# APPLICATION FOR VARIATION OF ENVIRONMENTAL PERMIT TO OPERATE ADHESIVE COATING AND ASSOCIATED DI-ISOCYANATE ACTIVITIES PROCESS UNDER THE ENVIRONMENTAL PERMITTING (ENGLAND AND WALES) REGULATIONS 2016 (AS AMENDED)

## SUPPLEMENTARY INFORMATION DOCUMENT

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# ACRONYMS / TERMS USED IN THIS REPORT

| | |
|---|---|
| ADPZ | Adler Pelzer Group |
| CAB | CAB Automotive Limited |
| DAA | Directly Associated Activity |
| ECL | Environmental Compliance Limited |
| EMS | Environmental Management System |
| EP Regulations | Environmental Permitting (England and Wales) Regulations 2016 |
| g/h | Grammes per Hour |
| Ha | Hectares |
| IED | Industrial Emissions Directive |
| IPPC | Integrated Pollution Prevention & Control |
| ISO | Isocyanate substances |
| LAPC | Local Authority Pollution Control |
| LEV | Local Exhaust Ventilation |
| LNR | Local Nature Reserve |
| MAGIC | Multi-Agency Geographic Information for the Countryside |
| $mg/Nm^3$ | Milligrams per Normalised Cubic Metre |
| OS | Ordnance Survey |
| PU | Polyurethane |
| SB | Spray Booth |
| SDS | Safety Data Sheet |
| SID | Supplementary Information Document |
| SMP | Solvent Management Plan |
| The Installation | CAB Automotive Site |
| TVOC | Total Volatile Organic Compounds |
| VOC | Volatile Organic Compounds |

# 1. INTRODUCTION

## 1.1. Overview

1.1.1. This Supplementary Information Document ("SID") document has been prepared on behalf of CAB Automotive Limited ("CAB"), part of the Adler Pelzer Group ("ADPZ"), by Environmental Compliance Limited ("ECL"). This EPTR relates to the adhesive coating and di-isocyanate activities that will be performed at the CAB Automotive site located at Vaughan Trading Estate, Sedgley Road East, Tipton, West Midlands, hereafter referred to as "the Installation".

1.1.2. The adhesive coating and di-isocyanate activities have undergone a number of changes, some of which have been previously notified, and others which were planned but due to customer requirements and changing contracts have been implemented recently. The changes have required the removal of some equipment / processes, relocation of processes within the process building, and the introduction of some new equipment associated with new contract work. The site has been operational for over 40 years and has benefitted from local authority Part B permits for its adhesive coating and di-isocyanate activities.

1.1.3. The changes to the business activities have resulted in one di-isocyanate process, covered by Permit PPC94089, being completely dismantled and no longer in use. A Surrender Application for the permit will be submitted.

1.1.4. The activities covered by Permit PPC92935 are dealt with in more detail in the sections below and are in respect of Section 6.4, Part B, (a) (iv) of Part 2 of Schedule 1 of the Environmental Permitting (England and Wales) Regulations 2016 (as amended) ("EP Regulations"). The Section 6.4 description is "Coating activities, printing and textile treatments" with the relevant regulatory threshold being solvent consumption of more than 5 tonnes in any 12-month period.

1.1.5. In addition, Schedule 14 of the EP Regulations is applicable to solvent activities, which cross references to adhesive coating activities detailed in Part 2 of Annex VII of the Industrial Emissions Directive ("IED").

1.1.6. Some of the raw material products used on site are identified with the relevant hazard statements that are listed in the IED to which Schedule 14 of the EP Regulations make direct reference to, specifically Article 58 and Article 59(5).

1.1.7. These Articles require the replacement of such substances as far as possible, with less harmful substances in the shortest possible time, and the emissions of such substances need to be controlled under contained conditions as far as technically and economically feasible.

1.1.8. The individual substances and their hazard statements are identified within section 3 below.

## 1.2. Installation Location

1.2.1. The Installation is located on Vaughan Trading Estate Road, Sedgley Road East, Tipton, West Midlands, DY4 7UJ. The Installation occupies an area of approximately 1.30 Hectares ("Ha") (13,000m$^2$), and is centred on Ordnance Survey ("OS") National Grid Reference SO9662 9149. The wider CAB Automotive site occupies an area of approximately 3.00Ha (30,000m$^2$).

1.2.2. The exact location of the Installation is indicated on the Installation Location Map provided in Appendix I of this document. The Installation boundary is indicated on the Installation Boundary Map, which is provided in Appendix II of this document.

1.2.3. The closest residential properties are approximately within 100m to the northeast and northwest of the Installation along Dudley Port A461 road and also Peacock Close which is to the northeast. To the southeast and south there are further industrial units, with the wider area being a mixture of commercial and residential, and transport networks.

# 2. LISTED ACTIVITIES

## 2.1. Installation Activities

2.1.1. As noted in Section 1.1.4., the activities undertaken at the Installation are covered by the EP Regulations, namely;

- Schedule 1, Part 2, Section 6.4, Part B, (a) (iv); and also
- Schedule 14, Solvent emission activities which cross references to the IED and specific articles within it.

2.1.2. Part 2 of Annex VII in the IED lists Adhesive Coating in row 16 of the table with the same solvent consumption threshold as Section 6.4 of the EP Regulations, which is greater than 5 tonnes in any 12-month period.

## 2.2. Existing Authorisations

2.2.1. Section A 1.3 of the Application Form requests details of any existing Local Authority Pollution Control ("LAPC") or Integrated Pollution Prevention & Control ("IPPC") authorisations for the installation, or any waste management licenses or water discharge consents. CAB currently have two existing Part B permits which are PPC94089 and PPC92935-V1.

# 3. OPERATING TECHNIQUES

## 3.1. Overview of the Adhesive Coating and Di-Isocyanate Processes

3.1.1. CAB previously submitted a variation application that requested the relocation of two activities from units 200-400 to the main installation building. These activities are the McLaren and Bently Fabbing glue spraying processes. The application was dated 20th July 2022.

3.1.2. Subsequent to the relocation of these processes, further changes have taken place with some activities being relocated within the main installation building, and some completely removed and no longer undertaken. Others have been slightly modified for upgrading, or to allow other processes changes. The specific activities now being undertaken at the Installation are detailed in the following sections.

3.1.3. Each activity is dealt with separately and provides a description of the activity, substances used, any emissions released and any relevant changes from previous information supplied to the regulator. However, it is worth noting that some equipment, such as spray booths and presses, may be for more than one activity.

3.1.4. A process location and associated substance use diagram is provided in Appendix III.

## 3.2. Polyurethane (PU) Line Carpet (Bentley Carpets)

3.2.1. This process utilises carpet cut from a roll in 'blank' sizes where it is placed together with heavy lay material into the Gantry Press. This forms it into a carpet shape. The moulded carpet is then put into the PU foaming tool where foam is automatically dispensed onto the rear of the moulded carpet. A water-based mould release agent is used each time. The cured foam back carpets are transferred to the waterjet cutting machines where they are cut to the required specification. This process is one of the directly associated activities ("DAA") detailed within the permit.

3.2.2. The PU foam substances contain isocyanates with emissions from the process currently being released internally from the local exhaust ventilation ("LEV"). However, different methods of extraction to atmosphere are being explored, such as canopy, vented systems, portable extraction, and some quotations have been received which are currently being reviewed for feasibility and operational practicalities.

3.2.3. The substances used in the process are:

- Speckflex NE 138 Isocyanate (which contains H351 (R40) risk substances);
- Speckflex NS832 Polyol; and
- Acmos 37-9830 Mould Release (which contains H341 (R68) and H360F (R61) risk substances, in small concentrations).

3.2.4. The Safety Data Sheets ("SDS") for the above are provided in Appendix IV.

## 3.3. Polyurethane (PU) Foam (JLR Defender Seats)

3.3.1. This process is not routinely used but remains for aftersales contracts in respect of JLR Defender

seat production. The JLR Defender seats begin production in the Aftersales foaming area where the designated moulding tool is applied with several coats of a wax type of substance to prevent the foam from sticking to the mould.

3.3.2. The mould is then connected to the foaming production tanks where it is injected with a mixture of isocyanate and polyol forming the interior cushioning of the Defender seats. Once the foam has set, the required fabric is chosen and taken over to spray both ("SB") 7 where spray adhesive is applied and then attached to the seat.

3.3.3. There is currently no LEV serving this area; however, production runs are short and irregular, resulting in 9 – 12 months between each order.

3.3.4. The substances used in this process are:

- Elastoflex W5516/131;
- ISO 145/35 (which contains H351 (R40) risk substance); and
- Acmos P180-52

3.3.5. The SDS for the above substances are provided in Appendix V.

3.3.6. This is an existing process detailed within the permit. SB7 is served with LEV that have not been subject to any changes, and which emits through the roof with stack details provided in Appendix XIII.

### 3.4. BMW Trimming

3.4.1. This process is no longer undertaken at the site. Any remaining substances/chemicals associated specifically with the activity have been secured in the waste store pending return/disposal.

### 3.5. Rhodes Press and After Sales

3.5.1. Within this area the Rhodes Press is located and is used by the aftersales team where they manufacture headliners, seats and other ad-hoc replacement parts for JLR vehicles. Non-phenolic felt pads are taken from the stock area and moulded into shape using the Rhodes Press. Once the desired temperature has been reached, the mould is sprayed with a release agent and the felt is placed inside. Once heated, the foam becomes hard and durable producing the frame for the JLR Defender headliner.

3.5.2. The substance used in these activities is:

- Acmos 37-9830.

3.5.3. The SDS is provided in Appendix VI.

3.5.4. These are existing activities served by LEV that emit through two stacks that have not been subject to any changes. Improved extraction is being assessed through the extension of the press curtains. The stack references are Rhodes Press PH8FS and PH8RS and the stack details are provided in Appendix XIII.

### 3.6. Bentley Fabbing

3.6.1. Within this area various processes are undertaken to manufacture interior linings and components for Bentley vehicles. Pre moulded plastic components are lightly sanded at the cleaning station and wiped over with white spirit. The surfaces are then tested with "Dyne Testing fluid" to ensure they are suitable for spraying. The components are then passed to spray booths to be coated with adhesive. Door casings are sprayed in SB2, and access covers in SB7. The plastic components are placed into a warming oven until the required temperature has been reached and curing achieved, and then passed to assembly line where additional parts and substrates are added.

3.6.2. The substances used in the process are:

- Thermonex 063-05A (WB Solvent) [SB2];
- Thermonex 006B Blue hardener (WB Solvent) [SB2];
- Xtrabond 35 (Solvent) [SB7];
- Dyne Testing Fluid; and
- White Spirit.

3.6.3. The SDS for these substances are provided in Appendix VII.

3.6.4. These are existing activities served by LEV for SB2 and SB7 that emit through stacks that have not been subject to any changes. The stack references are SB2 and SB7 with the stack details provided in Appendix XIII.

### 3.7. Jaguar X152

3.7.1. The activities are no longer undertaken at the site. Any remaining substances/chemicals associated specifically with the activity have been secured in the waste store pending return/disposal.

### 3.8. Butyl

3.8.1. The activities are no longer undertaken at the site. Any remaining substances/chemicals associated specifically with the activity have been secured in the waste store pending return/disposal.

### 3.9. McLaren

3.9.1. This area sits directly adjacent to Bentley Fabbing. The process undertaken in this area requires pre moulded plastic components and fabric trim cloth to be sprayed with adhesive in SB7. The plastic component is placed into a warming oven until the required temperature has been reached. It is then taken out and bonded together with additional parts and the fabrics are added. Parts are then trimmed and assembled ready for delivery.

3.9.2. The substance used within the process is:

- Alpha Adhesives S1922 (which contains H351 (R40) risk substance, but at very low concentration).

3.9.3. The SDS for this substance is provided in Appendix VIII.

3.9.4. These are existing activities served by LEV that emits through a stack that has not been subject to any changes. The stack reference is SB7, and the stack details are provided in Appendix XIII.

### 3.10. Aston Martin Wheel Arch Construction

3.10.1. The fabric front wheel arch liners are passed from the Waterjet cutting booth to the wheel arch construction area. The liner is stapled together to form the desired shape and then rivets are used to attach pre-made grill components to one side of the wheel arch.

3.10.2. Insulation foam is then attached to the other side of the wheel arch by using hotmelt glue. The arch is then checked and packed into stillages.

3.10.3. The substance used for this activity is:

- Jowat 628-90 Hotmelt Glue

3.10.4. The SDS for this substance is provided in Appendix IX

3.10.5. The Waterjet cutting booths are served by LEV that emits through vents exiting the High Bay area through wall vents. These are existing exit points.

### 3.11. Aston Martin Wheel Arch & Engine Covers (Moulding)

3.11.1. These activities are undertaken within the High Bay, Press 1 and SB1 locations. The substrates used to make the wheel arches and engine covers are heated in an oven in order to make the material flexible. Press 1 is sprayed with a release agent ready for the heated substrate to be placed in the mould. Foil coating is added to the relevant parts of the substrate which will act as heat protection once the parts are assembled. When the press has completed its cycle, the parts are removed and stacked ready for inspection.

3.11.2. Following inspection, any components identified with quality issues, such as tears in the foil, are set aside for repair. Repairable components are taken to SB1 where an aluminium paint is used to repair the tear by application with a brush.

3.11.3. The substances used within the process are:

- Acmos 37-9830
- Brillux Aluminium Bronze

3.11.4. The SDS for these substances are provided in Appendix X.

3.11.5. These are existing activities with Press 1 being served by LEV that emits via wall exit through vents referenced OV1S and OV2S. The SB1 is referenced SB1S. These have not been subject to any changes. The stack details are provided in Appendix XIII.

### 3.12. Bently Interior Panels (Boot Kit)

3.12.1. Within this area, battery covers, closing panels and access panels are manufactured or finished for Bentley vehicles. Larger components such as boot liners are moulded at Press 11 on the PU foaming line and transferred to the Bentley section in order to apply foam pads to the rear side of the carpet. Foam pads are applied using hot melt glue.

3.12.2. Smaller components such as access panels are made from pre-moulded plastic, this plastic and the fabric trim cloth are sprayed with adhesive. The plastic component is placed into a warming oven until the required temperature has been reached. It is then taken out and bonded together with the cloth.

3.12.3. The substances used within the process are:

- Jowat 628-90 Hot melt glue;
- Sikamelt 885-1A Hot melt glue, and
- Dyne Testing Fluid.

3.12.4. The SDS for these substances are provided in Appendix XI.

3.12.5. These are existing activities with Press 11 served by LEV that emits through the roof via a stack that has not been subject to any changes. The stack reference is PH11S, and the stack details are provided in Appendix XIII.

### 3.13. Carpet Cutting and Preparation

3.13.1. These activities are undertaken within areas CB3 and CB4. Moulded carpets are placed into a tool and fed into a waterjet cutting booth. Once the cycle is complete, the operatives check the carpet and use hotmelt glue to attach foam parts and plastic components to the carpet.

3.13.2. The waterjet cutting booths are served by LEV with filter sock filtration and the filtered air is returned back into the workplace.

3.13.3. The substance used in the process is:

- Sikamelt 885-1A Hot melt glue.

3.13.4. The SDS for the substance is provided in Appendix XII.

3.13.5. These are existing activities that have not been subject to any changes.

### 3.14. Activity No Longer Undertaken – BMW Mini Arm Rests

3.13.1. The previous activity relating to the production of BMW Mini arm rests, and regulated under permit PPC94089, is no longer undertaken. This activity involved the use of isocyanates and the emissions from this activity were released internally and considered a potential health and safety concern.

3.13.2. The process equipment associated with the activity has been decommissioned and will no longer be used. A Surrender Application will be submitted for the permit.

# 4. MANAGEMENT TECHNIQUES

## 4.1. Environmental Management Techniques

4.1.1. The changes that have occurred at the Installation over the last 18 months, and the final proposed up to the end of 2024 will consolidate a period of changes in business direction. The relocation of processes, removal of some plant and equipment, and reconfiguration of LEV and associated stack locations will mean the activities can be undertaken more efficiently and effectively.

4.1.2. The last 12 months has seen removal of redundant chemicals and equipment from the site. There has been investment in replacement equipment and updating of some of the process activities. Workflows have been rationalised and efforts to improve process efficiency implemented.

4.1.3. The outcome of the changes delivered on site will hopefully result in:

- Reduced waste;
- Improved process efficiency;
- Improved quality;
- Greater energy efficiency;
- Improved emissions control; and
- Improved health and safety standards.

4.1.4. The implementation of the changes provides the opportunity to review and update the environmental controls for site activities, along with updating and improving the documentation associated with the environmental management of the Installation.

# 5. EMISSIONS

## 5.1. Overview

5.1.1. The key emissions that can be released from the activities to the environment are:

- particulate (from adhesive coating, as part of volatile organic compounds ("VOC") released from the process, and as part of the press/cutting processes);
- VOC (from adhesive coating, cleaning activities, mixing, drying and curing, surface cleaning, storage, handling, waste and spillage);
- Isocyanate from the DAA of PU foam production; and
- odour.

5.1.2. There may be some fugitive emissions and / or VOC emissions from on-site activities such as spray gun cleaning or component cleaning. The fugitive emission release will have reduced from previously due to process changes and better and more efficient LEV capture and release to atmosphere.

5.1.3. Emissions monitoring has been undertaken and is described in more details in section 5.8. below.

## 5.2. Particulates

5.2.1. For those activities that have the potential to release particulate, such as manual spraying of adhesives within the spray booths, the LEV incorporates paper filters that are fitted to ensure minimum particulate release occurs. The filters are checked regularly and replaced on a routine basis. The checks and maintenance actions are recorded on the Booth Check Sheets.

5.2.2. Particulates associated with VOC releases are minimised by LEV filtration where necessary, and also by way of good housekeeping, which helps to minimise fugitive release.

5.2.3. The Bentley carpet cutting activities are undertaken within contained processing plant and by using high pressure waterjet technology. Although served by LEV extraction, there is little potential for particulate matter to be released. Any water droplet or particulate matter would be captured by the filter socks fitted to the LEV exhaust pipework.

5.2.4. The press activities have the potential to release particulate, as a fugitive emission, but this is considered minimal.

## 5.3. VOC

5.3.1. There are various stages of the activities where there is a potential for VOC emissions to be released to the environment, such as adhesive coating through spraying and roller application, cleaning activities, storage of chemicals, and in the event of spillage or overflow when transferring solvent bearing products.

5.3.2. The VOC containing products will be delivered in various size sealed containers. All VOC containing raw materials will be handled and stored in such ways to minimise the chances of accidental release and to prevent damage to containers. Lids will remain on containers until the

point of use.

5.3.3. Storage areas will have secondary containment in place for any potential spillage / leakage. Where required container bunds will be:

- Impervious and resistant to the substances in storage; and
- Capable of holding 110% of the capacity of the largest storage tank.

5.3.4. Containers storing adhesives and other VOC containing chemicals will undergo regular visual inspection for damage or leaks and to ensure the continued integrity of the containers used. In the event of a leak or spillage, spill kits will be strategically placed at the Installation to ensure they can be retrieved and deployed as soon as possible. Employees will be trained in the location and use of spill kits.

## 5.4. Isocyanates

5.4.1. The two PU foam activities use substances that contain isocyanates. The activities are served by LEV and extract emissions to atmosphere through roof stacks. There is the potential for some fugitive emissions relating to the substances used and from LEV not operating at optimum performance.

5.4.2. The removal of the BMW Mini Arm Rest activity will help with reducing the isocyanate emissions from the Installation.

## 5.5. Solvent Management Plan ("SMP")

5.5.1. The permit requires the submission of an annual SMP that details solvent consumption and actual solvent emissions The last submission was for 2022, and unfortunately, due to staff changeovers there has not been a submission since.

5.5.2. The data for 2023 and 2024 is being reviewed to see if it is possible to provide some information for the SMP. However, as part of on-going improvements, it is proposed that the SMP is updated to account for the process changes that are being presented in this Permit Variation Application. The updated SMP will be provided as soon as possible.

## 5.6. Odour

5.6.1. Due to the use of VOCs at the Installation there is the potential for the generation of odour emissions from the Installation. It is noted that residential receptors are in close proximity to the Installation (approximately 100m) and as such strict control measures will be in place to ensure that there will be no offensive odours beyond the permitted boundary.

5.6.2. The use of spray booths at the Installation for adhesive coating activities will ensure that odours can be effectively contained, and fugitive emissions managed. Extracted air from the spray booths will be managed through venting to external roof stacks, as detailed in Appendix XII.

5.6.3. In order to control fugitive odour emissions at the Installation the following general management techniques will be employed:

- good housekeeping regimes are implemented throughout the site buildings and storage areas. This includes regular inspection and cleaning of all adhesive preparation and storage areas, equipment, and waste containers;
- regular maintenance and cleaning of machinery and plant including glue spray guns and the spray booth air extraction system;
- staff will be suitably trained in the conditions of the Environmental Permit and EMS;
- all containers holding VOC substances will be lidded when not in use and regularly inspected to ensure their continued integrity;
- any leaks and spillages will be dealt with immediately in accordance with the Installations spill procedure;
- VOC containing waste will be appropriately stored in lidded containers; and
- the Installation is managed and operated in accordance with an ISO 14001 environmental management system ("EMS") which is reviewed regularly to ensure it remains appropriate and up to date.

## 5.7. Start Up and Shut Down

5.7.1. The start-up and the shut-down of the adhesive spray booths is dependent on a number of factors such as order levels and time frame of operations, quantity of components to be produced, material to be coated, quality checks and break downs. Workflows are scheduled to try to be efficient as possible and minimise waste and reduce energy usage, thus reducing the number of startups and shutdowns. However, as the finished product is quality critical, there will be requirement for regular cleaning of adhesive spray guns and maintenance of spray booths. Breakdowns are minimised through PPM and routine servicing of equipment.

## 5.8. Emission Limit Values & Emission Monitoring

5.8.1. The permit contains specific emission limits for particulates and total volatile organic compounds ("TVOC") (as carbon), which are:

- Particulates 50mg/$m^3$ (annually)
- TVOC 20mg/$m^3$ (annually)

5.8.2. It is noted that the permit emission limit of 20mg/$m^3$ for TVOC as carbon applies where the sum of the mass flows of all discharges of the compounds causing the risk phrase labelling is greater or equal to 100g/h.

5.8.3. Emissions monitoring was undertaken for particulates on the 9th November 2023, 18th December 2023, and 22nd January 2024, and TVOC as carbon was undertaken on 18th December 2023. A summary of the monitoring results is provided in Tables 1 and 2 below. The full Emissions Monitoring Report is provided in Appendix XIII.

**Table 1: Particulate Monitoring Results**

| Units | Limit | EX 1 Booth No2 (Mini) | EX2 Booth No1 (Mini) | EX4 Booth No8 (McLaren) | EX5 Booth No9 (McLaren) | SB5 Bentley | SB7 Bentley | X152 Jaguar | EX3 Booth No3 |
|---|---|---|---|---|---|---|---|---|---|
| $mg/m^3$ | 50 | 1.63 | 1.94 | 1.64 | 1.89 | 1.53 | 0.82 | 1.23 | 1.12 |
| g/h | - | 16.16 | 19.08 | 17.97 | 11.90 | 1.58 | 10.20 | 5.80 | 7.44 |

**Table 2: TVOC as carbon Monitoring Results**

| Units | Limit | Test Number | EX3 Booth No3 |
|---|---|---|---|
| $mg/m^3$ | 20 | 1 | 1.59 |
| g/h | - | 1 | 10.61 |
| $mg/m^3$ | 20 | 2 | 1.08 |
| g/h | - | 2 | 7.21 |
| $mg/m^3$ | 20 | 3 | 0.82 |
| g/h | - | 3 | 5.47 |
| $mg/m^3$ | 20 | Average | 1.16 |
| g/h | - | Average | 7.76 |

5.8.4. As can be seen from Tables 1 and 2, all results were within the permit limits.

5.8.5. Emissions monitoring requirements that will be detailed in any varied permit issued will be undertaken.

# 6. IMPACT ON THE ENVIRONMENT

## 6.1. Foreseeable Emissions

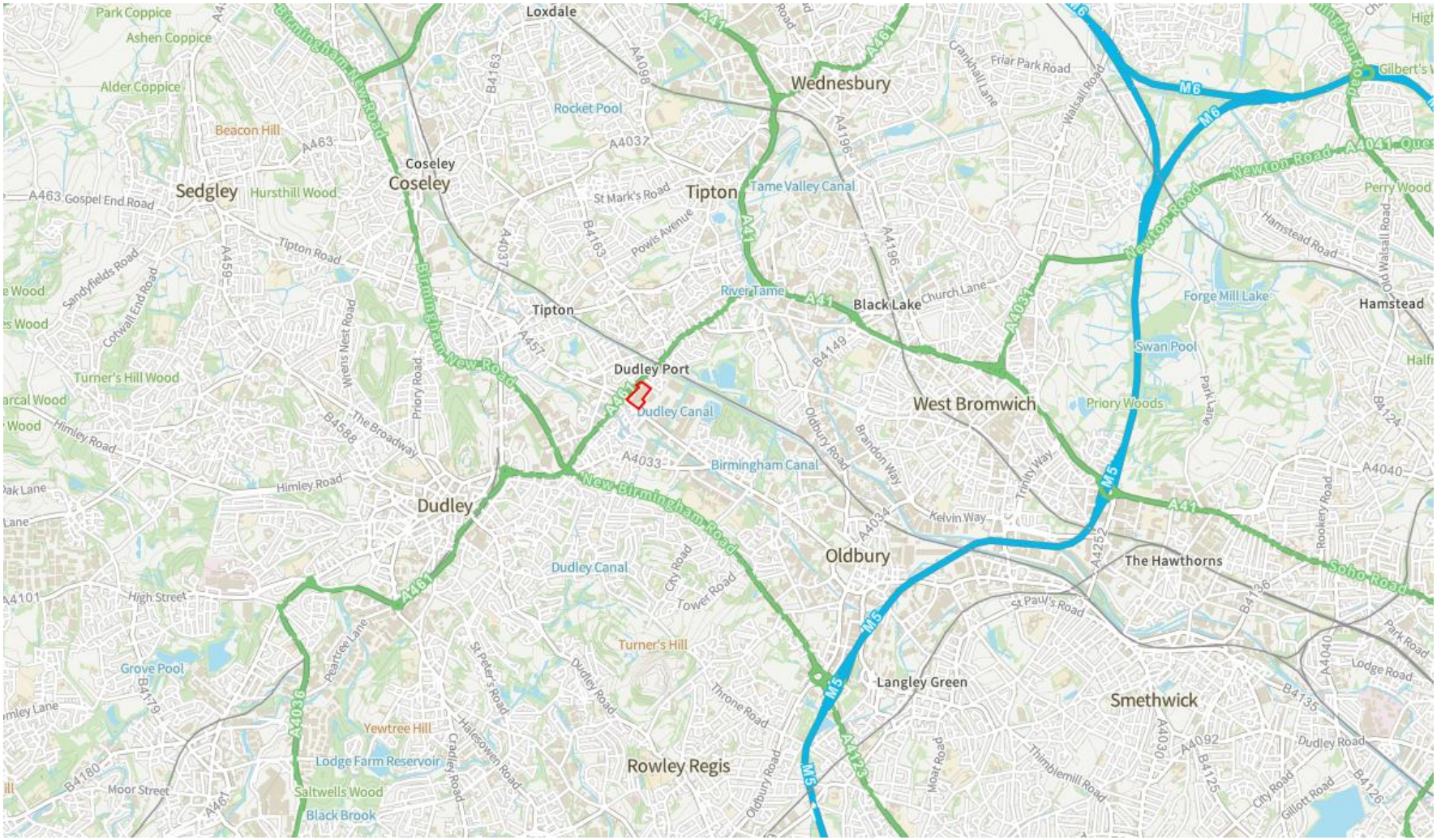
6.1.1. As detailed in Sections 3. and 5. above, the main foreseeable emissions are particulates, VOC, Isocyanate, and odour. It is considered that the majority of the emissions would come from point sources, i.e. stacks, and therefore deemed as contained sources. There will be some fugitive emissions from the activities, such as odour, however these are managed and minimised wherever possible. It is not considered the activities will have the potential to generate nuisance or have a significant negative impact on the local environment.

## 6.2. Potentially Significant Local Environment Designations

6.2.1. Searches conducted on the Multi-Agency Geographic Information for the Countryside ("MAGIC") online mapping tool identified one Local Nature Reserve, named Sheepwash LNR, that partly fell within a 1000m buffer zone of the Installation, from the site centre. A 2000m buffer zone did not identify any further locations or features that may be relevant for this Variation Application.

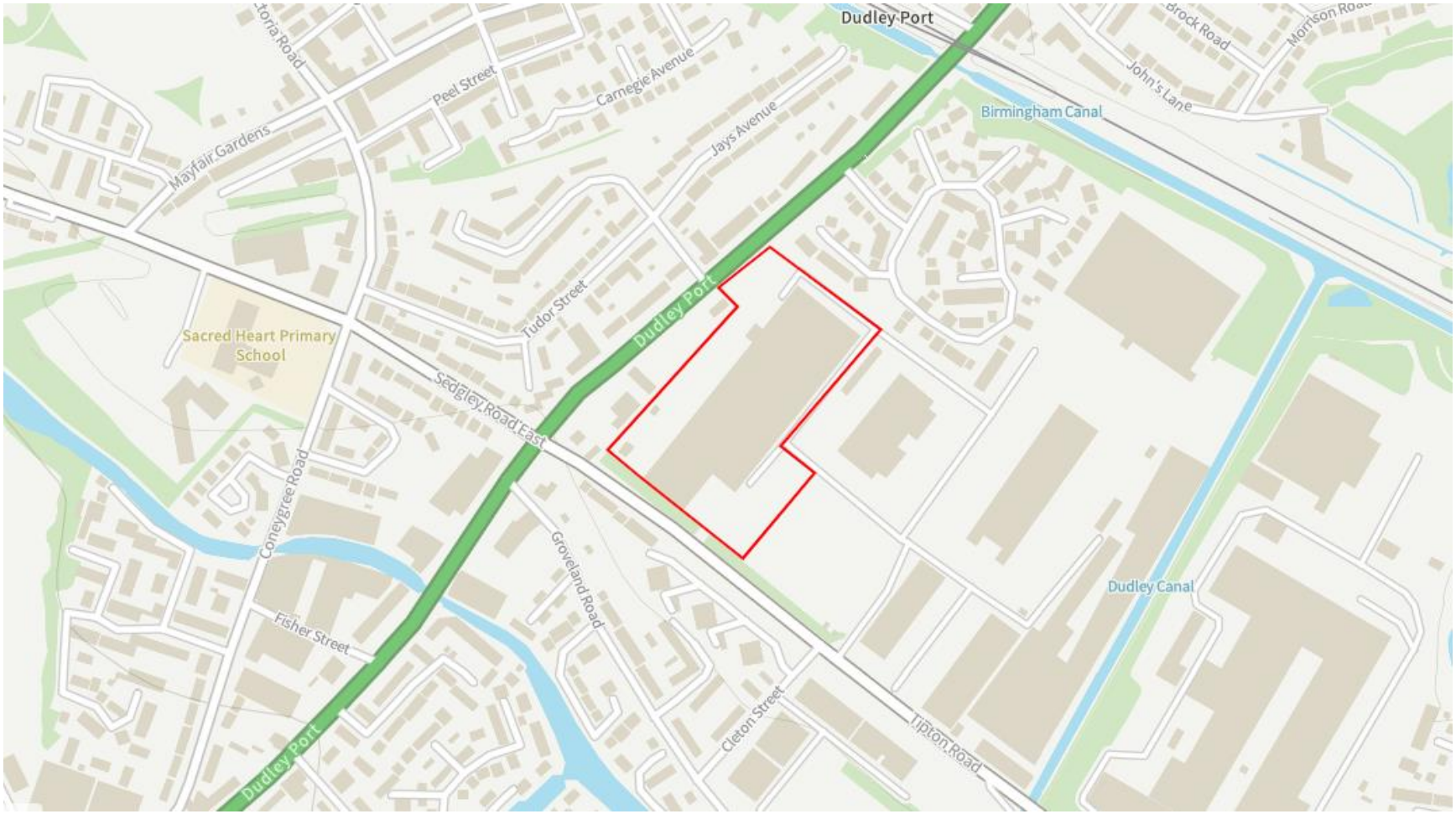
6.2.2. Due to the distance of the Installation from the Sheepwash LNR site and taking into consideration the emissions monitoring results presented in section 5.9 above, it is not considered that the activities will have a significant negative impact on the local environment. No environmental impact assessment has therefore been carried out for the Installation.

# APPENDIX I
# CAB AUTOMOTIVE INSTALLATION LOCATION MAP



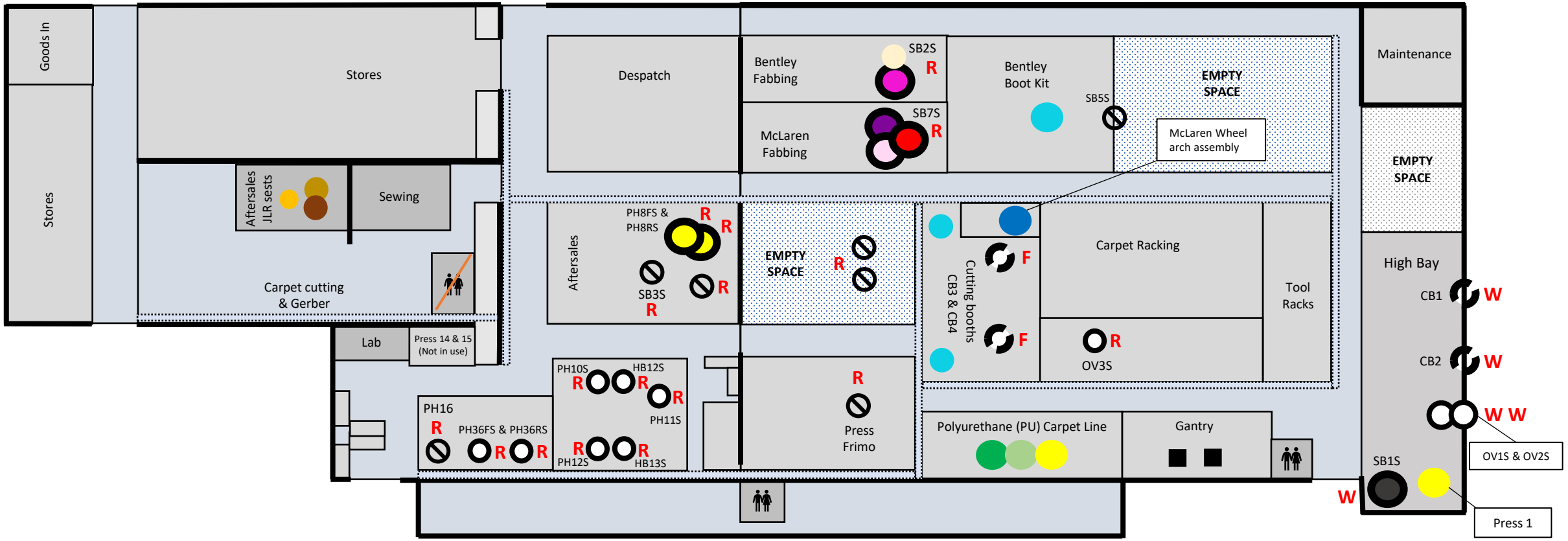

MAGIC Mapping Image November 2024

# APPENDIX II
# CAB AUTOMOTIVE INSTALLATION BOUNDARY MAP




MAGIC Mapping Tool November 2024

# APPENDIX III
# PROCESS LOCATION AND SUBSTANCE USE DIAGRAM




- Alpha Adhesive S1922
- Elastoflex W 5516/131
- ISO 145/35
- Xtrabond -35 (solvent)
- Thermonex 006B Blue (WB Solvent)
- Thermonex 063-05A (WB Solvent)
- Jowat 628.90
- Sikamelt 885-1A
- Specflex NE 138 Isocyanate
- Specflex NS832 Polyol
- Acmos P180-52
- Acmos 37-9830
- Aluminium Bronze 283
- Dyne Testing Fluid
- LEV/Stack (Heat extraction only)
- LEV/Stack (Water jet cutting)
- LEV/Stack Decommissioned/not in use

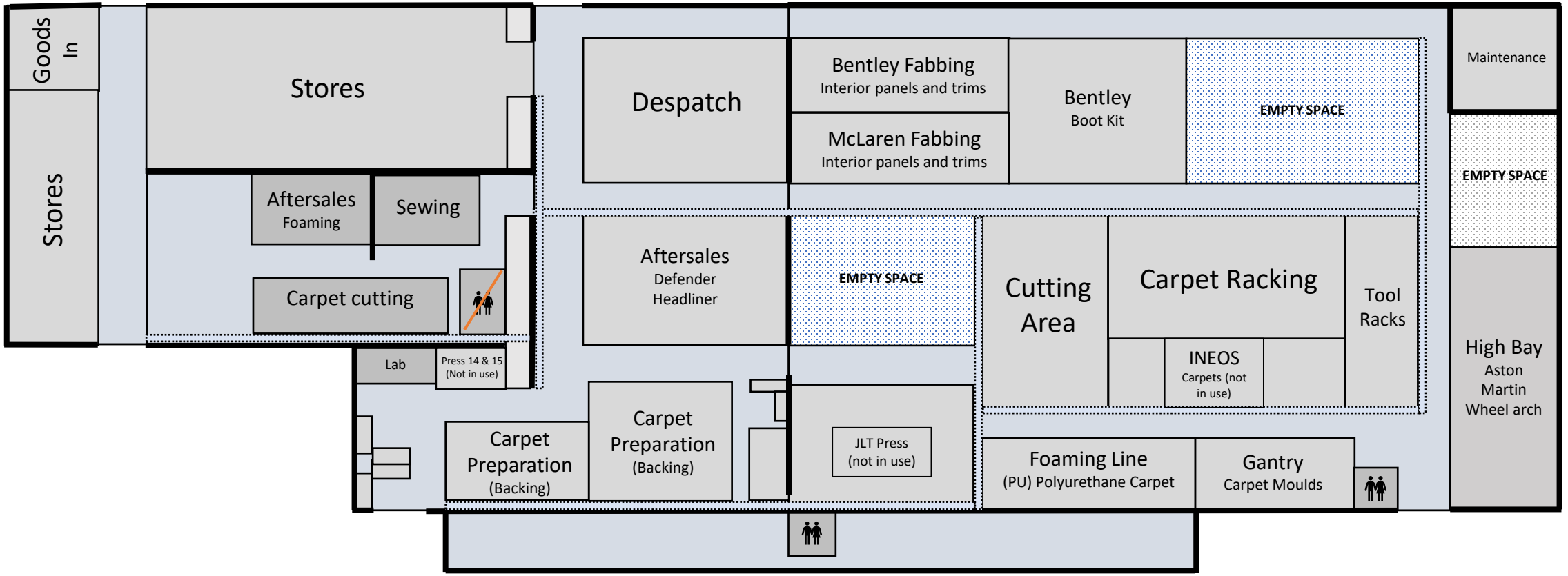
**SB** Spray Booth

■ Contact Oven

**Stack notes:**

**R** outlet via roof
**W** outlet via side wall
**F** outlet via filter sock

# Substance Layout October 2024


Goods In
Stores
Stores
Aftersales
Foaming
Sewing
Carpet cutting
Lab
Press 14 & 15
(Not in use)
Despatch
Bentley Fabbing
Interior panels and trims
McLaren Fabbing
Interior panels and trims
Bentley
Boot Kit
EMPTY SPACE
Maintenance
EMPTY SPACE
Aftersales
Defender
Headliner
EMPTY SPACE
Cutting
Area
Carpet Racking
INEOS
Carpets (not
in use)
Tool
Racks
High Bay
Aston
Martin
Wheel arch
Carpet
Preparation
(Backing)
Carpet
Preparation
(Backing)
JLT Press
(not in use)
Foaming Line
(PU) Polyurethane Carpet
Gantry
Carpet Moulds

# APPENDIX IV
# POLYURETHANE (PU) LINE CARPET (BENTLEY CARPETS) SDS

# SAFETY DATA SHEET

**DOW CHEMICAL COMPANY LIMITED**

Safety Data Sheet according to REACH Regulation (EC) No 1907/2006, as retained and amended in UK law

**Product name: SPECFLEX™ NE 138 Isocyanate DA**

**Revision Date:** 25.11.2022
**Version:** 19.0
**Print Date:** 13.07.2023
**Date of last issue:** 30.08.2021

DOW CHEMICAL COMPANY LIMITED encourages and expects you to read and understand the entire (M)SDS, as there is important information throughout the document. We expect you to follow the precautions identified in this document unless your use conditions would necessitate other appropriate methods or actions.

## SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

**1.1 Product identifier**
**Product name:** SPECFLEX™ NE 138 Isocyanate DA

**Chemical name of the substance:** Formaldehyde, oligomeric reaction products with aniline and phosgene
**CASRN:** 32055-14-4
**EC-No.:** 500-079-6

**1.2 Relevant identified uses of the substance or mixture and uses advised against**
**Identified uses:** Component(s) for the manufacture of urethane polymers.

**1.3 Details of the supplier of the safety data sheet**
**COMPANY IDENTIFICATION**
DOW CHEMICAL COMPANY LIMITED
5 OAKWATER AVENUE
CHEADLE ROYAL BUSINESS PARK
CHEADLE
SK8 3SR
UNITED KINGDOM

| | |
|---|---|
| **Customer Information Number:** | +44 (0) 1663 746518 |
| | SDSQuestion@dow.com |
| **Fax:** | +44 (0) 1663 746605 |

**1.4 EMERGENCY TELEPHONE NUMBER**
**24-Hour Emergency Contact:** 0031 115 694 982
**Local Emergency Contact:** 00 31 115 69 4982

## SECTION 2: HAZARDS IDENTIFICATION

**2.1 Classification of the substance or mixture**

**Classification according to Regulation (EC) No 1272/2008, as retained and amended in UK law**
Acute toxicity - Category 4 - Inhalation - H332

Skin irritation - Category 2 - H315
Eye irritation - Category 2 - H319
Respiratory sensitisation - Category 1 - H334
Skin sensitisation - Category 1 - H317
Carcinogenicity - Category 2 - H351
Specific target organ toxicity - single exposure - Category 3 - H335
Specific target organ toxicity - repeated exposure - Category 2 - H373
For the full text of the H-Statements mentioned in this Section, see Section 16.

**2.2 Label elements**

**Labelling according to Regulation (EC) No 1272/2008, as retained and amended in UK law**

**Hazard pictograms**



**Signal word: DANGER**

**Hazard statements**

| | |
|---|---|
| H315 | Causes skin irritation. |
| H317 | May cause an allergic skin reaction. |
| H319 | Causes serious eye irritation. |
| H332 | Harmful if inhaled. |
| H334 | May cause allergy or asthma symptoms or breathing difficulties if inhaled. |
| H335 | May cause respiratory irritation. |
| H351 | Suspected of causing cancer. |
| H373 | May cause damage to organs through prolonged or repeated exposure. |

**Precautionary statements**

| | |
|---|---|
| P201 | Obtain special instructions before use. |
| P260 | Do not breathe mist or vapours. |
| P264 | Wash skin thoroughly after handling. |
| P280 | Wear protective gloves/ protective clothing/ eye protection/ face protection/ hearing protection. |
| P304 + P340 + P312 | IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER/ doctor if you feel unwell. |
| P308 + P313 | IF exposed or concerned: Get medical advice/ attention. |

**Supplemental information**

| | |
|---|---|
| ---------- | In the EU, NO, IS, LI and GB: "As from 24 August 2023 adequate training is required before industrial or professional use." |

**2.3 Other hazards**

This product contains no substances assessed to be PBT or vPvB at levels of 0.1% or higher.

## SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

### 3.1 Substances

This product is a substance.

| CASRN / EC-No. / Index-No. | UK REACH Registration Number | Concentration | Component | Classification: REGULATION (EC) No 1272/2008, as retained and amended in UK law |
|---|---|---|---|---|
| **CASRN**<br>32055-14-4<br>**EC-No.**<br>500-079-6<br>**Index-No.**<br>– | – | 100.0% | Formaldehyde, oligomeric reaction products with aniline and phosgene | Acute Tox. 4; H332<br>Skin Irrit. 2; H315<br>Eye Irrit. 2; H319<br>Resp. Sens. 1; H334<br>Skin Sens. 1; H317<br>Carc. 2; H351<br>STOT SE 3; H335 (Respiratory system)<br>STOT RE 2; H373 (Respiratory Tract)<br><br>Acute toxicity estimate<br>Acute oral toxicity:<br>> 10,000 mg/kg<br>Acute inhalation toxicity:<br>0.49 mg/l, 4 Hour, dust/mist<br>0.31 mg/l, 4 Hour, dust/mist<br>2.24 mg/l, 1 Hour, dust/mist<br>Acute dermal toxicity:<br>> 9,400 mg/kg |
| **CASRN**<br>101-68-8<br>**EC-No.**<br>202-966-0<br>**Index-No.**<br>– | – | > 51.0 - < 61.0 % | 4,4'-Methylenediphenyl diisocyanate | Acute Tox. 4; H332<br>Skin Irrit. 2; H315<br>Eye Irrit. 2; H319<br>Resp. Sens. 1; H334<br>Skin Sens. 1; H317<br>Carc. 2; H351<br>STOT SE 3; H335 (Respiratory system)<br>STOT RE 2; H373<br><br>specific concentration limit<br>Eye Irrit. 2; H319<br>>= 5 %<br><br>specific concentration limit<br>STOT SE 3; H335<br>>= 5 % |

| | | | | |
|---|---|---|---|---|
| | | | | Skin Irrit. 2; H315<br>>= 5 %<br>Resp. Sens. 1; H334<br>>= 0.1 %<br><br>Acute toxicity estimate<br>Acute oral toxicity:<br>> 2,000 mg/kg<br>Acute inhalation toxicity:<br>2.24 mg/l, 1 Hour, dust/mist<br>Acute dermal toxicity:<br>> 9,400 mg/kg |

For the full text of the H-Statements mentioned in this Section, see Section 16.

*Note*
Note: CAS 101-68-8 is an MDI isomer that is part of CAS 32055-14-4.

## SECTION 4: FIRST AID MEASURES

**4.1 Description of first aid measures**
**General advice:**
First Aid responders should pay attention to self-protection and use the recommended protective clothing (chemical resistant gloves, splash protection). If potential for exposure exists refer to Section 8 for specific personal protective equipment.

**Inhalation:** Move person to fresh air and keep comfortable for breathing. If not breathing, give artificial respiration; if by mouth to mouth use rescuer protection (pocket mask, etc). If breathing is difficult, oxygen should be administered by qualified personnel. Call a physician or transport to a medical facility.

**Skin contact:** Remove material from skin immediately by washing with soap and plenty of water. Remove contaminated clothing and shoes while washing. Seek medical attention if irritation or rash occurs. Wash clothing before reuse. An MDI skin decontamination study demonstrated that cleaning very soon after exposure is important, and that a polyglycol-based skin cleanser or corn oil may be more effective than soap and water. Discard items which cannot be decontaminated, including leather articles such as shoes, belts and watchbands. Suitable emergency safety shower facility should be available in work area.

**Eye contact:** Immediately flush eyes with water; remove contact lenses, if present, after the first 5 minutes, then continue flushing eyes for at least 15 minutes. Obtain medical attention without delay, preferably from an ophthalmologist. Suitable emergency eye wash facility should be immediately available.

**Ingestion:** If swallowed, seek medical attention. Do not induce vomiting unless directed to do so by medical personnel.

**4.2 Most important symptoms and effects, both acute and delayed:**
Causes skin irritation. May cause an allergic skin reaction. Causes serious eye irritation. Harmful if inhaled. May cause allergy or asthma symptoms or breathing difficulties if inhaled. May cause

respiratory irritation. Suspected of causing cancer. May cause damage to organs through prolonged or repeated exposure.

**4.3 Indication of any immediate medical attention and special treatment needed**
**Notes to physician:** Maintain adequate ventilation and oxygenation of the patient. May cause respiratory sensitization or asthma-like symptoms. Bronchodilators, expectorants and antitussives may be of help. Treat bronchospasm with inhaled beta2 agonist and oral or parenteral corticosteroids. Respiratory symptoms, including pulmonary edema, may be delayed. Persons receiving significant exposure should be observed 24-48 hours for signs of respiratory distress. If you are sensitized to diisocyanates, consult your physician regarding working with other respiratory irritants or sensitizers. Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient. Excessive exposure may aggravate preexisting asthma and other respiratory disorders (e.g. emphysema, bronchitis, reactive airways dysfunction syndrome).

## SECTION 5: FIREFIGHTING MEASURES

**5.1 Extinguishing media**

**Suitable extinguishing media:** Water fog or fine spray.. Dry chemical fire extinguishers.. Carbon dioxide fire extinguishers.. Foam.. Alcohol resistant foams (ATC type) are preferred. General purpose synthetic foams (including AFFF) or protein foams may function, but will be less effective..

**Unsuitable extinguishing media:** Do not use direct water stream.. May spread fire..

**5.2 Special hazards arising from the substance or mixture**

**Hazardous combustion products:** During a fire, smoke may contain the original material in addition to combustion products of varying composition which may be toxic and/or irritating.. Combustion products may include and are not limited to:. Nitrogen oxides.. Isocyanates.. Hydrogen cyanide.. Carbon monoxide.. Carbon dioxide..

**Unusual Fire and Explosion Hazards:** Product reacts with water. Reaction may produce heat and/or gases.. This reaction may be violent.. Container may rupture from gas generation in a fire situation.. Violent steam generation or eruption may occur upon application of direct water stream to hot liquids.. Dense smoke is produced when product burns..

**5.3 Advice for firefighters**

**Fire Fighting Procedures:** Keep people away. Isolate fire and deny unnecessary entry.. Stay upwind. Keep out of low areas where gases (fumes) can accumulate.. Water is not recommended, but may be applied in large quantities as a fine spray when other extinguishing agents are not available.. Do not use direct water stream. May spread fire.. Fight fire from protected location or safe distance. Consider the use of unmanned hose holders or monitor nozzles.. Immediately withdraw all personnel from the area in case of rising sound from venting safety device or discoloration of the container.. Move container from fire area if this is possible without hazard.. Use water spray to cool fire-exposed containers and fire-affected zone until fire is out.. Contain fire water run-off if possible. Fire water run-off, if not contained, may cause environmental damage.. Review the "Accidental Release Measures" and the "Ecological Information" sections of this (M)SDS..

**Special protective equipment for firefighters:** Wear positive-pressure self-contained breathing apparatus (SCBA) and protective fire fighting clothing (includes fire fighting helmet, coat, trousers, boots, and gloves).. Avoid contact with this material during fire fighting operations. If contact is likely, change to full chemical resistant fire fighting clothing with self-contained breathing apparatus. If this is not available, wear full chemical resistant clothing with self-contained breathing apparatus and fight fire from a remote location.. For protective equipment in post-fire or non-fire clean-up situations, see Section 8 of the safety data sheet..

## SECTION 6: ACCIDENTAL RELEASE MEASURES

**6.1 Personal precautions, protective equipment and emergency procedures:** Isolate area. Keep unnecessary and unprotected personnel from entering the area. Ventilate area of leak or spill. Keep personnel out of low areas. Keep upwind of spill. If available, use foam to smother or suppress. Refer to section 7, Handling, for additional precautionary measures. Spilled material may cause a slipping hazard. See Section 10 for more specific information. Use appropriate safety equipment. For additional information, refer to Section 8, Exposure Controls and Personal Protection.

**6.2 Environmental precautions:** Prevent from entering into soil, ditches, sewers, waterways and/or groundwater. See Section 12, Ecological Information.

**6.3 Methods and materials for containment and cleaning up:** Contain spilled material if possible. Absorb with materials such as: Vermiculite. Dirt. Sand. Clay. Do NOT use absorbent materials such as: Cement powder (Note: may generate heat). Collect in suitable and properly labeled open containers. Do not place in sealed containers. Suitable containers include: Metal drums. Plastic drums. Polylined fiber pacs. Wash the spill site with large quantities of water. Attempt to neutralize by adding suitable decontaminant solution: Formulation 1: sodium carbonate 5 - 10%; liquid detergent 0.2 - 2%; water to make up to 100%, OR Formulation 2: concentrated ammonia solution 3 - 8%; liquid detergent 0.2 - 2%; water to make up to 100%. If ammonia is used, use good ventilation to prevent vapor exposure. Contact your supplier for clean-up assistance. See Section 13, Disposal Considerations, for additional information.

**6.4 Reference to other sections:** References to other sections, if applicable, have been provided in the previous sub-sections.

## SECTION 7: HANDLING AND STORAGE

**7.1 Precautions for safe handling:** Avoid breathing vapor. Avoid contact with eyes, skin, and clothing. Avoid prolonged or repeated contact with skin. Use with adequate ventilation. Wash thoroughly after handling. Keep container tightly closed. This material is hygroscopic in nature. See Section 8, EXPOSURE CONTROLS AND PERSONAL PROTECTION.
Spills of these organic materials on hot fibrous insulations may lead to lowering of the autoignition temperatures possibly resulting in spontaneous combustion.

**7.2 Conditions for safe storage, including any incompatibilities:** Store in a dry place. Protect from atmospheric moisture. Do not store product contaminated with water to prevent potential hazardous reaction. See Section 10 for more specific information. Additional storage and handling information on this product may be obtained by calling your sales or customer service contact.

**Storage stability**

| **Storage temperature:** | **Storage Period:** |
|---|---|

15 - 40 °C 9 Month

**7.3 Specific end use(s):** See the technical data sheet on this product for further information.

## SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

**8.1 Control parameters**
If exposure limits exist, they are listed below. If no exposure limits are displayed, then no values are applicable.

| Component | Regulation | Type of listing | Value |
|---|---|---|---|
| Formaldehyde, oligomeric reaction products with aniline and phosgene | GB EH40 | TWA | 0.02 mg/m3 , NCO |
| | Further information: Sen: Capable of causing occupational asthma. | | |
| | GB EH40 | STEL | 0.07 mg/m3 , NCO |
| | Further information: Sen: Capable of causing occupational asthma. | | |
| 4,4'-Methylenediphenyl diisocyanate | ACGIH | TWA | 0.005 ppm |
| | Dow IHG | TWA | 0.005 ppm |
| | Dow IHG | STEL | 0.02 ppm |
| | GB EH40 | TWA | 0.02 mg/m3 , NCO |
| | Further information: Sen: Capable of causing occupational asthma. | | |
| | GB EH40 | STEL | 0.07 mg/m3 , NCO |
| | Further information: Sen: Capable of causing occupational asthma. | | |

**Biological occupational exposure limits**

| Components | CAS-No. | Control parameters | Biological specimen | Sampling time | Permissible concentration | Basis |
|---|---|---|---|---|---|---|
| Formaldehyde, oligomeric reaction products with aniline and phosgene | 32055-14-4 | isocyanate-derived diamine (Isocyanates) | Urine | At the end of the period of exposure | 1 µmol/mol creatinine | GB EH40 BAT |
| 4,4'-Methylenediphenyl diisocyanate | 101-68-8 | isocyanate-derived diamine (Isocyanates) | Urine | At the end of the period of exposure | 1 µmol/mol creatinine | GB EH40 BAT |

**Recommended monitoring procedures**
Monitoring of the concentration of substances in the breathing zone of workers or in the general workplace may be required to confirm compliance with the Occupational Exposure Limits and the adequacy of exposure controls. For some substances biological monitoring may also be appropriate. Validated exposure measurement methods should be applied by a competent person and samples should be analysed by an accredited laboratory.
Reference should be made to monitoring standards, such as the following: European Standard EN 689 (Workplace atmospheres - Guidance for the assessment of exposure by inhalation to chemical agents for comparison with limit values and measurement strategy); European Standard EN 14042 (Workplace atmospheres - Guide for the application and use of procedures for the assessment of exposure to chemical and biological agents); European Standard EN 482 (Workplace atmospheres - General requirements for the performance of procedures for the measurement of chemical agents).

Reference to national guidance documents for methods for the determination of hazardous substances will also be required.
Examples of sources of recommended exposure measurement methods are given below or contact the supplier. Further national methods may be available.
National Institute of Occupational Safety and Health (NIOSH), USA: Manual of Analytical Methods.
Occupational Safety and Health Administration (OSHA), USA: Sampling and Analytical Methods.
Health and Safety Executive (HSE), United Kingdom: Methods for the Determination of Hazardous Substances.
Institut für Arbeitsschutz Deutschen Gesetzlichen Unfallversicherung (IFA), Germany.
L'Institut National de Recherche et de Securité, (INRS), France.

**Derived No Effect Level**
Formaldehyde, oligomeric reaction products with aniline and phosgene
**Workers**

| ***Acute systemic effects*** | | ***Acute local effects*** | | ***Long-term systemic effects*** | | ***Long-term local effects*** | |
|---|---|---|---|---|---|---|---|
| Dermal | Inhalation | Dermal | Inhalation | Dermal | Inhalation | Dermal | Inhalation |
| n.a. | n.a. | n.a. | 0.1 mg/m3 | n.a. | n.a. | n.a. | 0.05 mg/m3 |

**Consumers**

| ***Acute systemic effects*** | | | ***Acute local effects*** | | ***Long-term systemic effects*** | | | ***Long-term local effects*** | |
|---|---|---|---|---|---|---|---|---|---|
| Dermal | Inhalation | Oral | Dermal | Inhalation | Dermal | Inhalation | Oral | Dermal | Inhalation |
| n.a. | n.a. | n.a. | n.a. | 0.05 mg/m3 | n.a. | n.a. | n.a. | n.a. | 0.025 mg/m3 |

4,4'-Methylenediphenyl diisocyanate
**Workers**

| ***Acute systemic effects*** | | ***Acute local effects*** | | ***Long-term systemic effects*** | | ***Long-term local effects*** | |
|---|---|---|---|---|---|---|---|
| Dermal | Inhalation | Dermal | Inhalation | Dermal | Inhalation | Dermal | Inhalation |
| n.a. | n.a. | n.a. | 0.100 mg/m3 | n.a. | n.a. | n.a. | 0.050 mg/m3 |

**Consumers**

| ***Acute systemic effects*** | | | ***Acute local effects*** | | ***Long-term systemic effects*** | | | ***Long-term local effects*** | |
|---|---|---|---|---|---|---|---|---|---|
| Dermal | Inhalation | Oral | Dermal | Inhalation | Dermal | Inhalation | Oral | Dermal | Inhalation |
| n.a. | n.a. | n.a. | n.a. | 0.050 mg/m3 | n.a. | n.a. | n.a. | n.a. | 0.025 mg/m3 |

**Predicted No Effect Concentration**
Formaldehyde, oligomeric reaction products with aniline and phosgene

| **Compartment** | **PNEC** |
|---|---|
| Fresh water | 0.0037 mg/l |
| Intermittent use/release | 0.037 mg/l |
| Marine water | 0.37 mg/l |
| Fresh water sediment | 11.7 mg/kg dry weight (d.w.) |
| Marine sediment | 1.17 mg/kg dry weight (d.w.) |
| Soil | 2.33 mg/kg dry weight (d.w.) |

4,4'-Methylenediphenyl diisocyanate

| Compartment | PNEC |
|---|---|
| Fresh water | 1.0 mg/l |
| Intermittent use/release | 10 mg/l |
| Marine water | 0.100 mg/l |
| Sewage treatment plant | 1.0 mg/l |
| Soil | 1.0 mg/kg dry weight (d.w.) |

**8.2 Exposure controls**

**Engineering controls:** Use only with adequate ventilation. Local exhaust ventilation may be necessary for some operations. Provide general and/or local exhaust ventilation to control airborne levels below the exposure guidelines. Exhaust systems should be designed to move the air away from the source of vapor/aerosol generation and people working at this point. The odor and irritancy of this material are inadequate to warn of excessive exposure.

**Individual protection measures**

**Eye/face protection:** Use chemical goggles. Chemical goggles should be consistent with EN 166 or equivalent.

**Skin protection**

**Hand protection:** Use chemical resistant gloves classified under Standard EN374: Protective gloves against chemicals and micro-organisms. Examples of preferred glove barrier materials include: Polyethylene. Ethyl vinyl alcohol laminate ("EVAL"). Examples of acceptable glove barrier materials include: Butyl rubber. Avoid gloves made of: Neoprene. Polyvinyl chloride ("PVC" or "vinyl"). When prolonged or frequently repeated contact may occur, a glove with a protection class of 5 or higher (breakthrough time greater than 240 minutes according to EN 374) is recommended. When only brief contact is expected, a glove with a protection class of 3 or higher (breakthrough time greater than 60 minutes according to EN 374) is recommended. Glove thickness alone is not a good indicator of the level of protection a glove provides against a chemical substance as this level of protection is also highly dependent on the specific composition of the material that the glove is fabricated from. The thickness of the glove must, depending on model and type of material, generally be more than 0.35 mm to offer sufficient protection for prolonged and frequent contact with the substance. As an exception to this general rule it is known that multilayer laminate gloves may offer prolonged protection at thicknesses less than 0.35 mm. Other glove materials with a thickness of less than 0.35 mm may offer sufficient protection when only brief contact is expected. NOTICE: The selection of a specific glove for a particular application and duration of use in a workplace should also take into account all relevant workplace factors such as, but not limited to: Other chemicals which may be handled, physical requirements (cut/puncture protection, dexterity, thermal protection), potential body reactions to glove materials, as well as the instructions/specifications provided by the glove supplier.

**Other protection:** Use protective clothing chemically resistant to this material. Selection of specific items such as face shield, boots, apron, or full body suit will depend on the task.

**Respiratory protection:** Atmospheric levels should be maintained below the exposure guideline. When atmospheric levels may exceed the exposure guideline, use an approved air-purifying respirator equipped with an organic vapor sorbent and a particle filter. For situations where the atmospheric levels may exceed the level for which an air-purifying respirator is effective, use a positive-pressure air-supplying respirator (air line or self-contained breathing apparatus). For emergency response or for situations where the atmospheric level is

unknown, use an approved positive-pressure self-contained breathing apparatus or positive-pressure air line with auxiliary self-contained air supply.
Use the following CE approved air-purifying respirator: Organic vapor cartridge with a highly toxic particulate pre-filter, type AP3 (meeting standard EN 14387).

## SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

**9.1 Information on basic physical and chemical properties**

| | |
|---|---|
| **Appearance** | |
| **Physical state** | Liquid. |
| **Color** | Brown |
| **Odor** | Characteristic |
| **Odor Threshold** | 0.4 ppm *Based on Literature for MDI.* Odor is inadequate warning of excessive exposure. |
| **pH** | *Not applicable* substance/mixture reacts with water |
| **Melting point/range** | No test data available |
| **Freezing point** | No test data available |
| **Boiling point (760 mmHg)** | decomposes prior to boiling |
| **Flash point** | **closed cup** >100 °C *Estimated.* |
| **Evaporation Rate (Butyl Acetate = 1)** | No test data available |
| **Flammability (solid, gas)** | Not Applicable |
| **Flammability (liquids)** | Not expected to be a static-accumulating flammable liquid. |
| **Lower explosion limit** | No test data available |
| **Upper explosion limit** | No test data available |
| **Vapor Pressure** | No test data available |
| **Relative Vapor Density (air = 1)** | No test data available |
| **Relative Density (water = 1)** | 1.22 - 1.26 at 25 °C / 25 °C *Supplier* |
| **Water solubility** | insoluble |
| **Partition coefficient: n-octanol/water** | No data available |
| **Auto-ignition temperature** | No test data available |
| **Decomposition temperature** | No data available |
| **Kinematic Viscosity** | 115 - 210 mm2/s at 25 °C *ASTM D 445* |
| **Explosive properties** | Not explosive |
| **Oxidizing properties** | No |

**9.2 Other information**

| | |
|---|---|
| **Molecular weight** | No test data available |

NOTE: The physical data presented above are typical values and should not be construed as a specification.

## SECTION 10: STABILITY AND REACTIVITY

**10.1 Reactivity:** Diisocyanates react with many materials and the rate of reaction increases with temperature as well as increased contact; these reactions can become violent. Contact is increased by stirring or if the other material mixes with the diisocyanate. Diisocyanates are not soluble in water and sink to the bottom, but react slowly at the interface. The reaction forms carbon dioxide gas and a layer of solid polyurea. Reaction with water will generate carbon dioxide and heat.

**10.2 Chemical stability:** Stable under recommended storage conditions. See Storage, Section 7.

**10.3 Possibility of hazardous reactions:** Can occur. Exposure to elevated temperatures can cause product to decompose and generate gas. This can cause pressure build-up and/or rupturing of closed containers. Polymerization can be catalyzed by: Strong bases. Water.

**10.4 Conditions to avoid:** Exposure to elevated temperatures can cause product to decompose. Generation of gas during decomposition can cause pressure in closed systems. Pressure build-up can be rapid. Avoid moisture. Material reacts slowly with water, releasing carbon dioxide which can cause pressure buildup and rupture of closed containers. Elevated temperatures accelerate this reaction.

**10.5 Incompatible materials:** Avoid contact with: Acids. Alcohols. Amines. Water. Ammonia. Bases. Metal compounds. Moist air. Strong oxidizers. Diisocyanates react with many materials and the rate of reaction increases with temperature as well as increased contact; these reactions can become violent. Contact is increased by stirring or if the other material mixes with the diisocyanate. Diisocyanates are not soluble in water and sink to the bottom, but react slowly at the interface. The reaction forms carbon dioxide gas and a layer of solid polyurea. Reaction with water will generate carbon dioxide and heat. Avoid contact with metals such as: Aluminum. Zinc. Brass. Tin. Copper. Galvanized metals. Avoid contact with absorbent materials such as: Moist organic absorbents. Avoid unintended contact with polyols. The reaction of polyols and isocyanates generate heat.

**10.6 Hazardous decomposition products:** Decomposition products depend upon temperature, air supply and the presence of other materials.. Gases are released during decomposition..

## SECTION 11: TOXICOLOGICAL INFORMATION

*Toxicological information appears in this section when such data is available.*

**11.1 Information on toxicological effects**

**Information on likely routes of exposure**
Ingestion, Inhalation, Skin contact, Eye contact.

**Acute toxicity (represents short term exposures with immediate effects - no chronic/delayed effects known unless otherwise noted)**

**Acute Toxicity Endpoints:**
Harmful if inhaled.

**Acute oral toxicity**

**Information for the Product:**

Low toxicity if swallowed. Small amounts swallowed incidentally as a result of normal handling operations are not likely to cause injury; however, swallowing larger amounts may cause injury. Observations in animals include: Gastrointestinal irritation.

As product: Single dose oral LD50 has not been determined.

Based on information for component(s):
LD50, > 2,000 mg/kg Estimated.

**Information for components:**

**Formaldehyde, oligomeric reaction products with aniline and phosgene**
Typical for this family of materials. LD50, Rat, > 10,000 mg/kg

**4,4'-Methylenediphenyl diisocyanate**
LD50, Rat, > 2,000 mg/kg No deaths occurred at this concentration.

**Acute dermal toxicity**

**Information for the Product:**

Prolonged skin contact is unlikely to result in absorption of harmful amounts.

As product: The dermal LD50 has not been determined.

Based on information for component(s):
LD50, > 2,000 mg/kg Estimated.

**Information for components:**

**Formaldehyde, oligomeric reaction products with aniline and phosgene**
Typical for this family of materials. LD50, Rabbit, > 9,400 mg/kg

**4,4'-Methylenediphenyl diisocyanate**
LD50, Rabbit, > 9,400 mg/kg

**Acute inhalation toxicity**

**Information for the Product:**

At room temperature, vapors are minimal due to low volatility. However, certain operations may generate vapor or mist concentrations sufficient to cause respiratory irritation and other adverse effects. Such operations include those in which the material is heated, sprayed or otherwise mechanically dispersed such as drumming, venting or pumping. Excessive exposure may cause irritation to upper respiratory tract (nose and throat) and lungs. May cause pulmonary edema (fluid in the lungs.) Effects may be delayed. Decreased lung function has been associated with overexposure to isocyanates.

As product: The LC50 has not been determined.

**Information for components:**

**Formaldehyde, oligomeric reaction products with aniline and phosgene**
LC50, Rat, 4 Hour, dust/mist, 0.49 mg/l

For similar material(s): 2,4'-Diphenylmethane diisocyanate (CAS 5873-54-1). LC50, Rat, 4 Hour, dust/mist, 0.31 mg/l

For similar material(s): 4,4'-Methylenediphenyl diisocyanate (CAS 101-68-8). LC50, Rat, 1 Hour, dust/mist, 2.24 mg/l

**4,4'-Methylenediphenyl diisocyanate**
LC50, Rat, 1 Hour, dust/mist, 2.24 mg/l

**Skin corrosion/irritation**

Causes skin irritation.

**Information for the Product:**

Based on information for component(s):
Prolonged contact may cause skin irritation with local redness.
May stain skin.

**Information for components:**

**Formaldehyde, oligomeric reaction products with aniline and phosgene**
Prolonged contact may cause slight skin irritation with local redness.
May stain skin.

**4,4'-Methylenediphenyl diisocyanate**
Prolonged contact may cause moderate skin irritation with local redness.
Repeated contact may cause moderate skin irritation with local redness.
May stain skin.

**Serious eye damage/eye irritation**

Causes serious eye irritation.

**Information for the Product:**

Based on information for component(s):
May cause moderate eye irritation.
May cause slight temporary corneal injury.

**Information for components:**

**Formaldehyde, oligomeric reaction products with aniline and phosgene**
May cause moderate eye irritation.
May cause slight temporary corneal injury.

**4,4'-Methylenediphenyl diisocyanate**
May cause moderate eye irritation.

May cause slight temporary corneal injury.

**Sensitization**

**For skin sensitization:**
May cause an allergic skin reaction.

**For respiratory sensitization:**
May cause allergy or asthma symptoms or breathing difficulties if inhaled.

**Information for the Product:**

For skin sensitization:
A component in this mixture has been shown to be a skin sensitizer.
Animal studies have shown that skin contact with isocyanates may play a role in respiratory sensitization.

For respiratory sensitization:
A component in this mixture may cause an allergic respiratory response.
MDI concentrations below the exposure guidelines may cause allergic respiratory reactions in individuals already sensitized.
Asthma-like symptoms may include coughing, difficult breathing and a feeling of tightness in the chest. Occasionally, breathing difficulties may be life threatening.

**Information for components:**

**Formaldehyde, oligomeric reaction products with aniline and phosgene**
Skin contact may cause an allergic skin reaction.
Animal studies have shown that skin contact with isocyanates may play a role in respiratory sensitization.

May cause allergic respiratory reaction.
MDI concentrations below the exposure guidelines may cause allergic respiratory reactions in individuals already sensitized.
Asthma-like symptoms may include coughing, difficult breathing and a feeling of tightness in the chest. Occasionally, breathing difficulties may be life threatening.

**4,4'-Methylenediphenyl diisocyanate**
For skin sensitization:
Skin contact may cause an allergic skin reaction.
Animal studies have shown that skin contact with isocyanates may play a role in respiratory sensitization.

For respiratory sensitization:
May cause allergic respiratory reaction.
MDI concentrations below the exposure guidelines may cause allergic respiratory reactions in individuals already sensitized.
Asthma-like symptoms may include coughing, difficult breathing and a feeling of tightness in the chest. Occasionally, breathing difficulties may be life threatening.

**Specific Target Organ Systemic Toxicity (Single Exposure)**

May cause respiratory irritation.

**Information for the Product:**

Product test data not available.

**Information for components:**

**Formaldehyde, oligomeric reaction products with aniline and phosgene**
May cause respiratory irritation.
Route of Exposure: Inhalation
Target Organs: Respiratory Tract

**4,4'-Methylenediphenyl diisocyanate**
May cause respiratory irritation.
Route of Exposure: Inhalation
Target Organs: Respiratory Tract

**Aspiration Hazard**

**Information for the Product:**

Based on physical properties, not likely to be an aspiration hazard.

**Information for components:**

**Formaldehyde, oligomeric reaction products with aniline and phosgene**
Based on physical properties, not likely to be an aspiration hazard.

**4,4'-Methylenediphenyl diisocyanate**
Based on physical properties, not likely to be an aspiration hazard.

**Chronic toxicity (represents longer term exposures with repeated dose resulting in chronic/delayed effects - no immediate effects known unless otherwise noted)**

**Specific Target Organ Systemic Toxicity (Repeated Exposure)**

May cause damage to organs through prolonged or repeated exposure., May cause damage to organs (Respiratory Tract, Respiratory system) through prolonged or repeated exposure if inhaled.

**Information for the Product:**

Product test data not available.

**Information for components:**

**Formaldehyde, oligomeric reaction products with aniline and phosgene**
Tissue injury in the upper respiratory tract and lungs has been observed in laboratory animals after repeated excessive exposures to MDI/polymeric MDI aerosols.

**4,4'-Methylenediphenyl diisocyanate**
Tissue injury in the upper respiratory tract and lungs has been observed in laboratory animals after repeated excessive exposures to MDI/polymeric MDI aerosols.

**Carcinogenicity**

Suspected of causing cancer.

**Information for the Product:**

Product test data not available.

**Information for components:**

**Formaldehyde, oligomeric reaction products with aniline and phosgene**
Lung tumors have been observed in laboratory animals exposed to respirable aerosol droplets of MDI/Polymeric MDI (6 mg/m3) for their lifetime. Tumors occurred concurrently with respiratory irritation and lung injury. Current exposure guidelines are expected to protect against these effects reported for MDI.

**4,4'-Methylenediphenyl diisocyanate**
Lung tumors have been observed in laboratory animals exposed to respirable aerosol droplets of MDI/Polymeric MDI (6 mg/m3) for their lifetime. Tumors occurred concurrently with respiratory irritation and lung injury. Current exposure guidelines are expected to protect against these effects reported for MDI.

**Teratogenicity**

**Information for the Product:**

Product test data not available.

**Information for components:**

**Formaldehyde, oligomeric reaction products with aniline and phosgene**
In laboratory animals, MDI/polymeric MDI did not cause birth defects; other fetal effects occurred only at high doses which were toxic to the mother.

**4,4'-Methylenediphenyl diisocyanate**
Has been toxic to the fetus in laboratory animals at doses toxic to the mother. Did not cause birth defects in laboratory animals.

**Reproductive toxicity**

**Information for the Product:**

Product test data not available.

**Information for components:**

**Formaldehyde, oligomeric reaction products with aniline and phosgene**
No relevant data found.

**4,4'-Methylenediphenyl diisocyanate**
No relevant data found.

**Mutagenicity**

**Information for the Product:**

Product test data not available.

**Information for components:**

**Formaldehyde, oligomeric reaction products with aniline and phosgene**
Genetic toxicity data on MDI are inconclusive. MDI was weakly positive in some in vitro studies; other in vitro studies were negative. Animal mutagenicity studies were predominantly negative.

**4,4'-Methylenediphenyl diisocyanate**
Genetic toxicity data on MDI are inconclusive. MDI was weakly positive in some in vitro studies; other in vitro studies were negative. Animal mutagenicity studies were predominantly negative.

## SECTION 12: ECOLOGICAL INFORMATION

*Ecotoxicological information appears in this section when such data is available.*

**12.1 Toxicity**

**Acute toxicity to fish**
The measured ecotoxicity is that of the hydrolyzed product, generally under conditions maximizing production of soluble species.
Material is not classified as dangerous to aquatic organisms (LC50/EC50/IC50/LL50/EL50 greater than 100 mg/L in most sensitive species).

Based on information for a similar material:
LC50, Danio rerio (zebra fish), static test, 96 Hour, > 1,000 mg/l, OECD Test Guideline 203 or Equivalent

**Acute toxicity to aquatic invertebrates**
Based on information for a similar material:
EC50, Daphnia magna (Water flea), static test, 24 Hour, > 1,000 mg/l, OECD Test Guideline 202 or Equivalent

**Acute toxicity to algae/aquatic plants**
Based on information for a similar material:
NOEC, Desmodesmus subspicatus (green algae), static test, 72 Hour, Growth rate inhibition, 1,640 mg/l, OECD Test Guideline 201 or Equivalent

**Toxicity to bacteria**
Based on information for a similar material:
EC50, activated sludge, static test, 3 Hour, Respiration rates., > 100 mg/l

**Toxicity to soil-dwelling organisms**

EC50, Eisenia fetida (earthworms), Based on information for a similar material:, 14 d, > 1,000 mg/kg

**Toxicity to terrestrial plants**
EC50, Avena sativa (oats), Growth inhibition, 1,000 mg/l

EC50, Lactuca sativa (lettuce), Growth inhibition, 1,000 mg/l

**12.2 Persistence and degradability**
**Biodegradability:** In the aquatic and terrestrial environment, material reacts with water forming predominantly insoluble polyureas which appear to be stable. In the atmospheric environment, material is expected to have a short tropospheric half-life, based on calculations and by analogy with related diisocyanates.
10-day Window: Not applicable
**Biodegradation:** 0 %
**Exposure time:** 28 d
**Method:** OECD Test Guideline 302C or Equivalent

**12.3 Bioaccumulative potential**
**Bioaccumulation:** Bioconcentration potential is low (BCF < 100 or Log Pow < 3).
**Bioconcentration factor (BCF):** 92 Cyprinus carpio (Carp) 28 d

**12.4 Mobility in soil**
In the aquatic and terrestrial environment, movement is expected to be limited by its reaction with water forming predominantly insoluble polyureas.

**12.5 Results of PBT and vPvB assessment**
This substance is not considered to be persistent, bioaccumulating and toxic (PBT).

**12.6 Other adverse effects**
This substance is not on the Montreal Protocol list of substances that deplete the ozone layer.

## SECTION 13: DISPOSAL CONSIDERATIONS

**13.1 Waste treatment methods**
This product, when being disposed of in its unused and uncontaminated state should be treated as a hazardous waste according to EC Directive 2008/98/EC. Any disposal practices must be in compliance with all national and provincial laws and any municipal or local by-laws governing hazardous waste. For used, contaminated and residual materials additional evaluations may be required. Do not dump into any sewers, on the ground, or into any body of water. Incineration under approved, controlled conditions using incinerators suitable or designed for the disposal of hazardous chemical wastes, is the preferred method for disposal. Small quantities of waste may be pretreated for example with polyol, to neutralise prior to disposal. Empty drums should be decontaminated (see Section 6) and either punctured and scrapped or given to an approved drum reconditioner.

The definitive assignment of this material to the appropriate EWC group and thus its proper EWC code will depend on the use that is made of this material. Contact the authorized waste disposal services.

## SECTION 14: TRANSPORT INFORMATION

**Classification for ROAD and Rail transport (ADR/RID):**

| | | |
|---|---|---|
| **14.1** | **UN number or ID number** | Not applicable |
| **14.2** | **UN proper shipping name** | Not regulated for transport |
| **14.3** | **Transport hazard class(es)** | Not applicable |
| **14.4** | **Packing group** | Not applicable |
| **14.5** | **Environmental hazards** | Not considered environmentally hazardous based on available data. |
| **14.6** | **Special precautions for user** | No data available. |

**Classification for INLAND waterways (ADNR/ADN):**
**Consult your Dow contact before transporting by inland waterway**

**Classification for SEA transport (IMO-IMDG):**

| | | |
|---|---|---|
| **14.1** | **UN number or ID number** | Not applicable |
| **14.2** | **UN proper shipping name** | Not regulated for transport |
| **14.3** | **Transport hazard class(es)** | Not applicable |
| **14.4** | **Packing group** | Not applicable |
| **14.5** | **Environmental hazards** | Not considered as marine pollutant based on available data. |
| **14.6** | **Special precautions for user** | No data available. |
| **14.7** | **Maritime transport in bulk according to IMO instruments** | Consult IMO regulations before transporting ocean bulk |

**Classification for AIR transport (IATA/ICAO):**

| | | |
|---|---|---|
| **14.1** | **UN number or ID number** | Not applicable |
| **14.2** | **UN proper shipping name** | Not regulated for transport |
| **14.3** | **Transport hazard class(es)** | Not applicable |
| **14.4** | **Packing group** | Not applicable |
| **14.5** | **Environmental hazards** | Not applicable |
| **14.6** | **Special precautions for user** | No data available. |

This information is not intended to convey all specific regulatory or operational requirements/information relating to this product. Transportation classifications may vary by container volume and may be influenced by regional or country variations in regulations. Additional transportation system information can be obtained through an authorized sales or customer service representative. It is the responsibility of the transporting organization to follow all applicable laws, regulations and rules relating to the transportation of the material.

## SECTION 15: REGULATORY INFORMATION

**15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture**

**UK REACH - UK Statutory Instruments 2019 No.758 as amended**
This product contains only components that have been either registered, notified for downstream user import (DUIN), are exempt from registration, are regarded as registered or are not subject to registration according to UK Statutory Instruments 2019 No.758 as amended (UK REACH)., The aforementioned indications of the UK REACH registration status are provided in good faith and believed to be accurate as of the effective date shown above. However, no warranty, expressed or implied, is given. It is the buyer's/user's responsibility to ensure that his/her understanding of the regulatory status of this product is correct.

| | |
|---|---|
| **UK REACH List of restrictions (Annex 17)** | Conditions of restriction for the following entries should be considered:<br>Number on list 3<br>4,4'-Methylenediphenyl diisocyanate (Number on list 56, 74) |

**Control of Major Accident Hazards Regulations 2015 (COMAH)**
Listed in Regulation: Not applicable

**15.2 Chemical safety assessment**
No Chemical Safety Assessment has been carried out for this substance/mixture.

## SECTION 16: OTHER INFORMATION

**Full text of H-Statements referred to under sections 2 and 3.**

| | |
|---|---|
| H315 | Causes skin irritation. |
| H317 | May cause an allergic skin reaction. |
| H319 | Causes serious eye irritation. |
| H332 | Harmful if inhaled. |
| H334 | May cause allergy or asthma symptoms or breathing difficulties if inhaled. |
| H335 | May cause respiratory irritation. |
| H351 | Suspected of causing cancer. |
| H373 | May cause damage to organs through prolonged or repeated exposure. |

**Training advice**
In accordance with REACH Annex XVII, restriction no. 74, from 24 August 2023 adequate training is required before industrial or professional use.

**Revision**
Identification Number: 131422 / A279 / Issue Date: 25.11.2022 / Version: 19.0
Most recent revision(s) are noted by the bold, double bars in left-hand margin throughout this document.

**Legend**

| | |
|---|---|
| ACGIH | USA. ACGIH Threshold Limit Values (TLV) |
| Dow IHG | Dow Industrial Hygiene Guideline |
| GB EH40 | UK. EH40 WEL - Workplace Exposure Limits |
| GB EH40 BAT | UK. Biological monitoring guidance values |
| STEL | Short term exposure limit |
| TWA | Time weighted average |
| Acute Tox. | Acute toxicity |
| Carc. | Carcinogenicity |
| Eye Irrit. | Eye irritation |
| Resp. Sens. | Respiratory sensitisation |
| Skin Irrit. | Skin irritation |
| Skin Sens. | Skin sensitisation |
| STOT RE | Specific target organ toxicity - repeated exposure |
| STOT SE | Specific target organ toxicity - single exposure |

**Full text of other abbreviations**
ADN - European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways; ADR - Agreement concerning the International Carriage of Dangerous Goods by Road; AIIC - Australian Inventory of Industrial Chemicals; ASTM - American Society for the Testing of Materials; bw - Body weight; CLP - Classification Labelling Packaging Regulation; Regulation (EC) No 1272/2008; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DSL - Domestic Substances List (Canada); ECHA - European Chemicals Agency; EC-Number - European Community number; ECx - Concentration associated with x% response; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; n.o.s. - Not Otherwise Specified; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RID - Regulations concerning the International Carriage of Dangerous Goods by Rail; SADT - Self-Accelerating Decomposition Temperature; SDS - Safety Data Sheet; SVHC - Substance of Very High Concern; TCSI - Taiwan Chemical Substance Inventory; TECI - Thailand Existing Chemicals Inventory; TRGS - Technical Rule for Hazardous Substances; TSCA - Toxic Substances Control Act (United States); UN - United Nations; vPvB - Very Persistent and Very Bioaccumulative

**Information Source and References**
This SDS is prepared by Product Regulatory Services and Hazard Communications Groups from information supplied by internal references within our company.

DOW CHEMICAL COMPANY LIMITED urges each customer or recipient of this (M)SDS to study it carefully and consult appropriate expertise, as necessary or appropriate, to become aware of and understand the data contained in this (M)SDS and any hazards associated with the product. The information herein is provided in good faith and believed to be accurate as of the effective date shown above. However, no warranty, express or implied, is given. Regulatory requirements are subject to change and may differ between various locations. It is the buyer's/user's responsibility to ensure that his activities comply with all federal, state, provincial or local laws. The information presented here pertains only to the product as shipped. Since conditions for use of the product are not under the control of the manufacturer, it is the buyer's/user's duty to determine the conditions necessary for the safe use of this product. Due to the proliferation of sources for information such as manufacturer-specific (M)SDSs, we are not and cannot be responsible for (M)SDSs obtained from any source other than ourselves. If you have obtained an (M)SDS from another source or if you are not sure that the (M)SDS you have is current, please contact us for the most current version.
GB

# SAFETY DATA SHEET

**DOW CHEMICAL COMPANY LIMITED**

Safety Data Sheet according to REACH Regulation (EC) No 1907/2006, as retained and amended in UK law

**Product name: SPECFLEX™ NS 832 Polyol DA**

**Revision Date:** 09.12.2022
**Version:** 8.0
**Date of last issue:** 03.05.2021
**Print Date:** 13.07.2023

DOW CHEMICAL COMPANY LIMITED encourages and expects you to read and understand the entire (M)SDS, as there is important information throughout the document. We expect you to follow the precautions identified in this document unless your use conditions would necessitate other appropriate methods or actions.

## SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

**1.1 Product identifier**
**Product name:** SPECFLEX™ NS 832 Polyol DA

**1.2 Relevant identified uses of the substance or mixture and uses advised against**
**Identified uses:** Component(s) for the manufacture of urethane polymers. For industrial use.

**1.3 Details of the supplier of the safety data sheet**
**COMPANY IDENTIFICATION**
DOW CHEMICAL COMPANY LIMITED
5 OAKWATER AVENUE
CHEADLE ROYAL BUSINESS PARK
CHEADLE
SK8 3SR
UNITED KINGDOM

**Customer Information Number:** +44 (0) 1663 746518
SDSQuestion@dow.com
**Fax:** +44 (0) 1663 746605

**1.4 EMERGENCY TELEPHONE NUMBER**
**24-Hour Emergency Contact:** 0031 115 694 982
**Local Emergency Contact:** 00 31 115 69 4982

## SECTION 2: HAZARDS IDENTIFICATION

**2.1 Classification of the substance or mixture**

**Classification according to Regulation (EC) No 1272/2008, as retained and amended in UK law**
Not a hazardous substance or mixture.

**2.2 Label elements**

**Labelling according to Regulation (EC) No 1272/2008, as retained and amended in UK law**

Not a hazardous substance or mixture.

**2.3 Other hazards**
This product contains no substances assessed to be PBT or vPvB at levels of 0.1% or higher.

## SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

**3.2 Mixtures**

This product is a mixture.

| CASRN / EC-No. / Index-No. | UK REACH Registration Number | Concentration | Component | Classification: REGULATION (EC) No 1272/2008, as retained and amended in UK law |
|---|---|---|---|---|
| **CASRN**<br>Confidential<br>**EC-No.**<br>Confidential<br>**Index-No.**<br>– | – | > 70.0 - < 90.0 % | Polyether polyol | Not classified<br><br>Acute toxicity estimate<br>Acute oral toxicity:<br>> 2,000 mg/kg<br>Acute dermal toxicity:<br>> 2,000 mg/kg |
| **CASRN**<br>Confidential<br>**EC-No.**<br>Confidential<br>**Index-No.**<br>– | – | > 5.0 - < 20.0 % | Alcohol alkoxylate | Not classified<br><br>Acute toxicity estimate<br>Acute oral toxicity:<br>> 2,000 mg/kg<br>Acute dermal toxicity:<br>> 2,000 mg/kg |
| **CASRN**<br>1333-86-4<br>**EC-No.**<br>215-609-9<br>**Index-No.**<br>– | – | > 0.1 - < 1.0 % | Carbon black | Not classified<br><br>Acute toxicity estimate<br>Acute oral toxicity:<br>> 8,000 mg/kg<br>Acute inhalation toxicity:<br>27 mg/l, 1 Hour, dust/mist<br>Acute dermal toxicity:<br>> 3,000 mg/kg |
| **CASRN**<br>6711-48-4<br>**EC-No.** | – | > 0.1 - < 1.0 % | Bis(N,N-dimethyl-3-aminopropyl)amine | Acute Tox. 4; H302<br>Acute Tox. 3; H311<br>Skin Corr. 1; H314 |

| | | | | |
|---|---|---|---|---|
| 229-761-9<br>**Index-No.**<br>– | | | | Eye Dam. 1; H318<br><br>Acute toxicity estimate<br>Acute oral toxicity:<br>1,290 mg/kg<br>Acute inhalation toxicity:<br>> 2.6 mg/l, 1 Hour, vapour<br>Acute dermal toxicity:<br>370 mg/kg |

If present in this product, any not classified components disclosed above for which no country specific OEL value(s) is(are) indicated under Section 8, are being disclosed as voluntarily disclosed components.

For the full text of the H-Statements mentioned in this Section, see Section 16.

## SECTION 4: FIRST AID MEASURES

**4.1 Description of first aid measures**
**General advice:**
First Aid responders should pay attention to self-protection and use the recommended protective clothing (chemical resistant gloves, splash protection). If potential for exposure exists refer to Section 8 for specific personal protective equipment.

**Inhalation:** Move person to fresh air and keep comfortable for breathing; consult a physician.

**Skin contact:** Wash off with plenty of water.

**Eye contact:** Flush eyes thoroughly with water for several minutes. Remove contact lenses after the initial 1-2 minutes and continue flushing for several additional minutes. If effects occur, consult a physician, preferably an ophthalmologist. Suitable emergency eye wash facility should be available in work area.

**Ingestion:** If swallowed, seek medical attention. Do not induce vomiting unless directed to do so by medical personnel.

**4.2 Most important symptoms and effects, both acute and delayed:**
Aside from the information found under Description of first aid measures (above) and Indication of immediate medical attention and special treatment needed (below), any additional important symptoms and effects are described in Section 11: Toxicology Information.

**4.3 Indication of any immediate medical attention and special treatment needed**
**Notes to physician:** No specific antidote. Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient.

## SECTION 5: FIREFIGHTING MEASURES

**5.1 Extinguishing media**

**Suitable extinguishing media:** Water fog or fine spray.. Dry chemical fire extinguishers.. Carbon dioxide fire extinguishers.. Foam.. Alcohol resistant foams (ATC type) are preferred. General purpose synthetic foams (including AFFF) or protein foams may function, but will be less effective..

**Unsuitable extinguishing media:** Do not use direct water stream.. May spread fire..

### 5.2 Special hazards arising from the substance or mixture

**Hazardous combustion products:** During a fire, smoke may contain the original material in addition to combustion products of varying composition which may be toxic and/or irritating.. Combustion products may include and are not limited to:. Carbon monoxide.. Carbon dioxide..

**Unusual Fire and Explosion Hazards:** Container may rupture from gas generation in a fire situation.. Violent steam generation or eruption may occur upon application of direct water stream to hot liquids..

### 5.3 Advice for firefighters

**Fire Fighting Procedures:** Keep people away. Isolate fire and deny unnecessary entry.. Use water spray to cool fire exposed containers and fire affected zone until fire is out and danger of reignition has passed.. Fight fire from protected location or safe distance. Consider the use of unmanned hose holders or monitor nozzles.. Immediately withdraw all personnel from the area in case of rising sound from venting safety device or discoloration of the container.. Do not use direct water stream. May spread fire.. Move container from fire area if this is possible without hazard.. Burning liquids may be moved by flushing with water to protect personnel and minimize property damage.. Contain fire water run-off if possible. Fire water run-off, if not contained, may cause environmental damage.. Review the "Accidental Release Measures" and the "Ecological Information" sections of this (M)SDS..

**Special protective equipment for firefighters:** Wear positive-pressure self-contained breathing apparatus (SCBA) and protective fire fighting clothing (includes fire fighting helmet, coat, trousers, boots, and gloves).. Avoid contact with this material during fire fighting operations. If contact is likely, change to full chemical resistant fire fighting clothing with self-contained breathing apparatus. If this is not available, wear full chemical resistant clothing with self-contained breathing apparatus and fight fire from a remote location.. For protective equipment in post-fire or non-fire clean-up situations, see Section 8 of the safety data sheet..

## SECTION 6: ACCIDENTAL RELEASE MEASURES

**6.1 Personal precautions, protective equipment and emergency procedures:** Isolate area. Refer to section 7, Handling, for additional precautionary measures. Keep unnecessary and unprotected personnel from entering the area. Spilled material may cause a slipping hazard. Use appropriate safety equipment. For additional information, refer to Section 8, Exposure Controls and Personal Protection.

**6.2 Environmental precautions:** Prevent from entering into soil, ditches, sewers, waterways and/or groundwater. See Section 12, Ecological Information.

**6.3 Methods and materials for containment and cleaning up:** Contain spilled material if possible. Absorb with materials such as: Dirt. Sand. Sawdust. Collect in suitable and properly labeled

containers. Wash the spill site with water. See Section 13, Disposal Considerations, for additional information.

**6.4 Reference to other sections:** References to other sections, if applicable, have been provided in the previous sub-sections.

## SECTION 7: HANDLING AND STORAGE

**7.1 Precautions for safe handling:** Avoid contact with eyes. Wash thoroughly after handling. Keep container closed. This material is hygroscopic in nature. See Section 8, EXPOSURE CONTROLS AND PERSONAL PROTECTION.
Spills of these organic materials on hot fibrous insulations may lead to lowering of the autoignition temperatures possibly resulting in spontaneous combustion.

**7.2 Conditions for safe storage, including any incompatibilities:** Protect from atmospheric moisture. Store in a dry place. Avoid prolonged exposure to heat and air. Store in the following material(s): Carbon steel. Stainless steel. Polypropylene. Polyethylene-lined container. Teflon. Glass-lined container. Aluminum. Plasite 3066 lined container. Plasite 3070 lined container. 316 stainless steel. See Section 10 for more specific information.

**Storage stability**

| **Storage temperature:** | **Storage Period:** |
|---|---|
| 15 - 25 °C | 6 Month |

**7.3 Specific end use(s):** See the technical data sheet on this product for further information.

## SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

**8.1 Control parameters**
If exposure limits exist, they are listed below. If no exposure limits are displayed, then no values are applicable.

| Component | Regulation | Type of listing | Value |
|---|---|---|---|
| Carbon black | ACGIH | TWA Inhalable particulate matter | 3 mg/m3 |
| | Further information: A3: Confirmed animal carcinogen with unknown relevance to humans | | |
| | GB EH40 | TWA | 3.5 mg/m3 |
| | GB EH40 | STEL | 7 mg/m3 |

**Recommended monitoring procedures**
Monitoring of the concentration of substances in the breathing zone of workers or in the general workplace may be required to confirm compliance with the Occupational Exposure Limits and the adequacy of exposure controls. For some substances biological monitoring may also be appropriate. Validated exposure measurement methods should be applied by a competent person and samples should be analysed by an accredited laboratory.
Reference should be made to monitoring standards, such as the following: European Standard EN 689 (Workplace atmospheres - Guidance for the assessment of exposure by inhalation to chemical agents for comparison with limit values and measurement strategy); European Standard EN 14042 (Workplace atmospheres - Guide for the application and use of procedures for the assessment of exposure to chemical and biological agents); European Standard EN 482 (Workplace atmospheres -

General requirements for the performance of procedures for the measurement of chemical agents). Reference to national guidance documents for methods for the determination of hazardous substances will also be required.
Examples of sources of recommended exposure measurement methods are given below or contact the supplier. Further national methods may be available.
National Institute of Occupational Safety and Health (NIOSH), USA: Manual of Analytical Methods.
Occupational Safety and Health Administration (OSHA), USA: Sampling and Analytical Methods.
Health and Safety Executive (HSE), United Kingdom: Methods for the Determination of Hazardous Substances.
Institut für Arbeitsschutz Deutschen Gesetzlichen Unfallversicherung (IFA), Germany.
L'Institut National de Recherche et de Securité, (INRS), France.

**Derived No Effect Level**
Carbon black
**Workers**

| ***Acute systemic effects*** | | ***Acute local effects*** | | ***Long-term systemic effects*** | | ***Long-term local effects*** | |
|---|---|---|---|---|---|---|---|
| Dermal | Inhalation | Dermal | Inhalation | Dermal | Inhalation | Dermal | Inhalation |
| n.a. | n.a. | n.a. | n.a. | n.a. | 1 mg/m3 | n.a. | n.a. |

**Consumers**

| ***Acute systemic effects*** | | | ***Acute local effects*** | | ***Long-term systemic effects*** | | | ***Long-term local effects*** | |
|---|---|---|---|---|---|---|---|---|---|
| Dermal | Inhalation | Oral | Dermal | Inhalation | Dermal | Inhalation | Oral | Dermal | Inhalation |
| n.a. | n.a. | n.a. | n.a. | n.a. | n.a. | 0.06 mg/m3 | n.a. | n.a. | n.a. |

Bis(N,N-dimethyl-3-aminopropyl)amine
**Workers**

| ***Acute systemic effects*** | | ***Acute local effects*** | | ***Long-term systemic effects*** | | ***Long-term local effects*** | |
|---|---|---|---|---|---|---|---|
| Dermal | Inhalation | Dermal | Inhalation | Dermal | Inhalation | Dermal | Inhalation |
| n.a. | n.a. | n.a. | n.a. | 0.230 mg/kg bw/day | 0.820 mg/m3 | n.a. | n.a. |

**Consumers**

| ***Acute systemic effects*** | | | ***Acute local effects*** | | ***Long-term systemic effects*** | | | ***Long-term local effects*** | |
|---|---|---|---|---|---|---|---|---|---|
| Dermal | Inhalation | Oral | Dermal | Inhalation | Dermal | Inhalation | Oral | Dermal | Inhalation |
| n.a. | n.a. | n.a. | n.a. | n.a. | 0.250 mg/kg bw/day | 0.434 mg/m3 | 0.250 mg/kg bw/day | n.a. | n.a. |

**Predicted No Effect Concentration**
Carbon black

| **Compartment** | **PNEC** |
|---|---|
| Fresh water | 50 mg/l |

Bis(N,N-dimethyl-3-aminopropyl)amine

| **Compartment** | **PNEC** |
|---|---|

| | |
|---|---|
| Fresh water | 0.024 mg/l |
| Intermittent use/release | 0.079 mg/l |
| Marine water | 0.0024 mg/l |
| Sewage treatment plant | 10 mg/l |
| Fresh water sediment | 0.499 mg/kg dry weight (d.w.) |
| Marine sediment | 0.0499 mg/kg dry weight (d.w.) |
| Soil | 0.086 mg/kg dry weight (d.w.) |
| Oral | 1.6 mg/kg food |

**8.2 Exposure controls**

**Engineering controls:** Use local exhaust ventilation, or other engineering controls to maintain airborne levels below exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, general ventilation should be sufficient for most operations. Local exhaust ventilation may be necessary for some operations.

**Individual protection measures**

**Eye/face protection:** Use safety glasses (with side shields). Safety glasses (with side shields) should be consistent with EN 166 or equivalent.

**Skin protection**

**Hand protection:** Use gloves chemically resistant to this material when prolonged or frequently repeated contact could occur. Use chemical resistant gloves classified under Standard EN374: Protective gloves against chemicals and micro-organisms. If hands are cut or scratched, use gloves chemically resistant to this material even for brief exposures. Examples of preferred glove barrier materials include: Butyl rubber. Natural rubber ("latex"). Nitrile/butadiene rubber ("nitrile" or "NBR"). Polyethylene. Ethyl vinyl alcohol laminate ("EVAL"). Polyvinyl alcohol ("PVA"). Polyvinyl chloride ("PVC" or "vinyl"). Examples of acceptable glove barrier materials include: Neoprene. When prolonged or frequently repeated contact may occur, a glove with a protection class of 3 or higher (breakthrough time greater than 60 minutes according to EN 374) is recommended. Glove thickness alone is not a good indicator of the level of protection a glove provides against a chemical substance as this level of protection is also highly dependent on the specific composition of the material that the glove is fabricated from. The thickness of the glove must, depending on model and type of material, generally be more than 0.35 mm to offer sufficient protection for prolonged and frequent contact with the substance. As an exception to this general rule it is known that multilayer laminate gloves may offer prolonged protection at thicknesses less than 0.35 mm. Other glove materials with a thickness of less than 0.35 mm may offer sufficient protection when only brief contact is expected. NOTICE: The selection of a specific glove for a particular application and duration of use in a workplace should also take into account all relevant workplace factors such as, but not limited to: Other chemicals which may be handled, physical requirements (cut/puncture protection, dexterity, thermal protection), potential body reactions to glove materials, as well as the instructions/specifications provided by the glove supplier.

**Other protection:** Wear clean, body-covering clothing.

**Respiratory protection:** Respiratory protection should be worn when there is a potential to exceed the exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, wear respiratory protection when adverse effects, such as respiratory irritation or discomfort have been experienced, or where indicated by your risk

assessment process. For most conditions, no respiratory protection should be needed; however, if handling at elevated temperatures without sufficient ventilation, use an approved air-purifying respirator.

Use the following CE approved air-purifying respirator: Organic vapor cartridge with a particulate pre-filter, type AP2 (meeting standard EN 14387).

## SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

**9.1 Information on basic physical and chemical properties**

| | |
|---|---|
| **Appearance** | |
| **Physical state** | Liquid. |
| **Color** | Black |
| **Odor** | Amine. |
| **Odor Threshold** | No test data available |
| **pH** | Not applicable |
| **Melting point/range** | No test data available |
| **Freezing point** | No test data available |
| **Boiling point (760 mmHg)** | > 100 °C *Estimated.* |
| **Flash point** | **closed cup** >100 °C *Estimated.* |
| **Evaporation Rate (Butyl Acetate = 1)** | No test data available |
| **Flammability (solid, gas)** | Not Applicable |
| **Flammability (liquids)** | Not expected to be a static-accumulating flammable liquid. |
| **Lower explosion limit** | No test data available |
| **Upper explosion limit** | No test data available |
| **Vapor Pressure** | very low |
| **Relative Vapor Density (air = 1)** | No test data available |
| **Relative Density (water = 1)** | 1.03 - 1.07 at 20 °C / 20 °C *Supplier* |
| **Water solubility** | slightly soluble |
| **Partition coefficient: n-octanol/water** | No data available |
| **Auto-ignition temperature** | No test data available |
| **Decomposition temperature** | No data available |
| **Kinematic Viscosity** | 785 - 1515 cSt at 25 °C *ASTM D 445* |
| **Explosive properties** | Not explosive |
| **Oxidizing properties** | No |

**9.2 Other information**

| | |
|---|---|
| **Molecular weight** | No test data available |

NOTE: The physical data presented above are typical values and should not be construed as a specification.

## SECTION 10: STABILITY AND REACTIVITY

**10.1 Reactivity:** No data available

**10.2 Chemical stability:** Stable under recommended storage conditions. See Storage, Section 7.

**10.3 Possibility of hazardous reactions:** Will not occur by itself.

**10.4 Conditions to avoid:** Product can oxidize at elevated temperatures. Generation of gas during decomposition can cause pressure in closed systems.

**10.5 Incompatible materials:** Avoid contact with oxidizing materials. Avoid contact with: Strong acids. Strong bases. Avoid unintended contact with isocyanates. The reaction of polyols and isocyanates generates heat.

**10.6 Hazardous decomposition products:** Decomposition products depend upon temperature, air supply and the presence of other materials.. Decomposition products can include and are not limited to:. Carbon dioxide.. Alcohols.. Ethers.. Hydrocarbons.. Ketones.. Polymer fragments..

## SECTION 11: TOXICOLOGICAL INFORMATION

*Toxicological information appears in this section when such data is available.*

**11.1 Information on toxicological effects**

**Information on likely routes of exposure**
Ingestion, Inhalation, Skin contact, Eye contact.

**Acute toxicity (represents short term exposures with immediate effects - no chronic/delayed effects known unless otherwise noted)**

**Acute Toxicity Endpoints:**

**Acute oral toxicity**

**Information for the Product:**

Low toxicity if swallowed. Small amounts swallowed incidentally as a result of normal handling operations are not likely to cause injury; however, swallowing larger amounts may cause injury.

As product: Single dose oral LD50 has not been determined.

Based on information for component(s):
LD50, > 2,000 mg/kg Estimated.

**Information for components:**

**Polyether polyol**

Typical for this family of materials. LD50, Rat, > 2,000 mg/kg Estimated. No deaths occurred at this concentration.

**Alcohol alkoxylate**
Typical for this family of materials. LD50, Rat, > 2,000 mg/kg Estimated. No deaths occurred at this concentration.

**Carbon black**
LD50, Rat, > 8,000 mg/kg

**Bis(N,N-dimethyl-3-aminopropyl)amine**
LD50, Rat, 1,290 mg/kg

**Acute dermal toxicity**

**Information for the Product:**

Prolonged skin contact is unlikely to result in absorption of harmful amounts.

As product: The dermal LD50 has not been determined.

Based on information for component(s):
LD50, > 2,000 mg/kg Estimated.

**Information for components:**

**Polyether polyol**
Typical for this family of materials. LD50, Rabbit, > 2,000 mg/kg Estimated.

**Alcohol alkoxylate**
Typical for this family of materials. LD50, Rabbit, > 2,000 mg/kg No deaths occurred at this concentration.

**Carbon black**
LD50, Rabbit, > 3,000 mg/kg No deaths occurred at this concentration.

**Bis(N,N-dimethyl-3-aminopropyl)amine**
LD50, Rabbit, 370 mg/kg

**Acute inhalation toxicity**

**Information for the Product:**

At room temperature, exposure to vapor is minimal due to low volatility; single exposure is not likely to be hazardous. Vapor from heated material may cause respiratory irritation.

As product: The LC50 has not been determined.

**Information for components:**

**Polyether polyol**
The LC50 has not been determined.

**Alcohol alkoxylate**
The LC50 has not been determined.

**Carbon black**
LC50, Rat, 1 Hour, dust/mist, 27 mg/l No deaths occurred at this concentration.

**Bis(N,N-dimethyl-3-aminopropyl)amine**
In humans, symptoms may include: Headache. Nausea and/or vomiting. LC50, Rat, male and female, 1 Hour, vapour, > 2.6 mg/l No deaths occurred following exposure to a saturated atmosphere.

**Skin corrosion/irritation**

**Information for the Product:**

Based on information for component(s):
Prolonged exposure not likely to cause significant skin irritation.
May cause more severe response if skin is abraded (scratched or cut).

**Information for components:**

**Polyether polyol**
Prolonged exposure not likely to cause significant skin irritation.
May cause more severe response if skin is abraded (scratched or cut).
Material may be handled at elevated temperatures; contact with heated material may cause thermal burns.

**Alcohol alkoxylate**
Brief contact is essentially nonirritating to skin.

**Carbon black**
Prolonged exposure not likely to cause significant skin irritation.

**Bis(N,N-dimethyl-3-aminopropyl)amine**
Brief contact may cause severe skin burns. Symptoms may include pain, severe local redness and tissue damage.

**Serious eye damage/eye irritation**

**Information for the Product:**

Based on information for component(s):
May cause slight temporary eye irritation.
May cause slight temporary corneal injury.

**Information for components:**

**Polyether polyol**
May cause slight temporary eye irritation.
May cause slight temporary corneal injury.

**Alcohol alkoxylate**
Essentially nonirritating to eyes.

**Carbon black**
Solid or dust may cause irritation or corneal injury due to mechanical action.

**Bis(N,N-dimethyl-3-aminopropyl)amine**
May cause severe irritation with corneal injury which may result in permanent impairment of vision, even blindness. Chemical burns may occur.
Vapor may cause severe eye irritation and corneal injury.
Vapor of amines may cause swelling of the cornea resulting in visual disturbances such as blurred or hazy vision. Bright lights may appear to be surrounded by halos. Effects may be delayed and typically disappear spontaneously.
Effects may be delayed.

**Sensitization**

**Information for the Product:**

For skin sensitization:
No specific, relevant data available for assessment.

For respiratory sensitization:
No relevant data found.

**Information for components:**

**Polyether polyol**
For skin sensitization:
For this family of materials, sensitization studies done in guinea pigs have been negative.

For respiratory sensitization:
No relevant data found.

**Alcohol alkoxylate**
Did not cause allergic skin reactions when tested in guinea pigs.

For respiratory sensitization:
No relevant data found.

**Carbon black**
Did not cause allergic skin reactions when tested in guinea pigs.

For respiratory sensitization:
No relevant data found.

**Bis(N,N-dimethyl-3-aminopropyl)amine**
Did not cause allergic skin reactions when tested in guinea pigs.

For respiratory sensitization:

No relevant data found.

**Specific Target Organ Systemic Toxicity (Single Exposure)**

**Information for the Product:**

Product test data not available.

**Information for components:**

**Polyether polyol**
Evaluation of available data suggests that this material is not an STOT-SE toxicant.

**Alcohol alkoxylate**
Evaluation of available data suggests that this material is not an STOT-SE toxicant.

**Carbon black**
Evaluation of available data suggests that this material is not an STOT-SE toxicant.

**Bis(N,N-dimethyl-3-aminopropyl)amine**
Available data are inadequate to determine single exposure specific target organ toxicity.

**Aspiration Hazard**

**Information for the Product:**

Based on physical properties, not likely to be an aspiration hazard.

**Information for components:**

**Polyether polyol**
Based on physical properties, not likely to be an aspiration hazard.

**Alcohol alkoxylate**
Based on physical properties, not likely to be an aspiration hazard.

**Carbon black**
Based on physical properties, not likely to be an aspiration hazard.

**Bis(N,N-dimethyl-3-aminopropyl)amine**
Aspiration into the respiratory system may occur during ingestion or vomiting. Due to corrosivity, tissue damage or lung injury may occur.

**Chronic toxicity (represents longer term exposures with repeated dose resulting in chronic/delayed effects - no immediate effects known unless otherwise noted)**

**Specific Target Organ Systemic Toxicity (Repeated Exposure)**

**Information for the Product:**

Product test data not available.

**Information for components:**

**Polyether polyol**
No relevant data found.

**Alcohol alkoxylate**
Based on available data, repeated exposures are not anticipated to cause significant adverse effects.

**Carbon black**
Dust may cause irritation of the upper respiratory tract (nose and throat) and lungs. Repeated exposures to very fine dusts may cause lung injury.

**Bis(N,N-dimethyl-3-aminopropyl)amine**
No relevant data found.

**Carcinogenicity**

**Information for the Product:**

Product test data not available.

**Information for components:**

**Polyether polyol**
No relevant data found.

**Alcohol alkoxylate**
Available data suggest that the material is unlikely to cause cancer.

**Carbon black**
Lung fibrosis and tumors have been observed in rats exposed to high concentrations of very fine carbon black particles for their lifetime. Effects are believed to be due to overloading of the normal respiratory clearance mechanisms caused by the extreme study conditions. Rats may be particularly susceptible to particle clearance overload, resulting in lung injury and tumors. No increases in tumors were observed in male or female mice exposed under the same conditions.

**Bis(N,N-dimethyl-3-aminopropyl)amine**
No relevant data found.

**Teratogenicity**

**Information for the Product:**

Product test data not available.

**Information for components:**

**Polyether polyol**

No relevant data found.

**Alcohol alkoxylate**
For similar material(s): Did not cause birth defects or any other fetal effects in laboratory animals.

**Carbon black**
No relevant data found.

**Bis(N,N-dimethyl-3-aminopropyl)amine**
No relevant data found.

**Reproductive toxicity**

**Information for the Product:**

Product test data not available.

**Information for components:**

**Polyether polyol**
No relevant data found.

**Alcohol alkoxylate**
In animal studies, a similar material has been shown not to interfere with reproduction.

**Carbon black**
No relevant data found.

**Bis(N,N-dimethyl-3-aminopropyl)amine**
No relevant data found.

**Mutagenicity**

**Information for the Product:**

Product test data not available.

**Information for components:**

**Polyether polyol**
One material tested in this family was negative in the Ames test.

**Alcohol alkoxylate**
For this family of materials: In vitro genetic toxicity studies were negative.

**Carbon black**
Animal genetic toxicity studies were negative in some cases and positive in other cases. Positive findings were observed only at doses which produced significant inflammation.

**Bis(N,N-dimethyl-3-aminopropyl)amine**

In vitro genetic toxicity studies were negative.

## SECTION 12: ECOLOGICAL INFORMATION

*Ecotoxicological information appears in this section when such data is available.*

**12.1 Toxicity**

**Polyether polyol**

**Acute toxicity to fish**
For this family of materials:
Material is not classified as dangerous to aquatic organisms (LC50/EC50/IC50/LL50/EL50 greater than 100 mg/L in most sensitive species).

**Acute toxicity to aquatic invertebrates**
For this family of materials:
LC50, Daphnia magna (Water flea), static test, 48 Hour, 384 mg/l

**Acute toxicity to algae/aquatic plants**
For this family of materials:
ErC50, alga Scenedesmus sp., static test, 72 Hour, Growth rate, > 100 mg/l

**Alcohol alkoxylate**

**Acute toxicity to fish**
Material is not classified as dangerous to aquatic organisms (LC50/EC50/IC50/LL50/EL50 greater than 100 mg/L in most sensitive species).
LC50, Leuciscus idus (Golden orfe), semi-static test, 96 Hour, > 1,000 mg/l, OECD Test Guideline 203 or Equivalent

**Acute toxicity to aquatic invertebrates**
EC50, copepod Acartia tonsa, static test, 48 Hour, > 1,000 mg/l, Other guidelines
EC50, Daphnia magna (Water flea), static test, 24 Hour, > 100 mg/l, OECD Test Guideline 202 or Equivalent

**Acute toxicity to algae/aquatic plants**
EC50, Desmodesmus subspicatus (green algae), static test, 72 Hour, Growth rate inhibition, > 100 mg/l, OECD Test Guideline 201 or Equivalent
EC50, Skeletonema costatum (marine diatom), static test, 72 Hour, Growth rate inhibition, > 1,000 mg/l, OECD Test Guideline 201 or Equivalent

**Toxicity to bacteria**
EC50, activated sludge, static test, 3 Hour, Respiration rates., > 10,000 mg/l, OECD 209 Test

**Chronic toxicity to aquatic invertebrates**
NOEC, Daphnia magna (Water flea), semi-static test, 21 d, mortality, >= 10 mg/l

**Carbon black**

**Acute toxicity to fish**
Material is not classified as dangerous to aquatic organisms (LC50/EC50/IC50/LL50/EL50 greater than 100 mg/L in most sensitive species).
LC50, Leuciscus idus (Golden orfe), static test, 96 Hour, > 1,000 mg/l

**Acute toxicity to aquatic invertebrates**
EC50, Daphnia magna (Water flea), 24 Hour, > 5,600 mg/l

**Acute toxicity to algae/aquatic plants**
NOEC, Desmodesmus subspicatus (green algae), 72 Hour, 10,000 mg/l

**Bis(N,N-dimethyl-3-aminopropyl)amine**

**Acute toxicity to fish**
Material is harmful to aquatic organisms (LC50/EC50/IC50 between 10 and 100 mg/L in the most sensitive species).
LC50, Danio rerio (zebra fish), static test, 96 Hour, 21 - 46.4 mg/l, OECD Test Guideline 203 or Equivalent

**Acute toxicity to aquatic invertebrates**
EC50, Daphnia magna (Water flea), static test, 48 Hour, 40.6 mg/l, OECD Test Guideline 202 or Equivalent

**Acute toxicity to algae/aquatic plants**
ErC50, Algae, static test, 72 Hour, Growth rate inhibition, 7.9 mg/l, OECD Test Guideline 201 or Equivalent
NOEC, Algae, static test, 72 Hour, Growth rate inhibition, 1.2 mg/l, OECD Test Guideline 201 or Equivalent

**Toxicity to bacteria**
EC50, Bacteria, Growth inhibition, > 1,000 mg/l

**12.2 Persistence and degradability**

**Polyether polyol**
**Biodegradability:** For this family of materials: Material is readily biodegradable. Passes OECD test(s) for ready biodegradability.

**Alcohol alkoxylate**
**Biodegradability:** Material is expected to biodegrade very slowly (in the environment). Fails to pass OECD/EEC tests for ready biodegradability.
10-day Window: Not applicable
**Biodegradation:** < 60 %
**Exposure time:** 28 d
**Method:** OECD Test Guideline 301D or Equivalent

**Carbon black**
**Biodegradability:** Biodegradation is not applicable.

**Bis(N,N-dimethyl-3-aminopropyl)amine**
**Biodegradability:** Material is readily biodegradable. Passes OECD test(s) for ready biodegradability.
10-day Window: Pass
**Biodegradation:** > 70 %
**Exposure time:** 28 d
**Method:** OECD Test Guideline 301B or Equivalent

**12.3 Bioaccumulative potential**

**Polyether polyol**

**Bioaccumulation:** For this family of materials: No bioconcentration is expected because of the relatively high molecular weight (MW greater than 1000).

**Alcohol alkoxylate**

**Bioaccumulation:** For this family of materials: No bioconcentration is expected because of the relatively high water solubility.

**Carbon black**

**Bioaccumulation:** No relevant data found.

**Bis(N,N-dimethyl-3-aminopropyl)amine**

**Bioaccumulation:** Bioconcentration potential is low (BCF < 100 or Log Pow < 3).
**Partition coefficient: n-octanol/water(log Pow):** 0.2 Estimated.
**Bioconcentration factor (BCF):** 3 Fish Estimated.

**12.4 Mobility in soil**

**Polyether polyol**

No relevant data found.

**Alcohol alkoxylate**

No relevant data found.

**Carbon black**

No relevant data found.

**Bis(N,N-dimethyl-3-aminopropyl)amine**

Given its very low Henry's constant, volatilization from natural bodies of water or moist soil is not expected to be an important fate process.
**Partition coefficient (Koc):** 770 Estimated.

**12.5 Results of PBT and vPvB assessment**

**Polyether polyol**

This substance has not been assessed for persistence, bioaccumulation and toxicity (PBT).

**Alcohol alkoxylate**

This substance is not considered to be persistent, bioaccumulating and toxic (PBT). This substance is not considered to be very persistent and very bioaccumulating (vPvB).

**Carbon black**

This substance has not been assessed for persistence, bioaccumulation and toxicity (PBT).

**Bis(N,N-dimethyl-3-aminopropyl)amine**

This substance is not considered to be persistent, bioaccumulating and toxic (PBT). This substance is not considered to be very persistent and very bioaccumulating (vPvB).

**12.6 Other adverse effects**

**Polyether polyol**

This substance is not on the Montreal Protocol list of substances that deplete the ozone layer.

**Alcohol alkoxylate**
This substance is not on the Montreal Protocol list of substances that deplete the ozone layer.

**Carbon black**
This substance is not on the Montreal Protocol list of substances that deplete the ozone layer.

**Bis(N,N-dimethyl-3-aminopropyl)amine**
This substance is not on the Montreal Protocol list of substances that deplete the ozone layer.

## SECTION 13: DISPOSAL CONSIDERATIONS

**13.1 Waste treatment methods**
Any disposal practice must be in compliance with all local and national laws and regulations. Do not dump into any sewers, on the ground, or into any body of water.

The definitive assignment of this material to the appropriate EWC group and thus its proper EWC code will depend on the use that is made of this material. Contact the authorized waste disposal services.

## SECTION 14: TRANSPORT INFORMATION

**Classification for ROAD and Rail transport (ADR/RID):**

| | | |
|---|---|---|
| **14.1** | **UN number or ID number** | Not applicable |
| **14.2** | **UN proper shipping name** | Not regulated for transport |
| **14.3** | **Transport hazard class(es)** | Not applicable |
| **14.4** | **Packing group** | Not applicable |
| **14.5** | **Environmental hazards** | Not considered environmentally hazardous based on available data. |
| **14.6** | **Special precautions for user** | No data available. |

**Classification for INLAND waterways (ADNR/ADN):**
**Consult your Dow contact before transporting by inland waterway**

**Classification for SEA transport (IMO-IMDG):**

| | | |
|---|---|---|
| **14.1** | **UN number or ID number** | Not applicable |
| **14.2** | **UN proper shipping name** | Not regulated for transport |
| **14.3** | **Transport hazard class(es)** | Not applicable |
| **14.4** | **Packing group** | Not applicable |
| **14.5** | **Environmental hazards** | Not considered as marine pollutant based on available data. |
| **14.6** | **Special precautions for user** | No data available. |
| **14.7** | **Maritime transport in bulk according to IMO instruments** | Consult IMO regulations before transporting ocean bulk |

**Classification for AIR transport (IATA/ICAO):**

| | | |
|---|---|---|
| **14.1** | **UN number or ID number** | Not applicable |
| **14.2** | **UN proper shipping name** | Not regulated for transport |
| **14.3** | **Transport hazard class(es)** | Not applicable |
| **14.4** | **Packing group** | Not applicable |
| **14.5** | **Environmental hazards** | Not applicable |
| **14.6** | **Special precautions for user** | No data available. |

This information is not intended to convey all specific regulatory or operational requirements/information relating to this product. Transportation classifications may vary by container volume and may be influenced by regional or country variations in regulations. Additional transportation system information can be obtained through an authorized sales or customer service representative. It is the responsibility of the transporting organization to follow all applicable laws, regulations and rules relating to the transportation of the material.

## SECTION 15: REGULATORY INFORMATION

**15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture**

**UK REACH - UK Statutory Instruments 2019 No.758 as amended**
This product contains only components that have been either registered, notified for downstream user import (DUIN), are exempt from registration, are regarded as registered or are not subject to registration according to UK Statutory Instruments 2019 No.758 as amended (UK REACH)., Polymers are exempted from registration under REACH. All relevant starting materials and additives have been registered, notified for downstream user import (DUIN) or are exempt from registration according to UK Statutory Instruments 2019 No.758 as amended (UK REACH)., The aforementioned indications of the UK REACH registration status are provided in good faith and believed to be accurate as of the effective date shown above. However, no warranty, expressed or implied, is given. It is the buyer's/user's responsibility to ensure that his/her understanding of the regulatory status of this product is correct.

**Control of Major Accident Hazards Regulations 2015 (COMAH)**
Listed in Regulation: Not applicable

**15.2 Chemical safety assessment**
No Chemical Safety Assessment has been carried out for this substance/mixture.

## SECTION 16: OTHER INFORMATION

**Full text of H-Statements referred to under sections 2 and 3.**

| | |
|---|---|
| H302 | Harmful if swallowed. |
| H311 | Toxic in contact with skin. |
| H314 | Causes severe skin burns and eye damage. |
| H318 | Causes serious eye damage. |

**Classification and procedure used to derive the classification for mixtures according to Regulation (EC) No 1272/2008**

This product is not classified as dangerous according to EC criteria.

**Revision**

Identification Number: 309295 / A279 / Issue Date: 09.12.2022 / Version: 8.0
Most recent revision(s) are noted by the bold, double bars in left-hand margin throughout this document.

**Legend**

| | |
|---|---|
| ACGIH | USA. ACGIH Threshold Limit Values (TLV) |
| GB EH40 | UK. EH40 WEL - Workplace Exposure Limits |
| STEL | Short-term exposure limit (15-minute reference period) |
| TWA | 8-hour, time-weighted average |
| Acute Tox. | Acute toxicity |
| Eye Dam. | Serious eye damage |
| Skin Corr. | Skin corrosion |

**Full text of other abbreviations**

ADN - European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways; ADR - Agreement concerning the International Carriage of Dangerous Goods by Road; AIIC - Australian Inventory of Industrial Chemicals; ASTM - American Society for the Testing of Materials; bw - Body weight; CLP - Classification Labelling Packaging Regulation; Regulation (EC) No 1272/2008; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DSL - Domestic Substances List (Canada); ECHA - European Chemicals Agency; EC-Number - European Community number; ECx - Concentration associated with x% response; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; n.o.s. - Not Otherwise Specified; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and

Restriction of Chemicals; RID - Regulations concerning the International Carriage of Dangerous Goods by Rail; SADT - Self-Accelerating Decomposition Temperature; SDS - Safety Data Sheet; SVHC - Substance of Very High Concern; TCSI - Taiwan Chemical Substance Inventory; TECI - Thailand Existing Chemicals Inventory; TRGS - Technical Rule for Hazardous Substances; TSCA - Toxic Substances Control Act (United States); UN - United Nations; vPvB - Very Persistent and Very Bioaccumulative

**Information Source and References**
This SDS is prepared by Product Regulatory Services and Hazard Communications Groups from information supplied by internal references within our company.

DOW CHEMICAL COMPANY LIMITED urges each customer or recipient of this (M)SDS to study it carefully and consult appropriate expertise, as necessary or appropriate, to become aware of and understand the data contained in this (M)SDS and any hazards associated with the product. The information herein is provided in good faith and believed to be accurate as of the effective date shown above. However, no warranty, express or implied, is given. Regulatory requirements are subject to change and may differ between various locations. It is the buyer's/user's responsibility to ensure that his activities comply with all federal, state, provincial or local laws. The information presented here pertains only to the product as shipped. Since conditions for use of the product are not under the control of the manufacturer, it is the buyer's/user's duty to determine the conditions necessary for the safe use of this product. Due to the proliferation of sources for information such as manufacturer-specific (M)SDSs, we are not and cannot be responsible for (M)SDSs obtained from any source other than ourselves. If you have obtained an (M)SDS from another source or if you are not sure that the (M)SDS you have is current, please contact us for the most current version.
GB

## SECTION 1: Identification of the substance/mixture and of the company/undertaking

### 1.1. Product identifier

ACMOS 37-9830

### 1.2. Relevant identified uses of the substance or mixture and uses advised against

**Relevant identified uses**

Release agent for PUR

**Uses advised against**

Consumer uses: Private households (= general public = consumers)
Sector of uses [SU]: 21
Do not use for private purposes (household).

Relevant identified uses - Further information:
Industrial uses: Uses of substances as such or in preparations at industrial sites
Sector of uses [SU]: 3
The product is intended for professional use.

In compliance with the conditions described in the annex to this safety data sheet.
Summary of registered and identified uses and their respective exposure scenarios: see annex to this safety data sheet.
See section 16 for a comprehensive list of uses, for which an exposure scenarion is provided as an annex.

### 1.3. Details of the supplier of the safety data sheet

**Manufacturer**

| | | | |
|---|---|---|---|
| Company name: | ACMOS CHEMIE KG | | |
| Street: | Industriestrasse 49 | | |
| Place: | D-28199 Bremen | | |
| Post-office box: | 10 10 69<br>D-28010 Bremen | | |
| Telephone: | +49 (0)421-5189-0 | Telefax: | +49 (0)421-511415 |
| e-mail: | acmos@acmos.com | | |
| Contact person: | Mr. Stephan Dryhaus | | |
| e-mail: | sds@acmos.com | | |
| Internet: | www.acmos.com | | |
| Responsible Department: | Laboratory (Division: Occupational- / Product security) - see under section 16 | | |

### 1.4. Emergency telephone number:

+49 (0)551 19240 (Emergency information service / official advisory body: Giftinformationszentrum Nord, Universität Göttingen, 24 h from mo. - su.)
Language(s) of Telephone Service: DE, EN

**Supplier**

| | | | |
|---|---|---|---|
| Company name: | ACMOS U.K. Ltd., Willow Bank House | | |
| Street: | Old Lane, Heswall | | |
| Place: | GB-CH60 1 XX Wirral, Merseyside | | |
| Telephone: | +44-(0)151-348 4849 | Telefax: | +44-(0)151-348 4850 |
| e-mail: | info@acmos.co.uk | | |
| Contact person: | Mr. Stephen Spriggs | Telephone: | +44-783 158 0003 (mobile) |

### 1.4. Emergency telephone number:

+44 111 (Emergency information service / official advisory body: National Poisons Information Service - NPIS Birmingham) (https://www.npis.org)
Language(s) of Telephone Service: EN

## SECTION 2: Hazards identification

### 2.1. Classification of the substance or mixture

**GB CLP Regulation**

Eye Irrit. 2; H319
Aquatic Chronic 2; H411

Full text of hazard statements: see SECTION 16.

### 2.2. Label elements

**GB CLP Regulation**

**Signal word:** Warning

**Pictograms:**





**Hazard statements**

| | |
|---|---|
| H319 | Causes serious eye irritation. |
| H411 | Toxic to aquatic life with long lasting effects. |

**Precautionary statements**

| | |
|---|---|
| P273 | Avoid release to the environment. |
| P280 | Wear protective gloves/protective clothing/eye protection/face protection/hearing protection. |
| P305+P351+P338 | IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. |
| P337+P313 | If eye irritation persists: Get medical advice/attention. |
| P391 | Collect spillage. |

**Special labelling of certain mixtures**

| | |
|---|---|
| EUH208 | Contains stannane, dibutylbis(dodecylthio)- (dibutyltin bis(lauryl mercaptide)); reaction mass of 5 -chloro-2-methyl-2H-isothiazol-3-one and 2-methyl-2H-isothiazol-3-one (3:1). May produce an allergic reaction.<br>Labeling according to Regulation (EU) No 528/2012 on biocides, Article 58 (3) and Regulation (EC) No 1272/2008, Article 25 (due to the specific conditions of the active substance approval): a) Contains biocidal products: Product-type 6: Preservatives for products during storage. b) Property attributed to the treated article: None c) Name of all active ingredients: See product label. d) Names of contained nanomaterials: None e) Relevant use instructions: Use personal protective equipment as required. |

**Additional advice on labelling**

Labelling according to Regulation (EC) No. 1272/2008 [CLP]

### 2.3. Other hazards

Adverse physicochemical effects:
See section 9 for physical and chemical properties.

Adverse human health effects and symptoms:
See section 11 for toxicological information.
May cause sensitisation especially in sensitive humans.

Adverse environmental effects:
See section 12 for environmental information.

Other adverse effects:
Special danger of slipping by leaking/spilling product.

Results of PBT-/vPvB-assesment:
See under section 12.5 - Results of PBT and vPvB assessment.

## SECTION 3: Composition/information on ingredients

### 3.2. Mixtures

**Chemical characterization**

Emulsion of active ingredients in water

**Hazardous components**

| CAS No | Chemical name | | | Quantity |
|---|---|---|---|---|
| | EC No | Index No | REACH No | |
| | Classification (GB CLP Regulation) | | | |
| 124-30-1 | octadecylamine | | | 1 - < 3 % |
| | 204-695-3 | 612-282-00-8 | 01-2119473804-32 | |
| | Skin Irrit. 2, Eye Dam. 1, STOT RE 2, Asp. Tox. 1, Aquatic Acute 1, Aquatic Chronic 1; H315 H318 H373 H304 H400 H410 | | | |
| 90622-57-4 | hydrocarbons, C11-C12, isoalkanes, <2% aromatics | | | 1 - < 5 % |
| | 918-167-1 | | 01-2119472146-39 | |
| | Asp. Tox. 1, Aquatic Chronic 4; H304 H413 EUH066 | | | |
| 1185-81-5 | stannane, dibutylbis(dodecylthio)- (dibutyltin bis(lauryl mercaptide)) | | | < 0,3 % |
| | 214-688-7 | | 01-2119841260-50 | |
| | Muta. 2, Repr. 1B, Acute Tox. 4, Skin Irrit. 2, Skin Sens. 1, STOT RE 1, Aquatic Acute 1, Aquatic Chronic 1; H341 H360FD H312 H315 H317 H372 H400 H410 | | | |
| 63843-89-0 | bis(1,2,2,6,6-pentamethyl-4-piperidyl) [[3,5-bis(1,1-dimethylethyl)4-hydroxyphenyl]methyl]butylmalonate | | | < 0.1 % |
| | 264-513-3 | | 01-2119978231-37 | |
| | Acute Tox. 4, STOT RE 1, Aquatic Chronic 1; H302 H372 H410 | | | |
| 90640-32-7 | amines, C16-18-alkyl | | | < 0.1 % |
| | 292-550-5 | | 01-2119473799-15 | |
| | Skin Irrit. 2, Eye Dam. 1, STOT RE 2, Asp. Tox. 1, Aquatic Acute 1, Aquatic Chronic 1; H315 H318 H373 H304 H400 H410 | | | |
| 55965-84-9 | reaction mass of 5-chloro-2-methyl-2H-isothiazol-3-one and 2-methyl-2H-isothiazol-3-one (3:1) | | | < 0,0015 % |
| | 911-418-6 | 613-167-00-5 | 01-2120764691-48 | |
| | Acute Tox. 2, Acute Tox. 2, Acute Tox. 3, Skin Corr. 1C, Eye Dam. 1, Skin Sens. 1A, Aquatic Acute 1, Aquatic Chronic 1; H330 H310 H301 H314 H318 H317 H400 H410 EUH071 | | | |

Full text of H and EUH statements: see section 16.

**Specific Conc. Limits, M-factors and ATE**

| CAS No | EC No | Chemical name | Quantity |
|---|---|---|---|
| | Specific Conc. Limits, M-factors and ATE | | |
| 124-30-1 | 204-695-3 | octadecylamine | 1 - < 3 % |
| | inhalation: LC50 = > 0,099 mg/l (dusts or mists); dermal: LD50 = > 2000 mg/kg; oral: LD50 = > 2000 mg/kg<br>M acute; H400: M=10<br>M chron.; H410: M=10 | | |
| 90622-57-4 | 918-167-1 | hydrocarbons, C11-C12, isoalkanes, <2% aromatics | 1 - < 5 % |
| | inhalation: LC50 = > 5,6 mg/l (dusts or mists); dermal: LD50 = > 5000 mg/kg; oral: LD50 = > 5000 mg/kg | | |
| 1185-81-5 | 214-688-7 | stannane, dibutylbis(dodecylthio)- (dibutyltin bis(lauryl mercaptide)) | < 0,3 % |
| | dermal: LD50 = 1000 - 2000 mg/kg; oral: LD50 = > 2000 mg/kg M acute; H400: M=1<br>M chron.; H410: M=1 | | |
| 63843-89-0 | 264-513-3 | bis(1,2,2,6,6-pentamethyl-4-piperidyl) [[3,5-bis(1,1-dimethylethyl)4-hydroxyphenyl]methyl]butylmalonate | < 0.1 % |
| | inhalation: LC50 = > 0,46 mg/l (dusts or mists); dermal: LD50 = > 3170 mg/kg; oral: LD50 = 1490 mg/kg M chron.; H410: M=10 | | |
| 90640-32-7 | 292-550-5 | amines, C16-18-alkyl | < 0.1 % |
| | dermal: LD50 = > 2000 mg/kg; oral: LD50 = > 5000 mg/kg M acute; H400: M=10<br>M chron.; H410: M=10 | | |
| 55965-84-9 | 911-418-6 | reaction mass of 5-chloro-2-methyl-2H-isothiazol-3-one and 2-methyl-2H-isothiazol-3-one (3:1) | < 0,0015 % |
| | inhalation: ATE = 0,5 mg/l (vapours); inhalation: LC50 = > 0,33 mg/l (dusts or mists); dermal: LD50 = > 87 mg/kg; oral: LD50 = 64 - 66 mg/kg Skin Corr. 1C; H314: >= 0,6 - 100 Skin Irrit. 2; H315: >= 0,06 - < 0,6 Eye Dam. 1; H318: >= 0,6 - 100 Eye Irrit. 2; H319: >= 0,06 - < 0,6 Skin Sens. 1A; H317: >= 0,0015 - 100<br>M acute; H400: M=100<br>M chron.; H410: M=100 | | |

**Further Information**

The above mentioned EC-No. (Provisional List Number 9xx-xxx-x) is a specific subset of the specified CAS-No. and was associated with the registration process automatically (without CAS-No. or numeric identifier). An official announcement by the EC inventory will follow after evaluation of substance identity by the ECHA. The new nomenclature of hydrocarbon solvents is only related with group names of the HSPA (Hydrocarbon Solvents Producers Association). The previously used CAS-No. continues serving as a reference for different global inventories. The classification of hydrocarbon mixtures made in consideration of the applicable notes in annex VI of regulation (EC) No. 1272/2008.

## SECTION 4: First aid measures

### 4.1. Description of first aid measures

**General information**

Remove affected person from the danger area and lay down.
Take off immediately all contaminated clothing and wash it before reuse.
Put victim at rest, cover with a blanket and keep warm.
Do not leave affected person unattended.
If a person vomits when lying on his back, place him in the recovery position.
If breathing is irregular or stopped, administer artificial respiration.
If unconscious but breathing normally, place in recovery position and seek medical advice.
Never give anything by mouth to an unconscious person or a person with cramps.
In the event of cardiac arrest immediately perform cardiopulmonary resuscitation.
In case of accident or unwellness, seek medical advice immediately (show directions for use or safety data sheet if possible).

Self-protection of the first aider:
Wear personal protection equipment (refer to section 8).
First Aid.

Notes for the doctor:
No special measures are necessary.

**After inhalation**

Remove victim out of the danger area.
Provide fresh air.
Consult a doctor immediately in the case of inhaling spray mist and show him packing or label.

**After contact with skin**

Wash immediately with:
Water and soap
Rub greasy ointment into the skin.
Do not wash with:
Solvents/Thinner
In case of skin irritation, consult a physician.

**After contact with eyes**

In case of contact with eyes flush immediately with plenty of flowing water for 10 to 15 minutes holding eyelids apart and consult an ophthalmologist.
Remove contact lenses, if present and easy to do. Continue rinsing.
Protect uninjured eye.

**After ingestion**

Do NOT induce vomiting.
Give nothing to eat or drink.
Never give anything by mouth to an unconscious person or a person with cramps.
Call a physician immediately.

### 4.2. Most important symptoms and effects, both acute and delayed

The following symptoms may occur:
Cough
Allergic reactions
Acidosis
Nausea

### 4.3. Indication of any immediate medical attention and special treatment needed

Treat symptomatically.

## SECTION 5: Firefighting measures

### 5.1. Extinguishing media

**Suitable extinguishing media**

Full water jet
Water spray jet
Water mist
Extinguishing powder (ABC-powder)
Foam
Carbon dioxide ($CO_2$)

Fire class: not relevant

**Unsuitable extinguishing media**

None known

### 5.2. Special hazards arising from the substance or mixture

Hazardous combustion products:
None known
The product itself does not burn.

### 5.3. Advice for firefighters

Usual measures of preventive and averting fire protection.
Co-ordinate fire-fighting measures to the fire surroundings.
Collect contaminated fire extinguishing water separately. Do not allow entering drains or surface water.
Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.

Special protective equipment for firefighters
not relevant

## SECTION 6: Accidental release measures

### 6.1. Personal precautions, protective equipment and emergency procedures

**General advice**

Avoid contact with skin, eyes and clothes.
Do not breathe vapour/aerosol.
Prevent further leakage or spillage if safe to do so.
Provide adequate ventilation.
Special danger of slipping by leaking/spilling product.

For non-emergency personnel:
Use personal protection equipment.
Walk out of the danger zone and notify trained personnel.
Emergency procedures:
Keep the factory emergency plan and the information chain.

For emergency responders:
Use personal protection equipment.
The personal protective equipment must be adapted to the situation.
Suitable material:
See under section 8.2 - Personal protection equipment.

### 6.2. Environmental precautions

Do not allow to enter into surface water or drains.
Do not allow to enter into soil/subsoil.
Ensure waste is collected and contained.
In case of gas escape or of entry into waterways, soil or drains, inform the responsible authorities.

### 6.3. Methods and material for containment and cleaning up

**Other information**

For containment:
Repair leaks if without risk.
Move containers from spill area.
Make sure spills can be contained, e.g. in sump pallets or kerbed areas.

Prevent spread over a wide area (e.g. by containment or oil barriers).
Remove from the water surface (e.g. skimming, sucking).
Cover drains.

For cleaning up:
Clean-up methods - large spillage:
Absorb with liquid-binding material (sand, diatomaceous earth, acid- or universal binding agents).
Shovel into suitable container for disposal.
Local authorities should be advised if significant spillages cannot be contained.
Clean-up methods - small spillage:
Clear spills immediately.
Wipe up with absorbent material (eg. cloth, fleece).
Collect in closed and suitable containers for disposal.
Clear contaminated areas thoroughly.
Recommended cleansing agent:
Clean with detergents. Avoid solvent cleaners.
Retain contaminated washing water and dispose it.
Ensure all waste water is collected and treated via a waste water treatment plant.
Ventilate affected area.

Suitable material for taking up:
Sand
Kieselguhr
Universal binder
Absorbing material, organic

Unsuitable material for taking up:
None known

**6.4. Reference to other sections**

Personal protection equipment: see section 8
Disposal: see section 13

## SECTION 7: Handling and storage

**7.1. Precautions for safe handling**

**Advice on safe handling**

Measures to prevent aerosol and dust generation:
All work processes must always be designed so that the following is as low as possible:
Inhalation of vapours or spray/mists
Eye contact
Skin contact

Technical ventilation of workplace
Use only in a exhaust booth with integrated air filter.
Use in ventilated spray booths only.
Recirculation of exhaust air is not recommended.
Always close containers tightly after the removal of product.

**Advice on protection against fire and explosion**

Measures to prevent fire:
The product is not: Combustible
Usual measures for fire prevention.
Fire-fighting equipment on the basis of class B.

**Further information on handling**

Environmental precautions:
Transfer wash-downs in sealed containers.
Provide for retaining containers, e.g. floor pan without outflow.
For restriction of emission on volatile organic compounds (VOC) the solvent vapours should be supplied to an exhaust air purification facility (filter, gas washer, incineration).

Advices on general occupational hygiene:

Wear personal protection equipment (refer to section 8).
Minimum standard for preventive measures while handling with working materials are specified in the TRGS 500.
General industrial hygiene practice.
Handle in accordance with good industrial hygiene and safety practice.
Working places should be designed to allow cleaning at any time.
Floors, walls and other surfaces in the hazard area must be cleaned regularly.
Clean spray booth and exhaust hood completely with every product change.
When using do not eat, drink, smoke, sniff.
Thorough skin-cleansing after handling the product.
Used working clothes should not be worn outside the work area.

**7.2. Conditions for safe storage, including any incompatibilities**

**Requirements for storage rooms and vessels**

Suitable floor material:
Floors should be impervious, resistant to liquids and easy to clean.

Protect against:
Heat
Cold

Recommended storage temperature: +10 ... +30 °C

Keep away from:
Food and feedingstuffs

Packaging materials:
Suitable container/equipment material:
Keep/Store only in original container.
Unsuitable container/equipment material:
See under section 8.2 - Hand protection.

**Hints on joint storage**

Do not store together with:
Storage class:
1 (Explosive hazardous substances)
6.2 (Infectious substances)
7 (Radioactive substances)

**Further information on storage conditions**

Technical measures and storage conditions:
The valid water and zoning ordinances must be observed.
Keep container tightly closed.
Protect containers against damage.
Ensure adequate ventilation of the storage area.
Do not store outside.
See also instuctions on the label.

**7.3. Specific end use(s)**

Recommendation:
Possibilities for substitution and references to less hazardous products:
This product was designed for a special application purpose and optimized appropriately.
In case of questions regarding product and application, please contact our field service in line with customer service or our technical sales department.
Observe technical data sheet.

Industrial sector specific solutions:

Hazardous substance information systems of professional associations:

## SECTION 8: Exposure controls/personal protection

**8.1. Control parameters**

**Exposure limits (EH40)**

| CAS No | Substance | ppm | mg/m³ | fibres/ml | Category | Origin |
|---|---|---|---|---|---|---|
| - | Cycloalkanes >= C7 | - | 800 | | TWA (8 h) | WEL |
| - | Normal and branched chain alkanes >= C7 (it excludes n-heptane) | - | 1200 | | TWA (8 h) | WEL |
| - | Tin compounds, organic, except Cyhexatin (ISO), (as Sn) | - | 0.1 | | TWA (8 h) | WEL |
| | | - | 0.2 | | STEL (15 min) | WEL |

**DNEL/DMEL values**

| CAS No | Substance | | | |
|---|---|---|---|---|
| DNEL type | | Exposure route | Effect | Value |
| 124-30-1 | octadecylamine | | | |
| Worker DNEL, long-term | | dermal | systemic | 0,09 mg/kg bw/day |
| Worker DNEL, long-term | | inhalation | systemic | 0,38 mg/m³ |
| Consumer DNEL, long-term | | oral | systemic | 0,04 mg/kg bw/day |
| 63843-89-0 | bis(1,2,2,6,6-pentamethyl-4-piperidyl) [[3,5-bis(1,1-dimethylethyl)4-hydroxyphenyl]methyl]butylmalonate | | | |
| Worker DNEL, long-term | | dermal | systemic | 0,07 mg/kg bw/day |
| Worker DNEL, long-term | | inhalation | systemic | 0,05 mg/m³ |
| Consumer DNEL, long-term | | dermal | systemic | 0,033 mg/kg bw/day |
| Consumer DNEL, long-term | | inhalation | systemic | 0,01 mg/m³ |
| Consumer DNEL, long-term | | oral | systemic | 0,003 mg/kg bw/day |
| 90640-32-7 | amines, C16-18-alkyl | | | |
| Worker DNEL, long-term | | inhalation | local | 1 mg/m³ |
| Consumer DNEL, long-term | | inhalation | systemic | 0,035 mg/m³ |
| Worker DNEL, long-term | | inhalation | systemic | 0,38 mg/m³ |
| Consumer DNEL, long-term | | oral | systemic | 0,04 mg/kg bw/day |
| 55965-84-9 | reaction mass of 5-chloro-2-methyl-2H-isothiazol-3-one and 2-methyl-2H-isothiazol-3-one (3:1) | | | |
| Worker DNEL, long-term | | inhalation | local | 0,02 mg/m³ |
| Worker DNEL, acute | | inhalation | local | 0,04 mg/m³ |
| Consumer DNEL, long-term | | inhalation | local | 0,02 mg/m³ |
| Consumer DNEL, acute | | inhalation | local | 0,04 mg/m³ |
| Consumer DNEL, long-term | | oral | systemic | 0,09 mg/kg bw/day |
| Consumer DNEL, acute | | oral | systemic | 0,11 mg/kg bw/day |

**PNEC values**

| CAS No | Substance |
|---|---|
| Environmental compartment | Value |
| 124-30-1 | octadecylamine |
| Freshwater | 0,00026 mg/l |
| Marine water | 0,000026 mg/l |
| Freshwater sediment | 0,179 mg/kg |
| Marine sediment | 0,0179 mg/kg |
| Micro-organisms in sewage treatment plants (STP) | 0,55 mg/l |
| Soil | 10 mg/kg |
| 63843-89-0 | bis(1,2,2,6,6-pentamethyl-4-piperidyl) [[3,5-bis(1,1-dimethylethyl)4-hydroxyphenyl]methyl]butylmalonate |
| Freshwater | 0,00004 mg/l |
| Marine water | 0,00000 mg/l |
| Freshwater sediment | 504,4 mg/kg |
| Marine sediment | 50,44 mg/kg |
| Micro-organisms in sewage treatment plants (STP) | 1 mg/l |
| Soil | 1 mg/kg |
| 90640-32-7 | amines, C16-18-alkyl |
| Freshwater | 0,00026 mg/l |
| Freshwater sediment | 0,0039 mg/kg |
| Micro-organisms in sewage treatment plants (STP) | 0,550 mg/l |
| Soil | 10 mg/kg |
| 55965-84-9 | reaction mass of 5-chloro-2-methyl-2H-isothiazol-3-one and 2-methyl-2H-isothiazol-3-one (3:1) |
| Freshwater | 0,00339 mg/l |
| Marine water | 0,00339 mg/l |
| Freshwater sediment | 0,027 mg/kg |
| Marine sediment | 0,027 mg/kg |
| Soil | 0,01 mg/kg |

**Additional advice on limit values**

GESTIS - International Limit Values - Institut für Arbeitsschutz der Deutschen Gesetzlichen Unfallversicherung (IFA): http://limitvalue.ifa.dguv.de
Country information (EU) (http://www.dguv.de/ifa/fachinfos/occupational-exposure-limit-values/foreign-and-eu-limit-values/index.jsp)
Country information (GB) (http://www.hse.gov.uk/pubns/books/eh40.htm)
Occupational Exposure Limits of EU-memberstates - European Agency for Safety and Health at Work (OSHA) (http://osha.europa.eu/en/topics/ds/oel/index.stm/members.stm)
Source of law: EH40 (GB) (http://www.hse.gov.uk)

Recommended monitoring procedures:
Workplace atmospheres - Guide for the application and use of procedures for the assessment of exposure to chemical and biological agents (BS EN 14042):
Personal air monitoring
Room air monitoring
Test tube
Gas warning system

Preliminary concentration measurements:
Suitable detector tubes for measuring the current concentration in the air at the workplace: DRÄGER test tubes - short-term tubes (http://www.gasmesstechnik.de)
DRÄGER test tubes - Short-term tubes - Petroleum hydrocarbons 10 / a (n-octane, measuring range: 10 - 300 ppm, response time: 60 sec) (http://www.gasmesstechnik.de)
DRÄGER test tubes - Short-term tubes - Petroleum hydrocarbons 100 / a (n-octane, measuring range: 100 - 2500 ppm, response time: 30 sec) (http://www.gasmesstechnik.de)

Exposure limits at intended use:

DNEL-/PNEC-values:
Further information: see exposure scenarios attached to this safety data sheet.

Risk management measures according to used control banding approach:
Control banding for chemicals according to the ILO CHEMICAL CONTROL TOOLKIT (ICCT): ICCT-Guidelines and Control Guidance Sheets ( http://www.ilo.org/legacy/english/protection/safework/ctrl_banding/toolkit/main_guide.pdf)

Used model:
Consider appropriate model solutions according to good engineering practices on designing the working process, if available.

**8.2. Exposure controls**





**Appropriate engineering controls**

Substance/mixture related measures to prevent exposure during identified uses:
Technical measures to prevent exposure:
Design of appropriate work processes and engineering controls and the use of adequate materials (physical cut-off of man and machine, model solutions as certified working methods, working appliance according to the state of the art, optimization of process / spray robots, working appliance for prevention of skin contact, models of working times).

Organisational measures to prevent exposure:
Execution of collective protection measures at source and appropriate organisational measures (local exhaust ventilation, ventilation by technical means, general ventilation, measures on averting a danger at breakdowns / at emergencies / after accidents, first-aid-measures, manner related measures: operating instruction / instruction of employees, occupational medicine health precaution).

Structural measures to prevent exposure:
Execution of individual and personnel protection measures (personal protective equipment - PPE).

If technical exhaust or ventilation measures are not possible or insufficient, respiratory protection must be worn.
Technical measures and the application of suitable work processes have priority over personal protection equipment.

References for design of technical equipment:
See under section 7.1 - Precautions for safe handling.

Summary of the risk management measures for exposure scenario:
Use only the following product amount per time unit:
No information available.
Minimum room-width and room-height for handling/application:
No information available.
Minimum room ventilation rate for handling/application (air changes per hour):
No information available.

**Individual protection measures, such as personal protective equipment**

**Eye/face protection**

If required according to hazard assessment:
Suitable eye protection:
Eye glasses with side protection (EN 166)
Recommended eye protection articles:

UVEX I-VO / UVEX I-3 / UVEX SUPER OTG
Or comparable articles from other companies.

**Hand protection**

Skin protection:
Preventive skin protection.:
Draw up skin protection programme.
Before starting work, apply water-resistant skincare preparations.
e.g. saniwip®, dualin® (PETER GREVEN PHYSIODERM)
Wash hands before breaks and after work.
e.g. ecosan®, topscrub® soft / topscrub® extra / topscrub® nature (PETER GREVEN PHYSIODERM)
After cleaning apply high-fat content skin care cream.
e.g. physioderm® creme, cura soft® / cUrea soft® (PETER GREVEN PHYSIODERM)
Apply skin care products after work.

If required according to hazard assessment:
When handling with chemical substances, protective gloves must be worn with the CE-label including the four control digits.
The quality of the protective gloves resistant to chemicals must be chosen as a function of the specific working place concentration and quantity of hazardous substances.
Decrease wearing protection gloves to an inevitable degree to avoid skin rash.
Technical and organizational protective actions have to be preferred.
Breakthrough times and swelling properties of the material must be taken into consideration.
Check leak tightness/impermeability prior to use.
Wear cotton undermitten if possible.
Change preventive gloves once by hour or use special skin-protective preparations for protective gloves carrier,
e.g. physioderm® proGlove (PETER GREVEN PHYSIODERM)
Take recovery periods for skin regeneration.
Do not wear gloves near rotary machines and tools.
Dispose preventive gloves after defect or expiry of wearing time. Replace when worn.
In the case of wanting to use the gloves again, clean them before taking off and air them well.

Wearing time with permanent contact:
Suitable gloves type
Gloves with long cuffs
Recommended glove articles:
Suitable materials at long term, direct contact (Recommended: Preventive index 6, accordingly > 480 min. permeation time in accordance to EN 374):
Nitrile rubber / NBR (KCL-CAMATRIL VELOURS® - Art. No. 730) - Layer thickness: 0,4 mm
Or comparable articles from other companies.

Unsuitable material:
NR (natural rubber, Natural latex)

Wearing time with occasional contact (splashes):
Suitable gloves type
Disposable gloves
Recommended glove articles:
Suitable materials at short term contact or splash (Recommended: Preventive index 3, accordingly > 60 min. permeation time in accordance to EN 374):
Disposable gloves of special nitrile rubber / NBR (KCL-DERMATRIL® P - Art. No. 743) - Layer thickness: 0,2 mm
Or comparable articles from other companies.

The statements are based on self-tests, literary reference and information of glove manufacturers or have been derived from similar substances by analogy.
Source: CHEMIKALIEN-MANAGER - KCL software for hand protection.
It has to be noticed, that daily time of use of chemical protective gloves may be quite shorter in practice because of many factors of influence (e.g. thermal and mechanical stress as well as special conditions on the floor) than the permeation time determined in accordance to EN 374.

The respective permeation time doubles/halvens at about 1,5 times larger/lower layer thickness.
Declared permeation times according to EN 374 are not carried out under practical conditions. Therefore a maximum wearing time up to 50 % of breakthrough time is recommended.
They relate to the pure solvent as mean component.

Barrier creams are not substitutes for body protection.

**Skin protection**

If required according to hazard assessment:
Suitable protective clothing:
Overall, Natural fibres (e.g. cotton) (EN 340)
For the protection against direct skin contact, body protective clothing is essential (in addition to the usual working clothes).
When handling with chemical substances, protective clothing with CE-labels including the four control digits must be worn.
DIN-/EN-Norms EN 468
Chemical protection clothing (Disposable suit antistatic)
type 6 limited splash-tight
type 5 particle-tight (method B)
type 4 spray-tight
Recommended protective clothing articles:
TYVEK CLASSIC PLUS (DU PONT)
Or comparable articles from other companies.

Chemical resistant safety shoes with conductible sole (EN ISO 20345)

Wash contaminated clothing prior to re-use.
Used working clothes should not be worn outside the work area.
Street clothing should be stored separately from work clothing.

Thermal hazards:
No thermal hazards during use of this product.

**Respiratory protection**

If required according to hazard assessment:
Respiratory protection necessary at:
aerosol or mist formation + exceeding exposure limit values +
high concentrations / prolonged exposure / insufficient ventilation / insufficient exhaust
Use only respiratory protection equipment with CE-symbol including four digit test number.
Filter types: A, B, E, K. Class 1: Maximum permitted contaminant concentration in inhaled air = 1000 mL/m3 (0.1 % by vol.); class 2: maximum permitted contaminant concentration in inhaled air = 5000 mL/m³ (0.5 % by vol.); class 3: maximum permitted contaminant concentration in inhaled air = 10000 mL/m³ (1.0 % by vol.)
The filter class must be suitable for the maximum contaminant concentration (gas/vapour/aerosol/particulates) that may arise when handling the product. If the concentration is exceeded, self-contained breathing apparatus must be used.
Observe the wear time limits according GefStoffV in combination with the rules for using respiratory protection apparatus (BGR 190).
The use of filter equipment requires a minimum oxygen content of 17 Vol-% in the surrounding atmosphere and that the maximum permitted gas concentration - normally 0,5 Vol-% - is not exceeded.

Suitable respiratory protection apparatus:
Half-face mask or quarter facepiece: maximum use concentration for substances with exposure limits: P1 filter: up to a max. of 4 times the exposure limit. P2 filter: up to a max. of 10 times the exposure limit. P3 filter: up to a max. of 30 times the expo.

Recommended respiratory protection articles:
Half mask or quarter mask with combination filter A1P1/A2P2 for gases, vapors and particles. (EN 140, EN 14387)
Filtering half mask or quarter mask with combination filter FFA1 P1/FFA2P2 for gases, vapors and particles. (EN 405)
Gas filtrating Half-face mask FFA (EN 405)
Model 4251 (FFA1P1 - 1000 ml/m3) / 4255 (FFA2P2SL - 5000 ml/m3) (3M)
Half-face mask or Quarter-face mask with gas filter (EN 140, EN 14387)

Filter type 6051 (A1 - 1000 ml/m3) / 6055 (A2 - 5000 ml/m3) (3M)
Full-face mask with gas filter (EN 136, EN 14387)
Gas filter type: A, Indication colour: brown
Or comparable articles from other companies.

**Environmental exposure controls**

Environmental exposure controls:
Technical measures to prevent exposure:
Discharge exhaust air only with suitable seperators to atmosphere.
Organisational measures to prevent exposure:
Should not be released into the environment.
Structural measures to prevent exposure:

Use the following recovery and/or abatement technique for cleaning waste gases:
Exhaust air scrubber
Adsorption

Further information see under section 6.2 - Environmental precautions.

## SECTION 9: Physical and chemical properties

### 9.1. Information on basic physical and chemical properties

| | | |
|---|---|---|
| Physical state: | liquid | |
| Colour: | white | |
| Odour: | characteristic | |
| | | **Test method** |
| Melting point/freezing point: | < 0 °C | literature value |
| Boiling point or initial boiling point and boiling range: | > 100 °C | literature value |
| Flammability | | |
| Solid/liquid: | not applicable (Liquid) | |
| Gas: | not applicable (Liquid) | |
| Lower explosion limits: | not relevant | |
| Upper explosion limits: | not relevant | |
| Flash point: | not applicable | |
| Auto-ignition temperature: | not relevant | |
| Decomposition temperature: | not relevant | |
| pH-Value: | 6 | DIN 19268 |
| Viscosity / kinematic: (at 40 °C) | 43,7 mm²/s | DIN 53015 |
| Water solubility: (at 20 °C) | emulsifiable | |
| Solubility in other solvents | | |
| miscible with most organic solvents (Alcohols, aldehydes, Ketone) | | |
| Partition coefficient n-octanol/water: | not applicable (Mixtures) | |
| Vapour pressure: (at 20 °C) | Corresponds to the vapour pressure of water. < 23 hPa | literature value |
| Vapour pressure: (at 50 °C) | Corresponds to the vapour pressure of water. < 123 hPa | literature value |
| Density (at 20 °C): | 1 g/cm³ | DIN 51757 |
| Bulk density: | not applicable (Liquid) | |
| Relative vapour density: | not determined | |

### 9.2. Other information

**Information with regard to physical hazard classes**

Explosive properties
No flash point up to 100 °C.

Self-ignition temperature

| | |
|---|---|
| Solid: | Not pyrophoric. |
| Gas: | Not pyrophoric. |

Oxidizing properties
not relevant

**Other safety characteristics**

| | | |
|---|---|---|
| Evaporation rate: | not determined | |
| Solvent separation test: | not applicable | |
| Solvent content: | not determined | |
| Solid content: | not determined | |
| Sublimation point: | not applicable | |
| Softening point: | not applicable | |
| Pour point: | not applicable | |
| Viscosity / dynamic: | not determined | |
| Flow time: (at 23 °C) | > 30 s | 3 DIN EN ISO 2431 |

**Further Information**

Odour threshold: No data available

Surface tension: No data available
Fat solubility: No data available
Calculated oxidation potential of the mixture (OP): not relevant

Substance group relevant properties:
Data relevant with regard to physical hazard classes (supplemental):
Explosives
not applicable
Flammable gases
Non-flammable. / not applicable (Liquid)
Aerosols
Non-flammable. / not applicable (Liquid)
Oxidising gas
Not oxidising. / not applicable (Liquid)
Gases under pressure
not applicable (Liquid)
Flammable liquids
Non-flammable.
flammable solids
Non-flammable. / not applicable (Liquid)
Self-reactive substances and mixtures
not applicable
Pyrophoric liquids
Not pyrophoric.
Pyrophoric solids
Not pyrophoric. / not applicable (Liquid)
self-heating substances and mixtures
not applicable
Substances or mixtures which, in contact with water, emit flammable gases
not applicable
Oxidising liquids
Not oxidising.
Oxidising solids
Not oxidising. / not applicable (Liquid)
Organic peroxides
not applicable
Corrosive to metals.
Not corrosive to metals.

## SECTION 10: Stability and reactivity

**10.1. Reactivity**

The product is chemically stable under recommended conditions of storage, use and temperature.

**10.2. Chemical stability**

The product is chemically stable under recommended conditions of storage, use and temperature.

**10.3. Possibility of hazardous reactions**

No hazardous reaction when handled and stored according to provisions.

**10.4. Conditions to avoid**

Further information see under section 7.2 - Conditions for safe storage, including any incompatibilities.
Further information see under section 10.5 - Incompatible materials.

**10.5. Incompatible materials**

Violent reaction with:
Hazardous substances that release flammable gases when in contact with water
Further information see under section 7.1 - Precautions for safe handling.

**10.6. Hazardous decomposition products**

Does not decompose when used for intended uses.
No known hazardous decomposition products.
Under fire conditions: See under section 5.2 - Special hazards arising from the substance or mixture.

## SECTION 11: Toxicological information

**11.1. Information on hazard classes as defined in GB CLP Regulation**

**Toxicocinetics, metabolism and distribution**

There are no data available on the preparation/mixture itself.
The product has not been tested.

Information on likely routes of exposure /
Symptoms related to the physical, chemical and toxicological characteristics:
See under section 4.2 - Most important symptoms and effects, both acute and delayed.

Exposure route:
In case of ingestion:
Ingestion causes nausea, weakness and central nervous system effects.

In case of skin contact:
May cause skin irritation in susceptible persons.
Prolonged or repeated skin contact may cause removal of natural fat from the skin resulting in dermatitis (skin inflammation).

In case of inhalation:
slightly irritant but not relevant for classification.

In case of eye contact:
irritant.
Conjunctival redness.

Delayed and immediate effects as well as chronic effects from short and long-term exposure:
Not relevant

Interactive effects:
Not relevant

Absence of specific data:
No data is available on the product itself. Description of possible hazardous to health effects is based on experience and/or toxicological characteristics of several components.
However, some datas are not complete regarding particular main components. Nevertheless according to the experience of the manufacturer there are no other hazards expected then those which are already mentioned on the label.

Mixture versus substance information:
Not relevant

**Acute toxicity**

Based on available data, the classification criteria are not met.

| CAS No | Chemical name | | | | |
|---|---|---|---|---|---|
| | Exposure route | Dose | Species | Source | Method |
| 124-30-1 | octadecylamine | | | | |
| | oral | LD50 > 2000 mg/kg | Rat | ECHA | OECD 401 |
| | dermal | LD50 > 2000 mg/kg | Rat | ECHA | OECD 402 |
| | inhalation (1 h) dust/mist | LC50 > 0,099 mg/l | Rat | ECHA | OECD 403 |
| 90622-57-4 | hydrocarbons, C11-C12, isoalkanes, <2% aromatics | | | | |
| | oral | LD50 > 5000 mg/kg | Rat | Supplier / ECHA | OECD 401 |
| | dermal | LD50 > 5000 mg/kg | Rabbit | Supplier / ECHA | OECD 402 |
| | inhalation (4 h) dust/mist | LC50 > 5,6 mg/l | Rat | ECHA | OECD 403 |
| 1185-81-5 | stannane, dibutylbis(dodecylthio)- (dibutyltin bis(lauryl mercaptide)) | | | | |
| | oral | LD50 > 2000 mg/kg | Rat | Supplier / ECHA | OECD 423 |
| | dermal | LD50 1000 - 2000 mg/kg | Rabbit [female] | Supplier / ECHA | OECD 402 |
| 63843-89-0 | bis(1,2,2,6,6-pentamethyl-4-piperidyl) [[3,5-bis(1,1-dimethylethyl)4-hydroxyphenyl]methyl]butylmalonate | | | | |
| | oral | LD50 1490 mg/kg | Rat | Supplier / ECHA | OECD 401 |
| | dermal | LD50 > 3170 mg/kg | Rat | Supplier / ECHA | OECD 402 |
| | inhalation (4 h) dust/mist | LC50 > 0,46 mg/l | Rat | Supplier / ECHA | OECD 403 |
| 90640-32-7 | amines, C16-18-alkyl | | | | |
| | oral | LD50 > 5000 mg/kg | Rat | Supplier / ECHA | OECD 401 |
| | dermal | LD50 > 2000 mg/kg | Rat | ECHA | OECD 402 |
| 55965-84-9 | reaction mass of 5-chloro-2-methyl-2H-isothiazol-3-one and 2-methyl-2H-isothiazol-3-one (3:1) | | | | |
| | oral | LD50 64 - 66 mg/kg | Rat | ECHA / Supplier | OECD 401 |
| | dermal | LD50 > 87 mg/kg | Rat | ECHA | OECD 402 |
| | inhalation vapour | ATE 0,5 mg/l | | | |
| | inhalation (4 h) dust/mist | LC50 > 0,33 mg/l | Rat | ECHA | OECD 403 |

**Irritation and corrosivity**

Causes serious eye irritation.

Skin corrosion/irritation: Based on available data, the classification criteria are not met.

**Sensitising effects**

Contains stannane, dibutylbis(dodecylthio)- (dibutyltin bis(lauryl mercaptide)); reaction mass of 5-chloro-2-methyl-2H-isothiazol-3-one and 2-methyl-2H-isothiazol-3-one (3:1). May produce an allergic reaction.

**Carcinogenic/mutagenic/toxic effects for reproduction**

Based on available data, the classification criteria are not met.

**STOT-single exposure**

Based on available data, the classification criteria are not met.

**STOT-repeated exposure**

Based on available data, the classification criteria are not met.

**Aspiration hazard**

Based on available data, the classification criteria are not met.

**11.2. Information on other hazards**

**Endocrine disrupting properties**

Endocrine disrupting potential (Health):

not relevant

## SECTION 12: Ecological information

### 12.1. Toxicity

Aquatic toxicity:

Acute (short-term) fish toxicity:

There are no data available on the preparation/mixture itself. The product has not been tested.

Acute (short-term) toxicity to crustacea:

There are no data available on the preparation/mixture itself. The product has not been tested.

Acute (short-term) toxicity to algae and cyanobacteria:

There are no data available on the preparation/mixture itself. The product has not been tested.

Chronic (long-term) toxicity to aquatic invertebrate:

There are no data available on the preparation/mixture itself. The product has not been tested.

Chronic (long-term) fish toxicity:

There are no data available on the preparation/mixture itself. The product has not been tested.

Toxicity to other aquatic plants/organisms:

No data available (Substances/Ingredient)

Terrestrial toxicity:

Acute and subchronic bird toxicity:

No data available (Substances/Ingredient)

Bird reproduction toxicity:

No data available (Substances/Ingredient)

Acute earthworm toxicity:

No data available (Substances/Ingredient)

Chronical earthworm toxicity (reproduction):

No data available (Substances/Ingredient)

Useful insect toxicity:

No data available (Substances/Ingredient)

Acute plant toxicity:

No data available (Substances/Ingredient)

Chronic plant toxicity:

No data available (Substances/Ingredient)

Toxicity to soil macroorganisms except of arthropods:

No data available (Substances/Ingredient)

Effects on soil microorganisms:

No data available (Substances/Ingredient)

Behaviour in waste water treatment plants:

No data available

Observe local regulations concerning effluent treatment.

| CAS No | Chemical name | | | | | |
|---|---|---|---|---|---|---|
| | Aquatic toxicity | Dose | [h] \| [d] | Species | Source | Method |
| 124-30-1 | octadecylamine | | | | | |
| | Acute fish toxicity | LC50 > 0,01 - 0,1 mg/l | 96 h | Pimephales promelas | Supplier | EPA OPPTS 850.1085 |
| | Acute algae toxicity | ErC50 > 0,01 - 0,1 mg/l | 72 h | Scenedesmus subspicatus | Supplier | OECD 201 |
| | Acute crustacea toxicity | EC50 > 0,01 - 0,1 mg/l | 48 h | Daphnia magna | Supplier | OECD 202 |
| | Algae toxicity | NOEC 0,01 mg/l | 3 d | Desmodesmus subspicatus | ECHA | OECD 201 |
| | Crustacea toxicity | NOEC 0,001 mg/l | 21 d | Daphnia magna | ECHA | OECD 211 |
| | Acute bacteria toxicity | (EC50 14 mg/l) | 3 h | Activated sludge | ECHA | OECD 209 |
| 90622-57-4 | hydrocarbons, C11-C12, isoalkanes, <2% aromatics | | | | | |
| | Acute fish toxicity | LC50 > 1000 mg/l | 96 h | Oncorhynchus mykiss | Supplier / ECHA | OECD 203 |
| | Acute algae toxicity | ErC50 > 1000 mg/l | 72 h | Pseudokirchneriella subcapitata | Supplier / ECHA | OECD 201 |
| | Acute crustacea toxicity | EC50 > 1000 mg/l | 48 h | Daphnia magna | Supplier / ECHA | OECD 202 |
| | Fish toxicity | NOEC 0,209 mg/l | 28 d | Oncorhynchus mykiss | ECHA | [growth rate] |
| | Algae toxicity | NOEC 1000 mg/l | 3 d | Pseudokirchneriella subcapitata | Supplier / ECHA | OECD 201 |
| | Crustacea toxicity | NOEC > 1 mg/l | 21 d | Daphnia magna | Supplier / ECHA | OECD 211 |
| | Acute bacteria toxicity | (EC50 > 1,5 mg/l) | 0 h | Pseudomonas putida | ECHA | [5h] |
| 1185-81-5 | stannane, dibutylbis(dodecylthio)- (dibutyltin bis(lauryl mercaptide)) | | | | | |
| | Acute algae toxicity | ErC50 > 1,6 mg/l | 72 h | Desmodesmus subspicatus | ECHA | OECD 201 |
| | Acute crustacea toxicity | EC50 0,11 mg/l | 48 h | Daphnia magna | Supplier / ECHA | OECD 202 |
| 63843-89-0 | bis(1,2,2,6,6-pentamethyl-4-piperidyl) [[3,5-bis(1,1-dimethylethyl)4-hydroxyphenyl]methyl]butylmalonate | | | | | |
| | Acute fish toxicity | LC50 > 100 mg/l | 96 h | Danio rerio | Supplier / ECHA | OECD 203 |
| | Acute algae toxicity | ErC50 61 mg/l | 72 h | Desmodesmus subspicatus | Supplier / ECHA | [biomass] |
| | Acute crustacea toxicity | EC50 69 mg/l | 48 h | Daphnia magna | Supplier | OECD 202 [24h] |
| | Algae toxicity | NOEC < 1,23 mg/l | 3 d | Desmodesmus subspicatus | ECHA | 87/302/EEC |
| | Crustacea toxicity | NOEC 0,002 mg/l | 21 d | Daphnia magna | Supplier / ECHA | OECD 211 |
| | Acute bacteria toxicity | (EC50 > 100 mg/l) | 3 h | Activated sludge | Supplier / ECHA | OECD 209 |
| 90640-32-7 | amines, C16-18-alkyl | | | | | |
| | Acute fish toxicity | LC50 (0,84) mg/l | 96 h | Dario rerio | Supplier | OECD 203 |
| | Acute algae toxicity | ErC50 (0,12) mg/l | 72 h | Desmodesmus subspicatus | ECHA | OECD 201 |
| | Acute crustacea toxicity | EC50 (0,32) mg/l | 48 h | Daphnia magna | Supplier | OECD 202 |
| | Algae toxicity | NOEC 0,01 mg/l | 3 d | Desmodesmus subspicatus | ECHA | OECD 201 |
| | Crustacea toxicity | NOEC 0,01 mg/l | 21 d | Daphnia magna | Supplier | OECD 211 |
| | Acute bacteria toxicity | (EC50 490,1 mg/l) | 3 h | Activated sludge | ECHA | OECD 209 |
| 55965-84-9 | reaction mass of 5-chloro-2-methyl-2H-isothiazol-3-one and 2-methyl-2H-isothiazol-3-one (3:1) | | | | | |
| | Acute fish toxicity | LC50 0,19 mg/l | 96 h | Oncorhynchus mykiss | ECHA | EPA OPP 72-1 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | Acute algae toxicity | ErC50 | 0,037 mg/l | 72 h | Skeletonema costatum | ECHA | OECD 201 |
| | Acute crustacea toxicity | EC50 | 0,16 mg/l | 48 h | Daphnia magna | ECHA | EPA OPP 72-2 |
| | Fish toxicity | NOEC mg/l | 0,0464 | 35 d | Danio rerio | ECHA | OECD 210 |
| | Algae toxicity | NOEC | 0,004 mg/l | 3 d | Skeletonema costatum | ECHA | OECD 201 |
| | Crustacea toxicity | NOEC mg/l | 0,0111 | 21 d | Daphnia magna | ECHA | OECD 211 |
| | Acute bacteria toxicity | (EC50 | 4,5 mg/l) | 3 h | Activated sludge | ECHA | OECD 209 |

**12.2. Persistence and degradability**

Abiotic degradation:

Physicochemical elimination:

Oxidation:

not applicable (Mixtures)

No data available (Substances/Ingredient)

Hydrolysis:

not applicable (Mixtures)

No data available (Substances/Ingredient)

Photochemical elimination:

Photolysis:

not applicable (Mixtures)

No data available (Substances/Ingredient)

Ozonolysis:

not applicable (Mixtures)

No data available (Substances/Ingredient)

Biodegradation:

not applicable (Mixtures)

| CAS No | Chemical name | | | |
|---|---|---|---|---|
| | Method | Value | d | Source |
| | Evaluation | | | |
| 124-30-1 | octadecylamine | | | |
| | OECD 301 F | 70 % | 28 | ECHA |
| | readily biodegradable | | | |
| 90622-57-4 | hydrocarbons, C11-C12, isoalkanes, <2% aromatics | | | |
| | OECD 301 F | 31,3-41,7 % | 28 | Supplier / ECHA |
| | inherently biodegradable | | | |
| 1185-81-5 | stannane, dibutylbis(dodecylthio)- (dibutyltin bis(lauryl mercaptide)) | | | |
| | OECD 301 F | 0 % | 28 | ECHA |
| | under test conditions no biodegradation observed | | | |
| 63843-89-0 | bis(1,2,2,6,6-pentamethyl-4-piperidyl) [[3,5-bis(1,1-dimethylethyl)4-hydroxyphenyl]methyl]butylmalonate | | | |
| | OECD 301 B | 1 % | 28 | Supplier / ECHA |
| | not readily biodegradable | | | |
| 90640-32-7 | amines, C16-18-alkyl | | | |
| | OECD 301 D | 75 % | 28 | ECHA |
| | readily biodegradable | | | |
| 55965-84-9 | reaction mass of 5-chloro-2-methyl-2H-isothiazol-3-one and 2-methyl-2H-isothiazol-3-one (3:1) | | | |
| | OECD 301 B (CO2 Evolution Test) | > 38% | 29 | ECHA |
| | readily biodegradable, but failing 10-day window | | | |
| | OECD 303 A (Activated sludge Units) | > 80% | | Supplier |
| | readily biodegradable | | | |
| | OECD 302 B (Zahn-Wellns Test) | 100% | | Supplier |
| | readily biodegradable | | | |

**12.3. Bioaccumulative potential**

not applicable (Mixtures)

**Partition coefficient n-octanol/water**

| CAS No | Chemical name | Log Pow |
|---|---|---|
| 124-30-1 | octadecylamine | 8,35 |
| 1185-81-5 | stannane, dibutylbis(dodecylthio)- (dibutyltin bis(lauryl mercaptide)) | 3,11 |
| 63843-89-0 | bis(1,2,2,6,6-pentamethyl-4-piperidyl) [[3,5-bis(1,1-dimethylethyl)4-hydroxyphenyl]methyl]butylmalonate | 10,03 |
| 90640-32-7 | amines, C16-18-alkyl | 4,33 |
| 55965-84-9 | reaction mass of 5-chloro-2-methyl-2H-isothiazol-3-one and 2-methyl-2H-isothiazol-3-one (3:1) | 0,401 |

**BCF**

| CAS No | Chemical name | BCF | Species | Source |
|---|---|---|---|---|
| 124-30-1 | octadecylamine | > 500 | | Supplier |
| 63843-89-0 | bis(1,2,2,6,6-pentamethyl-4-piperidyl) [[3,5-bis(1,1-dimethylethyl)4-hydroxyphenyl]methyl]butylmalonate | 49,3-437,1 | Cyprinus carpio | Supplier / ECHA |
| 90640-32-7 | amines, C16-18-alkyl | 173 | | ECHA |
| 55965-84-9 | reaction mass of 5-chloro-2-methyl-2H-isothiazol-3-one and 2-methyl-2H-isothiazol-3-one (3:1) | 54 | Lepomis macrochirus | ECHA |

**12.4. Mobility in soil**

Surface tension:

See under section 9.1 - Information on basic physical and chemical properties.

Distribution:

Water-air (volatility rate, Henry-constant):

not applicable (Mixtures)

No data available (Substances/Ingredient)

Soil-Water (Adsorption coefficient):

not applicable (Mixtures)

No data available (Substances/Ingredient)

Soil-Air (volatility rate):

not applicable (Mixtures)

No data available (Substances/Ingredient)

**12.5. Results of PBT and vPvB assessment**

The substances in the mixture do not meet the PBT/vPvB criteria according to UK REACH.

The substances in the mixture do not meet the PBT/vPvB criteria according to REACH, annex XIII.

**12.6. Endocrine disrupting properties**

This product does not contain a substance that has endocrine disrupting properties with respect to non-target organisms as no components meets the criteria.

Endocrine disrupting potential (Environment):

not relevant

**12.7. Other adverse effects**

Ozone depletion potential (ODP):

No data available (Substances/Ingredient)

Photochemical ozone creation potential (POCP):

No data available (Substances/Ingredient)

Global warming potential (GWP):

No data available (Substances/Ingredient)

Endocrine disrupting potential

No data available

AOX: The product contains organic halogens.

## SECTION 13: Disposal considerations

**13.1. Waste treatment methods**

**Disposal recommendations**

Waste treatment options:
Transfer to an emulsion fission reactor or an emulsion evaporation system, observing official regulations.

Dispose of waste according to applicable legislation.
Waste disposal according to directive 2008/98/EC, covering waste and dangerous waste.
Properties of waste which render it hazardous:
Irritant — skin irritation and eye damage
Ecotoxic

Evidence for disposal must be provided.
Consult the appropriate local waste disposal expert about waste disposal.
Waste for recycling is to be classified and labelled.
For recycling, contact recycling exchanges.
May not be disposed or deposited together with domestic garbage.
Do not mix with other wastes.
Do not flush into surface water or sanitary sewer system.
Do not dispose of waste into sewer.
Before discharge in public drains (e.g. residues of washing- and rinsing liquids) please observe the relevant regulations. In case of further questions please contact your waste- or environmental representative or the responsible authority.
Clean IBCs or drums at approved facility only.
The waste producer is resposible for correct coding and designation of his wastes.
The allocation of waste identity numbers/waste descriptions must be carried out according to the EEC, specific to the industry and process.
List of proposed waste codes/waste designations in accordance with EWC:

**List of Wastes Code - residues/unused products**

070201 WASTES FROM ORGANIC CHEMICAL PROCESSES; wastes from the MFSU of plastics, synthetic rubber and man-made fibres; aqueous washing liquids and mother liquors; hazardous waste

**List of Wastes Code - used product**

070201 WASTES FROM ORGANIC CHEMICAL PROCESSES; wastes from the MFSU of plastics, synthetic rubber and man-made fibres; aqueous washing liquids and mother liquors; hazardous waste

**List of Wastes Code - contaminated packaging**

150110 WASTE PACKAGING; ABSORBENTS, WIPING CLOTHS, FILTER MATERIALS AND PROTECTIVE CLOTHING NOT OTHERWISE SPECIFIED; packaging (including separately collected municipal packaging waste); packaging containing residues of or contaminated by hazardous substances; hazardous waste

**Contaminated packaging**

Other disposal recommendations:
Contaminated packages must be completely emptied and can be re-used following proper cleaning.
Cleaning by recycling company.
Recommended cleansing agent:
Clean with detergents. Avoid solvent cleaners.

Handle contaminated packages in the same way as the substance itself.
Non-contaminated packages may be recycled.
Packing which cannot be properly cleaned must be disposed of.
As well uncleaned (empty) containers remain contaminated by product residues and may be hazardous by vapours.
They have to be disposed by specialists or have to be supplied to a licensed reconditioning.
The conditions of the regional reconditioning companies have to be observed.

## SECTION 14: Transport information

**Land transport (ADR/RID)**

| | |
|---|---|
| **14.1. UN number or ID number:** | UN3082 |
| **14.2. UN proper shipping name:** | ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Alkyl amines) |
| **14.3. Transport hazard class(es):** | 9 |
| **14.4. Packing group:** | III |
| Hazard label: | 9 |




| | |
|---|---|
| Classification code: | M6 |
| Special Provisions: | 274 335 375 601 |
| Limited quantity: | 5 L |
| Excepted quantity: | E1 |
| Transport category: | 3 |
| Hazard No: | 90 |
| Tunnel restriction code: | - |

**Other applicable information (land transport)**

Provision(s), multilateral agreement(s): Not applicable

Maximum permissible total quantity per unit of carriage according to subsection 1.1.3.6 ADR/RID: 1000 L.
Factor out of category of carriage (= 3) to calculate the quantity per unit of carriage: 1.

**Inland waterways transport (ADN)**

**Other applicable information (inland waterways transport)**

Not classified for this transport carrier.

**Marine transport (IMDG)**

| | |
|---|---|
| **14.1. UN number or ID number:** | UN3082 |
| **14.2. UN proper shipping name:** | ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Alkyl amines) |
| **14.3. Transport hazard class(es):** | 9 |
| **14.4. Packing group:** | III |
| Hazard label: | 9 |




| | |
|---|---|
| Marine pollutant: | P |
| Special Provisions: | 274, 335, 969 |
| Limited quantity: | 5 L |
| Excepted quantity: | E1 |
| EmS: | F-A, S-F |
| Segregation group: | IMDG-Code segregation group not applicable |

**Other applicable information (marine transport)**

Exception(s): Not applicable

**Air transport (ICAO-TI/IATA-DGR)**

| | |
|---|---|
| **14.1. UN number or ID number:** | UN3082 |
| **14.2. UN proper shipping name:** | ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Alkyl amines) |
| **14.3. Transport hazard class(es):** | 9 |
| **14.4. Packing group:** | III |
| Hazard label: | 9 |




| | |
|---|---|
| Special Provisions: | A97 A158 A197 |
| Limited quantity Passenger: | 30 kg G |
| Passenger LQ: | Y964 |
| Excepted quantity: | E1 |
| IATA-packing instructions - Passenger: | 964 |
| IATA-max. quantity - Passenger: | 450 L |
| IATA-packing instructions - Cargo: | 964 |
| IATA-max. quantity - Cargo: | 450 L |

**Other applicable information (air transport)**

ERG Kodex: 9L

The state variations in chapter 2.8.1 and the operator variations in chapter 2.8.3 for shipping of dangerous goods in limited quantities according to chapter 2.7 of the valid ICAO/IATA Dangerous Goods Regulations have to be observed.

The rulings for dangerous goods by air mail according to chapter 2.4 of the valid ICAO/IATA Dangerous Goods Regulations and the conventions of the Universal Postal Union (UPU) as well as the clauses of the relevant National Postal Administation have to be observed. Airmail: prohibited.

**14.5. Environmental hazards**

ENVIRONMENTALLY HAZARDOUS: Yes



Danger releasing substance: Alkyl amines

**14.6. Special precautions for user**

Further information see under section 6, 7, 8.

**14.7. Maritime transport in bulk according to IMO instruments**

No bulk transport in accordance with IBC code.
It is sold exclusively in traffic legally authorized and appropriate packaging.

**Other applicable information**

Postal, express and courier services:
Postal service (national):
Refer to your National Postal Administation.
Express freight / special delivery:
Refer to your National Postal Administation.
Courier service (national):
The general conditions of business of the particular courier service have to be observed.

## SECTION 15: Regulatory information

**15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture**

**EU regulatory information**

Restrictions on use (REACH, annex XVII):
Entry 3, Entry 20, Entry 75

2010/75/EU (VOC): 3 % (32 g/l)

**Additional information**

Authorisations and/or restrictions on use:
Authorisations:
Authorisation of Chemicals (REACH) as regards Annex XIV:
not relevant

Restrictions on use:
Restriction of chemicals (REACH) as regards annex XVII:
No. 20 - organo-tin compounds

Informations on Regulation (EC) No. 1272/2008 - Annex VI, Part 1:
Note P is valid: The harmonised classification as a carcinogen or mutagen applies unless it can be shown that the substance contains less than 0,1 % w/w benzene (Einecs No 200-753-7), in which case a classification in accordance with Title II of this Regulation shall be performed also for those hazard classes. Where the substance is not classified as a carcinogen or mutagen, at least the precautionary statements (P102-)P260-P262-P301 + P310-P331 shall apply.

Other regulations (EU):
Regulation (EC) No. 1005/2009 - Substances that deplete the ozone layer:
not relevant
Regulation (EC) No. 648/2004 and No 907/2006 - Detergents:
not relevant
Regulation (EC) No. 649/2012 - Export and import of dangerous chemicals:
not relevant
Regulation (EU) 2019/1021 - Persistent organic pollutants:
not relevant
Regulation (EC) No. 428/2009 and No. 388/2012 and No. 1382/2014 - Control of exports, or transfer, brokering and transit of dual-use goods (Dual-Use Regulation):
not relevant
Regulation (EC) No. 273/2004 - Drug precursors:
not relevant
Regulation (EC) No. 111/2005 - Definition of rules for the monitoring of trade in drug precursors between the Union and third countries:
not relevant
Directive 2012/18/EC - Control of major accident hazards involving dangerous substances (Seveso III):
ANNEX I, PART 1 (Categories of dangerous substances):
E2 (ENVIRONMENTAL HAZARDS) - Hazardous to the Aquatic Environment in Category Chronic 2 (Column 1)
Quantities: > 200.000 kg (Column 2) /> 500.000 kg (Column 3)
Directive 2004/42/EC - Use of organic solvents in certain paints and lacquers:
not relevant
Directive 2010/75/EU - Industrial Emissions Directive (Directive IE) - succession to Directive 1999/13/EC - Limitation of emissions of volatile organic compounds (VOC-Directive):
When using this substance / mixture it has to be checked whether the activities are subject to the the requirements of IE-RL, Chapter V (installations and activities with the use of organic solvents - VOC).
Aerosol Directive (75/324/):
not relevant
Biocide directive (98/8/EC):
not relevant
Regulation (EU) No. 528/2012 on biocides:
In accordance with Regulation (EU) No. 528/2012 on biocides
This product is a with biocidal products treated article.

Observe in addition any national regulations!

EC-Chemical inventories: All ingredients are listed in EINECS / ELINCS or excepted from listing.

**National regulatory information**

| | |
|---|---|
| Employment restrictions: | Observe restrictions to employment for juveniles according to the 'juvenile work protection guideline' (94/33/EC). Observe employment restrictions under the Maternity Protection Directive (92/85/EEC) for expectant or nursing mothers. |

**Additional information**

Other regulations, restrictions and prohibition regulations:

European product inventories (Registration status on mixtures):
Kemikalieinspektionen / Produktregistret / Swedish Chemicals Inspectorate - KemI (http://www.kemi.se):
This product was not registered.
Schweizerische Eidgenossenschaft - Bundesamt für Gesundheit - BAG (http://www.bag.admin.ch) / Anmeldestelle Chemikalien (http://www.cheminfo.ch) / Informationssystem für gefährliche und umweltrelevante Stoffe - IGS (http://igs.naz.ch/index.html):
This product was not registered.

International chemical inventories (Registration status on substances): No data available

A downstream user chemical safety assessment according to REACH (article 37.4) was performed for the following substance(s):
amines, C16-18-alkyl, EC-No.: 292-550-5
octadecylamine, EC-No.: 204-695-3

Links to the annexed exposure scenarios (ES) according to REACH (article 31.7):
Short title: Manufacture of plastics products, including compounding and conversation (industrial application).
PFA-DU-ES2
ODA-DU-ES2
Short title: Manufacture of plastics products, including compounding and conversation (professional application).
PFA-DU-ES4
ODA-DU-ES4

**15.2. Chemical safety assessment**

For the following substances of this mixture a chemical safety assessment has been carried out:
octadecylamine
hydrocarbons, C11-C12, isoalkanes, <2% aromatics
bis(1,2,2,6,6-pentamethyl-4-piperidyl) [[3,5-bis(1,1-dimethylethyl)4-hydroxyphenyl]methyl]butylmalonate
amines, C16-18-alkyl

## SECTION 16: Other information

**Changes**

This version replaces all former issues.

Changes made in this revision see section: 3, 11, 12, 15, 16.

**Abbreviations and acronyms**

ADN: European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways.
ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road.
ATE: Acute Toxicity Estimate.
CAS: Chemical Abstracts Service.
CEN: Comité Européen de Normalisation (European Committee for Standardisation).
CLP: Classification Labelling Packaging Regulation; Regulation (EC) No 1272/2008.
CSA: Chemical Safety Assessment.
CSR: Chemical Safety Report.
C&L: Classification & Labeling.
DNEL: Derived No-Effect Level.
EAK: European Waste Catalogue (replaced by LoW – see below).
EC50: Effective concentration, 50 percent.
ECHA: European Chemicals Agency.
EC: European community.

EINECS: European Inventory of Existing Commercial Chemical Substances.
ELINCS: European List of Notified Chemical Substances.
EN: European standard.
EWC: European Economic Community.
EEA: European Economic Area (EU + Iceland, Liechtenstein and Norway).
EU: European Union.
GHS: Globally Harmonized System of Classification and Labelling of Chemicals.
HSPA: Hydrocarbon Solvents Producers Association.
IATA-DGR: International Air Transport Association Dangerous Goods Regulations.
IBC-Code: International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk (International Bulk Chemical Code).
IC50 / ErC50: Inhibitory concentration, 50 percent.
ICAO-TI: International Cicil Aviation Organization Technical Instruction.
IMDG: International Maritime Dangerous Goods.
ISO: A standard of International Standards Organisation.
IUPAC: International Union for Pure and Applied Chemistry.
LC50: Lethal concentration, 50 percent.
LD50: Lethal Dose, 50 percent.
log Kow (Pow): octanol-water partition coefficient.
LoW: List of Wastes (see http://ec.europa.eu/environment/waste/framework/list.htm).
LQ: Limited Quantities.
MARPOL: Maritime Pollution Convention (Convention for the Prevention of Pollution from Ships).
OC: Operational Conditions.
OECD: Organisation for Economic Co-operation and Development.
OSHA: Occupational Safety and Health Agency.
PBT: Persistent, bioaccumulabe and toxic.
PEC: Predicted Effect Concentration.
PNEC: Predicted No-Effect Concentration.
PPE: Personal Protection Equipment.
(Q)SAR: Quantitative-Structure-Activity-Relationship.
REACH: Registration, Evaluation, Authorisation and Restriction of Chemicals; Regulation (EC) No 1907/2006.
RID: Regulations concerning the International Carriage of Dangerous Goods by Rail.
RMM: Risk Management Measure.
SVHC: Substances of Very High Concern.
STOT - RE: Specific Target Organ Toxicity - Repeated Exposure.
STOT - SE: Specific Target Organ Toxicity - Single Exposure.
UN: United Nations.
UVCB: Substances of Unknown or Variable composition, Complex reaction products or Biological materials.
vPvB: Very persistent and very bioaccumulable.
WoE: Weight of Evidence.

For abbreviations and acronyms, see table at http://abbrev.esdscom.eu

**Classification for mixtures and used evaluation method according to GB CLP Regulation**

| Classification | Classification procedure |
|---|---|
| Eye Irrit. 2; H319 | Calculation method |
| Aquatic Chronic 2; H411 | Calculation method |

**Relevant H and EUH statements (number and full text)**

| | |
|---|---|
| H301 | Toxic if swallowed. |
| H302 | Harmful if swallowed. |
| H304 | May be fatal if swallowed and enters airways. |
| H310 | Fatal in contact with skin. |
| H312 | Harmful in contact with skin. |
| H314 | Causes severe skin burns and eye damage. |
| H315 | Causes skin irritation. |
| H317 | May cause an allergic skin reaction. |
| H318 | Causes serious eye damage. |
| H319 | Causes serious eye irritation. |

| | |
|---|---|
| H330 | Fatal if inhaled. |
| H341 | Suspected of causing genetic defects. |
| H360FD | May damage fertility. May damage the unborn child. |
| H372 | Causes damage to organs through prolonged or repeated exposure. |
| H373 | May cause damage to organs through prolonged or repeated exposure. |
| H400 | Very toxic to aquatic life. |
| H410 | Very toxic to aquatic life with long lasting effects. |
| H411 | Toxic to aquatic life with long lasting effects. |
| H413 | May cause long lasting harmful effects to aquatic life. |
| EUH066 | Repeated exposure may cause skin dryness or cracking. |
| EUH071 | Corrosive to the respiratory tract. |
| EUH208 | Contains stannane, dibutylbis(dodecylthio)- (dibutyltin bis(lauryl mercaptide)); reaction mass of 5 -chloro-2-methyl-2H-isothiazol-3-one and 2-methyl-2H-isothiazol-3-one (3:1). May produce an allergic reaction. |

**Further Information**

Full text of all R-, H-, EUH-phrases which are referred to in section 2 and 3 of this safety data sheet - see previous list.
These (this) R-, H-, EUH-phrases/R-, H-, EUH-phrase apply/applies to the substance(s) of content, however, it does not necessarily show the classification of the product.

Key literature references and sources for data:
The classification corresponds to current EC-lists, but is completed by statements of technical literature and company data.

Other public accessible sources:
Regulation (EC) No. 1907/2006 (REACH) in the valid version in each case
Regulation (EC) No. 1272/2008 (CLP) in the valid version in each case

Further information and practical guides on the internet:
European Chemicals Agency - ECHA (http://echa.europa.eu)
ECHA - Information on Chemicals (http://echa.europa.eu/information-on-chemicals)
ECHA - Candidate List of Substances of Very High Concern for Authorisation (http://echa.europa.eu/de/candidate-list-table)
ECHA - List of restrictions table (http://echa.europa.eu/de/addressing-chemicals-of-concern/restrictions/list-of-restrictions/list-of-restrictions-table)
ECHA - Authorisation List (http://echa.europa.eu/hr/addressing-chemicals-of-concern/authorisation/recommendation-for-inclusion-in-the-authorisation-list/authorisation-list)
ECHA - C&L Inventory (http://echa.europa.eu/en/web/guest/regulations/clp/cl-inventory)
eChemPortal (http://www.echemportal.org)
The access to European Union law - EUR-Lex (http://eur-lex.europa.eu)
Health and Safety Executive (http://www.hse.gov.uk) / Control of Substances Hazardous to Health Regulations - COSHH (http://www.coshh-essentials.org.uk/Home.asp)
Pollution Prevention and Control Act and Pollution Prevention and Control Regulations

Recommended restriction of application:
See under section 1.2 - Uses advised against.
Use this product only for intended purpose in accordance with our product informations.
Please refer to our internet website for more information (http://www.acmos.com).

Training advice:
Yearly briefing and instruction of employees by means of operating instructions according to article 8 of EC-directive 98/24/EC.

Inquiry office: Laboratory (Division: Occupational- /Product security)
Contact person: Mr. Dryhaus (Telephone: +49-421-5189-0, Telefax: +49-421-5189-871)
Office hours: Mo - Th from 7.30 - 16.15 h and Fr from 7.30 - 13.30 h. Out of office hours no call diversion.

Disclaimer:

The information is based on the present level of our knowledge. It does not, however, give assurance of product properties and establishes no contract legal rights. The information contained herein are, to our knowledge at the time of their creation to be correct and been taken from sources deemed to be reliable. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release The receiver of our product is singularly responsible for adhering to existing laws and regulations. All descriptions are approximate values, they are not specified for construction of specifications. This safety data sheet does not represent any operating instruction according to national chemical regulations. It may be used for creation, but must not replace it. The employer is not relieved from his duties. All technical information to occupational protection are directed predominately to experts first (safety engineers, occupational medicines).

**Identified uses**

| No | Short title | LCS | SU | PC | PROC | ERC | AC | TF | Specification |
|---|---|---|---|---|---|---|---|---|---|
| 1 | Manufacture of plastics products, including compounding and conversion (industrial application) | IS | 12 | 24 | 7, 9, 10 | 4 | - | - | PFA-DU-ES2 |
| 2 | Manufacture of plastics products, including compounding and conversion (professional application) | PW | - | - | 9, 10, 11 | 4 | - | - | PFA-DU-ES4 |
| 3 | Manufacture of plastics products, including compounding and conversion (industrial application) | IS | 12 | 24 | 7, 9, 10 | 4 | - | - | ODA-DU-ES2 |
| 4 | Manufacture of plastics products, including compounding and conversion (professional application) | PW | - | - | 9, 10, 11 | 4 | - | - | ODA-DU-ES4 |

LCS: Life cycle stages
SU: Sectors of use
PC: Product categories
PROC: Process categories
ERC: Environmental release categories
AC: Article categories
TF: Technical functions

# APPENDIX V
# POLYURETHANE (PU) FOAM (JLR DEFENDER SEATS) SDS

We create chemistry

# Safety data sheet



BASF Safety data sheet according to Regulation UK SI 2019/758 and UK SI 2020/1577 as amended from time to time.
Date / Revised: 19.12.2022 Version: 8.0
Date previous version: 22.07.2020 Previous version: 7.0
Date / First version: 20.05.2009
Product: **Elastoflex* W 5516/131 Polyol component**
(ID no. 30471878/SDS_GEN_GB/EN)
Date of print 18.07.2023

## SECTION 1: Identification of the substance/mixture and of the company/undertaking

### 1.1. Product identifier

# Elastoflex* W 5516/131 Polyol component

### 1.2. Relevant identified uses of the substance or mixture and uses advised against

Recommended use: polyurethane component

### 1.3. Details of the supplier of the safety data sheet

Company:
BASF SE
67056 Ludwigshafen
GERMANY

Contact address:
BASF plc
4th and 5th Floors, 2 Stockport Exchange
Railway Road, Stockport, SK1 3GG
UNITED KINGDOM

Telephone: +44 161 475 3000
E-mail address: product-safety-uk-and-ireland@basf.com

### 1.4. Emergency telephone number

International emergency number:
Telephone: +49 180 2273-112

## SECTION 2: Hazards Identification

### 2.1. Classification of the substance or mixture

For the classification of the mixture the following methods have been applied: extrapolation on the concentration levels of the hazardous substances, on basis of test results and after evaluation of experts. The methodologies used are mentioned at the respective test results.

According to GB-CLP Regulations UK SI 2019/720 and UK SI 2020/1567

No need for classification according to GHS criteria for this product.

### 2.2. Label elements

According to GB-CLP Regulations UK SI 2019/720 and UK SI 2020/1567

The product does not require a hazard warning label in accordance with GHS criteria.

Labeling of special preparations (GHS):
EUH208: May produce an allergic reaction. Contains: 3-aminopropyldimethylamine; N,N-dimethyl-1,3-diaminopropane

### 2.3. Other hazards

According to GB-CLP Regulations UK SI 2019/720 and UK SI 2020/1567

See section 12 - Results of PBT and vPvB assessment.

Product does not contain a substance above legal limits included in the list established in accordance with Article 59(1) of Regulation (EC) No 1907/2006 for having endocrine disrupting properties or is identified to have endocrine disrupting properties in accordance with the criteria set out in Commission Delegated Regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605.

## SECTION 3: Composition/Information on Ingredients

### 3.1. Substances

Not applicable

### 3.2. Mixtures

Chemical nature

Preparation based on: polyol, catalyst, stabilizer, additives

Hazardous ingredients (GHS)

3-aminopropyldimethylamine; N,N-dimethyl-1,3-diaminopropane

| | |
|---|---|
| Content (W/W): >= 0.1 % - < 1 % | Flam. Liq. 3 |
| CAS Number: 109-55-7 | Acute Tox. 4 (oral) |
| EC-Number: 203-680-9 | Acute Tox. 4 (dermal) |
| REACH registration number: 01-2119486842-27 | Skin Corr./Irrit. 1B |
| | Eye Dam./Irrit. 1 |
| INDEX-Number: 612-061-00-6 | Skin Sens. 1B |
| | STOT SE 3 |
| | H314, H312, H302, H317, H226, H335 |

2,2'-iminodiethanol; diethanolamine

| | |
|---|---|
| Content (W/W): >= 0.1 % - < 1 % | Acute Tox. 4 (oral) |
| CAS Number: 111-42-2 | Skin Corr./Irrit. 2 |
| EC-Number: 203-868-0 | Eye Dam./Irrit. 1 |
| REACH registration number: 01-2119488930-28 | Repr. 2 (fertility) |
| | Repr. 2 (unborn child) |
| INDEX-Number: 603-071-00-1 | STOT RE (Kidney, Liver, Blood, Central nervous system) 2 |
| | H318, H315, H302, H373, H361fd |

For the classifications not written out in full in this section, including the hazard classes and the hazard statements, the full text is listed in section 16.

## SECTION 4: First-Aid Measures

### 4.1. Description of first aid measures

Remove contaminated clothing.

If inhaled:
Keep patient calm, remove to fresh air, seek medical attention.

On skin contact:
Wash thoroughly with soap and water

On contact with eyes:
Wash affected eyes for at least 15 minutes under running water with eyelids held open.

On ingestion:
Immediately rinse mouth and then drink 200-300 ml of water, seek medical attention.

### 4.2. Most important symptoms and effects, both acute and delayed

Symptoms: The most important known symptoms and effects are described in section 2 and/or in section 11.

Hazards: Symptoms can appear later.

### 4.3. Indication of any immediate medical attention and special treatment needed

Treatment: Treat according to symptoms (decontamination, vital functions), no known specific antidote.

## SECTION 5: Fire-Fighting Measures

### 5.1. Extinguishing media
Suitable extinguishing media:
water spray, dry powder, foam, carbon dioxide

### 5.2. Special hazards arising from the substance or mixture
Endangering substances: carbon monoxide, Carbon dioxide, nitrogen oxides
Advice: The substances/groups of substances mentioned can be released in case of fire.

### 5.3. Advice for fire-fighters
Special protective equipment:
Wear a self-contained breathing apparatus.

Further information:
Dispose of fire debris and contaminated extinguishing water in accordance with official regulations.

## SECTION 6: Accidental Release Measures

High risk of slipping due to leakage/spillage of product.

### 6.1. Personal precautions, protective equipment and emergency procedures
Use personal protective clothing. Information regarding personal protective measures, see section 8.

### 6.2. Environmental precautions
Do not empty into drains. Do not discharge into the subsoil/soil.

### 6.3. Methods and material for containment and cleaning up
For large amounts: Pump off product.
For residues: Pick up with suitable absorbent material (e.g. sand, sawdust, general-purpose binder, kieselguhr).
Dispose of absorbed material in accordance with regulations.

### 6.4. Reference to other sections
Information regarding exposure controls/personal protection and disposal considerations can be found in section 8 and 13.

## SECTION 7: Handling and Storage

### 7.1. Precautions for safe handling
Ensure thorough ventilation of stores and work areas.

Protection against fire and explosion:

No special precautions necessary.

### 7.2. Conditions for safe storage, including any incompatibilities

Segregate from foods and animal feeds.

Suitable materials for containers: Carbon steel (Iron), High density polyethylene (HDPE), Low density polyethylene (LDPE), tinned carbon steel (Tinplate), Stainless steel 1.4301 (V2)
Further information on storage conditions: Containers should be stored tightly sealed in a dry place. Information concerning the compliance to the Packaging (Essential Requirements) Regulations 1998 and their amendments may be obtained from the manufacturer.

Storage stability:
Protect against moisture.

### 7.3. Specific end use(s)

For the relevant identified use(s) listed in Section 1 the advice mentioned in this section 7 is to be observed.

## SECTION 8: Exposure Controls/Personal Protection

### 8.1. Control parameters

Components with occupational exposure limits

111-42-2: 2,2'-iminodiethanol

Components with PNEC

109-55-7: 3-aminopropyldimethylamine
freshwater: 0.0728 mg/l
marine water: 0.00728 mg/l
intermittent release: 0.34 mg/l
sediment (freshwater): 0.735 mg/kg
sediment (marine water): 0.0735 mg/kg
soil: 0.104 mg/kg
STP: 10 mg/l
oral (secondary poisoning):
No PNEC oral derived, as accumulation in organisms is not to be expected.

111-42-2: 2,2'-iminodiethanol
freshwater: 0.02 mg/l
marine water: 0.002 mg/l
intermittent release: 0.095 mg/l
sediment (freshwater): 0.092 mg/kg
sediment (marine water): 0.0092 mg/kg
soil: 1.63 mg/kg
STP: 100 mg/l
oral (secondary poisoning): 1.04 mg/kg

Components with DNEL

109-55-7: 3-aminopropyldimethylamine
worker: Long-term exposure - systemic and local effects, Inhalation: 1.2 mg/m3

111-42-2: 2,2'-iminodiethanol
worker: Long-term exposure - local effects, Inhalation: 0.5 mg/m3
worker: Long-term exposure- systemic effects, Inhalation: 0.75 mg/m3
worker: Long-term exposure- systemic effects, dermal: 0.13 mg/kg
consumer: Long-term exposure - systemic and local effects, Inhalation: 0.125 mg/m3
consumer: Long-term exposure- systemic effects, dermal: 0.07 mg/kg
consumer: Long-term exposure- systemic effects, oral: 0.06 mg/kg

### 8.2. Exposure controls

Personal protective equipment

Respiratory protection:
Respiratory protection in case of vapour/aerosol release. (Particle filter EN 143 P2 or FFP2)

Hand protection:
Suitable chemical resistant safety gloves (EN ISO 374-1) also with prolonged, direct contact (Recommended: Protective index 6, corresponding > 480 minutes of permeation time according to EN ISO 374-1): E.g. nitrile rubber (0.4 mm), chloroprene rubber (0.5 mm), butyl rubber (0.7 mm) etc.

Eye protection:
Safety glasses with side-shields (frame goggles) (e.g. EN 166)

Body protection:
Body protection must be chosen depending on activity and possible exposure, e.g. apron, protecting boots, chemical-protection suit (according to EN 14605 in case of splashes or EN ISO 13982 in case of dust).

General safety and hygiene measures
Wearing of closed work clothing is required additionally to the stated personal protection equipment. Avoid contact with the skin, eyes and clothing. When using, do not eat, drink or smoke. Hands and/or face should be washed before breaks and at the end of the shift. At the end of the shift the skin should be cleaned and skin-care agents applied.

Environmental exposure controls
For information regarding environmental exposure controls, see Section 6.

## SECTION 9: Physical and Chemical Properties

### 9.1. Information on basic physical and chemical properties

Form: liquid

| | | |
|---|---|---|
| Colour: | yellowish | |
| Odour: | amine-like | |
| Odour threshold: | not applicable | |
| pH value: | approx. 6 - 8<br>(20 °C) | |
| solidification temperature: | < 0 °C | |
| Boiling point: | > 150 °C | |
| Flash point: | > 150 °C | (DIN 51758) |
| Evaporation rate: | Value can be approximated from Henry's Law Constant or vapor pressure. | |
| Flammability: | not flammable | (derived from flash point) |
| Lower explosion limit: | For liquids not relevant for classification and labelling., The lower explosion point may be 5 - 15 °C below the flash point. | |
| Upper explosion limit: | For liquids not relevant for classification and labelling. | |
| Ignition temperature: | > 250 °C | |
| Vapour pressure: | < 10 mbar<br>(20 °C) | |
| Density: | 1.02 g/cm3<br>(20 °C) | (DIN 51757) |
| Relative density: | > 1.0<br>(20 °C) | |
| Relative vapour density (air): | not applicable | |
| Solubility in water: | partly soluble | |
| Partitioning coefficient n-octanol/water (log Kow): | not applicable for mixtures, Study scientifically not justified. | |
| Self ignition: | not self-igniting | |
| Thermal decomposition: | No decomposition if stored and handled as prescribed/indicated. | |
| Viscosity, dynamic: | not determined | |
| Viscosity, kinematic: | not determined | |
| Fire promoting properties: | not fire-propagating | |

## 9.2. Other information

| | |
|---|---|
| Self heating ability: | It is not a substance capable of spontaneous heating according to UN transport regulations class 4.2. |

| | |
|---|---|
| SADT: | Not a substance liable to self-decomposition according to UN transport regulations, class 4.1. |
| Radioactivity: | not radioactive for transport purposes |
| Miscibility with water: | partly miscible |

Other Information:
If necessary, information on other physical and chemical parameters is indicated in this section.

## SECTION 10: Stability and Reactivity

### 10.1. Reactivity
No hazardous reactions if stored and handled as prescribed/indicated.

| | | |
|---|---|---|
| Corrosion to metals: | No corrosive effect on metal. | |
| Reactions with water/air: | Reaction with: | water |
| | Flammable gases: | no |
| | Toxic gases: | no |

### 10.2. Chemical stability
The product is chemically stable.

| | |
|---|---|
| Peroxides: | The product does not contain peroxides. The product/the substance has not a tendency towards the formation of peroxide. |

### 10.3. Possibility of hazardous reactions
No hazardous reactions if stored and handled as prescribed/indicated.
The product is chemically stable.

### 10.4. Conditions to avoid
Temperature: < 0 °C
See SDS section 7 - Handling and storage.

### 10.5. Incompatible materials

Substances to avoid:
acids, oxidizing agents, isocyanates

### 10.6. Hazardous decomposition products

No hazardous decomposition products if stored and handled as prescribed/indicated.

## SECTION 11: Toxicological Information

### 11.1. Information on toxicological effects

Acute toxicity

Assessment of acute toxicity:
Virtually nontoxic after a single skin contact. Virtually nontoxic by inhalation. Virtually nontoxic after a single ingestion.

Irritation

Assessment of irritating effects:
Not irritating to the eyes. Not irritating to the skin.

Respiratory/Skin sensitization

Assessment of sensitization:
May produce an allergic reaction.

*Information on: 3-aminopropyldimethylamine; N,N-dimethyl-1,3-diaminopropane*
*Experimental/calculated data:*
*Mouse Local Lymph Node Assay (LLNA) mouse: skin sensitizing*
---

Germ cell mutagenicity

Assessment of mutagenicity:
The chemical structure does not suggest a specific alert for such an effect.

Carcinogenicity

Assessment of carcinogenicity:
The chemical structure does not suggest a specific alert for such an effect.

Reproductive toxicity

Assessment of reproduction toxicity:
The chemical structure does not suggest a specific alert for such an effect.

Developmental toxicity

Assessment of teratogenicity:
The chemical structure does not suggest a specific alert for such an effect.

Specific target organ toxicity (single exposure)

Assessment of STOT single:
Based on the available information there is no specific target organ toxicity to be expected after a single exposure.

Repeated dose toxicity and Specific target organ toxicity (repeated exposure)

Assessment of repeated dose toxicity:
Repeated dermal uptake of the substance did not cause substance-related effects. Repeated inhalative uptake of the substance did not cause substance-related effects. Repeated oral uptake of the substance did not cause substance-related effects.

Aspiration hazard

No aspiration hazard expected.

Other relevant toxicity information

The product has not been tested. The statement has been derived from substances/products of a similar structure or composition.

## SECTION 12: Ecological Information

### 12.1. Toxicity

Assessment of aquatic toxicity:
There is a high probability that the product is not acutely harmful to aquatic organisms.

### 12.2. Persistence and degradability

Assessment biodegradation and elimination (H2O):
Poorly biodegradable.

Elimination information:
Poorly biodegradable.

### 12.3. Bioaccumulative potential

Assessment bioaccumulation potential:
Does not significantly accumulate in organisms.

### 12.4. Mobility in soil

Assessment transport between environmental compartments:
Adsorption in soil: Adsorption to solid soil phase is not expected.

### 12.5. Results of PBT and vPvB assessment

According to Annex XIII of Regulation (EC) No.1907/2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH): The product does not contain a substance fulfilling the PBT (persistent/bioaccumulative/toxic) criteria.

### 12.6. Other adverse effects

The product does not contain substances that are listed in Regulation (EC) 1005/2009 on substances that deplete the ozone layer.

### 12.7. Additional information

Adsorbable organically-bound halogen (AOX):
This product contains no organically-bound halogen.

Other ecotoxicological advice:
Inhibition of degradation activity in activated sludge is not to be anticipated during correct introduction of low concentrations. Do not allow to enter soil, waterways or waste water channels. The product has not been tested. The statement has been derived from substances/products of a similar structure or composition.

## SECTION 13: Disposal Considerations

### 13.1. Waste treatment methods

Incinerate in suitable incineration plant, observing local authority regulations.
The UK Environmental Protection (Duty of Care) Regulations (EP) and amendments should be noted (United Kingdom).

Waste key:
07 02 08¤ other still bottoms and reaction residues

Contaminated packaging:
Contaminated packaging should be emptied as far as possible; then it can be passed on for recycling after being thoroughly cleaned.

## SECTION 14: Transport Information

**Land transport**

ADR

| | |
|---|---|
| | Not classified as a dangerous good under transport regulations |
| UN number or ID number: | Not applicable |
| UN proper shipping name: | Not applicable |
| Transport hazard class(es): | Not applicable |
| Packing group: | Not applicable |
| Environmental hazards: | Not applicable |
| Special precautions for user | None known |

RID

| | |
|---|---|
| | Not classified as a dangerous good under transport regulations |
| UN number or ID number: | Not applicable |
| UN proper shipping name: | Not applicable |
| Transport hazard class(es): | Not applicable |
| Packing group: | Not applicable |
| Environmental hazards: | Not applicable |
| Special precautions for user | None known |

**Inland waterway transport**

ADN

| | |
|---|---|
| | Not classified as a dangerous good under transport regulations |
| UN number or ID number: | Not applicable |
| UN proper shipping name: | Not applicable |
| Transport hazard class(es): | Not applicable |
| Packing group: | Not applicable |
| Environmental hazards: | Not applicable |
| Special precautions for user: | None known |

Transport in inland waterway vessel

Not evaluated

**Sea transport**

IMDG

| | |
|---|---|
| | Not classified as a dangerous good under transport regulations |
| UN number or ID number: | Not applicable |
| UN proper shipping name: | Not applicable |
| Transport hazard class(es): | Not applicable |
| Packing group: | Not applicable |
| Environmental hazards: | Not applicable |
| Special precautions for user | None known |

**Air transport**

IATA/ICAO

| | |
|---|---|
| | Not classified as a dangerous good under transport regulations |
| UN number or ID number: | Not applicable |
| UN proper shipping name: | Not applicable |
| Transport hazard class(es): | Not applicable |
| Packing group: | Not applicable |

| | |
|---|---|
| Environmental hazards: | Not applicable |
| Special precautions for user | None known |

### 14.1. UN number or ID number
See corresponding entries for “UN number or ID number” for the respective regulations in the tables above.

### 14.2. UN proper shipping name
See corresponding entries for “UN proper shipping name” for the respective regulations in the tables above.

### 14.3. Transport hazard class(es)
See corresponding entries for “Transport hazard class(es)” for the respective regulations in the tables above.

### 14.4. Packing group
See corresponding entries for “Packing group” for the respective regulations in the tables above.

### 14.5. Environmental hazards
See corresponding entries for “Environmental hazards” for the respective regulations in the tables above.

### 14.6. Special precautions for user
See corresponding entries for “Special precautions for user” for the respective regulations in the tables above.

### 14.7. Maritime transport in bulk according to IMO instruments

Maritime transport in bulk is not intended.

## SECTION 15: Regulatory Information

### 15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

Prohibitions, Restrictions and Authorizations

Restrictions of Regulation (EC) No 1907/2006, Annex XVII, do not apply for the intended use(s) of the product given in this SDS.

Directive 2012/18/EU - Control of Major Accident Hazards involving dangerous substances (EU):
Listed in above regulation: no

If it is intended to use materials for the manufacture of consumer goods (e. g. products which will come into contact with foodstuffs or with the skin, toys) or medical products, national and international regulations have to be observed. Where no regulations exist, consumer goods or

medical products must at least comply with European legislation. We recommend contacting our Sales and our Product Safety departments.

The data should be considered when making any assessment under the Control of Substances Hazardous to Health Regulations (COSHH), and related guidance, for example, 'COSHH Essentials' (United Kingdom).

If other regulatory information applies that is not already provided elsewhere in this safety data sheet, then it is described in this subsection.

### 15.2. Chemical Safety Assessment

Assessment of safe use has been performed for the mixture and the result is documented in section 7 and 8 of the SDS

## SECTION 16: Other Information

For the classification of the mixture the following methods have been applied: extrapolation on the concentration levels of the hazardous substances, on basis of test results and after evaluation of experts.
The methodologies used are mentioned at the respective test results.

Full text of the classifications, including the hazard classes and the hazard statements, if mentioned in section 2 or 3:

| | |
|---|---|
| Flam. Liq. | Flammable liquids |
| Acute Tox. | Acute toxicity |
| Skin Corr./Irrit. | Skin corrosion/irritation |
| Eye Dam./Irrit. | Serious eye damage/eye irritation |
| Skin Sens. | Skin sensitization |
| STOT SE | Specific target organ toxicity — single exposure |
| Repr. | Reproductive toxicity |
| STOT RE | Specific target organ toxicity — repeated exposure |
| H314 | Causes severe skin burns and eye damage. |
| H312 | Harmful in contact with skin. |
| H302 | Harmful if swallowed. |
| H317 | May cause an allergic skin reaction. |
| H226 | Flammable liquid and vapour. |
| H335 | May cause respiratory irritation. |
| H318 | Causes serious eye damage. |
| H315 | Causes skin irritation. |
| H373 | May cause damage to organs (Kidney, Liver, Blood, Central nervous system) through prolonged or repeated exposure. |
| H361fd | Suspected of damaging fertility. Suspected of damaging the unborn child. |

Abbreviations
ADR = The European Agreement concerning the International Carriage of Dangerous Goods by Road. ADN = The European Agreement concerning the International Carriage of Dangerous Goods by Inland waterways. ATE = Acute Toxicity Estimates. CAO = Cargo Aircraft Only. CAS = Chemical Abstract Service. CLP = Classification, Labelling and Packaging of substances and mixtures. DIN = German

national organization for standardization. DNEL = Derived No Effect Level. EC50 = Effective concentration median for 50% of the population. EC = European Community. EN = European Standards. IARC = International Agency for Research on Cancer. IATA = International Air Transport Association. IBC-Code = Intermediate Bulk Container code. IMDG = International Maritime Dangerous Goods Code. ISO = International Organization for Standardization. STEL = Short-Term Exposure Limit. LC50 = Lethal concentration median for 50% of the population. LD50 = Lethal dose median for 50% of the population. TLV = Threshold Limit Value. MARPOL = The International Convention for the Prevention of Pollution from Ships. NEN = Dutch Norm. NOEC = No Observed Effect Concentration. OEL = Occupational Exposure Limit. OECD = Organization for Economic Cooperation and Development. PBT = Persistent, Bioaccumulative and Toxic. PNEC = Predicted No Effect Level. PPM = Parts per million. RID = The European Agreement concerning the International Carriage of Dangerous Goods by Rail. TWA = Time Weight Average. UN-number = UN number at transport. vPvB = very Persistent and very Bioaccumulative.

The data contained in this safety data sheet are based on our current knowledge and experience and describe the product only with regard to safety requirements. This safety data sheet is neither a Certificate of Analysis (CoA) nor technical data sheet and shall not be mistaken for a specification agreement. Identified uses in this safety data sheet do neither represent an agreement on the corresponding contractual quality of the substance/mixture nor a contractually designated use. It is the responsibility of the recipient of the product to ensure any proprietary rights and existing laws and legislation are observed.

We create chemistry

# Safety data sheet



BASF Safety data sheet according to Regulation UK SI 2019/758 and UK SI 2020/1577 as amended from time to time.
Date / Revised: 19.09.2022 Version: 14.0
Date previous version: 12.01.2022 Previous version: 13.0
Date / First version: 05.08.2004
Product: **Iso 145/35 isocyanate component**
(ID no. 30244844/SDS_GEN_GB/EN)
Date of print 18.07.2023

## SECTION 1: Identification of the substance/mixture and of the company/undertaking

### 1.1. Product identifier

# Iso 145/35 isocyanate component

UFI: S3QF-K74K-6003-WKRS

### 1.2. Relevant identified uses of the substance or mixture and uses advised against

Relevant identified uses: Chemical
Uses advised against: Consumer spray applications, Consumer applications requiring temperartures above 40°C, Professional cleaning applications with aprotic polar solvents (meeting the IUPAC definition)
Recommended use: polyurethane component, industrial chemicals

### 1.3. Details of the supplier of the safety data sheet

Company:
BASF SE
67056 Ludwigshafen
GERMANY

Contact address:
BASF plc
4th and 5th Floors, 2 Stockport Exchange
Railway Road, Stockport, SK1 3GG
UNITED KINGDOM

Telephone: +44 161 475 3000
E-mail address: product-safety-uk-and-ireland@basf.com

### 1.4. Emergency telephone number

International emergency number:
Telephone: +49 180 2273-112

## SECTION 2: Hazards Identification

### 2.1. Classification of the substance or mixture

For the classification of the mixture the following methods have been applied: extrapolation on the concentration levels of the hazardous substances, on basis of test results and after evaluation of experts. The methodologies used are mentioned at the respective test results.

According to GB-CLP Regulations UK SI 2019/720 and UK SI 2020/1567

| | |
|---|---|
| Acute Tox. 4 (Inhalation - mist) | H332 Harmful if inhaled. |
| Eye Dam./Irrit. 2 | H319 Causes serious eye irritation. |
| Skin Corr./Irrit. 2 | H315 Causes skin irritation. |
| STOT SE 3 | H335 May cause respiratory irritation. |
| Skin Sens. 1 | H317 May cause an allergic skin reaction. |
| Resp. Sens. 1 | H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled. |
| Carc. 2 | H351 Suspected of causing cancer. |
| STOT RE 2 | H373 May cause damage to organs through prolonged or repeated inhalation exposure. |

For the classifications not written out in full in this section the full text can be found in section 16.

### 2.2. Label elements

According to GB-CLP Regulations UK SI 2019/720 and UK SI 2020/1567

Pictogram:



Signal Word:
Danger

Hazard Statement:

| | |
|---|---|
| H315 | Causes skin irritation. |
| H317 | May cause an allergic skin reaction. |
| H319 | Causes serious eye irritation. |
| H332 | Harmful if inhaled. |
| H334 | May cause allergy or asthma symptoms or breathing difficulties if inhaled. |
| H335 | May cause respiratory irritation. |
| H351 | Suspected of causing cancer. |
| H373 | May cause damage to organs (Respiratory system) through prolonged or repeated exposure (inhalation). |

Precautionary Statements (Prevention):

| | |
|---|---|
| P280 | Wear protective gloves, protective clothing and eye protection or face protection. |
| P284 | In case of inadequate ventilation wear respiratory protection. |

Precautionary Statements (Response):

| | |
|---|---|
| P302 + P352 | IF ON SKIN: Wash with plenty of soap and water. |
| P305 + P351 + P338 | IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. |

Precautionary Statements (Storage):

| | |
|---|---|
| P403 + P233 | Store in a well-ventilated place. Keep container tightly closed. |

Precautionary Statements (Disposal):

| | |
|---|---|
| P501 | Dispose of contents and container to hazardous or special waste collection point. |

Labeling of special preparations (GHS):
**As from 24 August 2023 adequate training is required before industrial or professional use.**
EUH204: Contains isocyanates. May produce an allergic reaction.

Hazard determining component(s) for labelling: Isocyanic acid, polymethylenepolyphenylene ester (P-MDI), Reaction mass of 4,4'-methylenediphenyl diisocyanate and o-(p-isocyanatobenzyl)phenyl isocyanate

### 2.3. Other hazards

According to GB-CLP Regulations UK SI 2019/720 and UK SI 2020/1567

See section 12 - Results of PBT and vPvB assessment.

Product does not contain a substance above legal limits included in the list established in accordance with Article 59(1) of Regulation (EC) No 1907/2006 for having endocrine disrupting properties or is identified to have endocrine disrupting properties in accordance with the criteria set out in Commission Delegated Regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605.

Avoid any contact with the substance in case of known allergy to isocyanates, skin complaints, hypersensitivity reactions, chronic respiratory disease, asthmatic attacks or bronchial attacks

## SECTION 3: Composition/Information on Ingredients

### 3.1. Substances

Not applicable

### 3.2. Mixtures

Chemical nature

Preparation based on: MDI

Hazardous ingredients (GHS)

Isocyanic acid, polymethylenepolyphenylene ester (P-MDI)

| | |
|---|---|
| Content (W/W): >= 10 % - <= 90 % | Acute Tox. 4 (Inhalation - mist) |
| CAS Number: 9016-87-9 | Eye Dam./Irrit. 2 |
| | Skin Corr./Irrit. 2 |
| | STOT SE 3 (irr. to respiratory syst.) |
| | Skin Sens. 1 |
| | Resp. Sens. 1 |
| | Carc. 2 |
| | STOT RE (Respiratory system) 2 |
| | H315, H317, H319, H332, H334, H335, H351, H373 |
| | EUH204 |

Reaction mass of 4,4'-methylenediphenyl diisocyanate and o-(p-isocyanatobenzyl)phenyl isocyanate

| | |
|---|---|
| Content (W/W): >= 1 % - < 70 % | Acute Tox. 4 (Inhalation - mist) |
| EC-Number: 905-806-4 | Skin Corr./Irrit. 2 |
| REACH registration number: 01-2119457015-45 | Eye Dam./Irrit. 2 |
| | Resp. Sens. 1 |
| | Skin Sens. 1 |
| | Carc. 2 |
| | STOT SE 3 (irr. to respiratory syst.) |
| | STOT RE (Respiratory system) 2 |
| | H319, H315, H332, H334, H317, H335, H351, H373 |
| | EUH204 |
| | Specific concentration limit: |
| | Skin Corr./Irrit. 2: >= 5 % |
| | Resp. Sens. 1: >= 0.1 % |
| | STOT SE 3, irr. to respiratory syst.: >= 5 % |
| | Eye Dam./Irrit. 2: >= 5 % |

For the classifications not written out in full in this section, including the hazard classes and the hazard statements, the full text is listed in section 16.

## SECTION 4: First-Aid Measures

### 4.1. Description of first aid measures

First aid personnel should pay attention to their own safety. If the patient is likely to become unconscious, place and transport in stable sideways position (recovery position). Immediately remove contaminated clothing.

If inhaled:
Keep patient calm, remove to fresh air, seek medical attention.

On skin contact:
Immediately wash thoroughly with soap and water, seek medical attention.

On contact with eyes:
Wash affected eyes for at least 15 minutes under running water with eyelids held open, consult an eye specialist.

On ingestion:
Immediately rinse mouth and then drink 200-300 ml of water, seek medical attention.

### 4.2. Most important symptoms and effects, both acute and delayed
Symptoms: The most important known symptoms and effects are described in section 2 and/or in section 11.

Hazards: Symptoms can appear later.

### 4.3. Indication of any immediate medical attention and special treatment needed
Treatment: Treat according to symptoms (decontamination, vital functions), no known specific antidote, administer corticosteroid dose aerosol to prevent pulmonary odema.

## SECTION 5: Fire-Fighting Measures

### 5.1. Extinguishing media
Suitable extinguishing media:
dry powder, carbon dioxide, water spray, foam

Unsuitable extinguishing media for safety reasons:
water jet

### 5.2. Special hazards arising from the substance or mixture
Endangering substances: Carbon dioxide, carbon monoxide, hydrogen cyanide, nitrogen oxides, isocyanate
Advice: The substances/groups of substances mentioned can be released in case of fire. Evolution of fumes/fog.

### 5.3. Advice for fire-fighters
Special protective equipment:
Wear self-contained breathing apparatus and chemical-protective clothing.

Further information:
Keep containers cool by spraying with water if exposed to fire. Dispose of fire debris and contaminated extinguishing water in accordance with official regulations.

## SECTION 6: Accidental Release Measures

High risk of slipping due to leakage/spillage of product.

### 6.1. Personal precautions, protective equipment and emergency procedures

Use personal protective clothing. Information regarding personal protective measures, see section 8. Ensure adequate ventilation. Use breathing apparatus if exposed to vapours/dust/aerosol.

### 6.2. Environmental precautions

Do not empty into drains. Do not discharge into the subsoil/soil.

### 6.3. Methods and material for containment and cleaning up

For large amounts: Pump off product.
For residues: Pick up with inert absorbent material (e.g. sand, earth etc.).
Neutralize with a solution of 5 - 10 % Sodium carbonate, 0,2 - 2 % detergents and 90 - 95 % water.
Dispose of absorbed material in accordance with regulations.

### 6.4. Reference to other sections

Information regarding exposure controls/personal protection and disposal considerations can be found in section 8 and 13.

## SECTION 7: Handling and Storage

### 7.1. Precautions for safe handling

Provide suitable exhaust ventilation at the processing machines. Ensure thorough ventilation of stores and work areas. Avoid aerosol formation. When handling heated product, vapours of the product should be ventilated, and respiratory protection used. Wear respiratory protection when spraying. Danger of bursting when sealed gastight. Protect against moisture. Clean up contamination as soon as they occur. Provide basic employee training to prevent/minimize exposures. Products freshly manufactured from isocyanates can contain incompletely reacted isocyanates and other dangerous substances, e.g. primary aromatic amines. Industrial cleaning with aprotic polar solvents (meeting the IUPAC definition) may lead to formation of hazardous primary aromatic amine (>0,1%). See Section 11.

Protection against fire and explosion:
No special precautions necessary.

### 7.2. Conditions for safe storage, including any incompatibilities

Keep away from water. Segregate from foods and animal feeds. Segregate from acids and bases.

Suitable materials for containers: Carbon steel (Iron), High density polyethylene (HDPE), Low density polyethylene (LDPE), tinned carbon steel (Tinplate), Stainless steel 1.4301 (V2)
Further information on storage conditions: Keep container tightly closed in a cool, well-ventilated place. Protect against moisture. Formation of CO2 and build up of pressure possible. Danger of bursting when sealed gastight. Information concerning the compliance to the Packaging (Essential Requirements) Regulations 1998 and their amendments may be obtained from the manufacturer.

Storage stability:
Protect against moisture.
If moisture enters isocyanate containers, CO2 forms and pressure builds up.

### 7.3. Specific end use(s)
For the relevant identified use(s) listed in Section 1 the advice mentioned in this section 7 is to be observed.

## SECTION 8: Exposure Controls/Personal Protection

### 8.1. Control parameters

Components with occupational exposure limits

9016-87-9: Isocyanic acid, polymethylenepolyphenylene ester (P-MDI)
TWA value 0.02 mg/m3 (WEL/EH 40 (UK))
Measured as: NCO
STEL value 0.07 mg/m3 (WEL/EH 40 (UK))
Measured as: NCO
Ceiling limit value/factor: 15 min

Reaction mass of 4,4'-methylenediphenyl diisocyanate and o-(p-isocyanatobenzyl)phenyl isocyanate
TWA value 0.02 mg/m3 (WEL/EH 40 (UK))
Measured as: NCO
STEL value 0.07 mg/m3 (WEL/EH 40 (UK))
Measured as: NCO
Ceiling limit value/factor: 15 min

101-68-8: 4,4'-methylenediphenyl diisocyanate; diphenylmethane-4,4'-di-isocyanate
TWA value 0.02 mg/m3 (WEL/EH 40 (UK))
Measured as: NCO
STEL value 0.07 mg/m3 (WEL/EH 40 (UK))
Measured as: NCO
Ceiling limit value/factor: 15 min

Components with biological limit values

101-68-8: 4,4'-methylenediphenyl diisocyanate
UKEH40BMGV
Determinant: Isocyanate-derived diamine
Biological Specimen: Creatinine in urine
Sampling time: At the end of the period of exposure
Concentration: 1 umol/mol

2536-05-2: 2,2'-Methylenediphenyl diisocyanate
UKEH40BMGV

Determinant: Isocyanate-derived diamine
Biological Specimen: Creatinine in urine
Sampling time: At the end of the period of exposure
Concentration: 1 umol/mol

5873-54-1: o-(p-isocyanatobenzyl)phenyl isocyanate
UKEH40BMGV
Determinant: Isocyanate-derived diamine
Biological Specimen: Creatinine in urine
Sampling time: At the end of the period of exposure
Concentration: 1 umol/mol

Reaction mass of 4,4'-methylenediphenyl diisocyanate and o-(p-isocyanatobenzyl)phenyl isocyanate

9016-87-9: Isocyanic acid, polymethylenepolyphenylene ester (P-MDI)

9016-87-9: Isocyanic acid, polymethylenepolyphenylene ester (P-MDI)
UKEH40BMGV
Determinant: Isocyanate-derived diamine
Biological Specimen: Creatinine in urine
Sampling time: At the end of the period of exposure
Concentration: 1 umol/mol

Components with PNEC

Reaction mass of 4,4'-methylenediphenyl diisocyanate and o-(p-isocyanatobenzyl)phenyl isocyanate
freshwater: 1 mg/l
marine water: 0.1 mg/l
intermittent release: 10 mg/l
STP: 1 mg/l
sediment (freshwater):
Exposure of sediment is not expected
sediment (marine water):
Exposure of sediment is not expected
soil: 1 mg/kg

Components with DNEL

Reaction mass of 4,4'-methylenediphenyl diisocyanate and o-(p-isocyanatobenzyl)phenyl isocyanate
worker: Short-term exposure - systemic effects, dermal: 50 mg/kg
worker: Short-term exposure - systemic and local effects, Inhalation: 0.1 mg/m3
worker: Short-term exposure - local effects, dermal: 28.7 mg/cm2
worker: Long-term exposure - systemic and local effects, Inhalation: 0.05 mg/m3

consumer: Short-term exposure - systemic effects, dermal: 25 mg/kg
consumer: Short-term exposure - systemic and local effects, Inhalation: 0.05 mg/m3
consumer: Short-term exposure - systemic effects, oral: 20 mg/kg
consumer: Short-term exposure - local effects, dermal: 17.2 mg/cm2
consumer: Long-term exposure - systemic and local effects, Inhalation: 0.025 mg/m3

## 8.2. Exposure controls

Appropriate engineering controls
It is recommended to control the adherence of the DNEL/DMEL-values by measurements. Ensure an efficient ventilation of the working place (at least 3 air changes per hour).

Personal protective equipment

Respiratory protection:
Respiratory protection in case of vapour/aerosol release. (Combination filter EN 14387 A-P2)

Hand protection:
Chemical resistant protective gloves (EN ISO 374-1)
Suitable materials also with prolonged, direct contact (Recommended: Protective index 6, corresponding > 480 minutes of permeation time according to EN ISO 374-1):
butyl rubber (butyl) - 0.7 mm coating thickness
nitrile rubber (NBR) - 0.4 mm coating thickness
chloroprene rubber (CR) - 0.5 mm coating thickness
Unsuitable materials
polyvinylchloride (PVC) - 0.7 mm coating thickness
Polyethylene-Laminate (PE laminate) - ca. 0.1 mm coating thickness

Suitable materials that provide sufficient protection for industrial cleaning with aprotic polar solvents (meeting the IUPAC definition):
butyl rubber (butyl) - 0.7 mm coating thickness
nitrile rubber (NBR) - 0.4 mm coating thickness
chloroprene rubber (CR) - 0.5 mm coating thickness

Eye protection:
Safety glasses with side-shields (frame goggles) (e.g. EN 166)

Body protection:
Body protection must be chosen depending on activity and possible exposure, e.g. apron, protecting boots, chemical-protection suit (according to EN 14605 in case of splashes or EN ISO 13982 in case of dust).

General safety and hygiene measures
Do not breathe vapour/spray. With products freshly manufactured from isocyanates body protection and chemical resistant protective gloves is recommended. Wearing of closed work clothing is required additionally to the stated personal protection equipment. No eating, drinking, smoking or tobacco use at the place of work. Take off immediately all contaminated clothing. Hands and/or face

should be washed before breaks and at the end of the shift. At the end of the shift the skin should be cleaned and skin-care agents applied.

Environmental exposure controls
For information regarding environmental exposure controls, see Section 6.

## SECTION 9: Physical and Chemical Properties

### 9.1. Information on basic physical and chemical properties

| | | |
|---|---|---|
| Form: | liquid | |
| Colour: | yellowish to brown | |
| Odour: | earthy, musty | |
| Odour threshold: | Not determined due to respiratory tract sensitizing properties. | |
| pH value: | not applicable | |
| solidification temperature: | < 10 °C | |
| Freezing point: | No data available. | |
| Boiling range: | > 200 °C<br>(1,013 mbar) | |
| Flash point: | > 200 °C | |
| Evaporation rate: | Value can be approximated from Henry's Law Constant or vapor pressure. | |
| Flammability: | not flammable | (derived from flash point) |
| Lower explosion limit: | For liquids not relevant for classification and labelling., The lower explosion point may be 5 - 15 °C below the flash point. | |
| Upper explosion limit: | For liquids not relevant for classification and labelling. | |
| Ignition temperature: | > 530 °C | |
| Vapour pressure: | < 0.01 Pa<br>(25 °C) | |
| Density: | 1.22 g/cm3<br>(20 °C) | |
| Relative density: | approx. 1.22<br>(20 °C) | |
| Relative vapour density (air): | not applicable | |
| Solubility in water: | Hydrolyzes to form water-insoluble compounds. | |

Partitioning coefficient n-octanol/water (log Kow):
not applicable for mixtures
Self ignition: not self-igniting

Thermal decomposition: > 230 °C
Viscosity, dynamic: 50 - 100 mPa.s
(25 °C)
Viscosity, kinematic:
not determined
Fire promoting properties: not fire-propagating

### 9.2. Other information

Self heating ability: It is not a substance capable of spontaneous heating according to UN transport regulations class 4.2.

SADT: Not a substance liable to self-decomposition according to UN transport regulations, class 4.1.

Radioactivity:
not radioactive for transport purposes

Miscibility with water:
Reacts with water.

Other Information:
If necessary, information on other physical and chemical parameters is indicated in this section.

## SECTION 10: Stability and Reactivity

### 10.1. Reactivity
No hazardous reactions if stored and handled as prescribed/indicated.

| | | |
|---|---|---|
| Corrosion to metals: | No corrosive effect on metal. | |
| Reactions with water/air: | Reaction with: | water |
| | Flammable gases: | no |
| | Toxic gases: | no |

### 10.2. Chemical stability
The product is chemically stable.

Peroxides: The product does not contain peroxides. The product/the substance has not a tendency towards the formation of peroxide.

### 10.3. Possibility of hazardous reactions
Reacts with water, with formation of carbon dioxide. Risk of bursting. Reacts with alcohols. Reacts with acids. Reacts with alkalies. Reacts with amines. Risk of exothermic reaction. Risk of polymerization. Contact with certain rubbers and plastics can cause brittleness of the substance/product with subsequent loss in strength.

The product is chemically stable.

### 10.4. Conditions to avoid

Avoid moisture.

### 10.5. Incompatible materials

Substances to avoid:
acids, alcohols, amines, water, Alkalines

### 10.6. Hazardous decomposition products

No hazardous decomposition products if stored and handled as prescribed/indicated.

## SECTION 11: Toxicological Information

### 11.1. Information on toxicological effects

Acute toxicity

Assessment of acute toxicity:
Of moderate toxicity after short-term inhalation. Virtually nontoxic after a single skin contact. Virtually nontoxic after a single ingestion.

Experimental/calculated data:
(by inhalation):The substance from the isocyanate substance class has been tested in a form (respirable aerosol) that is different from the forms in which the product is placed on the market and used. Therefore, the test result is not adequate for the purpose of classification and labelling of the product. Based on expert judgement and available data, a modified classification and labeling for acute inhalation toxicity is justified. The generation of a respirable aerosol must be prevented!

*Information on: Isocyanic acid, polymethylenepolyphenylene ester (P-MDI)*
*Experimental/calculated data:*
*LC50 rat (by inhalation): approx. 0.493 mg/l 4 h*
*An aerosol was tested.*

*(by inhalation):The substance from the isocyanate substance class has been tested in a form (respirable aerosol) that is different from the forms in which the product is placed on the market and used. Therefore, the test result is not adequate for the purpose of classification and labelling of the product. Based on expert judgement and available data, a modified classification and labeling for acute inhalation toxicity is justified. The generation of a respirable aerosol must be prevented!*

*Information on: Reaction mass of 4,4'-methylenediphenyl diisocyanate and o-(p-isocyanatobenzyl)phenyl isocyanate*
*Experimental/calculated data:*
*LC50 rat (by inhalation): > 2.24 mg/l 1 h (OECD Guideline 403)*
*The European Union (EU) has classified this substance as 'harmful'. An aerosol was tested.*

*(by inhalation):The substance from the isocyanate substance class has been tested in a form (respirable aerosol) that is different from the forms in which the product is placed on the market and used. Therefore, the test result is not adequate for the purpose of classification and labelling of the*

*product. Based on expert judgement and available data, a modified classification and labeling for acute inhalation toxicity is justified. The generation of a respirable aerosol must be prevented!*
---

Irritation

Assessment of irritating effects:
Eye contact causes irritation. Skin contact causes irritation.

*Information on: Isocyanic acid, polymethylenepolyphenylene ester (P-MDI)*
*Experimental/calculated data:*
*Skin corrosion/irritation*
*: Irritant.*

*Information on: Reaction mass of 4,4'-methylenediphenyl diisocyanate and o-(p-isocyanatobenzyl)phenyl isocyanate*
*Experimental/calculated data:*
*Skin corrosion/irritation*
*rabbit: Irritant. (OECD Guideline 404)*
---

*Information on: Isocyanic acid, polymethylenepolyphenylene ester (P-MDI)*
*Experimental/calculated data:*
*Serious eye damage/irritation*
*: Irritant.*

*Information on: Reaction mass of 4,4'-methylenediphenyl diisocyanate and o-(p-isocyanatobenzyl)phenyl isocyanate*
*Experimental/calculated data:*
*Serious eye damage/irritation*
*rabbit: Irritant. (OECD Guideline 405)*
---

Respiratory/Skin sensitization

Assessment of sensitization:
Sensitization after skin contact possible. The substance may cause sensitization of the respiratory tract.

*Information on: Reaction mass of 4,4'-methylenediphenyl diisocyanate and o-(p-isocyanatobenzyl)phenyl isocyanate*
*Experimental/calculated data:*
*Buehler test guinea pig: skin sensitizing (similar to OECD guideline 406)*

*other guinea pig: respiratory sensitizing*
---

Germ cell mutagenicity

Assessment of mutagenicity:
The chemical structure does not suggest a specific alert for such an effect.

Carcinogenicity

Assessment of carcinogenicity:
A carcinogenic effect cannot safely be ruled out.

Industrial cleaning with aprotic polar solvents (meeting the IUPAC definition) may lead to formation of hazardous primary aromatic amine (>0,1%). Primary aromatic amines are chemicals that are regarded as potenttially carcinogenic for humans based on animal testing. Some of these chemicals are known human carcinogens. No adverse health effects are anticipated if recommended personal protective equipment and industrial hygiene practices are used.

*Information on: Isocyanic acid, polymethylenepolyphenylene ester (P-MDI)*
*Assessment of carcinogenicity:*
*A carcinogenic effect cannot safely be ruled out.*

*Industrial cleaning with aprotic polar solvents (meeting the IUPAC definition) may lead to formation of hazardous primary aromatic amine (>0,1%). Primary aromatic amines are chemicals that are regarded as potenttially carcinogenic for humans based on animal testing. Some of these chemicals are known human carcinogens. No adverse health effects are anticipated if recommended personal protective equipment and industrial hygiene practices are used.*

*Information on: Reaction mass of 4,4'-methylenediphenyl diisocyanate and o-(p-isocyanatobenzyl)phenyl isocyanate*
*Assessment of carcinogenicity:*
*Indication of possible carcinogenic effect in animal tests. However, the relevance of this result for humans is unclear.*
---

Reproductive toxicity

Assessment of reproduction toxicity:
The chemical structure does not suggest a specific alert for such an effect.

Developmental toxicity

Assessment of teratogenicity:
The chemical structure does not suggest a specific alert for such an effect.

Specific target organ toxicity (single exposure)

Assessment of STOT single:
Causes temporary irritation of the respiratory tract.

Repeated dose toxicity and Specific target organ toxicity (repeated exposure)

Assessment of repeated dose toxicity:

Repeated inhalation exposure may affect certain organs. Repeated exposure to the substance by dermal administration leads to effects similar to those found after single exposure. Repeated exposure to the substance by oral administration leads to effects similar to those found after single exposure.

*Information on: Isocyanic acid, polymethylenepolyphenylene ester (P-MDI)*
*Experimental/calculated data:*
*NOEL*
*rat by inhalation*

*Information on: Reaction mass of 4,4'-methylenediphenyl diisocyanate and o-(p-isocyanatobenzyl)phenyl isocyanate*
*Experimental/calculated data:*
*rat by inhalation, olfactory epithelium (OECD Guideline 452)*
*NOAEL: 0.2 mg/m3*
*LOAEL: 1 mg/m3*
*The substance may cause damage to the olfactory epithelium after repeated inhalation. These effects are not relevant to humans at occupational levels of exposure.*
---

Aspiration hazard

No aspiration hazard expected.

Other relevant toxicity information

The product has not been tested. The statement has been derived from the properties of the individual components.

## SECTION 12: Ecological Information

### 12.1. Toxicity

Assessment of aquatic toxicity:
There is a high probability that the product is not acutely harmful to aquatic organisms.

### 12.2. Persistence and degradability

Assessment biodegradation and elimination (H2O):
Hydrolyzes to form water-insoluble compounds. Experience shows this product to be inert and non-degradable.

Elimination information:
Poorly biodegradable.

Assessment of stability in water:
In contact with water the substance will hydrolyse rapidly.

### 12.3. Bioaccumulative potential

Assessment bioaccumulation potential:
Does not significantly accumulate in organisms.

### 12.4. Mobility in soil

Assessment transport between environmental compartments:
Adsorption in soil: Adsorption to solid soil phase is not expected.

### 12.5. Results of PBT and vPvB assessment

According to Annex XIII of Regulation (EC) No.1907/2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH): The product does not contain a substance fulfilling the PBT (persistent/bioaccumulative/toxic) criteria or the vPvB (very persistent/very bioaccumulative) criteria.

### 12.6. Other adverse effects

The product does not contain substances that are listed in Regulation (EC) 1005/2009 on substances that deplete the ozone layer.

### 12.7. Additional information

Adsorbable organically-bound halogen (AOX):
This product contains no organically-bound halogen.

Other ecotoxicological advice:
Do not release untreated into natural waters. Do not allow to enter soil, waterways or waste water channels.

## SECTION 13: Disposal Considerations

### 13.1. Waste treatment methods

The waste codes are manufacturer's recommendations based on the designated use of the product. Other use and special waste disposal treatment on customer's location may require different waste-code assignments.

Incinerate in suitable incineration plant, observing local authority regulations.
Dispose of isocyanate waste in dry containers and never mix together with other wastes (reaction, dangerous pressure build up).

The UK Environmental Protection (Duty of Care) Regulations (EP) and amendments should be noted (United Kingdom).
This product and any uncleaned containers must be disposed of as hazardous waste in accordance with the 2005 Hazardous Waste Regulations and amendments (United Kingdom)

Waste key:

08 05 01¤ waste isocyanates

Contaminated packaging:
Contaminated packaging should be emptied as far as possible; then it can be passed on for recycling after being thoroughly cleaned.

## SECTION 14: Transport Information

**Land transport**

ADR

| | |
|---|---|
| | Not classified as a dangerous good under transport regulations |
| UN number or ID number: | Not applicable |
| UN proper shipping name: | Not applicable |
| Transport hazard class(es): | Not applicable |
| Packing group: | Not applicable |
| Environmental hazards: | Not applicable |
| Special precautions for user | None known |

RID

| | |
|---|---|
| | Not classified as a dangerous good under transport regulations |
| UN number or ID number: | Not applicable |
| UN proper shipping name: | Not applicable |
| Transport hazard class(es): | Not applicable |
| Packing group: | Not applicable |
| Environmental hazards: | Not applicable |
| Special precautions for user | None known |

**Inland waterway transport**
ADN

| | |
|---|---|
| | Not classified as a dangerous good under transport regulations |
| UN number or ID number: | Not applicable |
| UN proper shipping name: | Not applicable |
| Transport hazard class(es): | Not applicable |
| Packing group: | Not applicable |
| Environmental hazards: | Not applicable |
| Special precautions for user: | None known |

Transport in inland waterway vessel
Not evaluated

**Sea transport**

IMDG

| | |
|---|---|
| | Not classified as a dangerous good under transport regulations |
| UN number or ID number: | Not applicable |
| UN proper shipping name: | Not applicable |
| Transport hazard class(es): | Not applicable |
| Packing group: | Not applicable |
| Environmental hazards: | Not applicable |
| Special precautions for user | None known |

**Air transport**

IATA/ICAO

| | |
|---|---|
| | Not classified as a dangerous good under transport regulations |
| UN number or ID number: | Not applicable |
| UN proper shipping name: | Not applicable |
| Transport hazard class(es): | Not applicable |
| Packing group: | Not applicable |
| Environmental hazards: | Not applicable |
| Special precautions for user | None known |

## 14.1. UN number or ID number
See corresponding entries for “UN number or ID number” for the respective regulations in the tables above.

## 14.2. UN proper shipping name
See corresponding entries for “UN proper shipping name” for the respective regulations in the tables above.

## 14.3. Transport hazard class(es)
See corresponding entries for “Transport hazard class(es)” for the respective regulations in the tables above.

## 14.4. Packing group
See corresponding entries for “Packing group” for the respective regulations in the tables above.

## 14.5. Environmental hazards
See corresponding entries for “Environmental hazards” for the respective regulations in the tables above.

## 14.6. Special precautions for user

See corresponding entries for “Special precautions for user” for the respective regulations in the tables above.

### 14.7. Maritime transport in bulk according to IMO instruments

Maritime transport in bulk is not intended.

## SECTION 15: Regulatory Information

### 15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

Prohibitions, Restrictions and Authorizations

Annex XVII of Regulation (EC) No 1907/2006: Number on List: 56, 74

Directive 2012/18/EU - Control of Major Accident Hazards involving dangerous substances (EU): Listed in above regulation: no

If it is intended to use materials for the manufacture of consumer goods (e. g. products which will come into contact with foodstuffs or with the skin, toys) or medical products, national and international regulations have to be observed. Where no regulations exist, consumer goods or medical products must at least comply with European legislation. We recommend contacting our Sales and our Product Safety departments.

If other regulatory information applies that is not already provided elsewhere in this safety data sheet, then it is described in this subsection.

The data should be considered when making any assessment under the Control of Substances Hazardous to Health Regulations (COSHH), and related guidance, for example, 'COSHH Essentials' (United Kingdom).

### 15.2. Chemical Safety Assessment

Assessment of safe use has been performed for the mixture and the result is documented in section 7 and 8 of the SDS

## SECTION 16: Other Information

For the classification of the mixture the following methods have been applied: extrapolation on the concentration levels of the hazardous substances, on basis of test results and after evaluation of experts.
The methodologies used are mentioned at the respective test results.

Full text of the classifications, including the hazard classes and the hazard statements, if mentioned in section 2 or 3:

| | |
|---|---|
| Acute Tox. | Acute toxicity |

| | |
|---|---|
| Eye Dam./Irrit. | Serious eye damage/eye irritation |
| Skin Corr./Irrit. | Skin corrosion/irritation |
| STOT SE | Specific target organ toxicity — single exposure |
| Skin Sens. | Skin sensitization |
| Resp. Sens. | Respiratory sensitization |
| Carc. | Carcinogenicity |
| STOT RE | Specific target organ toxicity — repeated exposure |
| H315 | Causes skin irritation. |
| H317 | May cause an allergic skin reaction. |
| H319 | Causes serious eye irritation. |
| H332 | Harmful if inhaled. |
| H334 | May cause allergy or asthma symptoms or breathing difficulties if inhaled. |
| H335 | May cause respiratory irritation. |
| H351 | Suspected of causing cancer. |
| H373 | May cause damage to organs (Respiratory system) through prolonged or repeated exposure (inhalation). |
| H373 | May cause damage to organs (Respiratory system) through prolonged or repeated exposure. |
| EUH204 | Contains isocyanates. May produce an allergic reaction. |

Abbreviations
ADR = The European Agreement concerning the International Carriage of Dangerous Goods by Road. ADN = The European Agreement concerning the International Carriage of Dangerous Goods by Inland waterways. ATE = Acute Toxicity Estimates. CAO = Cargo Aircraft Only. CAS = Chemical Abstract Service. CLP = Classification, Labelling and Packaging of substances and mixtures. DIN = German national organization for standardization. DNEL = Derived No Effect Level. EC50 = Effective concentration median for 50% of the population. EC = European Community. EN = European Standards. IARC = International Agency for Research on Cancer. IATA = International Air Transport Association. IBC-Code = Intermediate Bulk Container code. IMDG = International Maritime Dangerous Goods Code. ISO = International Organization for Standardization. STEL = Short-Term Exposure Limit. LC50 = Lethal concentration median for 50% of the population. LD50 = Lethal dose median for 50% of the population. TLV = Threshold Limit Value. MARPOL = The International Convention for the Prevention of Pollution from Ships. NEN = Dutch Norm. NOEC = No Observed Effect Concentration. OEL = Occupational Exposure Limit. OECD = Organization for Economic Cooperation and Development. PBT = Persistent, Bioaccumulative and Toxic. PNEC = Predicted No Effect Level. PPM = Parts per million. RID = The European Agreement concerning the International Carriage of Dangerous Goods by Rail. TWA = Time Weight Average. UN-number = UN number at transport. vPvB = very Persistent and very Bioaccumulative.

The data contained in this safety data sheet are based on our current knowledge and experience and describe the product only with regard to safety requirements. This safety data sheet is neither a Certificate of Analysis (CoA) nor technical data sheet and shall not be mistaken for a specification agreement. Identified uses in this safety data sheet do neither represent an agreement on the corresponding contractual quality of the substance/mixture nor a contractually designated use. It is the responsibility of the recipient of the product to ensure any proprietary rights and existing laws and legislation are observed.

## SECTION 1: Identification of the substance/mixture and of the company/undertaking

### 1.1. Product identifier

ACMOS P180-52

UFI: HRD1-672J-ED25-REJ1

### 1.2. Relevant identified uses of the substance or mixture and uses advised against

**Relevant identified uses**

Release agent

**Uses advised against**

Consumer uses: Private households (= general public = consumers)
Sector of uses [SU]: 21
Do not use for private purposes (household).

Relevant identified uses - Further information:
Industrial uses: Uses of substances as such or in preparations at industrial sites
Sector of uses [SU]: 3
Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
Sector of uses [SU]: 22
The product is intended for professional use.

### 1.3. Details of the supplier of the safety data sheet

**Manufacturer**

| | | | |
|---|---|---|---|
| Company name: | ACMOS CHEMIE KG | | |
| Street: | Industriestrasse 49 | | |
| Place: | D-28199 Bremen | | |
| Post-office box: | 10 10 69<br>D-28010 Bremen | | |
| Telephone: | +49 (0)421-5189-0 | Telefax: | +49 (0)421-511415 |
| E-mail: | acmos@acmos.com | | |
| Contact person: | Mr. Stephan Dryhaus | | |
| E-mail: | sds@acmos.com | | |
| Internet: | www.acmos.com | | |
| Responsible Department: | Laboratory (Division: Occupational- / Product security) - see under section 16 | | |

### 1.4. Emergency telephone number:

+49 (0)551 19240 (Emergency information service / official advisory body: Giftinformationszentrum Nord, Universität Göttingen, 24 h from mo. - su.)
Language(s) of Telephone Service: DE, EN

**Supplier**

| | | | |
|---|---|---|---|
| Company name: | ACMOS U.K. Ltd., Willow Bank House | | |
| Street: | Old Lane, Heswall | | |
| Place: | GB-CH60 1 XX Wirral, Merseyside | | |
| Telephone: | +44-(0)151-348 4849 | Telefax: | +44-(0)151-348 4850 |
| E-mail: | info@acmos.co.uk | | |
| Contact person: | Mr. Stephen Spriggs | Telephone: | +44-783 158 0003 (mobile) |

### 1.4. Emergency telephone number:

+44 111 (Emergency information service / official advisory body: National Poisons Information Service - NPIS Birmingham) (https://www.npis.org)
Language(s) of Telephone Service: EN

## SECTION 2: Hazards identification

### 2.1. Classification of the substance or mixture

**GB CLP Regulation**

Flam. Sol. 1; H228
STOT SE 3; H336
Aquatic Chronic 3; H412

Full text of hazard statements: see SECTION 16.

### 2.2. Label elements

**GB CLP Regulation**

**Hazard components for labelling**

hydrocarbons, C9-C10, n-alkanes, isoalkanes, cyclics, <2% aromatics
hydrocarbons, C9, aromatics

**Signal word:** Danger

**Pictograms:**



**Hazard statements**

| | |
|---|---|
| H228 | Flammable solid. |
| H336 | May cause drowsiness or dizziness. |
| H412 | Harmful to aquatic life with long lasting effects. |

**Precautionary statements**

| | |
|---|---|
| P210 | Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. |
| P261 | Avoid breathing vapours. |
| P273 | Avoid release to the environment. |
| P304+P340 | IF INHALED: Remove person to fresh air and keep comfortable for breathing. |
| P312 | Call a POISON CENTER/doctor if you feel unwell. |
| P370+P378 | In case of fire: Use Water mist/Extinguishing powder/Foam/Carbon dioxide (CO2) to extinguish. |
| P403+P233 | Store in a well-ventilated place. Keep container tightly closed. |

**Special labelling of certain mixtures**

| | |
|---|---|
| EUH066 | Repeated exposure may cause skin dryness or cracking. |

**Additional advice on labelling**

Labelling according to Regulation (EC) No. 1272/2008 [CLP]

## 2.3. Other hazards

Adverse physicochemical effects:
See section 9 for physical and chemical properties.
The vapour of the product is heavier than air and may accumulate below ground level, in pits, channels and basements in higher concentration.
The accumulation in lowlying or closed rooms can cause increased danger of fire and explosion.
Vapours can travel considerable distances to a source of ignition where they can ignite, flash back, or explode.
Vapours of flammable solvents can accumulate in the gas phase of closed container, especially during heat treatment.
Therefore keep away from fire and sources of ignition.
This material can be ignited by heat, sparks, flames, or other sources of ignition (e.g., static electricity, pilot lights, mechanical/electrical equipment, and electronic devices such as cell phones, computers, calculators, and pagers which have not been certified as intrinsically safe).
In use may form flammable/explosive vapour-air mixture.
In case of insufficient ventilation and/or through use, explosive/highly flammable mixtures may develop.
Even after use and until complete evaporation of the flammable components, there is still a danger of an explosive steam-air mixture forming.

Adverse human health effects and symptoms:
See section 11 for toxicological information.

Adverse environmental effects:
See section 12 for environmental information.

Other adverse effects:
Special danger of slipping by leaking/spilling product.

Results of PBT-/vPvB-assesment:
See under section 12.5 - Results of PBT and vPvB assessment.

Endocrine disrupting properties:
See under section 11.2 + 12.6 - Endocrine disrupting properties.

# SECTION 3: Composition/information on ingredients

## 3.2. Mixtures

**Chemical characterization**

Dispersion of waxes in a mixture of solvents

**Hazardous components**

| CAS No | Chemical name | | | Quantity |
|---|---|---|---|---|
| | EC No | Index No | REACH No | |
| | Classification (GB CLP Regulation) | | | |
| 64742-49-0 | hydrocarbons, C9-C10, n-alkanes, isoalkanes, cyclics, <2% aromatics | | | 65 - < 70 % |
| | 927-241-2 | | 01-2119471843-32 | |
| | Flam. Liq. 3, STOT SE 3, Asp. Tox. 1, Aquatic Chronic 3; H226 H336 H304 H412 EUH066 | | | |
| 64742-95-6 | hydrocarbons, C9, aromatics | | | 10 - < 15 % |
| | 918-668-5 | | 01-2119455851-35 | |
| | Flam. Liq. 3, STOT SE 3, STOT SE 3, Asp. Tox. 1, Aquatic Chronic 2; H226 H335 H336 H304 H411 EUH066 | | | |

Full text of H and EUH statements: see section 16.

**Specific Conc. Limits, M-factors and ATE**

| CAS No | EC No | Chemical name | Quantity |
|---|---|---|---|
| | Specific Conc. Limits, M-factors and ATE | | |
| 64742-49-0 | 927-241-2 | hydrocarbons, C9-C10, n-alkanes, isoalkanes, cyclics, <2% aromatics | 65 - < 70 % |
| | inhalation: LC50 = > 5,6 mg/l (dusts or mists); dermal: LD50 = > 5000 mg/kg; oral: LD50 = > 5000 mg/kg | | |
| 64742-95-6 | 918-668-5 | hydrocarbons, C9, aromatics | 10 - < 15 % |
| | inhalation: LC50 = > 10,2 mg/l (vapours); dermal: LD50 = > 3160 mg/kg; oral: LD50 = 3492 mg/kg | | |

**Further Information**

The above mentioned EC-No. (Provisional List Number 9xx-xxx-x) is a specific subset of the specified CAS-No. and was associated with the registration process automatically (without CAS-No. or numeric identifier). An official announcement by the EC inventory will follow after evaluation of substance identity by the ECHA. The new nomenclature of hydrocarbon solvents is only related with group names of the HSPA (Hydrocarbon Solvents Producers Association). The previously used CAS-No. continues serving as a reference for different global inventories. The classification of hydrocarbon mixtures made in consideration of the applicable notes in annex VI of regulation (EC) No. 1272/2008.

## SECTION 4: First aid measures

### 4.1. Description of first aid measures

**General information**

Remove affected person from the danger area and lay down.
Take off immediately all contaminated clothing and wash it before reuse.
Put victim at rest, cover with a blanket and keep warm.
Do not leave affected person unattended.
If a person vomits when lying on his back, place him in the recovery position.
If breathing is irregular or stopped, administer artificial respiration.
If unconscious but breathing normally, place in recovery position and seek medical advice.
Never give anything by mouth to an unconscious person or a person with cramps.
In the event of cardiac arrest immediately perform cardiopulmonary resuscitation.
In case of accident or unwellness, seek medical advice immediately (show directions for use or safety data sheet if possible).

Self-protection of the first aider:
Wear personal protection equipment (refer to section 8).
First Aid.

Notes for the doctor:
No special measures are necessary.

**After inhalation**

Remove victim out of the danger area.
Provide fresh air.
In the case of lung irritation: Primary treatment using corticoide spray, eg. Auxiloson spray, Pulmicort-dosage-spray. (Auxiloson and Pulmicort are registered trademarks.) Call a physician immediately.
In case of respiratory tract irritation, consult a physician.

**After contact with skin**

Wash immediately with:
Water and soap
Rub greasy ointment into the skin.
Do not wash with:
Solvents/Thinner
In case of skin irritation, consult a physician.

**After contact with eyes**

In case of contact with eyes flush immediately with plenty of flowing water for 10 to 15 minutes holding eyelids apart and consult an ophthalmologist.
Remove contact lenses, if present and easy to do. Continue rinsing.
If present: Initial treatment with Previn. (Previn is a registered trademark).
Protect uninjured eye.

**After ingestion**

Do NOT induce vomiting.
Give nothing to eat or drink.
Never give anything by mouth to an unconscious person or a person with cramps.
Call a physician immediately.

**4.2. Most important symptoms and effects, both acute and delayed**

The following symptoms may occur:
Cough
Dyspnoea
Cyanosis (blue coloured blood)
Depression of central nervous system
Headache
Nausea
Dizziness
Dizziness
Inebriation
Unconsciousness

**4.3. Indication of any immediate medical attention and special treatment needed**

Treat symptomatically.
Regulation of the blood circulation, possible shock treatment.
Where appropriate artificial ventilation.

## SECTION 5: Firefighting measures

**5.1. Extinguishing media**

**Suitable extinguishing media**

Water mist
Extinguishing powder (ABC-powder)
Foam
Carbon dioxide ($CO_2$)

Fire class (EN 2): B (Fires of liquids or liquid turning substances)

**Unsuitable extinguishing media**

Full water jet
Water spray jet

**5.2. Special hazards arising from the substance or mixture**

In principle, fire gasses of organic materials have to be classified as toxic to the respiratory system.
Burning produces heavy smoke.

Hazardous combustion products:
Carbon monoxide
carbon dioxide ($CO_2$)
Hydrocarbons
Pyrolysis products, toxic

**5.3. Advice for firefighters**

Usual measures of preventive and averting fire protection.

Co-ordinate fire-fighting measures to the fire surroundings.
Do not inhale explosion and combustion gases.
Move to fresh air in case of accidental inhalation of fumes from overheating or combustion.
Beware of reignition.
Use caution when applying carbon dioxide in confined spaces. Carbon dioxide can displace oxygen.
Move undamaged containers from immediate hazard area if it can be done safely.
Stop and contain spill/release if it can be done safely. If this cannot be done, allow fire to burn under control.
Use water spray jet to protect personnel and to cool endangered containers.
Closed containers may burst when pressure and temperature rise
Collect contaminated fire extinguishing water separately. Do not allow entering drains or surface water.
Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.

Special protective equipment for firefighters
Wear a self-contained breathing apparatus and chemical protective clothing.
DIN-/EN-Norms EN 469
Firefighting protective clothing.

## SECTION 6: Accidental release measures

### 6.1. Personal precautions, protective equipment and emergency procedures

**General advice**

Avoid contact with skin, eyes and clothes.
Do not breathe vapour/aerosol.
Remove all sources of ignition.
Prevent further leakage or spillage if safe to do so.
Remove persons to safety.
Be aware that gases can spread at ground level (heavier than air) and pay attention to the wind direction.
Provide adequate ventilation.
Special danger of slipping by leaking/spilling product.

**For non-emergency personnel**

Use personal protection equipment.
Walk out of the danger zone and notify trained personnel.
Emergency procedures: Keep the factory emergency plan and the information chain.

**For emergency responders**

Use personal protection equipment.
The personal protective equipment must be adapted to the situation.
Suitable material:
See under section 8.2 - Personal protection equipment.

### 6.2. Environmental precautions

Do not allow to enter into surface water or drains.
Do not allow to enter into soil/subsoil.
Ensure waste is collected and contained.
Suppress gases/vapours/mists with water spray jet.
In case of gas escape or of entry into waterways, soil or drains, inform the responsible authorities.

### 6.3. Methods and material for containment and cleaning up

**For containment**

Repair leaks if without risk.
Move containers from spill area.
Make sure spills can be contained, e.g. in sump pallets or kerbed areas.
Prevent spread over a wide area (e.g. by containment or oil barriers).
Remove from the water surface (e.g. skimming, sucking).

**For cleaning up**

Large amounts of spillages:
Shovel into suitable container for disposal.
Local authorities should be advised if significant spillages cannot be contained.

Small amounts of spillages:
Clear spills immediately.
Wipe up with absorbent material (eg. cloth, fleece).

Collect in closed and suitable containers for disposal.
Clear contaminated areas thoroughly.
Recommended cleansing agent:
Clean with detergents. Avoid solvent cleaners.
Retain contaminated washing water and dispose it.
Ensure all waste water is collected and treated via a waste water treatment plant.
Ventilate affected area.

**Other information**

Suitable material for taking up:
Sand
Kieselguhr
Universal binder
Absorbing material, organic

Unsuitable material for taking up:
None known

**6.4. Reference to other sections**

Personal protection equipment: see section 8
Disposal: see section 13

## SECTION 7: Handling and storage

**7.1. Precautions for safe handling**

**Advice on safe handling**

Measures to prevent aerosol and dust generation:
All work processes must always be designed so that the following is as low as possible:
Inhalation of vapours or spray/mists
Eye contact
Skin contact

Technical ventilation of workplace
Vapours are heavier than air.
Provide room air exhaust at ground level.
During filling, metering and sampling should be used if possible:
Devices with local exhaust
Use only in a exhaust booth with integrated air filter.
Use in ventilated spray booths only.
Recirculation of exhaust air is not recommended.
Always close containers tightly after the removal of product.

**Advice on protection against fire and explosion**

Measures to prevent fire:
The product is: Highly flammable.
The formation of combustible vapours is possible at temperatures above: +10 °C (Flash point - 15 °C)
Vapours can form explosive mixtures with air.
Reignition possible over considerable distance.
Vapours are heavier than air, spread along floors and form explosive mixtures with air.
Due to danger of explosion, prevent leakage of vapours into cellars, flues and ditches.
Provide earthing of containers, equipment, pumps and ventilation facilities.
Use explosion-proof machinery, apparatus, ventilation facilities, tools etc.
Use non-sparking tools.
Take precautionary measures against static discharges.
Flammable vapours can accumulate in head space of closed systems.
Only use the material in places where open light, fire and other flammable sources can be kept away.
Keep away from sources of heat (e.g. hot surfaces), sparks and open flames.
Usual measures for fire prevention.
Fire-fighting equipment on the basis of class B.
Wear anti-static footwear and clothing

Measures according to German "Explosion rules" required:

Prevention measures regarding formation of explosible atmosphere (restriction and supervision of concentration, inertisation, airtightness, ventilation, warning device, etc.).
Prevention measures regarding ignition of explosible atmosphere (zone graduation, removing of ignition sources, explosion-proof electrical installation, earthing, etc.).
Constructive measures for restriction of effects regarding explosions (resistance to pressure of explosions, discharge of pressure of explosions, suppression of explosions, etc.).

**Advice on general occupational hygiene**

Advices on general occupational hygiene:
Wear personal protection equipment (refer to section 8).
Minimum standard for preventive measures while handling with working materials are specified in the TRGS 500.
General industrial hygiene practice.
Handle in accordance with good industrial hygiene and safety practice.
Working places should be designed to allow cleaning at any time.
Floors, walls and other surfaces in the hazard area must be cleaned regularly.
Clean spray booth and exhaust hood completely with every product change.
When using do not eat, drink, smoke, sniff.
Thorough skin-cleansing after handling the product.
Used working clothes should not be worn outside the work area.

**Further information on handling**

Environmental precautions:
Shafts and sewers must be protected from entry of the product.
Transfer wash-downs in sealed containers.
Provide for retaining containers, e.g. floor pan without outflow.
For restriction of emission on volatile organic compounds (VOC) the solvent vapours should be supplied to an exhaust air purification facility (filter, gas washer, incineration).

## 7.2. Conditions for safe storage, including any incompatibilities

**Requirements for storage rooms and vessels**

Suitable floor material:
Floors should be impervious, resistant to liquids and easy to clean.

Protect against:
Heat
Cold

Recommended storage temperature: +10 ... +30 °C

Keep away from:
Food and feedingstuffs

Packaging materials:
Suitable container/equipment material:
Keep/Store only in original container.
Unsuitable container/equipment material:
See under section 8.2 - Hand protection.

**Hints on joint storage**

Do not store together with:
Storage class:
1 (Explosive hazardous substances)
2 A (Gases (except aerosol dispensers and lighters))
2 B (Aerosol dispensers and lighters)
3 (Flammable liquids)
5.1 A (Highly oxidising substances)
5.1 C (Ammonium nitrate and preparations containing ammonium nitrate)
6.1 B (Non-combustible substances of acute toxicity, category 1 and 2 / very toxic substances)
6.2 (Infectious substances)
7 (Radioactive substances)

**Further information on storage conditions**

Technical measures and storage conditions:

The valid water and zoning ordinances must be observed.
Heating causes rise in pressure with risk of bursting.
Keep away from sources of ignition - No smoking.
Keep in a cool, well-ventilated place.
Keep container tightly closed.
Protect containers against damage.
Ensure adequate ventilation of the storage area.
Store small packages in a suitable, robust cabinet.
Do not store outside.
See also instuctions on the label.

**7.3. Specific end use(s)**

Recommendation:
Possibilities for substitution and references to less hazardous products:
This product was designed for a special application purpose and optimized appropriately.
In case of questions regarding product and application, please contact our field service in line with customer service or our technical sales department.
Observe technical data sheet.

Industrial sector specific solutions:

Hazardous substance information systems of professional associations:

## SECTION 8: Exposure controls/personal protection

**8.1. Control parameters**

**Exposure limits (EH40)**

| CAS No | Substance | ppm | mg/m³ | fibres/ml | Category | Origin |
|---|---|---|---|---|---|---|
| - | Aromatics | - | 500 | | TWA (8 h) | WEL |
| - | Cycloalkanes >= C7 | - | 800 | | TWA (8 h) | WEL |
| - | Normal and branched chain alkanes >= C7 (it excludes n-heptane) | - | 1200 | | TWA (8 h) | WEL |
| 8002-74-2 | Paraffin wax, fume | - | 2 | | TWA (8 h) | WEL |
| | | - | 6 | | STEL (15 min) | WEL |

**DNEL/DMEL values**

| CAS No | Substance | | |
|---|---|---|---|
| DNEL type | Exposure route | Effect | Value |
| 64742-49-0 | hydrocarbons, C9-C10, n-alkanes, isoalkanes, cyclics, <2% aromatics | | |
| Worker DNEL, long-term | inhalation | systemic | 871 mg/m³ |
| Worker DNEL, long-term | dermal | systemic | 77 mg/kg bw/day |
| Consumer DNEL, long-term | inhalation | systemic | 185 mg/m³ |
| Consumer DNEL, long-term | dermal | systemic | 46 mg/kg bw/day |
| Consumer DNEL, long-term | oral | systemic | 46 mg/kg bw/day |
| 64742-95-6 | hydrocarbons, C9, aromatics | | |
| Worker DNEL, long-term | inhalation | systemic | 150 mg/m³ |
| Worker DNEL, long-term | dermal | systemic | 25 mg/kg bw/day |
| Consumer DNEL, long-term | inhalation | systemic | 32 mg/m³ |
| Consumer DNEL, long-term | dermal | systemic | 11 mg/kg bw/day |
| Consumer DNEL, long-term | oral | systemic | 11 mg/kg bw/day |

**Additional advice on limit values**

GESTIS - International Limit Values - Institut für Arbeitsschutz der Deutschen Gesetzlichen Unfallversicherung (IFA):
http://limitvalue.ifa.dguv.de
Country information (EU)
(http://www.dguv.de/ifa/fachinfos/occupational-exposure-limit-values/foreign-and-eu-limit-values/index.jsp)

Country information (GB) (http://www.hse.gov.uk/pubns/books/eh40.htm)
Occupational Exposure Limits of EU-memberstates - European Agency for Safety and Health at Work (OSHA) (http://osha.europa.eu/en/topics/ds/oel/index.stm/members.stm)
Source of law: EH40 (GB) (http://www.hse.gov.uk)

Recommended monitoring procedures:
Workplace atmospheres - Guide for the application and use of procedures for the assessment of exposure to chemical and biological agents (BS EN 14042):
Personal air monitoring
Room air monitoring
Test tube
Gas warning system
Biological monitoring

Preliminary concentration measurements:
Suitable detector tubes for measuring the current concentration in the air at the workplace: DRÄGER test tubes - short-term tubes (http://www.gasmesstechnik.de)
DRÄGER test tubes - Short-term tubes - Petroleum hydrocarbons 10 / a (n-octane, measuring range: 10 - 300 ppm, response time: 60 sec) (http://www.gasmesstechnik.de)
DRÄGER test tubes - Short-term tubes - Petroleum hydrocarbons 100 / a (n-octane, measuring range: 100 - 2500 ppm, response time: 30 sec) (http://www.gasmesstechnik.de)

Exposure limits at intended use:

DNEL-/PNEC-values:
There are no exposure scenarios attached in the Appendix of this Safety Data Sheet.

Risk management measures according to used control banding approach:
Control banding for chemicals according to the ILO CHEMICAL CONTROL TOOLKIT (ICCT): ICCT-Guidelines and Control Guidance Sheets ( http://www.ilo.org/legacy/english/protection/safework/ctrl_banding/toolkit/main_guide.pdf)

Used model:
Consider appropriate model solutions according to good engineering practices on designing the working process, if available.

**8.2. Exposure controls**






**Appropriate engineering controls**

Substance/mixture related measures to prevent exposure during identified uses:
Technical measures to prevent exposure:
Design of appropriate work processes and engineering controls and the use of adequate materials (physical cut-off of man and machine, model solutions as certified working methods, working appliance according to the state of the art, working appliance for prevention of skin contact, models of working times).

Organisational measures to prevent exposure:
Execution of collective protection measures at source and appropriate organisational measures (local exhaust ventilation, ventilation by technical means, general ventilation, measures on averting a danger at breakdowns / at emergencies / after accidents, first-aid-measures, manner related measures: operating instruction / instruction of employees, occupational medicine health precaution).

Structural measures to prevent exposure:

Execution of individual and personnel protection measures (personal protective equipment - PPE).

If technical exhaust or ventilation measures are not possible or insufficient, respiratory protection must be worn.
Technical measures and the application of suitable work processes have priority over personal protection equipment.

References for design of technical equipment:
See under section 7.1 - Precautions for safe handling.

Summary of the risk management measures for exposure scenario:
Use only the following product amount per time unit:
No information available.
Minimum room-width and room-height for handling/application:
No information available.
Minimum room ventilation rate for handling/application (air changes per hour):
No information available.

**Individual protection measures, such as personal protective equipment**

**Eye/face protection**

If required according to hazard assessment:
Suitable eye protection:
Eye glasses with side protection (EN 166)
Recommended eye protection articles:
UVEX I-VO / UVEX I-3 / UVEX SUPER OTG
Or comparable articles from other companies.

**Hand protection**

Skin protection:
Preventive skin protection.:
Draw up skin protection programme.
Before starting work, apply solvent-resistant skincare preparations.
e.g. sansibal® / sansibon®, dualin® (PETER GREVEN PHYSIODERM)
Wash hands before breaks and after work.
e.g. ecosan®, topscrub® soft / topscrub® extra / topscrub® nature (PETER GREVEN PHYSIODERM)
After cleaning apply high-fat content skin care cream.
e.g. physioderm® creme, cura soft® / cUrea soft® (PETER GREVEN PHYSIODERM)
Apply skin care products after work.

If required according to hazard assessment:
When handling with chemical substances, protective gloves must be worn with the CE-label including the four control digits.
The quality of the protective gloves resistant to chemicals must be chosen as a function of the specific working place concentration and quantity of hazardous substances.
Decrease wearing protection gloves to an inevitable degree to avoid skin rash.
Technical and organizational protective actions have to be preferred.
Breakthrough times and swelling properties of the material must be taken into consideration.
Check leak tightness/impermeability prior to use.
Wear cotton undermitten if possible.
Change preventive gloves once by hour or use special skin-protective preparations for protective gloves carrier,
e.g. physioderm® proGlove (PETER GREVEN PHYSIODERM)
Take recovery periods for skin regeneration.
Do not wear gloves near rotary machines and tools.
Dispose preventive gloves after defect or expiry of wearing time. Replace when worn.
In the case of wanting to use the gloves again, clean them before taking off and air them well.

Wearing time with permanent contact:
Suitable gloves type
Gloves with long cuffs
Recommended glove articles:
Suitable materials at long term, direct contact (Recommended: Preventive index 2 - 6, accordingly > 30 - 480 min. permeation time in accordance to EN 374):

Nitrile rubber / NBR (KCL-CAMATRIL VELOURS® - Art. No. 730) - Layer thickness: 0,4 mm
Fluorine rubber / FKM / Viton (KCL-VITOJECT® - Art. No. 890) - Layer thickness: 0,7 mm
Or comparable articles from other companies.

Unsuitable material:
Butyl caoutchouc (butyl rubber)
NR (natural rubber, Natural latex)

Wearing time with occasional contact (splashes):
Suitable gloves type
Disposable gloves
Recommended glove articles:
Suitable materials at short term contact or splash (Recommended: Preventive index A, accordingly > 1 - 5 min. permeation time in accordance to EN 374):
Disposable gloves of special nitrile rubber / NBR (KCL-DERMATRIL® P - Art. No. 743) - Layer thickness: 0,2 mm
Or comparable articles from other companies.

The statements are based on self-tests, literary reference and information of glove manufacturers or have been derived from similar substances by analogy.
Source: CHEMIKALIEN-MANAGER - KCL software for hand protection.
It has to be noticed, that daily time of use of chemical protective gloves may be quite shorter in practice because of many factors of influence (e.g. thermal and mechanical stress as well as special conditions on the floor) than the permeation time determined in accordance to EN 374.
The respective permeation time doubles/halvens at about 1,5 times larger/lower layer thickness.
Declared permeation times according to EN 374 are not carried out under practical conditions. Therefore a maximum wearing time up to 50 % of breakthrough time is recommended.
They relate to the pure solvent as mean component.

Barrier creams are not substitutes for body protection.

**Skin protection**

If required according to hazard assessment:
Suitable protective clothing:
Overall, Natural fibres (e.g. cotton) (EN 340)

Chemical resistant safety shoes with conductible sole (EN ISO 20345)

Wash contaminated clothing prior to re-use.
Used working clothes should not be worn outside the work area.
Street clothing should be stored separately from work clothing.

**Respiratory protection**

If required according to hazard assessment:
Respiratory protection necessary at:
exceeding exposure limit values +
high concentrations / prolonged exposure / insufficient ventilation / insufficient exhaust
Use only respiratory protection equipment with CE-symbol including four digit test number.
Filter types: A, B, E, K. Class 1: Maximum permitted contaminant concentration in inhaled air = 1000 mL/m3 (0.1 % by vol.); class 2: maximum permitted contaminant concentration in inhaled air = 5000 mL/m³ (0.5 % by vol.); class 3: maximum permitted contaminant concentration in inhaled air = 10000 mL/m³ (1.0 % by vol.)
The filter class must be suitable for the maximum contaminant concentration (gas/vapour/aerosol/particulates) that may arise when handling the product. If the concentration is exceeded, self-contained breathing apparatus must be used.
Observe the wear time limits according GefStoffV in combination with the rules for using respiratory protection apparatus (BGR 190).
The use of filter equipment requires a minimum oxygen content of 17 Vol-% in the surrounding atmosphere and that the maximum permitted gas concentration - normally 0,5 Vol-% - is not exceeded.

Suitable respiratory protection apparatus:
Half-face mask or quarter facepiece: maximum use concentration for substances with exposure limits: P1 filter: up to a max. of 4 times the exposure limit. P2 filter: up to a max. of 10 times the exposure limit. P3 filter: up to a max. of 30 times

the expo.

Recommended respiratory protection articles:
Half mask or quarter mask with combination filter A1P1/A2P2 for gases, vapors and particles. (EN 140, EN 14387)
Filtering half mask or quarter mask with combination filter FFA1 P1/FFA2P2 for gases, vapors and particles. (EN 405)
Gas filtrating Half-face mask FFA (EN 405)
Model 4251 (FFA1P1 - 1000 ml/m3) / 4255 (FFA2P2SL - 5000 ml/m3) (3M)
Half-face mask or Quarter-face mask with gas filter (EN 140, EN 14387)
Filter type 6051 (A1 - 1000 ml/m3) / 6055 (A2 - 5000 ml/m3) (3M)
Full-face mask with gas filter (EN 136, EN 14387)
Gas filter type: A, Indication colour: brown
Or comparable articles from other companies.

**Thermal hazards**

No thermal hazards during use of this product.

**Environmental exposure controls**

Environmental exposure controls:
Technical measures to prevent exposure:
Discharge exhaust air only with suitable seperators to atmosphere.
Organisational measures to prevent exposure:
Should not be released into the environment.
Structural measures to prevent exposure:

Use the following recovery and/or abatement technique for cleaning waste gases:
Exhaust air scrubber
Adsorption
Incineration

Further information see under section 6.2 - Environmental precautions.

## SECTION 9: Physical and chemical properties

### 9.1. Information on basic physical and chemical properties

| | | |
|---|---|---|
| Physical state: | paste | |
| Colour: | white | |
| Odour: | characteristic | |
| Odour threshold: | No data available | |
| | | **Test method** |
| Melting point/freezing point: | not determined | |
| Boiling point or initial boiling point and boiling range: | > 140 °C | literature value |
| Flammability | | |
| Solid/liquid: | The product is: Flammable | |
| Lower explosion limits: | 0,6 vol. % | literature value |
| Upper explosion limits: | 7,0 vol. % | literature value |
| Flash point: | > 24 °C | literature value |
| Auto-ignition temperature: | > 200 °C | literature value |
| Decomposition temperature: | Thermally stable. | |
| pH-Value: | not applicable | |
| Viscosity / kinematic: | not applicable | |
| Water solubility: (at 20 °C) | practically insoluble: < 0,1 g/L | literature value |
| Solubility in other solvents | | |
| Fat solubility: No data available | | |
| Dissolution rate: | (Nanoform) not relevant | |
| Partition coefficient n-octanol/water: | not applicable (Mixtures) | |
| Dispersion stability: | (Nanoform) not relevant | |
| Vapour pressure: (at 20 °C) | < 5 hPa | literature value |

| | | |
|---|---|---|
| Vapour pressure: (at 50 °C) | < 24 hPa | literature value |
| Density (at 20 °C): | 0,71 g/cm³ | DIN 51757 |
| Relative density: | not determined | |
| Bulk density: | not determined | |
| Relative vapour density: | not determined | |
| Particle characteristics: | not applicable (Paste) | |

**9.2. Other information**

Explosive properties

In use may form flammable/explosive vapour-air mixture.

The statements for steam pressure, ignition point and explosion levels apply to the solvent / solvent mixture.

Self-ignition temperature

| | |
|---|---|
| Solid: | Not pyrophoric. |
| Gas: | Not pyrophoric. |

**Other safety characteristics**

| | | |
|---|---|---|
| Evaporation rate: | not applicable | |
| Solvent separation test: | not applicable | |
| Solvent content: | < 3 % | |
| Solid content: | not determined | |
| Sublimation point: | not applicable | |
| Softening point: | > 40 °C | ASTM D 4359 |
| Pour point: | not determined | |
| Viscosity / dynamic: | not applicable | |
| Flow time: | not applicable | |

**Further Information**

Other safety characteristics:

Mechanical sensitivity: No ignition, explosion, self-heating or visible decomposition.
miscibility: miscible with most organic solvents
Conductivity (ASTM D 2624): > 1000 pS/m
Corrosiveness: not applicable
Redox potential: not determined
radical formation potential: not applicable
photocatalytic properties: not applicable
Surface tension: not applicable (solid)
Molecular weight: ~ 126 g/mol (calculated)

Temperature Class (EN 60079-0): T 3 (T > +200 °C ... <= +300 °C)
Limiting oxygen concentration (LOC) (EN 14756): No data available
Explosion group: IIA
Maximum experimental safe gap (MESG) (IEC 60079-1-1): > 0,9 mm
Minimum ignition current (MIC) (IEC 60079-11): No data available
Minimum ignition energy (MIE) (EN 13673-1): No data available

Data apply to the main component.

Data relevant with regard to physical hazard classes (supplemental):

Explosives
not applicable
Flammable gases
not applicable (solid)
Aerosols
not applicable (solid)
Oxidising gas
Not oxidising. / not applicable (solid)
Gases under pressure

not applicable (solid)
Flammable liquids
not applicable (solid)
flammable solids
Highly flammable.
UN Recommendations on the Transport of Dangerous Goods -
Manual of Tests and Criteria, Part III, Subsection 33.2.1.
Burning rate > 2,2 mm/s.
In use may form flammable/explosive vapour-air mixture.
Self-reactive substances and mixtures
not applicable
Pyrophoric liquids
Not pyrophoric. / not applicable (solid)
Pyrophoric solids
Not pyrophoric.
self-heating substances and mixtures
not applicable
Substances or mixtures which, in contact with water, emit flammable gases
not applicable
Oxidising liquids
Not oxidising. / not applicable (solid)
Oxidising solids
Not oxidising.
Organic peroxides
not applicable
Corrosive to metals.
Not corrosive to metals.
Desensitised explosives
not applicable

## SECTION 10: Stability and reactivity

**10.1. Reactivity**

The product is chemically stable under recommended conditions of storage, use and temperature.

**10.2. Chemical stability**

The product is chemically stable under recommended conditions of storage, use and temperature.

**10.3. Possibility of hazardous reactions**

No hazardous reaction when handled and stored according to provisions.

**10.4. Conditions to avoid**

Heat, flames and sparks.
Further information see under section 7.2 - Conditions for safe storage, including any incompatibilities.
Further information see under section 10.5 - Incompatible materials.

**10.5. Incompatible materials**

Violent reaction with:
Oxidising agent, strong
Further information see under section 7.1 - Precautions for safe handling.

**10.6. Hazardous decomposition products**

Does not decompose when used for intended uses.
No known hazardous decomposition products.
Under fire conditions: See under section 5.2 - Special hazards arising from the substance or mixture.

## SECTION 11: Toxicological information

**11.1. Information on hazard classes as defined in GB CLP Regulation**

**Toxicocinetics, metabolism and distribution**

There are no data available on the preparation/mixture itself.
The product has not been tested.

Information on likely routes of exposure /
Symptoms related to the physical, chemical and toxicological characteristics:
See under section 4.2 - Most important symptoms and effects, both acute and delayed.

Exposure route:
In case of ingestion:
Ingestion causes nausea, weakness and central nervous system effects.
Due to the viscosity, this product does not present an aspiration hazard.

In case of skin contact:
slightly irritant but not relevant for classification.
Prolonged or repeated skin contact may cause removal of natural fat from the skin resulting in dermatitis (skin inflammation).

In case of inhalation:
slightly irritant but not relevant for classification.
Narcotic effects

In case of eye contact:
slightly irritant but not relevant for classification.
Conjunctival redness.

Delayed and immediate effects as well as chronic effects from short and long-term exposure:
Inhalative specific target organ toxicity (single exposure)

Interactive effects:
Not relevant

Absence of specific data:
No data is available on the product itself. Description of possible hazardous to health effects is based on experience and/or toxicological characteristics of several components.
However, some datas are not complete regarding particular main components. Nevertheless according to the experience of the manufacturer there are no other hazards expected then those which are already mentioned on the label.

Mixture versus substance information:
Not relevant

**Acute toxicity**

Based on available data, the classification criteria are not met.

**ATEmix calculated**

ATE (oral) > 2000 mg/kg; ATE (dermal) > 2000 mg/kg; ATE (inhalation vapour) > 20 mg/l; ATE (inhalation dust/mist) > 5 mg/l

| CAS No | Chemical name | | | | |
|---|---|---|---|---|---|
| | Exposure route | Dose | Species | Source | Method |
| 64742-49-0 | hydrocarbons, C9-C10, n-alkanes, isoalkanes, cyclics, <2% aromatics | | | | |
| | oral | LD50 > 5000 mg/kg | Rat | ECHA | OECD 401 |
| | dermal | LD50 > 5000 mg/kg | Rat | ECHA | OECD 402 |
| | inhalation (4 h) dust/mist | LC50 > 5,6 mg/l | Rat | ECHA | OECD 403 |
| 64742-95-6 | hydrocarbons, C9, aromatics | | | | |
| | oral | LD50 3492 mg/kg | Rat [female] | ECHA | |
| | dermal | LD50 > 3160 mg/kg | Rabbit | ECHA | OECD 402 |
| | inhalation (4 h) vapour | LC50 > 10,2 mg/l | Rat | ECHA | OECD 403 |

**Irritation and corrosivity**

Based on available data, the classification criteria are not met.

**Sensitising effects**

Based on available data, the classification criteria are not met.

**Carcinogenic/mutagenic/toxic effects for reproduction**

Based on available data, the classification criteria are not met.

**STOT-single exposure**

May cause drowsiness or dizziness. (hydrocarbons, C9-C10, n-alkanes, isoalkanes, cyclics, <2% aromatics)

**STOT-repeated exposure**

Repeated exposure may cause skin dryness or cracking.

**Aspiration hazard**

Based on available data, the classification criteria are not met.

**Information on likely routes of exposure**

oral: +
Dermal: +
inhalation: +
Eye contact: +

**11.2. Information on other hazards**

**Endocrine disrupting properties**

This product does not contain a substance that has endocrine disrupting properties with respect to humans as no components meets the criteria.

## SECTION 12: Ecological information

**12.1. Toxicity**

Aquatic toxicity:

Acute (short-term) fish toxicity:
There are no data available on the preparation/mixture itself. The product has not been tested.

Acute (short-term) toxicity to crustacea:
There are no data available on the preparation/mixture itself. The product has not been tested.

Acute (short-term) toxicity to algae and cyanobacteria:
There are no data available on the preparation/mixture itself. The product has not been tested.

Chronic (long-term) toxicity to aquatic invertebrate:
There are no data available on the preparation/mixture itself. The product has not been tested.

Chronic (long-term) fish toxicity:
There are no data available on the preparation/mixture itself. The product has not been tested.

Toxicity to other aquatic plants/organisms:
No data available (Substances/Ingredient)

Terrestrial toxicity:

Acute and subchronic bird toxicity:
No data available (Substances/Ingredient)

Bird reproduction toxicity:
No data available (Substances/Ingredient)

Acute earthworm toxicity:
No data available (Substances/Ingredient)

Chronical earthworm toxicity (reproduction):
No data available (Substances/Ingredient)

Useful insect toxicity:
No data available (Substances/Ingredient)

Acute plant toxicity:
No data available (Substances/Ingredient)

Chronic plant toxicity:
No data available (Substances/Ingredient)

Toxicity to soil macroorganisms except of arthropods:
No data available (Substances/Ingredient)

Effects on soil microorganisms:
No data available (Substances/Ingredient)

Behaviour in waste water treatment plants:
Due to its low solubility in water the product is almost completely mechanically separated in biological sewage plants.
Observe local regulations concerning effluent treatment.

| CAS No | Chemical name | | | | | | |
|---|---|---|---|---|---|---|---|
| | Aquatic toxicity | Dose | | [h] \| [d] | Species | Source | Method |
| 64742-49-0 | hydrocarbons, C9-C10, n-alkanes, isoalkanes, cyclics, <2% aromatics | | | | | | |
| | Acute fish toxicity | LC50 | > 10 - < 30 mg/l | 96 h | Oncorhynchus mykiss | ECHA | OECD 203 |
| | Acute algae toxicity | ErC50 | > 1000 mg/l | 72 h | Pseudokirchneriella subcapitata | ECHA | OECD 201 |
| | Acute crustacea toxicity | EC50 | > 22 - < 46 mg/l | 48 h | Daphnia magna | ECHA | OECD 202 |
| | Fish toxicity | NOEC | 0,182 mg/l | 28 d | Oncorhynchus mykiss | ECHA | |
| | Algae toxicity | NOEC | < 1 mg/l | 3 d | Pseudokirchneriella subcapitata | ECHA | OECD 201 |
| | Crustacea toxicity | NOEC | 0,317 mg/l | 21 d | Daphnia magna | ECHA | |
| | Acute bacteria toxicity | (EC50 | 1065 mg/l) | | Tetrahymena pyriformis | ECHA | [48h] |
| 64742-95-6 | hydrocarbons, C9, aromatics | | | | | | |
| | Acute fish toxicity | LC50 | 9,2 mg/l | 96 h | Oncorhynchus mykiss | ECHA | OECD 203 |
| | Acute algae toxicity | ErC50 | 2,9 mg/l | 72 h | Pseudokirchneriella subcapitata | ECHA | OECD 201 |
| | Acute crustacea toxicity | EC50 | 3,2 mg/l | 48 h | Daphnia magna | ECHA | OECD 202 |
| | Fish toxicity | NOEC | 1,228 mg/l | 28 d | Oncorhynchus mykiss | ECHA | |
| | Algae toxicity | NOEC | 0,22 mg/l | 3 d | Pseudokirchneriella subcapitata | ECHA | OECD 201 |
| | Crustacea toxicity | NOEC | 2,144 mg/l | 21 d | Daphnia magna | ECHA | |
| | Acute bacteria toxicity | (EC50 | > 99 mg/l) | 0,5 h | Activated sludge | ECHA | OECD 209 [10 min] |

**12.2. Persistence and degradability**

Abiotic degradation:
Physicochemical elimination:
Oxidation:
not applicable (Mixtures)
Hydrolysis:
not applicable (Mixtures)
Photochemical elimination:
Photolysis:
not applicable (Mixtures)
Ozonolysis:
not applicable (Mixtures)

Biodegradation:
not applicable (Mixtures)

| CAS No | Chemical name | | | |
|---|---|---|---|---|
| | Method | Value | d | Source |
| | Evaluation | | | |
| 64742-49-0 | hydrocarbons, C9-C10, n-alkanes, isoalkanes, cyclics, <2% aromatics | | | |
| | OECD 301 F | 89 % | 28 | ECHA |
| | readily biodegradable | | | |
| 64742-95-6 | hydrocarbons, C9, aromatics | | | |
| | OECD 301 F | 78 % | 28 | ECHA |
| | readily biodegradable | | | |

**12.3. Bioaccumulative potential**

not applicable (Mixtures)

**12.4. Mobility in soil**

Surface tension:
See under section 9.1 - Information on basic physical and chemical properties.

Distribution:
Water-air (volatility rate, Henry-constant):
not applicable (Mixtures)
The product is insoluble and floats on water.
Soil-Water (Adsorption coefficient):
not applicable (Mixtures)
Soil-Air (volatility rate):
not applicable (Mixtures)

This product contains one or more hydrocarbon UVCB's. Standard tests for this endpoint are intended for single substances and are not appropriate for this complex substance.

**12.5. Results of PBT and vPvB assessment**

The substances in the mixture do not meet the PBT/vPvB criteria according to UK REACH.

**12.6. Endocrine disrupting properties**

This product does not contain a substance that has endocrine disrupting properties with respect to non-target organisms as no components meets the criteria.

**12.7. Other adverse effects**

Ozone depletion potential (ODP):
No data available (Substances/Ingredient)
Photochemical ozone creation potential (POCP):
No data available (Substances/Ingredient)
Global warming potential (GWP):
No data available (Substances/Ingredient)

AOX: Product does not contain any organic halogens.

## SECTION 13: Disposal considerations

**13.1. Waste treatment methods**

**Disposal recommendations**

Waste treatment options (Recovery operations / Disposal operations):
Send to a hazardous waste incinerator facility under observation of official regulations.

Dispose of waste according to applicable legislation.
Waste disposal according to directive 2008/98/EC, covering waste and dangerous waste.
Hazardous waste according to Directive 2008/98/EC (waste framework directive).
Properties of waste which render it hazardous:
Flammable [HP 3]
Specific Target Organ Toxicity (STOT)/Aspiration Toxicity [HP 5]
Ecotoxic [HP 14]

Evidence for disposal must be provided.
Consult the appropriate local waste disposal expert about waste disposal.
Waste for recycling is to be classified and labelled.
For recycling, contact recycling exchanges.
May not be disposed or deposited together with domestic garbage.
Do not mix with other wastes.
Do not flush into surface water or sanitary sewer system.
Do not dispose of waste into sewer.
Before discharge in public drains (e.g. residues of washing- and rinsing liquids) please observe the relevant regulations. In case of further questions please contact your waste- or environmental representative or the responsible authority.
Clean IBCs or drums at approved facility only.
The waste producer is resposible for correct coding and designation of his wastes.

The allocation of waste identity numbers/waste descriptions must be carried out according to the EEC, specific to the industry and process.
The waste code has to be identified in agreement with the disposal company or the competent authority.
List of proposed waste codes/waste designations in accordance with EWC:

**List of Wastes Code - residues/unused products**

070204 WASTES FROM ORGANIC CHEMICAL PROCESSES; wastes from the MFSU of plastics, synthetic rubber and man-made fibres; other organic solvents, washing liquids and mother liquors; hazardous waste

**List of Wastes Code - used product**

070204 WASTES FROM ORGANIC CHEMICAL PROCESSES; wastes from the MFSU of plastics, synthetic rubber and man-made fibres; other organic solvents, washing liquids and mother liquors; hazardous waste

**List of Wastes Code - contaminated packaging**

150110 WASTE PACKAGING; ABSORBENTS, WIPING CLOTHS, FILTER MATERIALS AND PROTECTIVE CLOTHING NOT OTHERWISE SPECIFIED; packaging (including separately collected municipal packaging waste); packaging containing residues of or contaminated by hazardous substances; hazardous waste

**Contaminated packaging**

Other disposal recommendations:
Contaminated packages must be completely emptied and can be re-used following proper cleaning.
Cleaning by recycling company.
Recommended cleansing agent:
Clean with detergents. Avoid solvent cleaners.

Handle contaminated packages in the same way as the substance itself.
Non-contaminated packages may be recycled.
Packing which cannot be properly cleaned must be disposed of.
As well uncleaned (empty) containers remain contaminated by product residues and may be hazardous by vapours.
They have to be disposed by specialists or have to be supplied to a licensed reconditioning.
The conditions of the regional reconditioning companies have to be observed.

## SECTION 14: Transport information

**Land transport (ADR/RID)**

| | |
|---|---|
| **14.1. UN number or ID number:** | UN3175 |
| **14.2. UN proper shipping name:** | SOLIDS CONTAINING FLAMMABLE LIQUID, N.O.S. (Naphtha, heavy) |
| **14.3. Transport hazard class(es):** | 4.1 |
| **14.4. Packing group:** | II |
| Hazard label: | 4.1 |




| | |
|---|---|
| Classification code: | F1 |
| Special Provisions: | 216 274 601 |
| Limited quantity: | 1 kg |
| Excepted quantity: | E2 |
| Transport category: | 2 |
| Hazard No: | 40 |
| Tunnel restriction code: | E |

**Other applicable information (land transport)**

Provision(s), multilateral agreement(s): Not applicable

Maximum permissible total quantity per unit of carriage according to subsection 1.1.3.6 ADR/RID: 333 kg.
Factor out of category of carriage (= 2) to calculate the quantity per unit of carriage: 3.

**Inland waterways transport (ADN)**

**Other applicable information (inland waterways transport)**

Not classified for this transport carrier.

**Marine transport (IMDG)**

| | |
|---|---|
| **14.1. UN number or ID number:** | UN3175 |
| **14.2. UN proper shipping name:** | SOLIDS CONTAINING FLAMMABLE LIQUID, N.O.S. (Naphtha, heavy) |
| **14.3. Transport hazard class(es):** | 4.1 |
| **14.4. Packing group:** | II |
| Hazard label: | 4.1 |



| | |
|---|---|
| Marine pollutant: | -- |
| Special Provisions: | 216, 274 |
| Limited quantity: | 1 kg |
| Excepted quantity: | E2 |
| EmS: | F-A, S-I |
| Segregation group: | IMDG-Code segregation group not applicable |

**Other applicable information (marine transport)**

Exception(s): Not applicable

**Air transport (ICAO-TI/IATA-DGR)**

| | |
|---|---|
| **14.1. UN number or ID number:** | UN3175 |
| **14.2. UN proper shipping name:** | SOLIDS CONTAINING FLAMMABLE LIQUID, N.O.S. (Naphtha, heavy) |
| **14.3. Transport hazard class(es):** | 4.1 |
| **14.4. Packing group:** | II |
| Hazard label: | 4.1 |



| | |
|---|---|
| Special Provisions: | A46 |
| Limited quantity Passenger: | 5 kg |
| Passenger LQ: | Y441 |
| Excepted quantity: | E2 |
| IATA-packing instructions - Passenger: | 445 |
| IATA-max. quantity - Passenger: | 15 kg |
| IATA-packing instructions - Cargo: | 448 |
| IATA-max. quantity - Cargo: | 50 kg |

**Other applicable information (air transport)**

ERG Kodex: 3L

The state variations in chapter 2.8.1 and the operator variations in chapter 2.8.3 for shipping of dangerous goods in limited quantities according to chapter 2.7 of the valid ICAO/IATA Dangerous Goods Regulations have to be observed.

The rulings for dangerous goods by air mail according to chapter 2.4 of the valid ICAO/IATA Dangerous Goods Regulations and the conventions of the Universal Postal Union (UPU) as well as the clauses of the relevant National Postal Administation have to be observed. Airmail: prohibited.

**14.5. Environmental hazards**

ENVIRONMENTALLY HAZARDOUS: No

**14.6. Special precautions for user**

Further information see under section 6, 7, 8.

**14.7. Maritime transport in bulk according to IMO instruments**

No bulk transport in accordance with IBC code.
It is sold exclusively in traffic legally authorized and appropriate packaging.

**Other applicable information**

Postal, express and courier services:
Postal service (national):
Express freight / special delivery:

Refer to your National Postal Administation.
Courier service (national):
The general conditions of business of the particular courier service have to be observed.

## SECTION 15: Regulatory information

### 15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

**EU regulatory information**

Restrictions on use (REACH, annex XVII):
Entry 40

2010/75/EU (VOC): 83 % (589 g/l)

**Additional information**

Authorisations and/or restrictions on use:
Authorisations:
Authorisation of Chemicals (REACH) as regards Annex XIV:
not relevant
Restrictions on use:
Restriction of chemicals (REACH) as regards annex XVII:
No. 40 - Substances in aerosol dispensers for entertainment and decorative purposes for supply to the general public

Informations on Regulation (EC) No. 1272/2008 - Annex VI, Part 1:
Note P is valid: The harmonised classification as a carcinogen or mutagen applies unless it can be shown that the substance contains less than 0,1 % w/w benzene (Einecs No 200-753-7), in which case a classification in accordance with Title II of this Regulation shall be performed also for those hazard classes. Where the substance is not classified as a carcinogen or mutagen, at least the precautionary statements (P102-)P260-P262-P301 + P310-P331 shall apply.

Other regulations (EU):
Regulation (EC) No. 1005/2009 - Substances that deplete the ozone layer:
not relevant
Regulation (EC) No. 648/2004 and No 907/2006 - Detergents:
not relevant
Regulation (EC) No. 649/2012 - Export and import of dangerous chemicals:
not relevant
Regulation (EU) 2019/1021 - Persistent organic pollutants:
not relevant
Regulation (EC) No. 428/2009 and No. 388/2012 and No. 1382/2014 - Control of exports, or transfer, brokering and transit of dual-use goods (Dual-Use Regulation):
not relevant
Regulation (EC) No. 273/2004 - Drug precursors:
not relevant
Regulation (EC) No. 111/2005 - Definition of rules for the monitoring of trade in drug precursors between the Union and third countries:
not relevant
Regulation (EU) 2019/1148 - Marketing and use of precursors for explosives:
Annex I - Restricted explosives precursors:
not relevant
Annex II - Notification requirements for explosives precursors:
not relevant
Directive 2012/18/EC - Control of major accident hazards involving dangerous substances (Seveso III):
not relevant
Directive 2004/42/EC - Use of organic solvents in certain paints and lacquers:
not relevant
Directive 2010/75/EU - Industrial Emissions Directive (Directive IE) - succession to Directive 1999/13/EC - Limitation of emissions of volatile organic compounds (VOC-Directive):
When using this substance / mixture it has to be checked whether the activities are subject to the the requirements of IE-RL, Chapter V (installations and activities with the use of organic solvents - VOC).
Aerosol Directive (75/324/):
not relevant
Biocide directive (98/8/EC):

not relevant

Regulation (EU) No. 528/2012 on biocides:

not relevant

Observe in addition any national regulations!

EC-Chemical inventories: All ingredients are listed in EINECS / ELINCS or excepted from listing.

**National regulatory information**

Employment restrictions: Observe restrictions to employment for juveniles according to the 'juvenile work protection guideline' (94/33/EC). Observe employment restrictions under the Maternity Protection Directive (92/85/EEC) for expectant or nursing mothers.

**Additional information**

not relevant

Other regulations, restrictions and prohibition regulations:

European product inventories (Registration status on mixtures):
Kemikalieinspektionen / Produktregistret / Swedish Chemicals Inspectorate - KemI (http://www.kemi.se):
This product was registered.
Schweizerische Eidgenossenschaft - Bundesamt für Gesundheit - BAG (http://www.bag.admin.ch) / Anmeldestelle Chemikalien (http://www.cheminfo.ch) / Informationssystem für gefährliche und umweltrelevante Stoffe - IGS (http://igs.naz.ch/index.html):
This product was registered.

International chemical inventories (Registration status on substances): No data available

**15.2. Chemical safety assessment**

For the following substances of this mixture a chemical safety assessment has been carried out:
hydrocarbons, C9-C10, n-alkanes, isoalkanes, cyclics, <2% aromatics
hydrocarbons, C9, aromatics

## SECTION 16: Other information

**Changes**

This version replaces all former issues.

Changes made in this revision see section: 1, 2, 4, 6, 7, 8, 9, 11, 12, 13, 14, 15, 16.

**Abbreviations and acronyms**

ADN: European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways.
ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road.
ATE: Acute Toxicity Estimate.
CAS: Chemical Abstracts Service.
CEN: Comité Européen de Normalisation (European Committee for Standardisation).
CLP: Classification Labelling Packaging Regulation; Regulation (EC) No 1272/2008.
CSA: Chemical Safety Assessment.
CSR: Chemical Safety Report.
C&L: Classification & Labeling.
DNEL: Derived No-Effect Level.
EAK: European Waste Catalogue (replaced by LoW – see below).
EC50: Effective concentration, 50 percent.

ECHA: European Chemicals Agency.
EC: European community.
EINECS: European Inventory of Existing Commercial Chemical Substances.
ELINCS: European List of Notified Chemical Substances.
EN: European standard.
EWC: European Economic Community.
EEA: European Economic Area (EU + Iceland, Liechtenstein and Norway).
EU: European Union.
GHS: Globally Harmonized System of Classification and Labelling of Chemicals.
HSPA: Hydrocarbon Solvents Producers Association.
IATA-DGR: International Air Transport Association Dangerous Goods Regulations.
IBC-Code: International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk (International Bulk Chemical Code).
IC50 / ErC50: Inhibitory concentration, 50 percent.
ICAO-TI: International Cicil Aviation Organization Technical Instruction.
IMDG: International Maritime Dangerous Goods.
ISO: A standard of International Standards Organisation.
IUPAC: International Union for Pure and Applied Chemistry.
LC50: Lethal concentration, 50 percent.
LD50: Lethal Dose, 50 percent.
log Kow (Pow): octanol-water partition coefficient.
LoW: List of Wastes (see http://ec.europa.eu/environment/waste/framework/list.htm).
LQ: Limited Quantities.
MARPOL: Maritime Polluntion Convention (Convention for the Prevention of Pollution from Ships).
OC: Operational Conditions.
OECD: Organisation for Economic Co-operation and Development.
OSHA: Occupational Safety and Health Agency.
PBT: Persistent, bioaccumulabe and toxic.
PEC: Predicted Effect Concentration.
PNEC: Predicted No-Effect Concentration.
PPE: Personal Protection Equipment.
(Q)SAR: Quantitative-Structure-Activity-Relationship.
REACH: Registration, Evaluation, Authorisation and Restriction of Chemicals; Regulation (EC) No 1907/2006.
RID: Regulations concerning the International Carriage of Dangerous Goods by Rail.
RMM: Risk Management Measure.
STEL: Short time exposure limit.
SVHC: Substances of Very High Concern.
STOT - RE: Specific Target Organ Toxicity - Repeated Exposure.
STOT - SE: Specific Target Organ Toxicity - Single Exposure.
TWA: Time Weighted Average.
UVCB: Substances of Unknown or Variable composition, Complex reaction products or Biological materials.
vPvB: Very persistent and very bioaccumulable.
WoE: Weight of Evidence.

For abbreviations and acronyms, see table at http://abbrev.esdscom.eu

**Key literature references and sources for data**

The classification corresponds to current EC-lists, but is completed by statements of technical literature and company data.

Other public accessible sources:
Regulation (EC) No. 1907/2006 (REACH) in the valid version in each case
Regulation (EC) No. 1272/2008 (CLP) in the valid version in each case

Further information and practical guides on the internet:
European Chemicals Agency - ECHA (http://echa.europa.eu)
ECHA - Information on Chemicals (http://echa.europa.eu/information-on-chemicals)
ECHA - Candidate List of Substances of Very High Concern for Authorisation (http://echa.europa.eu/de/candidate-list-table)
ECHA - List of restrictions table (http://echa.europa.eu/de/addressing-chemicals-of-concern/restrictions/list-of-restrictions/list-of-restrictions-table)
ECHA - Authorisation List (http://echa.europa.eu/hr/addressing-chemicals-of-concern/authorisation/recommendation-for-inclusion-in-the-authorisation-list/authorisation-list)
ECHA - C&L Inventory (http://echa.europa.eu/en/web/guest/regulations/clp/cl-inventory)
eChemPortal (http://www.echemportal.org)
The access to European Union law - EUR-Lex (http://eur-lex.europa.eu)
Health and Safety Executive (http://www.hse.gov.uk) / Control of Substances Hazardous to Health Regulations - COSHH (http://www.coshh-essentials.org.uk/Home.asp)
Pollution Prevention and Control Act and Pollution Prevention and Control Regulations

**Classification for mixtures and used evaluation method according to GB CLP Regulation**

| Classification | Classification procedure |
|---|---|
| Flam. Sol. 1; H228 | On basis of test data |
| STOT SE 3; H336 | Calculation method |
| Aquatic Chronic 3; H412 | Calculation method |

**Relevant H and EUH statements (number and full text)**

| | |
|---|---|
| H226 | Flammable liquid and vapour. |
| H228 | Flammable solid. |
| H304 | May be fatal if swallowed and enters airways. |
| H335 | May cause respiratory irritation. |
| H336 | May cause drowsiness or dizziness. |
| H411 | Toxic to aquatic life with long lasting effects. |
| H412 | Harmful to aquatic life with long lasting effects. |
| EUH066 | Repeated exposure may cause skin dryness or cracking. |

**Further Information**

Full text of all R-, H-, EUH-phrases which are referred to in section 2 and 3 of this safety data sheet - see previous list.
These (this) R-, H-, EUH-phrases/R-, H-, EUH-phrase apply/applies to the substance(s) of content, however, it does not necessarily show the classification of the product.

Recommended restriction of application:
See under section 1.2 - Uses advised against.
Use this product only for intended purpose in accordance with our product informations.
Please refer to our internet website for more information (http://www.acmos.com).

Training advice:
Yearly briefing and instruction of employees by means of operating instructions according to article 8 of EC-directive 98/24/EC.

Inquiry office: Laboratory (Division: Occupational- /Product security)
Contact person: Mr. Dryhaus (Telephone: +49-421-5189-0, Telefax: +49-421-5189-871)
Office hours: Mo - Th from 7.30 - 16.15 h and Fr from 7.30 - 13.30 h. Out of office hours no call diversion.

Disclaimer:
The information is based on the present level of our knowledge. It does not, however, give assurance of product

properties and establishes no contract legal rights. The information contained herein are, to our knowledge at the time of their creation to be correct and been taken from sources deemed to be reliable. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release The receiver of our product is singularly responsible for adhering to existing laws and regulations. All descriptions are approximate values, they are not specified for construction of specifications. This safety data sheet does not represent any operating instruction according to national chemical regulations. It may be used for creation, but must not replace it. The employer is not relieved from his duties. All technical information to occupational protection are directed predominately to experts first (safety engineers, occupational medicines).

# APPENDIX VI
# RHODES PRESS AND AFTER SALES SDS

## SECTION 1: Identification of the substance/mixture and of the company/undertaking

### 1.1. Product identifier

ACMOS 37-9830

### 1.2. Relevant identified uses of the substance or mixture and uses advised against

**Relevant identified uses**

Release agent for PUR

**Uses advised against**

Consumer uses: Private households (= general public = consumers)
Sector of uses [SU]: 21
Do not use for private purposes (household).

Relevant identified uses - Further information:
Industrial uses: Uses of substances as such or in preparations at industrial sites
Sector of uses [SU]: 3
The product is intended for professional use.

In compliance with the conditions described in the annex to this safety data sheet.
Summary of registered and identified uses and their respective exposure scenarios: see annex to this safety data sheet.
See section 16 for a comprehensive list of uses, for which an exposure scenarion is provided as an annex.

### 1.3. Details of the supplier of the safety data sheet

**Manufacturer**

| | | | |
|---|---|---|---|
| Company name: | ACMOS CHEMIE KG | | |
| Street: | Industriestrasse 49 | | |
| Place: | D-28199 Bremen | | |
| Post-office box: | 10 10 69<br>D-28010 Bremen | | |
| Telephone: | +49 (0)421-5189-0 | Telefax: | +49 (0)421-511415 |
| e-mail: | acmos@acmos.com | | |
| Contact person: | Mr. Stephan Dryhaus | | |
| e-mail: | sds@acmos.com | | |
| Internet: | www.acmos.com | | |
| Responsible Department: | Laboratory (Division: Occupational- / Product security) - see under section 16 | | |

### 1.4. Emergency telephone number:

+49 (0)551 19240 (Emergency information service / official advisory body: Giftinformationszentrum Nord, Universität Göttingen, 24 h from mo. - su.)
Language(s) of Telephone Service: DE, EN

**Supplier**

| | | | |
|---|---|---|---|
| Company name: | ACMOS U.K. Ltd., Willow Bank House | | |
| Street: | Old Lane, Heswall | | |
| Place: | GB-CH60 1 XX Wirral, Merseyside | | |
| Telephone: | +44-(0)151-348 4849 | Telefax: | +44-(0)151-348 4850 |
| e-mail: | info@acmos.co.uk | | |
| Contact person: | Mr. Stephen Spriggs | Telephone: | +44-783 158 0003 (mobile) |

### 1.4. Emergency telephone number:

+44 111 (Emergency information service / official advisory body: National Poisons Information Service - NPIS Birmingham) (https://www.npis.org)
Language(s) of Telephone Service: EN

## SECTION 2: Hazards identification

### 2.1. Classification of the substance or mixture

**GB CLP Regulation**

Eye Irrit. 2; H319
Aquatic Chronic 2; H411

Full text of hazard statements: see SECTION 16.

### 2.2. Label elements

**GB CLP Regulation**

**Signal word:** Warning

**Pictograms:**





**Hazard statements**

| | |
|---|---|
| H319 | Causes serious eye irritation. |
| H411 | Toxic to aquatic life with long lasting effects. |

**Precautionary statements**

| | |
|---|---|
| P273 | Avoid release to the environment. |
| P280 | Wear protective gloves/protective clothing/eye protection/face protection/hearing protection. |
| P305+P351+P338 | IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. |
| P337+P313 | If eye irritation persists: Get medical advice/attention. |
| P391 | Collect spillage. |

**Special labelling of certain mixtures**

| | |
|---|---|
| EUH208 | Contains stannane, dibutylbis(dodecylthio)- (dibutyltin bis(lauryl mercaptide)); reaction mass of 5 -chloro-2-methyl-2H-isothiazol-3-one and 2-methyl-2H-isothiazol-3-one (3:1). May produce an allergic reaction.<br>Labeling according to Regulation (EU) No 528/2012 on biocides, Article 58 (3) and Regulation (EC) No 1272/2008, Article 25 (due to the specific conditions of the active substance approval): a) Contains biocidal products: Product-type 6: Preservatives for products during storage. b) Property attributed to the treated article: None c) Name of all active ingredients: See product label. d) Names of contained nanomaterials: None e) Relevant use instructions: Use personal protective equipment as required. |

**Additional advice on labelling**

Labelling according to Regulation (EC) No. 1272/2008 [CLP]

### 2.3. Other hazards

Adverse physicochemical effects:
See section 9 for physical and chemical properties.

Adverse human health effects and symptoms:
See section 11 for toxicological information.
May cause sensitisation especially in sensitive humans.

Adverse environmental effects:
See section 12 for environmental information.

Other adverse effects:
Special danger of slipping by leaking/spilling product.

Results of PBT-/vPvB-assesment:
See under section 12.5 - Results of PBT and vPvB assessment.

## SECTION 3: Composition/information on ingredients

### 3.2. Mixtures

**Chemical characterization**

Emulsion of active ingredients in water

**Hazardous components**

| CAS No | Chemical name | | | Quantity |
|---|---|---|---|---|
| | EC No | Index No | REACH No | |
| | Classification (GB CLP Regulation) | | | |
| 124-30-1 | octadecylamine | | | 1 - < 3 % |
| | 204-695-3 | 612-282-00-8 | 01-2119473804-32 | |
| | Skin Irrit. 2, Eye Dam. 1, STOT RE 2, Asp. Tox. 1, Aquatic Acute 1, Aquatic Chronic 1; H315 H318 H373 H304 H400 H410 | | | |
| 90622-57-4 | hydrocarbons, C11-C12, isoalkanes, <2% aromatics | | | 1 - < 5 % |
| | 918-167-1 | | 01-2119472146-39 | |
| | Asp. Tox. 1, Aquatic Chronic 4; H304 H413 EUH066 | | | |
| 1185-81-5 | stannane, dibutylbis(dodecylthio)- (dibutyltin bis(lauryl mercaptide)) | | | < 0,3 % |
| | 214-688-7 | | 01-2119841260-50 | |
| | Muta. 2, Repr. 1B, Acute Tox. 4, Skin Irrit. 2, Skin Sens. 1, STOT RE 1, Aquatic Acute 1, Aquatic Chronic 1; H341 H360FD H312 H315 H317 H372 H400 H410 | | | |
| 63843-89-0 | bis(1,2,2,6,6-pentamethyl-4-piperidyl) [[3,5-bis(1,1-dimethylethyl)4-hydroxyphenyl]methyl]butylmalonate | | | < 0.1 % |
| | 264-513-3 | | 01-2119978231-37 | |
| | Acute Tox. 4, STOT RE 1, Aquatic Chronic 1; H302 H372 H410 | | | |
| 90640-32-7 | amines, C16-18-alkyl | | | < 0.1 % |
| | 292-550-5 | | 01-2119473799-15 | |
| | Skin Irrit. 2, Eye Dam. 1, STOT RE 2, Asp. Tox. 1, Aquatic Acute 1, Aquatic Chronic 1; H315 H318 H373 H304 H400 H410 | | | |
| 55965-84-9 | reaction mass of 5-chloro-2-methyl-2H-isothiazol-3-one and 2-methyl-2H-isothiazol-3-one (3:1) | | | < 0,0015 % |
| | 911-418-6 | 613-167-00-5 | 01-2120764691-48 | |
| | Acute Tox. 2, Acute Tox. 2, Acute Tox. 3, Skin Corr. 1C, Eye Dam. 1, Skin Sens. 1A, Aquatic Acute 1, Aquatic Chronic 1; H330 H310 H301 H314 H318 H317 H400 H410 EUH071 | | | |

Full text of H and EUH statements: see section 16.

**Specific Conc. Limits, M-factors and ATE**

| CAS No | EC No | Chemical name | Quantity |
|---|---|---|---|
| | Specific Conc. Limits, M-factors and ATE | | |
| 124-30-1 | 204-695-3 | octadecylamine | 1 - < 3 % |
| | inhalation: LC50 = > 0,099 mg/l (dusts or mists); dermal: LD50 = > 2000 mg/kg; oral: LD50 = > 2000 mg/kg<br>M acute; H400: M=10<br>M chron.; H410: M=10 | | |
| 90622-57-4 | 918-167-1 | hydrocarbons, C11-C12, isoalkanes, <2% aromatics | 1 - < 5 % |
| | inhalation: LC50 = > 5,6 mg/l (dusts or mists); dermal: LD50 = > 5000 mg/kg; oral: LD50 = > 5000 mg/kg | | |
| 1185-81-5 | 214-688-7 | stannane, dibutylbis(dodecylthio)- (dibutyltin bis(lauryl mercaptide)) | < 0,3 % |
| | dermal: LD50 = 1000 - 2000 mg/kg; oral: LD50 = > 2000 mg/kg M acute; H400: M=1<br>M chron.; H410: M=1 | | |
| 63843-89-0 | 264-513-3 | bis(1,2,2,6,6-pentamethyl-4-piperidyl) [[3,5-bis(1,1-dimethylethyl)4-hydroxyphenyl]methyl]butylmalonate | < 0.1 % |
| | inhalation: LC50 = > 0,46 mg/l (dusts or mists); dermal: LD50 = > 3170 mg/kg; oral: LD50 = 1490 mg/kg M chron.; H410: M=10 | | |
| 90640-32-7 | 292-550-5 | amines, C16-18-alkyl | < 0.1 % |
| | dermal: LD50 = > 2000 mg/kg; oral: LD50 = > 5000 mg/kg M acute; H400: M=10<br>M chron.; H410: M=10 | | |
| 55965-84-9 | 911-418-6 | reaction mass of 5-chloro-2-methyl-2H-isothiazol-3-one and 2-methyl-2H-isothiazol-3-one (3:1) | < 0,0015 % |
| | inhalation: ATE = 0,5 mg/l (vapours); inhalation: LC50 = > 0,33 mg/l (dusts or mists); dermal: LD50 = > 87 mg/kg; oral: LD50 = 64 - 66 mg/kg Skin Corr. 1C; H314: >= 0,6 - 100 Skin Irrit. 2; H315: >= 0,06 - < 0,6 Eye Dam. 1; H318: >= 0,6 - 100 Eye Irrit. 2; H319: >= 0,06 - < 0,6 Skin Sens. 1A; H317: >= 0,0015 - 100<br>M acute; H400: M=100<br>M chron.; H410: M=100 | | |

**Further Information**

The above mentioned EC-No. (Provisional List Number 9xx-xxx-x) is a specific subset of the specified CAS-No. and was associated with the registration process automatically (without CAS-No. or numeric identifier). An official announcement by the EC inventory will follow after evaluation of substance identity by the ECHA. The new nomenclature of hydrocarbon solvents is only related with group names of the HSPA (Hydrocarbon Solvents Producers Association). The previously used CAS-No. continues serving as a reference for different global inventories. The classification of hydrocarbon mixtures made in consideration of the applicable notes in annex VI of regulation (EC) No. 1272/2008.

## SECTION 4: First aid measures

### 4.1. Description of first aid measures

**General information**

Remove affected person from the danger area and lay down.
Take off immediately all contaminated clothing and wash it before reuse.
Put victim at rest, cover with a blanket and keep warm.
Do not leave affected person unattended.
If a person vomits when lying on his back, place him in the recovery position.
If breathing is irregular or stopped, administer artificial respiration.
If unconscious but breathing normally, place in recovery position and seek medical advice.
Never give anything by mouth to an unconscious person or a person with cramps.
In the event of cardiac arrest immediately perform cardiopulmonary resuscitation.
In case of accident or unwellness, seek medical advice immediately (show directions for use or safety data sheet if possible).

Self-protection of the first aider:
Wear personal protection equipment (refer to section 8).
First Aid.

Notes for the doctor:
No special measures are necessary.

**After inhalation**

Remove victim out of the danger area.
Provide fresh air.
Consult a doctor immediately in the case of inhaling spray mist and show him packing or label.

**After contact with skin**

Wash immediately with:
Water and soap
Rub greasy ointment into the skin.
Do not wash with:
Solvents/Thinner
In case of skin irritation, consult a physician.

**After contact with eyes**

In case of contact with eyes flush immediately with plenty of flowing water for 10 to 15 minutes holding eyelids apart and consult an ophthalmologist.
Remove contact lenses, if present and easy to do. Continue rinsing.
Protect uninjured eye.

**After ingestion**

Do NOT induce vomiting.
Give nothing to eat or drink.
Never give anything by mouth to an unconscious person or a person with cramps.
Call a physician immediately.

### 4.2. Most important symptoms and effects, both acute and delayed

The following symptoms may occur:
Cough
Allergic reactions
Acidosis
Nausea

### 4.3. Indication of any immediate medical attention and special treatment needed

Treat symptomatically.

## SECTION 5: Firefighting measures

### 5.1. Extinguishing media

**Suitable extinguishing media**

Full water jet
Water spray jet
Water mist
Extinguishing powder (ABC-powder)
Foam
Carbon dioxide ($CO_2$)

Fire class: not relevant

**Unsuitable extinguishing media**

None known

### 5.2. Special hazards arising from the substance or mixture

Hazardous combustion products:
None known
The product itself does not burn.

### 5.3. Advice for firefighters

Usual measures of preventive and averting fire protection.
Co-ordinate fire-fighting measures to the fire surroundings.
Collect contaminated fire extinguishing water separately. Do not allow entering drains or surface water.
Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.

Special protective equipment for firefighters
not relevant

## SECTION 6: Accidental release measures

### 6.1. Personal precautions, protective equipment and emergency procedures

**General advice**

Avoid contact with skin, eyes and clothes.
Do not breathe vapour/aerosol.
Prevent further leakage or spillage if safe to do so.
Provide adequate ventilation.
Special danger of slipping by leaking/spilling product.

For non-emergency personnel:
Use personal protection equipment.
Walk out of the danger zone and notify trained personnel.
Emergency procedures:
Keep the factory emergency plan and the information chain.

For emergency responders:
Use personal protection equipment.
The personal protective equipment must be adapted to the situation.
Suitable material:
See under section 8.2 - Personal protection equipment.

### 6.2. Environmental precautions

Do not allow to enter into surface water or drains.
Do not allow to enter into soil/subsoil.
Ensure waste is collected and contained.
In case of gas escape or of entry into waterways, soil or drains, inform the responsible authorities.

### 6.3. Methods and material for containment and cleaning up

**Other information**

For containment:
Repair leaks if without risk.
Move containers from spill area.
Make sure spills can be contained, e.g. in sump pallets or kerbed areas.

Prevent spread over a wide area (e.g. by containment or oil barriers).
Remove from the water surface (e.g. skimming, sucking).
Cover drains.

For cleaning up:
Clean-up methods - large spillage:
Absorb with liquid-binding material (sand, diatomaceous earth, acid- or universal binding agents).
Shovel into suitable container for disposal.
Local authorities should be advised if significant spillages cannot be contained.
Clean-up methods - small spillage:
Clear spills immediately.
Wipe up with absorbent material (eg. cloth, fleece).
Collect in closed and suitable containers for disposal.
Clear contaminated areas thoroughly.
Recommended cleansing agent:
Clean with detergents. Avoid solvent cleaners.
Retain contaminated washing water and dispose it.
Ensure all waste water is collected and treated via a waste water treatment plant.
Ventilate affected area.

Suitable material for taking up:
Sand
Kieselguhr
Universal binder
Absorbing material, organic

Unsuitable material for taking up:
None known

**6.4. Reference to other sections**

Personal protection equipment: see section 8
Disposal: see section 13

## SECTION 7: Handling and storage

**7.1. Precautions for safe handling**

**Advice on safe handling**

Measures to prevent aerosol and dust generation:
All work processes must always be designed so that the following is as low as possible:
Inhalation of vapours or spray/mists
Eye contact
Skin contact

Technical ventilation of workplace
Use only in a exhaust booth with integrated air filter.
Use in ventilated spray booths only.
Recirculation of exhaust air is not recommended.
Always close containers tightly after the removal of product.

**Advice on protection against fire and explosion**

Measures to prevent fire:
The product is not: Combustible
Usual measures for fire prevention.
Fire-fighting equipment on the basis of class B.

**Further information on handling**

Environmental precautions:
Transfer wash-downs in sealed containers.
Provide for retaining containers, e.g. floor pan without outflow.
For restriction of emission on volatile organic compounds (VOC) the solvent vapours should be supplied to an exhaust air purification facility (filter, gas washer, incineration).

Advices on general occupational hygiene:

Wear personal protection equipment (refer to section 8).
Minimum standard for preventive measures while handling with working materials are specified in the TRGS 500.
General industrial hygiene practice.
Handle in accordance with good industrial hygiene and safety practice.
Working places should be designed to allow cleaning at any time.
Floors, walls and other surfaces in the hazard area must be cleaned regularly.
Clean spray booth and exhaust hood completely with every product change.
When using do not eat, drink, smoke, sniff.
Thorough skin-cleansing after handling the product.
Used working clothes should not be worn outside the work area.

**7.2. Conditions for safe storage, including any incompatibilities**

**Requirements for storage rooms and vessels**

Suitable floor material:
Floors should be impervious, resistant to liquids and easy to clean.

Protect against:
Heat
Cold

Recommended storage temperature: +10 ... +30 °C

Keep away from:
Food and feedingstuffs

Packaging materials:
Suitable container/equipment material:
Keep/Store only in original container.
Unsuitable container/equipment material:
See under section 8.2 - Hand protection.

**Hints on joint storage**

Do not store together with:
Storage class:
1 (Explosive hazardous substances)
6.2 (Infectious substances)
7 (Radioactive substances)

**Further information on storage conditions**

Technical measures and storage conditions:
The valid water and zoning ordinances must be observed.
Keep container tightly closed.
Protect containers against damage.
Ensure adequate ventilation of the storage area.
Do not store outside.
See also instuctions on the label.

**7.3. Specific end use(s)**

Recommendation:
Possibilities for substitution and references to less hazardous products:
This product was designed for a special application purpose and optimized appropriately.
In case of questions regarding product and application, please contact our field service in line with customer service or our technical sales department.
Observe technical data sheet.

Industrial sector specific solutions:

Hazardous substance information systems of professional associations:

## SECTION 8: Exposure controls/personal protection

**8.1. Control parameters**

**Exposure limits (EH40)**

| CAS No | Substance | ppm | mg/m³ | fibres/ml | Category | Origin |
|---|---|---|---|---|---|---|
| - | Cycloalkanes >= C7 | - | 800 | | TWA (8 h) | WEL |
| - | Normal and branched chain alkanes >= C7 (it excludes n-heptane) | - | 1200 | | TWA (8 h) | WEL |
| - | Tin compounds, organic, except Cyhexatin (ISO), (as Sn) | - | 0.1 | | TWA (8 h) | WEL |
| | | - | 0.2 | | STEL (15 min) | WEL |

**DNEL/DMEL values**

| CAS No | Substance | | | |
|---|---|---|---|---|
| DNEL type | | Exposure route | Effect | Value |
| 124-30-1 | octadecylamine | | | |
| Worker DNEL, long-term | | dermal | systemic | 0,09 mg/kg bw/day |
| Worker DNEL, long-term | | inhalation | systemic | 0,38 mg/m³ |
| Consumer DNEL, long-term | | oral | systemic | 0,04 mg/kg bw/day |
| 63843-89-0 | bis(1,2,2,6,6-pentamethyl-4-piperidyl) [[3,5-bis(1,1-dimethylethyl)4-hydroxyphenyl]methyl]butylmalonate | | | |
| Worker DNEL, long-term | | dermal | systemic | 0,07 mg/kg bw/day |
| Worker DNEL, long-term | | inhalation | systemic | 0,05 mg/m³ |
| Consumer DNEL, long-term | | dermal | systemic | 0,033 mg/kg bw/day |
| Consumer DNEL, long-term | | inhalation | systemic | 0,01 mg/m³ |
| Consumer DNEL, long-term | | oral | systemic | 0,003 mg/kg bw/day |
| 90640-32-7 | amines, C16-18-alkyl | | | |
| Worker DNEL, long-term | | inhalation | local | 1 mg/m³ |
| Consumer DNEL, long-term | | inhalation | systemic | 0,035 mg/m³ |
| Worker DNEL, long-term | | inhalation | systemic | 0,38 mg/m³ |
| Consumer DNEL, long-term | | oral | systemic | 0,04 mg/kg bw/day |
| 55965-84-9 | reaction mass of 5-chloro-2-methyl-2H-isothiazol-3-one and 2-methyl-2H-isothiazol-3-one (3:1) | | | |
| Worker DNEL, long-term | | inhalation | local | 0,02 mg/m³ |
| Worker DNEL, acute | | inhalation | local | 0,04 mg/m³ |
| Consumer DNEL, long-term | | inhalation | local | 0,02 mg/m³ |
| Consumer DNEL, acute | | inhalation | local | 0,04 mg/m³ |
| Consumer DNEL, long-term | | oral | systemic | 0,09 mg/kg bw/day |
| Consumer DNEL, acute | | oral | systemic | 0,11 mg/kg bw/day |

**PNEC values**

| CAS No | Substance |
|---|---|
| Environmental compartment | Value |
| 124-30-1 | octadecylamine |
| Freshwater | 0,00026 mg/l |
| Marine water | 0,000026 mg/l |
| Freshwater sediment | 0,179 mg/kg |
| Marine sediment | 0,0179 mg/kg |
| Micro-organisms in sewage treatment plants (STP) | 0,55 mg/l |
| Soil | 10 mg/kg |
| 63843-89-0 | bis(1,2,2,6,6-pentamethyl-4-piperidyl) [[3,5-bis(1,1-dimethylethyl)4-hydroxyphenyl]methyl]butylmalonate |
| Freshwater | 0,00004 mg/l |
| Marine water | 0,00000 mg/l |
| Freshwater sediment | 504,4 mg/kg |
| Marine sediment | 50,44 mg/kg |
| Micro-organisms in sewage treatment plants (STP) | 1 mg/l |
| Soil | 1 mg/kg |
| 90640-32-7 | amines, C16-18-alkyl |
| Freshwater | 0,00026 mg/l |
| Freshwater sediment | 0,0039 mg/kg |
| Micro-organisms in sewage treatment plants (STP) | 0,550 mg/l |
| Soil | 10 mg/kg |
| 55965-84-9 | reaction mass of 5-chloro-2-methyl-2H-isothiazol-3-one and 2-methyl-2H-isothiazol-3-one (3:1) |
| Freshwater | 0,00339 mg/l |
| Marine water | 0,00339 mg/l |
| Freshwater sediment | 0,027 mg/kg |
| Marine sediment | 0,027 mg/kg |
| Soil | 0,01 mg/kg |

**Additional advice on limit values**

GESTIS - International Limit Values - Institut für Arbeitsschutz der Deutschen Gesetzlichen Unfallversicherung (IFA): http://limitvalue.ifa.dguv.de
Country information (EU) (http://www.dguv.de/ifa/fachinfos/occupational-exposure-limit-values/foreign-and-eu-limit-values/index.jsp)
Country information (GB) (http://www.hse.gov.uk/pubns/books/eh40.htm)
Occupational Exposure Limits of EU-memberstates - European Agency for Safety and Health at Work (OSHA) (http://osha.europa.eu/en/topics/ds/oel/index.stm/members.stm)
Source of law: EH40 (GB) (http://www.hse.gov.uk)

Recommended monitoring procedures:
Workplace atmospheres - Guide for the application and use of procedures for the assessment of exposure to chemical and biological agents (BS EN 14042):
Personal air monitoring
Room air monitoring
Test tube
Gas warning system

Preliminary concentration measurements:
Suitable detector tubes for measuring the current concentration in the air at the workplace: DRÄGER test tubes - short-term tubes (http://www.gasmesstechnik.de)
DRÄGER test tubes - Short-term tubes - Petroleum hydrocarbons 10 / a (n-octane, measuring range: 10 - 300 ppm, response time: 60 sec) (http://www.gasmesstechnik.de)
DRÄGER test tubes - Short-term tubes - Petroleum hydrocarbons 100 / a (n-octane, measuring range: 100 - 2500 ppm, response time: 30 sec) (http://www.gasmesstechnik.de)

Exposure limits at intended use:

DNEL-/PNEC-values:
Further information: see exposure scenarios attached to this safety data sheet.

Risk management measures according to used control banding approach:
Control banding for chemicals according to the ILO CHEMICAL CONTROL TOOLKIT (ICCT): ICCT-Guidelines and Control Guidance Sheets ( http://www.ilo.org/legacy/english/protection/safework/ctrl_banding/toolkit/main_guide.pdf)

Used model:
Consider appropriate model solutions according to good engineering practices on designing the working process, if available.

**8.2. Exposure controls**





**Appropriate engineering controls**

Substance/mixture related measures to prevent exposure during identified uses:
Technical measures to prevent exposure:
Design of appropriate work processes and engineering controls and the use of adequate materials (physical cut-off of man and machine, model solutions as certified working methods, working appliance according to the state of the art, optimization of process / spray robots, working appliance for prevention of skin contact, models of working times).

Organisational measures to prevent exposure:
Execution of collective protection measures at source and appropriate organisational measures (local exhaust ventilation, ventilation by technical means, general ventilation, measures on averting a danger at breakdowns / at emergencies / after accidents, first-aid-measures, manner related measures: operating instruction / instruction of employees, occupational medicine health precaution).

Structural measures to prevent exposure:
Execution of individual and personnel protection measures (personal protective equipment - PPE).

If technical exhaust or ventilation measures are not possible or insufficient, respiratory protection must be worn.
Technical measures and the application of suitable work processes have priority over personal protection equipment.

References for design of technical equipment:
See under section 7.1 - Precautions for safe handling.

Summary of the risk management measures for exposure scenario:
Use only the following product amount per time unit:
No information available.
Minimum room-width and room-height for handling/application:
No information available.
Minimum room ventilation rate for handling/application (air changes per hour):
No information available.

**Individual protection measures, such as personal protective equipment**

**Eye/face protection**

If required according to hazard assessment:
Suitable eye protection:
Eye glasses with side protection (EN 166)
Recommended eye protection articles:

UVEX I-VO / UVEX I-3 / UVEX SUPER OTG
Or comparable articles from other companies.

**Hand protection**

Skin protection:
Preventive skin protection.:
Draw up skin protection programme.
Before starting work, apply water-resistant skincare preparations.
e.g. saniwip®, dualin® (PETER GREVEN PHYSIODERM)
Wash hands before breaks and after work.
e.g. ecosan®, topscrub® soft / topscrub® extra / topscrub® nature (PETER GREVEN PHYSIODERM)
After cleaning apply high-fat content skin care cream.
e.g. physioderm® creme, cura soft® / cUrea soft® (PETER GREVEN PHYSIODERM)
Apply skin care products after work.

If required according to hazard assessment:
When handling with chemical substances, protective gloves must be worn with the CE-label including the four control digits.
The quality of the protective gloves resistant to chemicals must be chosen as a function of the specific working place concentration and quantity of hazardous substances.
Decrease wearing protection gloves to an inevitable degree to avoid skin rash.
Technical and organizational protective actions have to be preferred.
Breakthrough times and swelling properties of the material must be taken into consideration.
Check leak tightness/impermeability prior to use.
Wear cotton undermitten if possible.
Change preventive gloves once by hour or use special skin-protective preparations for protective gloves carrier,
e.g. physioderm® proGlove (PETER GREVEN PHYSIODERM)
Take recovery periods for skin regeneration.
Do not wear gloves near rotary machines and tools.
Dispose preventive gloves after defect or expiry of wearing time. Replace when worn.
In the case of wanting to use the gloves again, clean them before taking off and air them well.

Wearing time with permanent contact:
Suitable gloves type
Gloves with long cuffs
Recommended glove articles:
Suitable materials at long term, direct contact (Recommended: Preventive index 6, accordingly > 480 min. permeation time in accordance to EN 374):
Nitrile rubber / NBR (KCL-CAMATRIL VELOURS® - Art. No. 730) - Layer thickness: 0,4 mm
Or comparable articles from other companies.

Unsuitable material:
NR (natural rubber, Natural latex)

Wearing time with occasional contact (splashes):
Suitable gloves type
Disposable gloves
Recommended glove articles:
Suitable materials at short term contact or splash (Recommended: Preventive index 3, accordingly > 60 min. permeation time in accordance to EN 374):
Disposable gloves of special nitrile rubber / NBR (KCL-DERMATRIL® P - Art. No. 743) - Layer thickness: 0,2 mm
Or comparable articles from other companies.

The statements are based on self-tests, literary reference and information of glove manufacturers or have been derived from similar substances by analogy.
Source: CHEMIKALIEN-MANAGER - KCL software for hand protection.
It has to be noticed, that daily time of use of chemical protective gloves may be quite shorter in practice because of many factors of influence (e.g. thermal and mechanical stress as well as special conditions on the floor) than the permeation time determined in accordance to EN 374.

The respective permeation time doubles/halvens at about 1,5 times larger/lower layer thickness.
Declared permeation times according to EN 374 are not carried out under practical conditions. Therefore a maximum wearing time up to 50 % of breakthrough time is recommended.
They relate to the pure solvent as mean component.

Barrier creams are not substitutes for body protection.

**Skin protection**

If required according to hazard assessment:
Suitable protective clothing:
Overall, Natural fibres (e.g. cotton) (EN 340)
For the protection against direct skin contact, body protective clothing is essential (in addition to the usual working clothes).
When handling with chemical substances, protective clothing with CE-labels including the four control digits must be worn.
DIN-/EN-Norms EN 468
Chemical protection clothing (Disposable suit antistatic)
type 6 limited splash-tight
type 5 particle-tight (method B)
type 4 spray-tight
Recommended protective clothing articles:
TYVEK CLASSIC PLUS (DU PONT)
Or comparable articles from other companies.

Chemical resistant safety shoes with conductible sole (EN ISO 20345)

Wash contaminated clothing prior to re-use.
Used working clothes should not be worn outside the work area.
Street clothing should be stored separately from work clothing.

Thermal hazards:
No thermal hazards during use of this product.

**Respiratory protection**

If required according to hazard assessment:
Respiratory protection necessary at:
aerosol or mist formation + exceeding exposure limit values +
high concentrations / prolonged exposure / insufficient ventilation / insufficient exhaust
Use only respiratory protection equipment with CE-symbol including four digit test number.
Filter types: A, B, E, K. Class 1: Maximum permitted contaminant concentration in inhaled air = 1000 mL/m3 (0.1 % by vol.); class 2: maximum permitted contaminant concentration in inhaled air = 5000 mL/m³ (0.5 % by vol.); class 3: maximum permitted contaminant concentration in inhaled air = 10000 mL/m³ (1.0 % by vol.)
The filter class must be suitable for the maximum contaminant concentration (gas/vapour/aerosol/particulates) that may arise when handling the product. If the concentration is exceeded, self-contained breathing apparatus must be used.
Observe the wear time limits according GefStoffV in combination with the rules for using respiratory protection apparatus (BGR 190).
The use of filter equipment requires a minimum oxygen content of 17 Vol-% in the surrounding atmosphere and that the maximum permitted gas concentration - normally 0,5 Vol-% - is not exceeded.

Suitable respiratory protection apparatus:
Half-face mask or quarter facepiece: maximum use concentration for substances with exposure limits: P1 filter: up to a max. of 4 times the exposure limit. P2 filter: up to a max. of 10 times the exposure limit. P3 filter: up to a max. of 30 times the expo.

Recommended respiratory protection articles:
Half mask or quarter mask with combination filter A1P1/A2P2 for gases, vapors and particles. (EN 140, EN 14387)
Filtering half mask or quarter mask with combination filter FFA1 P1/FFA2P2 for gases, vapors and particles. (EN 405)
Gas filtrating Half-face mask FFA (EN 405)
Model 4251 (FFA1P1 - 1000 ml/m3) / 4255 (FFA2P2SL - 5000 ml/m3) (3M)
Half-face mask or Quarter-face mask with gas filter (EN 140, EN 14387)

Filter type 6051 (A1 - 1000 ml/m3) / 6055 (A2 - 5000 ml/m3) (3M)
Full-face mask with gas filter (EN 136, EN 14387)
Gas filter type: A, Indication colour: brown
Or comparable articles from other companies.

**Environmental exposure controls**

Environmental exposure controls:
Technical measures to prevent exposure:
Discharge exhaust air only with suitable seperators to atmosphere.
Organisational measures to prevent exposure:
Should not be released into the environment.
Structural measures to prevent exposure:

Use the following recovery and/or abatement technique for cleaning waste gases:
Exhaust air scrubber
Adsorption

Further information see under section 6.2 - Environmental precautions.

## SECTION 9: Physical and chemical properties

### 9.1. Information on basic physical and chemical properties

| | | |
|---|---|---|
| Physical state: | liquid | |
| Colour: | white | |
| Odour: | characteristic | |
| | | **Test method** |
| Melting point/freezing point: | < 0 °C | literature value |
| Boiling point or initial boiling point and boiling range: | > 100 °C | literature value |
| Flammability | | |
| Solid/liquid: | not applicable (Liquid) | |
| Gas: | not applicable (Liquid) | |
| Lower explosion limits: | not relevant | |
| Upper explosion limits: | not relevant | |
| Flash point: | not applicable | |
| Auto-ignition temperature: | not relevant | |
| Decomposition temperature: | not relevant | |
| pH-Value: | 6 | DIN 19268 |
| Viscosity / kinematic: (at 40 °C) | 43,7 mm²/s | DIN 53015 |
| Water solubility: (at 20 °C) | emulsifiable | |
| Solubility in other solvents | | |
| miscible with most organic solvents (Alcohols, aldehydes, Ketone) | | |
| Partition coefficient n-octanol/water: | not applicable (Mixtures) | |
| Vapour pressure: (at 20 °C) | Corresponds to the vapour pressure of water. < 23 hPa | literature value |
| Vapour pressure: (at 50 °C) | Corresponds to the vapour pressure of water. < 123 hPa | literature value |
| Density (at 20 °C): | 1 g/cm³ | DIN 51757 |
| Bulk density: | not applicable (Liquid) | |
| Relative vapour density: | not determined | |

### 9.2. Other information

**Information with regard to physical hazard classes**

Explosive properties
No flash point up to 100 °C.

Self-ignition temperature

| | |
|---|---|
| Solid: | Not pyrophoric. |
| Gas: | Not pyrophoric. |

Oxidizing properties
not relevant

**Other safety characteristics**

| | | |
|---|---|---|
| Evaporation rate: | not determined | |
| Solvent separation test: | not applicable | |
| Solvent content: | not determined | |
| Solid content: | not determined | |
| Sublimation point: | not applicable | |
| Softening point: | not applicable | |
| Pour point: | not applicable | |
| Viscosity / dynamic: | not determined | |
| Flow time: (at 23 °C) | > 30 s | 3 DIN EN ISO 2431 |

**Further Information**

Odour threshold: No data available

Surface tension: No data available
Fat solubility: No data available
Calculated oxidation potential of the mixture (OP): not relevant

Substance group relevant properties:
Data relevant with regard to physical hazard classes (supplemental):
Explosives
not applicable
Flammable gases
Non-flammable. / not applicable (Liquid)
Aerosols
Non-flammable. / not applicable (Liquid)
Oxidising gas
Not oxidising. / not applicable (Liquid)
Gases under pressure
not applicable (Liquid)
Flammable liquids
Non-flammable.
flammable solids
Non-flammable. / not applicable (Liquid)
Self-reactive substances and mixtures
not applicable
Pyrophoric liquids
Not pyrophoric.
Pyrophoric solids
Not pyrophoric. / not applicable (Liquid)
self-heating substances and mixtures
not applicable
Substances or mixtures which, in contact with water, emit flammable gases
not applicable
Oxidising liquids
Not oxidising.
Oxidising solids
Not oxidising. / not applicable (Liquid)
Organic peroxides
not applicable
Corrosive to metals.
Not corrosive to metals.

## SECTION 10: Stability and reactivity

**10.1. Reactivity**

The product is chemically stable under recommended conditions of storage, use and temperature.

**10.2. Chemical stability**

The product is chemically stable under recommended conditions of storage, use and temperature.

**10.3. Possibility of hazardous reactions**

No hazardous reaction when handled and stored according to provisions.

**10.4. Conditions to avoid**

Further information see under section 7.2 - Conditions for safe storage, including any incompatibilities.
Further information see under section 10.5 - Incompatible materials.

**10.5. Incompatible materials**

Violent reaction with:
Hazardous substances that release flammable gases when in contact with water
Further information see under section 7.1 - Precautions for safe handling.

**10.6. Hazardous decomposition products**

Does not decompose when used for intended uses.
No known hazardous decomposition products.
Under fire conditions: See under section 5.2 - Special hazards arising from the substance or mixture.

## SECTION 11: Toxicological information

**11.1. Information on hazard classes as defined in GB CLP Regulation**

**Toxicocinetics, metabolism and distribution**

There are no data available on the preparation/mixture itself.
The product has not been tested.

Information on likely routes of exposure /
Symptoms related to the physical, chemical and toxicological characteristics:
See under section 4.2 - Most important symptoms and effects, both acute and delayed.

Exposure route:
In case of ingestion:
Ingestion causes nausea, weakness and central nervous system effects.

In case of skin contact:
May cause skin irritation in susceptible persons.
Prolonged or repeated skin contact may cause removal of natural fat from the skin resulting in dermatitis (skin inflammation).

In case of inhalation:
slightly irritant but not relevant for classification.

In case of eye contact:
irritant.
Conjunctival redness.

Delayed and immediate effects as well as chronic effects from short and long-term exposure:
Not relevant

Interactive effects:
Not relevant

Absence of specific data:
No data is available on the product itself. Description of possible hazardous to health effects is based on experience and/or toxicological characteristics of several components.
However, some datas are not complete regarding particular main components. Nevertheless according to the experience of the manufacturer there are no other hazards expected then those which are already mentioned on the label.

Mixture versus substance information:
Not relevant

**Acute toxicity**

Based on available data, the classification criteria are not met.

| CAS No | Chemical name | | | | |
|---|---|---|---|---|---|
| | Exposure route | Dose | Species | Source | Method |
| 124-30-1 | octadecylamine | | | | |
| | oral | LD50 > 2000 mg/kg | Rat | ECHA | OECD 401 |
| | dermal | LD50 > 2000 mg/kg | Rat | ECHA | OECD 402 |
| | inhalation (1 h) dust/mist | LC50 > 0,099 mg/l | Rat | ECHA | OECD 403 |
| 90622-57-4 | hydrocarbons, C11-C12, isoalkanes, <2% aromatics | | | | |
| | oral | LD50 > 5000 mg/kg | Rat | Supplier / ECHA | OECD 401 |
| | dermal | LD50 > 5000 mg/kg | Rabbit | Supplier / ECHA | OECD 402 |
| | inhalation (4 h) dust/mist | LC50 > 5,6 mg/l | Rat | ECHA | OECD 403 |
| 1185-81-5 | stannane, dibutylbis(dodecylthio)- (dibutyltin bis(lauryl mercaptide)) | | | | |
| | oral | LD50 > 2000 mg/kg | Rat | Supplier / ECHA | OECD 423 |
| | dermal | LD50 1000 - 2000 mg/kg | Rabbit [female] | Supplier / ECHA | OECD 402 |
| 63843-89-0 | bis(1,2,2,6,6-pentamethyl-4-piperidyl) [[3,5-bis(1,1-dimethylethyl)4-hydroxyphenyl]methyl]butylmalonate | | | | |
| | oral | LD50 1490 mg/kg | Rat | Supplier / ECHA | OECD 401 |
| | dermal | LD50 > 3170 mg/kg | Rat | Supplier / ECHA | OECD 402 |
| | inhalation (4 h) dust/mist | LC50 > 0,46 mg/l | Rat | Supplier / ECHA | OECD 403 |
| 90640-32-7 | amines, C16-18-alkyl | | | | |
| | oral | LD50 > 5000 mg/kg | Rat | Supplier / ECHA | OECD 401 |
| | dermal | LD50 > 2000 mg/kg | Rat | ECHA | OECD 402 |
| 55965-84-9 | reaction mass of 5-chloro-2-methyl-2H-isothiazol-3-one and 2-methyl-2H-isothiazol-3-one (3:1) | | | | |
| | oral | LD50 64 - 66 mg/kg | Rat | ECHA / Supplier | OECD 401 |
| | dermal | LD50 > 87 mg/kg | Rat | ECHA | OECD 402 |
| | inhalation vapour | ATE 0,5 mg/l | | | |
| | inhalation (4 h) dust/mist | LC50 > 0,33 mg/l | Rat | ECHA | OECD 403 |

**Irritation and corrosivity**

Causes serious eye irritation.

Skin corrosion/irritation: Based on available data, the classification criteria are not met.

**Sensitising effects**

Contains stannane, dibutylbis(dodecylthio)- (dibutyltin bis(lauryl mercaptide)); reaction mass of 5-chloro-2-methyl-2H-isothiazol-3-one and 2-methyl-2H-isothiazol-3-one (3:1). May produce an allergic reaction.

**Carcinogenic/mutagenic/toxic effects for reproduction**

Based on available data, the classification criteria are not met.

**STOT-single exposure**

Based on available data, the classification criteria are not met.

**STOT-repeated exposure**

Based on available data, the classification criteria are not met.

**Aspiration hazard**

Based on available data, the classification criteria are not met.

**11.2. Information on other hazards**

**Endocrine disrupting properties**

Endocrine disrupting potential (Health):

not relevant

## SECTION 12: Ecological information

### 12.1. Toxicity

Aquatic toxicity:

Acute (short-term) fish toxicity:

There are no data available on the preparation/mixture itself. The product has not been tested.

Acute (short-term) toxicity to crustacea:

There are no data available on the preparation/mixture itself. The product has not been tested.

Acute (short-term) toxicity to algae and cyanobacteria:

There are no data available on the preparation/mixture itself. The product has not been tested.

Chronic (long-term) toxicity to aquatic invertebrate:

There are no data available on the preparation/mixture itself. The product has not been tested.

Chronic (long-term) fish toxicity:

There are no data available on the preparation/mixture itself. The product has not been tested.

Toxicity to other aquatic plants/organisms:

No data available (Substances/Ingredient)

Terrestrial toxicity:

Acute and subchronic bird toxicity:

No data available (Substances/Ingredient)

Bird reproduction toxicity:

No data available (Substances/Ingredient)

Acute earthworm toxicity:

No data available (Substances/Ingredient)

Chronical earthworm toxicity (reproduction):

No data available (Substances/Ingredient)

Useful insect toxicity:

No data available (Substances/Ingredient)

Acute plant toxicity:

No data available (Substances/Ingredient)

Chronic plant toxicity:

No data available (Substances/Ingredient)

Toxicity to soil macroorganisms except of arthropods:

No data available (Substances/Ingredient)

Effects on soil microorganisms:

No data available (Substances/Ingredient)

Behaviour in waste water treatment plants:

No data available

Observe local regulations concerning effluent treatment.

| CAS No | Chemical name | | | | | |
|---|---|---|---|---|---|---|
| | Aquatic toxicity | Dose | [h] \| [d] | Species | Source | Method |
| 124-30-1 | octadecylamine | | | | | |
| | Acute fish toxicity | LC50 > 0,01 - 0,1 mg/l | 96 h | Pimephales promelas | Supplier | EPA OPPTS 850.1085 |
| | Acute algae toxicity | ErC50 > 0,01 - 0,1 mg/l | 72 h | Scenedesmus subspicatus | Supplier | OECD 201 |
| | Acute crustacea toxicity | EC50 > 0,01 - 0,1 mg/l | 48 h | Daphnia magna | Supplier | OECD 202 |
| | Algae toxicity | NOEC 0,01 mg/l | 3 d | Desmodesmus subspicatus | ECHA | OECD 201 |
| | Crustacea toxicity | NOEC 0,001 mg/l | 21 d | Daphnia magna | ECHA | OECD 211 |
| | Acute bacteria toxicity | (EC50 14 mg/l) | 3 h | Activated sludge | ECHA | OECD 209 |
| 90622-57-4 | hydrocarbons, C11-C12, isoalkanes, <2% aromatics | | | | | |
| | Acute fish toxicity | LC50 > 1000 mg/l | 96 h | Oncorhynchus mykiss | Supplier / ECHA | OECD 203 |
| | Acute algae toxicity | ErC50 > 1000 mg/l | 72 h | Pseudokirchneriella subcapitata | Supplier / ECHA | OECD 201 |
| | Acute crustacea toxicity | EC50 > 1000 mg/l | 48 h | Daphnia magna | Supplier / ECHA | OECD 202 |
| | Fish toxicity | NOEC 0,209 mg/l | 28 d | Oncorhynchus mykiss | ECHA | [growth rate] |
| | Algae toxicity | NOEC 1000 mg/l | 3 d | Pseudokirchneriella subcapitata | Supplier / ECHA | OECD 201 |
| | Crustacea toxicity | NOEC > 1 mg/l | 21 d | Daphnia magna | Supplier / ECHA | OECD 211 |
| | Acute bacteria toxicity | (EC50 > 1,5 mg/l) | 0 h | Pseudomonas putida | ECHA | [5h] |
| 1185-81-5 | stannane, dibutylbis(dodecylthio)- (dibutyltin bis(lauryl mercaptide)) | | | | | |
| | Acute algae toxicity | ErC50 > 1,6 mg/l | 72 h | Desmodesmus subspicatus | ECHA | OECD 201 |
| | Acute crustacea toxicity | EC50 0,11 mg/l | 48 h | Daphnia magna | Supplier / ECHA | OECD 202 |
| 63843-89-0 | bis(1,2,2,6,6-pentamethyl-4-piperidyl) [[3,5-bis(1,1-dimethylethyl)4-hydroxyphenyl]methyl]butylmalonate | | | | | |
| | Acute fish toxicity | LC50 > 100 mg/l | 96 h | Danio rerio | Supplier / ECHA | OECD 203 |
| | Acute algae toxicity | ErC50 61 mg/l | 72 h | Desmodesmus subspicatus | Supplier / ECHA | [biomass] |
| | Acute crustacea toxicity | EC50 69 mg/l | 48 h | Daphnia magna | Supplier | OECD 202 [24h] |
| | Algae toxicity | NOEC < 1,23 mg/l | 3 d | Desmodesmus subspicatus | ECHA | 87/302/EEC |
| | Crustacea toxicity | NOEC 0,002 mg/l | 21 d | Daphnia magna | Supplier / ECHA | OECD 211 |
| | Acute bacteria toxicity | (EC50 > 100 mg/l) | 3 h | Activated sludge | Supplier / ECHA | OECD 209 |
| 90640-32-7 | amines, C16-18-alkyl | | | | | |
| | Acute fish toxicity | LC50 (0,84) mg/l | 96 h | Dario rerio | Supplier | OECD 203 |
| | Acute algae toxicity | ErC50 (0,12) mg/l | 72 h | Desmodesmus subspicatus | ECHA | OECD 201 |
| | Acute crustacea toxicity | EC50 (0,32) mg/l | 48 h | Daphnia magna | Supplier | OECD 202 |
| | Algae toxicity | NOEC 0,01 mg/l | 3 d | Desmodesmus subspicatus | ECHA | OECD 201 |
| | Crustacea toxicity | NOEC 0,01 mg/l | 21 d | Daphnia magna | Supplier | OECD 211 |
| | Acute bacteria toxicity | (EC50 490,1 mg/l) | 3 h | Activated sludge | ECHA | OECD 209 |
| 55965-84-9 | reaction mass of 5-chloro-2-methyl-2H-isothiazol-3-one and 2-methyl-2H-isothiazol-3-one (3:1) | | | | | |
| | Acute fish toxicity | LC50 0,19 mg/l | 96 h | Oncorhynchus mykiss | ECHA | EPA OPP 72-1 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | Acute algae toxicity | ErC50 | 0,037 mg/l | 72 h | Skeletonema costatum | ECHA | OECD 201 |
| | Acute crustacea toxicity | EC50 | 0,16 mg/l | 48 h | Daphnia magna | ECHA | EPA OPP 72-2 |
| | Fish toxicity | NOEC mg/l | 0,0464 | 35 d | Danio rerio | ECHA | OECD 210 |
| | Algae toxicity | NOEC | 0,004 mg/l | 3 d | Skeletonema costatum | ECHA | OECD 201 |
| | Crustacea toxicity | NOEC mg/l | 0,0111 | 21 d | Daphnia magna | ECHA | OECD 211 |
| | Acute bacteria toxicity | (EC50 | 4,5 mg/l) | 3 h | Activated sludge | ECHA | OECD 209 |

**12.2. Persistence and degradability**

Abiotic degradation:

Physicochemical elimination:

Oxidation:

not applicable (Mixtures)

No data available (Substances/Ingredient)

Hydrolysis:

not applicable (Mixtures)

No data available (Substances/Ingredient)

Photochemical elimination:

Photolysis:

not applicable (Mixtures)

No data available (Substances/Ingredient)

Ozonolysis:

not applicable (Mixtures)

No data available (Substances/Ingredient)

Biodegradation:

not applicable (Mixtures)

| CAS No | Chemical name | | | |
|---|---|---|---|---|
| | Method | Value | d | Source |
| | Evaluation | | | |
| 124-30-1 | octadecylamine | | | |
| | OECD 301 F | 70 % | 28 | ECHA |
| | readily biodegradable | | | |
| 90622-57-4 | hydrocarbons, C11-C12, isoalkanes, <2% aromatics | | | |
| | OECD 301 F | 31,3-41,7 % | 28 | Supplier / ECHA |
| | inherently biodegradable | | | |
| 1185-81-5 | stannane, dibutylbis(dodecylthio)- (dibutyltin bis(lauryl mercaptide)) | | | |
| | OECD 301 F | 0 % | 28 | ECHA |
| | under test conditions no biodegradation observed | | | |
| 63843-89-0 | bis(1,2,2,6,6-pentamethyl-4-piperidyl) [[3,5-bis(1,1-dimethylethyl)4-hydroxyphenyl]methyl]butylmalonate | | | |
| | OECD 301 B | 1 % | 28 | Supplier / ECHA |
| | not readily biodegradable | | | |
| 90640-32-7 | amines, C16-18-alkyl | | | |
| | OECD 301 D | 75 % | 28 | ECHA |
| | readily biodegradable | | | |
| 55965-84-9 | reaction mass of 5-chloro-2-methyl-2H-isothiazol-3-one and 2-methyl-2H-isothiazol-3-one (3:1) | | | |
| | OECD 301 B (CO2 Evolution Test) | > 38% | 29 | ECHA |
| | readily biodegradable, but failing 10-day window | | | |
| | OECD 303 A (Activated sludge Units) | > 80% | | Supplier |
| | readily biodegradable | | | |
| | OECD 302 B (Zahn-Wellns Test) | 100% | | Supplier |
| | readily biodegradable | | | |

**12.3. Bioaccumulative potential**

not applicable (Mixtures)

**Partition coefficient n-octanol/water**

| CAS No | Chemical name | Log Pow |
|---|---|---|
| 124-30-1 | octadecylamine | 8,35 |
| 1185-81-5 | stannane, dibutylbis(dodecylthio)- (dibutyltin bis(lauryl mercaptide)) | 3,11 |
| 63843-89-0 | bis(1,2,2,6,6-pentamethyl-4-piperidyl) [[3,5-bis(1,1-dimethylethyl)4-hydroxyphenyl]methyl]butylmalonate | 10,03 |
| 90640-32-7 | amines, C16-18-alkyl | 4,33 |
| 55965-84-9 | reaction mass of 5-chloro-2-methyl-2H-isothiazol-3-one and 2-methyl-2H-isothiazol-3-one (3:1) | 0,401 |

**BCF**

| CAS No | Chemical name | BCF | Species | Source |
|---|---|---|---|---|
| 124-30-1 | octadecylamine | > 500 | | Supplier |
| 63843-89-0 | bis(1,2,2,6,6-pentamethyl-4-piperidyl) [[3,5-bis(1,1-dimethylethyl)4-hydroxyphenyl]methyl]butylmalonate | 49,3-437,1 | Cyprinus carpio | Supplier / ECHA |
| 90640-32-7 | amines, C16-18-alkyl | 173 | | ECHA |
| 55965-84-9 | reaction mass of 5-chloro-2-methyl-2H-isothiazol-3-one and 2-methyl-2H-isothiazol-3-one (3:1) | 54 | Lepomis macrochirus | ECHA |

**12.4. Mobility in soil**

Surface tension:

See under section 9.1 - Information on basic physical and chemical properties.

Distribution:

Water-air (volatility rate, Henry-constant):

not applicable (Mixtures)

No data available (Substances/Ingredient)

Soil-Water (Adsorption coefficient):

not applicable (Mixtures)

No data available (Substances/Ingredient)

Soil-Air (volatility rate):

not applicable (Mixtures)

No data available (Substances/Ingredient)

**12.5. Results of PBT and vPvB assessment**

The substances in the mixture do not meet the PBT/vPvB criteria according to UK REACH.

The substances in the mixture do not meet the PBT/vPvB criteria according to REACH, annex XIII.

**12.6. Endocrine disrupting properties**

This product does not contain a substance that has endocrine disrupting properties with respect to non-target organisms as no components meets the criteria.

Endocrine disrupting potential (Environment):

not relevant

**12.7. Other adverse effects**

Ozone depletion potential (ODP):

No data available (Substances/Ingredient)

Photochemical ozone creation potential (POCP):

No data available (Substances/Ingredient)

Global warming potential (GWP):

No data available (Substances/Ingredient)

Endocrine disrupting potential

No data available

AOX: The product contains organic halogens.

## SECTION 13: Disposal considerations

**13.1. Waste treatment methods**

**Disposal recommendations**

Waste treatment options:
Transfer to an emulsion fission reactor or an emulsion evaporation system, observing official regulations.

Dispose of waste according to applicable legislation.
Waste disposal according to directive 2008/98/EC, covering waste and dangerous waste.
Properties of waste which render it hazardous:
Irritant — skin irritation and eye damage
Ecotoxic

Evidence for disposal must be provided.
Consult the appropriate local waste disposal expert about waste disposal.
Waste for recycling is to be classified and labelled.
For recycling, contact recycling exchanges.
May not be disposed or deposited together with domestic garbage.
Do not mix with other wastes.
Do not flush into surface water or sanitary sewer system.
Do not dispose of waste into sewer.
Before discharge in public drains (e.g. residues of washing- and rinsing liquids) please observe the relevant regulations. In case of further questions please contact your waste- or environmental representative or the responsible authority.
Clean IBCs or drums at approved facility only.
The waste producer is resposible for correct coding and designation of his wastes.
The allocation of waste identity numbers/waste descriptions must be carried out according to the EEC, specific to the industry and process.
List of proposed waste codes/waste designations in accordance with EWC:

**List of Wastes Code - residues/unused products**

070201 WASTES FROM ORGANIC CHEMICAL PROCESSES; wastes from the MFSU of plastics, synthetic rubber and man-made fibres; aqueous washing liquids and mother liquors; hazardous waste

**List of Wastes Code - used product**

070201 WASTES FROM ORGANIC CHEMICAL PROCESSES; wastes from the MFSU of plastics, synthetic rubber and man-made fibres; aqueous washing liquids and mother liquors; hazardous waste

**List of Wastes Code - contaminated packaging**

150110 WASTE PACKAGING; ABSORBENTS, WIPING CLOTHS, FILTER MATERIALS AND PROTECTIVE CLOTHING NOT OTHERWISE SPECIFIED; packaging (including separately collected municipal packaging waste); packaging containing residues of or contaminated by hazardous substances; hazardous waste

**Contaminated packaging**

Other disposal recommendations:
Contaminated packages must be completely emptied and can be re-used following proper cleaning.
Cleaning by recycling company.
Recommended cleansing agent:
Clean with detergents. Avoid solvent cleaners.

Handle contaminated packages in the same way as the substance itself.
Non-contaminated packages may be recycled.
Packing which cannot be properly cleaned must be disposed of.
As well uncleaned (empty) containers remain contaminated by product residues and may be hazardous by vapours.
They have to be disposed by specialists or have to be supplied to a licensed reconditioning.
The conditions of the regional reconditioning companies have to be observed.

## SECTION 14: Transport information

**Land transport (ADR/RID)**

| | |
|---|---|
| **14.1. UN number or ID number:** | UN3082 |
| **14.2. UN proper shipping name:** | ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Alkyl amines) |
| **14.3. Transport hazard class(es):** | 9 |
| **14.4. Packing group:** | III |
| Hazard label: | 9 |




| | |
|---|---|
| Classification code: | M6 |
| Special Provisions: | 274 335 375 601 |
| Limited quantity: | 5 L |
| Excepted quantity: | E1 |
| Transport category: | 3 |
| Hazard No: | 90 |
| Tunnel restriction code: | - |

**Other applicable information (land transport)**

Provision(s), multilateral agreement(s): Not applicable

Maximum permissible total quantity per unit of carriage according to subsection 1.1.3.6 ADR/RID: 1000 L.
Factor out of category of carriage (= 3) to calculate the quantity per unit of carriage: 1.

**Inland waterways transport (ADN)**

**Other applicable information (inland waterways transport)**

Not classified for this transport carrier.

**Marine transport (IMDG)**

| | |
|---|---|
| **14.1. UN number or ID number:** | UN3082 |
| **14.2. UN proper shipping name:** | ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Alkyl amines) |
| **14.3. Transport hazard class(es):** | 9 |
| **14.4. Packing group:** | III |
| Hazard label: | 9 |




| | |
|---|---|
| Marine pollutant: | P |
| Special Provisions: | 274, 335, 969 |
| Limited quantity: | 5 L |
| Excepted quantity: | E1 |
| EmS: | F-A, S-F |
| Segregation group: | IMDG-Code segregation group not applicable |

**Other applicable information (marine transport)**

Exception(s): Not applicable

**Air transport (ICAO-TI/IATA-DGR)**

| | |
|---|---|
| **14.1. UN number or ID number:** | UN3082 |
| **14.2. UN proper shipping name:** | ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Alkyl amines) |
| **14.3. Transport hazard class(es):** | 9 |
| **14.4. Packing group:** | III |
| Hazard label: | 9 |




| | |
|---|---|
| Special Provisions: | A97 A158 A197 |
| Limited quantity Passenger: | 30 kg G |
| Passenger LQ: | Y964 |
| Excepted quantity: | E1 |
| IATA-packing instructions - Passenger: | 964 |
| IATA-max. quantity - Passenger: | 450 L |
| IATA-packing instructions - Cargo: | 964 |
| IATA-max. quantity - Cargo: | 450 L |

**Other applicable information (air transport)**

ERG Kodex: 9L

The state variations in chapter 2.8.1 and the operator variations in chapter 2.8.3 for shipping of dangerous goods in limited quantities according to chapter 2.7 of the valid ICAO/IATA Dangerous Goods Regulations have to be observed.

The rulings for dangerous goods by air mail according to chapter 2.4 of the valid ICAO/IATA Dangerous Goods Regulations and the conventions of the Universal Postal Union (UPU) as well as the clauses of the relevant National Postal Administation have to be observed. Airmail: prohibited.

**14.5. Environmental hazards**

ENVIRONMENTALLY HAZARDOUS: Yes



Danger releasing substance: Alkyl amines

**14.6. Special precautions for user**

Further information see under section 6, 7, 8.

**14.7. Maritime transport in bulk according to IMO instruments**

No bulk transport in accordance with IBC code.
It is sold exclusively in traffic legally authorized and appropriate packaging.

**Other applicable information**

Postal, express and courier services:
Postal service (national):
Refer to your National Postal Administation.
Express freight / special delivery:
Refer to your National Postal Administation.
Courier service (national):
The general conditions of business of the particular courier service have to be observed.

## SECTION 15: Regulatory information

**15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture**

**EU regulatory information**

Restrictions on use (REACH, annex XVII):
Entry 3, Entry 20, Entry 75

2010/75/EU (VOC): 3 % (32 g/l)

**Additional information**

Authorisations and/or restrictions on use:
Authorisations:
Authorisation of Chemicals (REACH) as regards Annex XIV:
not relevant

Restrictions on use:
Restriction of chemicals (REACH) as regards annex XVII:
No. 20 - organo-tin compounds

Informations on Regulation (EC) No. 1272/2008 - Annex VI, Part 1:
Note P is valid: The harmonised classification as a carcinogen or mutagen applies unless it can be shown that the substance contains less than 0,1 % w/w benzene (Einecs No 200-753-7), in which case a classification in accordance with Title II of this Regulation shall be performed also for those hazard classes. Where the substance is not classified as a carcinogen or mutagen, at least the precautionary statements (P102-)P260-P262-P301 + P310-P331 shall apply.

Other regulations (EU):
Regulation (EC) No. 1005/2009 - Substances that deplete the ozone layer:
not relevant
Regulation (EC) No. 648/2004 and No 907/2006 - Detergents:
not relevant
Regulation (EC) No. 649/2012 - Export and import of dangerous chemicals:
not relevant
Regulation (EU) 2019/1021 - Persistent organic pollutants:
not relevant
Regulation (EC) No. 428/2009 and No. 388/2012 and No. 1382/2014 - Control of exports, or transfer, brokering and transit of dual-use goods (Dual-Use Regulation):
not relevant
Regulation (EC) No. 273/2004 - Drug precursors:
not relevant
Regulation (EC) No. 111/2005 - Definition of rules for the monitoring of trade in drug precursors between the Union and third countries:
not relevant
Directive 2012/18/EC - Control of major accident hazards involving dangerous substances (Seveso III):
ANNEX I, PART 1 (Categories of dangerous substances):
E2 (ENVIRONMENTAL HAZARDS) - Hazardous to the Aquatic Environment in Category Chronic 2 (Column 1)
Quantities: > 200.000 kg (Column 2) /> 500.000 kg (Column 3)
Directive 2004/42/EC - Use of organic solvents in certain paints and lacquers:
not relevant
Directive 2010/75/EU - Industrial Emissions Directive (Directive IE) - succession to Directive 1999/13/EC - Limitation of emissions of volatile organic compounds (VOC-Directive):
When using this substance / mixture it has to be checked whether the activities are subject to the the requirements of IE-RL, Chapter V (installations and activities with the use of organic solvents - VOC).
Aerosol Directive (75/324/):
not relevant
Biocide directive (98/8/EC):
not relevant
Regulation (EU) No. 528/2012 on biocides:
In accordance with Regulation (EU) No. 528/2012 on biocides
This product is a with biocidal products treated article.

Observe in addition any national regulations!

EC-Chemical inventories: All ingredients are listed in EINECS / ELINCS or excepted from listing.

**National regulatory information**

| | |
|---|---|
| Employment restrictions: | Observe restrictions to employment for juveniles according to the 'juvenile work protection guideline' (94/33/EC). Observe employment restrictions under the Maternity Protection Directive (92/85/EEC) for expectant or nursing mothers. |

**Additional information**

Other regulations, restrictions and prohibition regulations:

European product inventories (Registration status on mixtures):
Kemikalieinspektionen / Produktregistret / Swedish Chemicals Inspectorate - KemI (http://www.kemi.se):
This product was not registered.
Schweizerische Eidgenossenschaft - Bundesamt für Gesundheit - BAG (http://www.bag.admin.ch) / Anmeldestelle Chemikalien (http://www.cheminfo.ch) / Informationssystem für gefährliche und umweltrelevante Stoffe - IGS (http://igs.naz.ch/index.html):
This product was not registered.

International chemical inventories (Registration status on substances): No data available

A downstream user chemical safety assessment according to REACH (article 37.4) was performed for the following substance(s):
amines, C16-18-alkyl, EC-No.: 292-550-5
octadecylamine, EC-No.: 204-695-3

Links to the annexed exposure scenarios (ES) according to REACH (article 31.7):
Short title: Manufacture of plastics products, including compounding and conversation (industrial application).
PFA-DU-ES2
ODA-DU-ES2
Short title: Manufacture of plastics products, including compounding and conversation (professional application).
PFA-DU-ES4
ODA-DU-ES4

**15.2. Chemical safety assessment**

For the following substances of this mixture a chemical safety assessment has been carried out:
octadecylamine
hydrocarbons, C11-C12, isoalkanes, <2% aromatics
bis(1,2,2,6,6-pentamethyl-4-piperidyl) [[3,5-bis(1,1-dimethylethyl)4-hydroxyphenyl]methyl]butylmalonate
amines, C16-18-alkyl

## SECTION 16: Other information

**Changes**

This version replaces all former issues.

Changes made in this revision see section: 3, 11, 12, 15, 16.

**Abbreviations and acronyms**

ADN: European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways.
ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road.
ATE: Acute Toxicity Estimate.
CAS: Chemical Abstracts Service.
CEN: Comité Européen de Normalisation (European Committee for Standardisation).
CLP: Classification Labelling Packaging Regulation; Regulation (EC) No 1272/2008.
CSA: Chemical Safety Assessment.
CSR: Chemical Safety Report.
C&L: Classification & Labeling.
DNEL: Derived No-Effect Level.
EAK: European Waste Catalogue (replaced by LoW – see below).
EC50: Effective concentration, 50 percent.
ECHA: European Chemicals Agency.
EC: European community.

EINECS: European Inventory of Existing Commercial Chemical Substances.
ELINCS: European List of Notified Chemical Substances.
EN: European standard.
EWC: European Economic Community.
EEA: European Economic Area (EU + Iceland, Liechtenstein and Norway).
EU: European Union.
GHS: Globally Harmonized System of Classification and Labelling of Chemicals.
HSPA: Hydrocarbon Solvents Producers Association.
IATA-DGR: International Air Transport Association Dangerous Goods Regulations.
IBC-Code: International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk (International Bulk Chemical Code).
IC50 / ErC50: Inhibitory concentration, 50 percent.
ICAO-TI: International Cicil Aviation Organization Technical Instruction.
IMDG: International Maritime Dangerous Goods.
ISO: A standard of International Standards Organisation.
IUPAC: International Union for Pure and Applied Chemistry.
LC50: Lethal concentration, 50 percent.
LD50: Lethal Dose, 50 percent.
log Kow (Pow): octanol-water partition coefficient.
LoW: List of Wastes (see http://ec.europa.eu/environment/waste/framework/list.htm).
LQ: Limited Quantities.
MARPOL: Maritime Pollution Convention (Convention for the Prevention of Pollution from Ships).
OC: Operational Conditions.
OECD: Organisation for Economic Co-operation and Development.
OSHA: Occupational Safety and Health Agency.
PBT: Persistent, bioaccumulabe and toxic.
PEC: Predicted Effect Concentration.
PNEC: Predicted No-Effect Concentration.
PPE: Personal Protection Equipment.
(Q)SAR: Quantitative-Structure-Activity-Relationship.
REACH: Registration, Evaluation, Authorisation and Restriction of Chemicals; Regulation (EC) No 1907/2006.
RID: Regulations concerning the International Carriage of Dangerous Goods by Rail.
RMM: Risk Management Measure.
SVHC: Substances of Very High Concern.
STOT - RE: Specific Target Organ Toxicity - Repeated Exposure.
STOT - SE: Specific Target Organ Toxicity - Single Exposure.
UN: United Nations.
UVCB: Substances of Unknown or Variable composition, Complex reaction products or Biological materials.
vPvB: Very persistent and very bioaccumulable.
WoE: Weight of Evidence.

For abbreviations and acronyms, see table at http://abbrev.esdscom.eu

**Classification for mixtures and used evaluation method according to GB CLP Regulation**

| Classification | Classification procedure |
|---|---|
| Eye Irrit. 2; H319 | Calculation method |
| Aquatic Chronic 2; H411 | Calculation method |

**Relevant H and EUH statements (number and full text)**

| | |
|---|---|
| H301 | Toxic if swallowed. |
| H302 | Harmful if swallowed. |
| H304 | May be fatal if swallowed and enters airways. |
| H310 | Fatal in contact with skin. |
| H312 | Harmful in contact with skin. |
| H314 | Causes severe skin burns and eye damage. |
| H315 | Causes skin irritation. |
| H317 | May cause an allergic skin reaction. |
| H318 | Causes serious eye damage. |
| H319 | Causes serious eye irritation. |

| | |
|---|---|
| H330 | Fatal if inhaled. |
| H341 | Suspected of causing genetic defects. |
| H360FD | May damage fertility. May damage the unborn child. |
| H372 | Causes damage to organs through prolonged or repeated exposure. |
| H373 | May cause damage to organs through prolonged or repeated exposure. |
| H400 | Very toxic to aquatic life. |
| H410 | Very toxic to aquatic life with long lasting effects. |
| H411 | Toxic to aquatic life with long lasting effects. |
| H413 | May cause long lasting harmful effects to aquatic life. |
| EUH066 | Repeated exposure may cause skin dryness or cracking. |
| EUH071 | Corrosive to the respiratory tract. |
| EUH208 | Contains stannane, dibutylbis(dodecylthio)- (dibutyltin bis(lauryl mercaptide)); reaction mass of 5 -chloro-2-methyl-2H-isothiazol-3-one and 2-methyl-2H-isothiazol-3-one (3:1). May produce an allergic reaction. |

**Further Information**

Full text of all R-, H-, EUH-phrases which are referred to in section 2 and 3 of this safety data sheet - see previous list.
These (this) R-, H-, EUH-phrases/R-, H-, EUH-phrase apply/applies to the substance(s) of content, however, it does not necessarily show the classification of the product.

Key literature references and sources for data:
The classification corresponds to current EC-lists, but is completed by statements of technical literature and company data.

Other public accessible sources:
Regulation (EC) No. 1907/2006 (REACH) in the valid version in each case
Regulation (EC) No. 1272/2008 (CLP) in the valid version in each case

Further information and practical guides on the internet:
European Chemicals Agency - ECHA (http://echa.europa.eu)
ECHA - Information on Chemicals (http://echa.europa.eu/information-on-chemicals)
ECHA - Candidate List of Substances of Very High Concern for Authorisation (http://echa.europa.eu/de/candidate-list-table)
ECHA - List of restrictions table (http://echa.europa.eu/de/addressing-chemicals-of-concern/restrictions/list-of-restrictions/list-of-restrictions-table)
ECHA - Authorisation List (http://echa.europa.eu/hr/addressing-chemicals-of-concern/authorisation/recommendation-for-inclusion-in-the-authorisation-list/authorisation-list)
ECHA - C&L Inventory (http://echa.europa.eu/en/web/guest/regulations/clp/cl-inventory)
eChemPortal (http://www.echemportal.org)
The access to European Union law - EUR-Lex (http://eur-lex.europa.eu)
Health and Safety Executive (http://www.hse.gov.uk) / Control of Substances Hazardous to Health Regulations - COSHH (http://www.coshh-essentials.org.uk/Home.asp)
Pollution Prevention and Control Act and Pollution Prevention and Control Regulations

Recommended restriction of application:
See under section 1.2 - Uses advised against.
Use this product only for intended purpose in accordance with our product informations.
Please refer to our internet website for more information (http://www.acmos.com).

Training advice:
Yearly briefing and instruction of employees by means of operating instructions according to article 8 of EC-directive 98/24/EC.

Inquiry office: Laboratory (Division: Occupational- /Product security)
Contact person: Mr. Dryhaus (Telephone: +49-421-5189-0, Telefax: +49-421-5189-871)
Office hours: Mo - Th from 7.30 - 16.15 h and Fr from 7.30 - 13.30 h. Out of office hours no call diversion.

Disclaimer:

The information is based on the present level of our knowledge. It does not, however, give assurance of product properties and establishes no contract legal rights. The information contained herein are, to our knowledge at the time of their creation to be correct and been taken from sources deemed to be reliable. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release The receiver of our product is singularly responsible for adhering to existing laws and regulations. All descriptions are approximate values, they are not specified for construction of specifications. This safety data sheet does not represent any operating instruction according to national chemical regulations. It may be used for creation, but must not replace it. The employer is not relieved from his duties. All technical information to occupational protection are directed predominately to experts first (safety engineers, occupational medicines).

**Identified uses**

| No | Short title | LCS | SU | PC | PROC | ERC | AC | TF | Specification |
|---|---|---|---|---|---|---|---|---|---|
| 1 | Manufacture of plastics products, including compounding and conversion (industrial application) | IS | 12 | 24 | 7, 9, 10 | 4 | - | - | PFA-DU-ES2 |
| 2 | Manufacture of plastics products, including compounding and conversion (professional application) | PW | - | - | 9, 10, 11 | 4 | - | - | PFA-DU-ES4 |
| 3 | Manufacture of plastics products, including compounding and conversion (industrial application) | IS | 12 | 24 | 7, 9, 10 | 4 | - | - | ODA-DU-ES2 |
| 4 | Manufacture of plastics products, including compounding and conversion (professional application) | PW | - | - | 9, 10, 11 | 4 | - | - | ODA-DU-ES4 |

LCS: Life cycle stages
SU: Sectors of use
PC: Product categories
PROC: Process categories
ERC: Environmental release categories
AC: Article categories
TF: Technical functions

# APPENDIX VII
# BENTLEY FABBING SDS

# Safety data sheet
## according to 1907/2006/EC, Article 31

Printing date 19.04.2018 Version number 6 Revision: 19.04.2018

* 
## SECTION 1: Identification of the substance/mixture and of the company/ undertaking

· **1.1 Product identifier**

· **Trade name: thermonex® 063-05A**
· **1.2 Relevant identified uses of the substance or mixture and uses advised against**
· **Product category** PC1 Adhesives, sealants

· **Application of the substance / the mixture** Adhesives

· **1.3 Details of the supplier of the safety data sheet**
· **Manufacturer/Supplier:**
H.B. Fuller, Isar-Rakoll, S.A.
Estrada Nacional 13
PT-4486-851 Mindelo - Vila do Conde
+351 229 288 200
EU-MSDS@hbfuller.com

· **Informing department:** Regulatory Department
· **1.4 Emergency telephone number:**
NCEC emergency service
+44 (0) 1235 239 670 (24 hours)

* 
## SECTION 2: Hazards identification

· **2.1 Classification of the substance or mixture**
· **Classification according to Regulation (EC) No 1272/2008**
The product is not classified according to the CLP regulation.

· **2.2 Label elements**
· **Labelling according to Regulation (EC) No 1272/2008** Void
· **Hazard pictograms** Void
· **Signal word** Void
· **Hazard statements** Void
· **Additional information:**
Contains 1,2-benzisothiazol-3(2H)-one, mixture of: 5-chloro-2-methyl-4-isothiazolin-3-one [EC no. 247-500-7] and 2-methyl-2Hisothiazol-3-one [EC no. 220-239-6] (3:1). May produce an allergic reaction.
Safety data sheet available on request.
· **2.3 Other hazards**
· **Results of PBT and vPvB assessment**
· **PBT:** Not applicable.
· **vPvB:** Not applicable.

## SECTION 3: Composition/information on ingredients

· **3.2 Chemical characterisation: Mixtures**
· **Description:** Adhesive.

· **Dangerous components:** Void
· **Additional information** For the wording of the listed hazard phrases refer to section 16.

## SECTION 4: First aid measures

· **4.1 Description of first aid measures**
· **After inhalation** Supply fresh air; consult doctor in case of symptoms.
· **After skin contact** Instantly wash with water and soap and rinse thoroughly.

(Contd. on page 2)

# Safety data sheet
## according to 1907/2006/EC, Article 31

Printing date 19.04.2018 Version number 6 Revision: 19.04.2018

**Trade name: thermonex® 063-05A**

(Contd. of page 1)

· **After eye contact**
Rinse opened eye for several minutes under running water. If symptoms persist, consult doctor.
· **After swallowing** Do not induce vomiting; instantly call for medical help.
· **4.2 Most important symptoms and effects, both acute and delayed**
No further relevant information available.
· **4.3 Indication of any immediate medical attention and special treatment needed**
No further relevant information available.

* 
## SECTION 5: Firefighting measures

· **5.1 Extinguishing media**
· **Suitable extinguishing agents**
Use fire fighting measures that suit the environment.
Water haze
Foam
Fire-extinguishing powder
Carbon dioxide
· **5.2 Special hazards arising from the substance or mixture** Can be released in case of fire
· **5.3 Advice for firefighters**
· **Protective equipment:** Wear self-contained breathing apparatus.
· **Additional information** Collect contaminated fire fighting water separately. It must not enter drains.

## SECTION 6: Accidental release measures

· **6.1 Personal precautions, protective equipment and emergency procedures**
Ensure adequate ventilation
· **6.2 Environmental precautions:**
Do not allow to enter drainage system, surface or ground water.
Dilute with much water.
· **6.3 Methods and material for containment and cleaning up:**
Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).
· **6.4 Reference to other sections**
See Section 7 for information on safe handling
See Section 8 for information on personal protection equipment.
See Section 13 for information on disposal.

## SECTION 7: Handling and storage

· **7.1 Precautions for safe handling** Keep containers tightly sealed.
· **Information about protection against explosions and fires:** No special measures required.

· **7.2 Conditions for safe storage, including any incompatibilities**
· **Storage**
· **Requirements to be met by storerooms and containers:** Prevent any penetration into the ground.
· **Information about storage in one common storage facility:** Store away from foodstuffs.
· **Further information about storage conditions:**
Protect from frost.
Protect from heat and direct sunlight.
Store in cool, dry conditions in original sealed container
· **7.3 Specific end use(s)** No further relevant information available.



(Contd. on page 3)

# Safety data sheet
## according to 1907/2006/EC, Article 31

Printing date 19.04.2018 Version number 6 Revision: 19.04.2018

**Trade name: thermonex® 063-05A**

(Contd. of page 2)

* 
## SECTION 8: Exposure controls/personal protection

· **Additional information about design of technical systems:** No further data; see item 7.

· **8.1 Control parameters**
· **Components with limit values that require monitoring at the workplace:**
The product does not contain any relevant quantities of materials with critical values that have to be monitored at the workplace.
· **Additional information:** The lists that were valid during the compilation were used as basis.

· **8.2 Exposure controls**
· **Personal protective equipment**
· **General protective and hygienic measures**
The usual precautionary measures should be adhered to general rules for handling chemicals.
Keep away from foodstuffs, beverages and food.
Wash hands during breaks and at the end of the work.
· **Breathing equipment:** Not necessary if room is well-ventilated.
· **Protection of hands:**



Protective gloves.

· **Material of gloves**
Nitrile rubber, NBR
Recommended thickness of the material: ≥ 0.4 mm
The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer. As the product is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.
· **Penetration time of glove material**
The information is based on literature data and information of glove manufacturers.
· **Eye protection:**



Tightly sealed safety glasses.

· **Body protection:** Protective work clothing.

## SECTION 9: Physical and chemical properties

· **9.1 Information on basic physical and chemical properties**
· **General Information**
· **Appearance:**

| | |
|---|---|
| **Form:** | Fluid |
| **Colour:** | White |
| · **Odour:** | Light |
| · **Odour threshold:** | Not determined. |
| · **pH-value at 20 °C:** | 7.7 |
| · **Change in condition** | |
| **Melting point/freezing point:** | Not determined |
| **Initial boiling point and boiling range:** | 100 °C (DIN 53171) |

(Contd. on page 4)

# Safety data sheet
## according to 1907/2006/EC, Article 31

Printing date 19.04.2018 Version number 6 Revision: 19.04.2018

**Trade name: thermonex® 063-05A**

(Contd. of page 3)

| | |
|---|---|
| · **Flash point:** | Not applicable |
| · **Inflammability (solid, gaseous)** | Not applicable. |
| · **Decomposition temperature:** | Not determined. |
| · **Self-inflammability:** | Product is not selfigniting. |
| · **Explosive properties:** | Product is not explosive. |
| · **Critical values for explosion:** | |
| **Lower:** | Not determined. |
| **Upper:** | Not determined. |
| · **Vapour pressure at 20 °C:** | 23 hPa (DIN 51640) |
| · **Density at 20 °C** | ca. 1.08 g/cm³ (DIN 51757) |
| · **Relative density** | Not determined. |
| · **Vapour density** | Not determined. |
| · **Evaporation rate** | Not determined. |
| · **Solubility in / Miscibility with** | |
| **Water:** | Fully miscible |
| · **Partition coefficient: n-octanol/water:** | Not determined. |
| · **Viscosity:** | |
| **dynamic at 23 °C:** | 6750 mPas (Brookfield (ISO 2555)) |
| **kinematic:** | Not determined. |
| · **Solvent content:** | |
| **Organic solvents:** | 0.9 % |
| **Solids content:** | 45.0 % (ISO 3251) |
| · **9.2 Other information** | No further relevant information available. |

## SECTION 10: Stability and reactivity

· **10.1 Reactivity** No further relevant information available.
· **10.2 Chemical stability**
· **Thermal decomposition / conditions to be avoided:**
No decomposition if used and stored according to specifications.
· **10.3 Possibility of hazardous reactions** No dangerous reactions known
· **10.4 Conditions to avoid** No further relevant information available.
· **10.5 Incompatible materials:** No further relevant information available.
· **10.6 Hazardous decomposition products:** No dangerous decomposition products known

* 
## SECTION 11: Toxicological information

· **11.1 Information on toxicological effects**
· **Acute toxicity** Based on available data, the classification criteria are not met.
· **Primary irritant effect:**
· **Skin corrosion/irritation** Based on available data, the classification criteria are not met.
· **Serious eye damage/irritation** Based on available data, the classification criteria are not met.
· **Respiratory or skin sensitisation** Based on available data, the classification criteria are not met.
· **CMR effects (carcinogenity, mutagenicity and toxicity for reproduction)**
· **Germ cell mutagenicity** Based on available data, the classification criteria are not met.

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# Safety data sheet
## according to 1907/2006/EC, Article 31

Printing date 19.04.2018 Version number 6 Revision: 19.04.2018

**Trade name: thermonex® 063-05A**

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· **Carcinogenicity** Based on available data, the classification criteria are not met.
· **Reproductive toxicity** Based on available data, the classification criteria are not met.
· **STOT-single exposure** Based on available data, the classification criteria are not met.
· **STOT-repeated exposure** Based on available data, the classification criteria are not met.
· **Aspiration hazard** Based on available data, the classification criteria are not met.

* 
## SECTION 12: Ecological information

· **12.1 Toxicity**
· **Aquatic toxicity:** No further relevant information available.
· **12.2 Persistence and degradability** No further relevant information available.
· **12.3 Bioaccumulative potential** No further relevant information available.
· **12.4 Mobility in soil** No further relevant information available.
· **Additional ecological information:**
· **General notes:**
Water hazard class 1 (German Regulation) (Self-assessment): slightly hazardous for water.
Do not allow product to reach ground water, water bodies or sewage system.
· **12.5 Results of PBT and vPvB assessment**
· **PBT:** Not applicable.
· **vPvB:** Not applicable.
· **12.6 Other adverse effects** No further relevant information available.

## SECTION 13: Disposal considerations

· **13.1 Waste treatment methods**
· **Recommendation** Must be specially treated under adherence to official regulations.

| · **European waste catalogue** | |
|---|---|
| 08 00 00 | WASTES FROM THE MANUFACTURE, FORMULATION, SUPPLY AND USE (MFSU) OF COATINGS (PAINTS, VARNISHES AND VITREOUS ENAMELS), ADHESIVES, SEALANTS AND PRINTING INKS |
| 08 04 00 | wastes from MFSU of adhesives and sealants (including waterproofing products) |
| 08 04 16 | aqueous liquid waste containing adhesives or sealants other than those mentioned in 08 04 15 |

· **Uncleaned packagings:**
· **Recommendation:** Disposal must be made according to official regulations.
· **Recommended cleaning agent:** Water, if necessary with cleaning agent.

* 
## SECTION 14: Transport information

· **14.1 UN-Number**
· **ADR, ADN, IMDG, IATA** Void

· **14.2 UN proper shipping name**
· **ADR, ADN, IMDG, IATA** Void

· **14.3 Transport hazard class(es)**

· **ADR, ADN, IMDG, IATA**
· **Class** Void

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# Safety data sheet
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| | |
|---|---|
| · **14.4 Packing group**<br>· **ADR, IMDG, IATA** | Void |
| · **14.5 Environmental hazards:**<br>· **Marine pollutant:** | No |
| · **14.6 Special precautions for user** | Not applicable. |
| · **14.7 Transport in bulk according to Annex II of Marpol and the IBC Code** | Not applicable. |
| · **Transport/Additional information:** | Not dangerous according to the above specifications. |
| · **ADR**<br>· **Remarks:** | No dangerous good in accordance to the ADR-regulations. |
| · **UN "Model Regulation":** | Void |

* 
## SECTION 15: Regulatory information

· **15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture**

· **National regulations**

· **Technical instructions (air):**

| Class | Share in % |
|---|---|
| NK | 0,1-1 |

· **Water hazard class:** Water hazard class 1 (Self-assessment): slightly hazardous for water.
· **VOC (EU) %** 0.86 %
· **VOC (EU)** 22.4 g/l
· **15.2 Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.

## SECTION 16: Other information

These data are based on our present knowledge. However, they shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

· **Department issuing data specification sheet:**
Environment, Health & Safety Department
Regulatory department
· **Contact:** EU-MSDS@hbfuller.com
· **Abbreviations and acronyms:**
ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
IMDG: International Maritime Code for Dangerous Goods
IATA: International Air Transport Association
GHS: Globally Harmonised System of Classification and Labelling of Chemicals
EINECS: European Inventory of Existing Commercial Chemical Substances
ELINCS: European List of Notified Chemical Substances
CAS: Chemical Abstracts Service (division of the American Chemical Society)
PBT: Persistent, Bioaccumulative and Toxic
vPvB: very Persistent and very Bioaccumulative
· *** Data compared to the previous version altered.**

# Safety data sheet
**according to 1907/2006/EC, Article 31**

*Printing date 19.04.2018* *Version number 7* *Revision: 19.04.2018*

## SECTION 1: Identification of the substance/mixture and of the company/ undertaking

· **1.1 Product identifier**

· **Trade name: thermonex® hardener 006B L.Blue**
· **1.2 Relevant identified uses of the substance or mixture and uses advised against**
· **Product category** PC1 Adhesives, sealants

· **Application of the substance / the mixture** Hardening agent/ Curing agent

· **1.3 Details of the supplier of the safety data sheet**
· **Manufacturer/Supplier:**
H.B. Fuller, Isar-Rakoll, S.A.
Estrada Nacional 13
PT-4486-851 Mindelo - Vila do Conde
+351 229 288 200
EU-MSDS@hbfuller.com

· **Informing department:** Regulatory Department
· **1.4 Emergency telephone number:**
NCEC emergency service
+44 (0) 1235 239 670 (24 hours)

## SECTION 2: Hazards identification

· **2.1 Classification of the substance or mixture**
· **Classification according to Regulation (EC) No 1272/2008**

| | | |
|---|---|---|
| Acute Tox. 4 | H332 | Harmful if inhaled. |
| Eye Irrit. 2 | H319 | Causes serious eye irritation. |
| Skin Sens. 1 | H317 | May cause an allergic skin reaction. |
| STOT SE 3 | H335 | May cause respiratory irritation. |
| Aquatic Chronic 3 | H412 | Harmful to aquatic life with long lasting effects. |

· **2.2 Label elements**
· **Labelling according to Regulation (EC) No 1272/2008**
The product is classified and labelled according to the CLP regulation.
· **Hazard pictograms**



GHS07

· **Signal word** Warning

· **Hazard-determining components of labelling:**
hydrophilic aliphatic polyisocyanate
hexamethylene diisocyanate
· **Hazard statements**
H332 Harmful if inhaled.
H319 Causes serious eye irritation.
H317 May cause an allergic skin reaction.
H335 May cause respiratory irritation.
H412 Harmful to aquatic life with long lasting effects.
· **Precautionary statements**

| | |
|---|---|
| P261 | Avoid breathing dust/fume/gas/mist/vapours/spray. |
| P280 | Wear protective gloves / eye protection / face protection. |

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# Safety data sheet
## according to 1907/2006/EC, Article 31

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***Trade name: thermonex® hardener 006B L.Blue***

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*P304+P340* IF INHALED: Remove person to fresh air and keep comfortable for breathing.
*P305+P351+P338* IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
*P405* Store locked up.
*P501* Dispose of contents/container in accordance with local/regional/national/international regulations.

· ***2.3 Other hazards***
· ***Results of PBT and vPvB assessment***
· ***PBT:*** *Not applicable.*
· ***vPvB:*** *Not applicable.*

## SECTION 3: Composition/information on ingredients

· ***3.2 Chemical characterisation: Mixtures***
· ***Description:*** *Adhesive.*

· ***Dangerous components:***

| | | |
|---|---|---|
| CAS: 125252-47-3 | hydrophilic aliphatic polyisocyanate<br>Acute Tox. 4, H332; Skin Sens. 1, H317; STOT SE 3, H335; Aquatic Chronic 3, H412 | 50-100% |
| CAS: 108-32-7<br>EINECS: 203-572-1<br>Reg.nr.: 01-2119537232-48-0000 | propylene carbonate<br>Eye Irrit. 2, H319 | 10-25% |
| CAS: 822-06-0<br>EINECS: 212-485-8<br>Reg.nr.: 01-2119457571-37-0000 | hexamethylene diisocyanate<br>Acute Tox. 3, H311; Acute Tox. 3, H331; Resp. Sens. 1, H334; Acute Tox. 4, H302; Skin Irrit. 2, H315; Eye Irrit. 2, H319; Skin Sens. 1, H317; STOT SE 3, H335 | <0.5% |

· ***Additional information*** *For the wording of the listed hazard phrases refer to section 16.*

## SECTION 4: First aid measures

· ***4.1 Description of first aid measures***
· ***General information***
*Instantly remove any clothing soiled by the product.*
*Symptoms of poisoning may even occur after several hours; therefore medical observation for at least 48 hours after the accident.*
*Take affected persons into the open air.*
· ***After inhalation*** *Supply fresh air and call for doctor for safety reasons.*
· ***After skin contact***
*Instantly wash with water and soap and rinse thoroughly.*
*If skin irritation continues, consult a doctor.*
· ***After eye contact*** *Rinse opened eye for several minutes under running water. Then consult doctor.*
· ***After swallowing*** *Do not induce vomiting; instantly call for medical help.*
· ***4.2 Most important symptoms and effects, both acute and delayed***
*No further relevant information available.*
· ***4.3 Indication of any immediate medical attention and special treatment needed***
*No further relevant information available.*


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# Safety data sheet
## according to 1907/2006/EC, Article 31

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***Trade name: thermonex® hardener 006B L.Blue***

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## SECTION 5: Firefighting measures

· ***5.1 Extinguishing media***
· ***Suitable extinguishing agents***
*Use fire fighting measures that suit the environment.*
*Water haze*
*Foam*
*Fire-extinguishing powder*
*Carbon dioxide*
· ***5.2 Special hazards arising from the substance or mixture***
*Can be released in case of fire*
*Nitrous vitriol gases*
*Carbon monoxide and carbon dioxide*
*Isocyanate fumes and traces of hydrogen cyanide.*
*Under certain fire conditions, traces of other toxic gases cannot be excluded.*
· ***5.3 Advice for firefighters***
· ***Protective equipment:*** *Do not inhale explosion gases or combustion gases.*
· ***Additional information***
*Collect contaminated fire fighting water separately. It must not enter drains.*
*Dispose of fire debris and contaminated fire fighting water in accordance with official regulations.*

## SECTION 6: Accidental release measures

· ***6.1 Personal precautions, protective equipment and emergency procedures***
*Ensure adequate ventilation*
*Wear protective clothing.*
· ***6.2 Environmental precautions:***
*Do not allow to enter drainage system, surface or ground water.*
*Inform respective authorities in case product reaches water or sewage system.*
· ***6.3 Methods and material for containment and cleaning up:***
*Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).*
*Ensure adequate ventilation.*
*Send for recovery or disposal in suitable containers.*
· ***6.4 Reference to other sections***
*See Section 7 for information on safe handling*
*See Section 8 for information on personal protection equipment.*
*See Section 13 for information on disposal.*

## SECTION 7: Handling and storage

· ***7.1 Precautions for safe handling***
*Ensure good ventilation/exhaustion at the workplace.*
*Keep out of the reach of children.*
· ***Information about protection against explosions and fires:*** *No special measures required.*

· ***7.2 Conditions for safe storage, including any incompatibilities***
· ***Storage***
· ***Requirements to be met by storerooms and containers:*** *Prevent any penetration into the ground.*
· ***Information about storage in one common storage facility:*** *Store away from foodstuffs.*
· ***Further information about storage conditions:***
*Protect from heat and direct sunlight.*
*Store in cool, dry conditions in original sealed container*

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· **7.3 Specific end use(s)** No further relevant information available.

* 
## SECTION 8: Exposure controls/personal protection

· **Additional information about design of technical systems:** No further data; see item 7.

· **8.1 Control parameters**

| · **Components with limit values that require monitoring at the workplace:** | |
|---|---|
| **822-06-0 hexamethylene diisocyanate** | |
| WEL | Short-term value: 0.07 mg/m³<br>Long-term value: 0.02 mg/m³<br>Sen; as -NCO |

· **Additional information:** The lists that were valid during the compilation were used as basis.

· **8.2 Exposure controls**
· **Personal protective equipment**
· **General protective and hygienic measures**
The usual precautionary measures should be adhered to general rules for handling chemicals.
Keep away from foodstuffs, beverages and food.
Take off immediately all contaminated clothing
Wash hands during breaks and at the end of the work.
Do not inhale gases / fumes / aerosols.
· **Breathing equipment:** Use breathing protection in case of insufficient ventilation.
· **Recommended filter device for short term use:** Combination filter A-P2
· **Protection of hands:**



Protective gloves.

Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation
· **Material of gloves**
Recommended thickness of the material: ≥ 0.7 mm
The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer. As the product is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.
Butyl rubber, BR
· **Penetration time of glove material**
The information is based on literature data and information of glove manufacturers.
Value for the permeation: Level ≤ 6
· **Eye protection:**



Tightly sealed safety glasses.

· **Body protection:** Protective work clothing.



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**Trade name: thermonex® hardener 006B L.Blue**

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## SECTION 9: Physical and chemical properties

| | |
|---|---|
| · **9.1 Information on basic physical and chemical properties** | |
| · **General Information** | |
| · **Appearance:** | |
| **Form:** | Fluid |
| **Colour:** | Light blue |
| · **Odour:** | Fruit-like |
| · **Odour threshold:** | Not determined. |
| · **pH-value:** | Not determined. |
| · **Change in condition** | |
| **Melting point/freezing point:** | Not determined |
| **Initial boiling point and boiling range:** | Not determined |
| · **Flash point:** | 135 °C (DIN 53213) |
| · **Inflammability (solid, gaseous)** | Not applicable. |
| · **Decomposition temperature:** | Not determined. |
| · **Self-inflammability:** | Product is not selfigniting. |
| · **Explosive properties:** | Product is not explosive. |
| · **Critical values for explosion:** | |
| **Lower:** | 4.7 Vol % (EN 1839) |
| **Upper:** | 21.0 Vol % (EN 1839) |
| · **Vapour pressure at 20 °C:** | 42 hPa (DIN 51640) |
| · **Density at 20 °C** | ca. 1.17 g/cm³ (DIN 51757) |
| · **Relative density** | Not determined. |
| · **Vapour density** | Not determined. |
| · **Evaporation rate** | Not determined. |
| · **Solubility in / Miscibility with** | |
| **Water:** | Not miscible or difficult to mix |
| · **Partition coefficient: n-octanol/water:** | Not determined. |
| · **Viscosity:** | |
| **dynamic:** | Not determined. |
| **kinematic:** | Not determined. |
| · **Solvent content:** | |
| **Solids content:** | 83.0 % (ISO 3251) |
| · **9.2 Other information** | No further relevant information available. |

## SECTION 10: Stability and reactivity

· **10.1 Reactivity** No further relevant information available.
· **10.2 Chemical stability**
· **Thermal decomposition / conditions to be avoided:**
To avoid thermal decomposition do not overheat.
· **10.3 Possibility of hazardous reactions** Reacts with alcohols, amines, aqueous acids and alkalis
· **10.4 Conditions to avoid** No further relevant information available.
· **10.5 Incompatible materials:** No further relevant information available.

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# Safety data sheet
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**Trade name: thermonex® hardener 006B L.Blue**

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· **10.6 Hazardous decomposition products:** No dangerous decomposition products known

* 
## SECTION 11: Toxicological information

· **11.1 Information on toxicological effects**
· **Acute toxicity**
Harmful if inhaled.

| · **LD/LC50 values that are relevant for classification:** | | |
|---|---|---|
| **125252-47-3 hydrophilic aliphatic polyisocyanate** | | |
| Oral | LD50 | >2,000 mg/kg (rat) |
| **108-32-7 propylene carbonate** | | |
| Oral | LD50 | 5,000 mg/kg (rat) |
| **822-06-0 hexamethylene diisocyanate** | | |
| Oral | LD50 | 738 mg/kg (rat) |
| Dermal | LD50 | 593 mg/kg (rabbit) |

· **Primary irritant effect:**
· **Skin corrosion/irritation** Based on available data, the classification criteria are not met.
· **Serious eye damage/irritation**
Causes serious eye irritation.
· **Respiratory or skin sensitisation**
May cause an allergic skin reaction.
· **CMR effects (carcinogenity, mutagenicity and toxicity for reproduction)**
· **Germ cell mutagenicity** Based on available data, the classification criteria are not met.
· **Carcinogenicity** Based on available data, the classification criteria are not met.
· **Reproductive toxicity** Based on available data, the classification criteria are not met.
· **STOT-single exposure**
May cause respiratory irritation.
· **STOT-repeated exposure** Based on available data, the classification criteria are not met.
· **Aspiration hazard** Based on available data, the classification criteria are not met.

* 
## SECTION 12: Ecological information

· **12.1 Toxicity**

| · **Aquatic toxicity:** | |
|---|---|
| **125252-47-3 hydrophilic aliphatic polyisocyanate** | |
| LC50/96h | 17.8 mg/l (Brachydanio rerio) |
| EC50/48h | 58 mg/l (Daphnia magna) |
| **108-32-7 propylene carbonate** | |
| LC50/48h | 1,000 mg/l (-) |
| IC50/72h | >900 mg/l (Desmodesmus subspicatus) |
| LC50/24h | 5 mg/l (-) |
| EC50/48h | >1,000 mg/l (Daphnia magna) |

| · **12.2 Persistence and degradability** | |
|---|---|
| **125252-47-3 hydrophilic aliphatic polyisocyanate** | |
| Bio.Abbaubark./28 d | 2 % (-) |
| **108-32-7 propylene carbonate** | |
| Bio.Abbaubark./28 d | 94 % (-) |

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# Safety data sheet
## according to 1907/2006/EC, Article 31

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***Trade name: thermonex® hardener 006B L.Blue***

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· ***12.3 Bioaccumulative potential*** *No further relevant information available.*
· ***12.4 Mobility in soil*** *No further relevant information available.*
· ***Ecotoxical effects:***
· ***Remark:*** *Harmful to fish*
· ***Additional ecological information:***
· ***General notes:***
*Water hazard class 1 (German Regulation) (Self-assessment): slightly hazardous for water.*
*Do not allow product to reach ground water, water bodies or sewage system.*
*Harmful to aquatic organisms*
· ***12.5 Results of PBT and vPvB assessment***
· ***PBT:*** *Not applicable.*
· ***vPvB:*** *Not applicable.*
· ***12.6 Other adverse effects*** *No further relevant information available.*

## SECTION 13: Disposal considerations

· ***13.1 Waste treatment methods***
· ***Recommendation***
*Must not be disposed of together with household garbage. Do not allow product to reach sewage system.*
*Must be specially treated under adherence to official regulations.*

| · **European waste catalogue** | |
|---|---|
| 08 00 00 | WASTES FROM THE MANUFACTURE, FORMULATION, SUPPLY AND USE (MFSU) OF COATINGS (PAINTS, VARNISHES AND VITREOUS ENAMELS), ADHESIVES, SEALANTS AND PRINTING INKS |
| 08 04 00 | wastes from MFSU of adhesives and sealants (including waterproofing products) |
| 08 04 09* | waste adhesives and sealants containing organic solvents or other hazardous substances |

· ***Uncleaned packagings:***
· ***Recommendation:*** *Disposal must be made according to official regulations.*

## SECTION 14: Transport information

| | |
|---|---|
| · ***14.1 UN-Number*** | |
| · ***ADR, ADN, IMDG, IATA*** | *Void* |
| · ***14.2 UN proper shipping name*** | |
| · ***ADR, ADN, IMDG, IATA*** | *Void* |
| · ***14.3 Transport hazard class(es)*** | |
| · ***ADR, ADN, IMDG, IATA*** | |
| · ***Class*** | *Void* |
| · ***14.4 Packing group*** | |
| · ***ADR, IMDG, IATA*** | *Void* |
| · ***14.5 Environmental hazards:*** | |
| · ***Marine pollutant:*** | *No* |
| · ***14.6 Special precautions for user*** | *Not applicable.* |

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# Safety data sheet
## according to 1907/2006/EC, Article 31

Printing date 19.04.2018 Version number 7 Revision: 19.04.2018

**Trade name: thermonex® hardener 006B L.Blue**

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| | |
|---|---|
| · **14.7 Transport in bulk according to Annex II of Marpol and the IBC Code** | Not applicable. |
| · **Transport/Additional information:** | Not dangerous according to the above specifications. |
| · **ADR** | |
| · **Remarks:** | No dangerous good in accordance to the ADR-regulations. |
| · **UN "Model Regulation":** | Void |

## SECTION 15: Regulatory information

· **15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture**
· **REGULATION (EC) No 1907/2006 ANNEX XVII** Conditions of restriction: 3

· **National regulations**

· **Technical instructions (air):**

| Class | Share in % |
|---|---|
| I | 0,1-1 |
| NK | 10-20 |

· **Water hazard class:** Water hazard class 1 (Self-assessment): slightly hazardous for water.
· **VOC (EU) %** 0.00 %
· **Code MAL** 5-5
· **VOC (EU)** 0.0 g/l
· **15.2 Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.

## SECTION 16: Other information

These data are based on our present knowledge. However, they shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

· **Relevant phrases**
H302 Harmful if swallowed.
H311 Toxic in contact with skin.
H315 Causes skin irritation.
H317 May cause an allergic skin reaction.
H319 Causes serious eye irritation.
H331 Toxic if inhaled.
H332 Harmful if inhaled.
H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.
H335 May cause respiratory irritation.
H412 Harmful to aquatic life with long lasting effects.
· **Contact:** EU-MSDS@hbfuller.com
· **Abbreviations and acronyms:**
RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)
ICAO: International Civil Aviation Organisation
ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
IMDG: International Maritime Code for Dangerous Goods
IATA: International Air Transport Association

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# Safety data sheet
## according to 1907/2006/EC, Article 31

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***Trade name: thermonex® hardener 006B L.Blue***

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*GHS: Globally Harmonised System of Classification and Labelling of Chemicals*
*EINECS: European Inventory of Existing Commercial Chemical Substances*
*ELINCS: European List of Notified Chemical Substances*
*CAS: Chemical Abstracts Service (division of the American Chemical Society)*
*LC50: Lethal concentration, 50 percent*
*LD50: Lethal dose, 50 percent*
*PBT: Persistent, Bioaccumulative and Toxic*
*vPvB: very Persistent and very Bioaccumulative*
*Acute Tox. 3: Acute toxicity – Category 3*
*Acute Tox. 4: Acute toxicity – Category 4*
*Skin Irrit. 2: Skin corrosion/irritation – Category 2*
*Eye Irrit. 2: Serious eye damage/eye irritation – Category 2*
*Resp. Sens. 1: Respiratory sensitisation – Category 1*
*Skin Sens. 1: Skin sensitisation – Category 1*
*STOT SE 3: Specific target organ toxicity (single exposure) – Category 3*
*Aquatic Chronic 3: Hazardous to the aquatic environment - long-term aquatic hazard – Category 3*

· **** Data compared to the previous version altered.***

Hybond
THE ADHESIVE SPECIALISTS

# SAFETY DATA SHEET

**According to REACH Regulation (EC) No 1907/2006, as amended by UK REACH Regulations SI 2019/758**

**XtraBOND 35 Contact Spray Adhesive**

## Section 1: Identification of the substance/mixture and of the company/undertaking

**1.1. Product identifier**

| | |
|---|---|
| **Product name:** | XTRABOND 35 CONTACT SPRAY ADHESIVE |
| **Chemical Name:** | Not Applicable |
| **Synonyms:** | Not Available |
| **Proper shipping name:** | CHEMICAL UNDER PRESSURE FLAMMABLE N.O.S (contains Hydrocarbons, C6-C7, n-alkanes, isoalkanes, cyclics, <5% n-hexane) |
| **Chemical formula:** | Not Applicable |
| **Other means of identification:** | Not Available |

**1.2. Relevant identified uses of the substance or mixture and uses advised against**

| | |
|---|---|
| **Chemical Product Category:** | PC1 Adhesives, sealants |
| **Sectors of Use:** | SU22 Professional uses: Public domain (administration, education, entertainment, services, craftsmen)<br>SU3 Industrial uses: Uses of substances as such or in preparations* at industrial sites |
| **Relevant identified uses:** | The use of a quantity of material in an unventilated or confined space may result in increased exposure and an irritating atmosphere developing. Before starting consider control of exposure by mechanical ventilation. |
| **Uses advised against:** | No specific uses advised against are identified. |

**1.3. Details of the supplier of the safety data sheet Company name:**

Hybond
Unit 1, Grange Business Park
Lancaster Road
Shrewsbury
SY1 3LG
Tel: 01743 861800 Fax: 01743 860064
Email: techsupport@hybond.org.uk

**1.4. Emergency telephone number**

| | |
|---|---|
| **Emergency tel:** | 01743 861800 (**not 24 hours**) |

## Section 2: Hazards identification

**2.1. Classification of the substance or mixture**

**Classified according to GB-CLP Regulation, UK SI 2019/720 and UK SI 2020/1567 [1]**

H222+H229 - Aerosols Category 1, H315 - Skin Corrosion/Irritation Category 2, H319 - Serious Eye Damage/Eye Irritation Category 2, H336 - Specific Target Organ Toxicity - Single Exposure (Narcotic Effects) Category 3, H412 - Hazardous to the Aquatic Environment Long-Term Hazard Category 3

| | |
|---|---|
| **Legend:** | 1. Classified by Chemwatch; 2. Classification drawn from GB-CLP Regulation, UK SI 2019/720 and UK SI 2020/1567 |

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**2.2. Label Elements**
Hazard Pictograms



**Signal Word** Danger

**Hazard Statements**
**H222** Extremely flammable aerosol.
**H229** Pressurised container: may burst if heated.
**H315** Causes skin irritation.
**H319** Causes serious eye irritation.
**H336** May cause drowsiness or dizziness.
**H412** Harmful to aquatic life with long lasting effects.

**Supplementary Statements**
Not Applicable

**Precautionary Statements Prevention**
**P210** Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
**P211** Do not spray on an open flame or other ignition source.
**P251** Do not pierce or burn, even after use.
**P271** Use only outdoors or in a well-ventilated area.
**P261** Avoid breathing gas.

**Precautionary Statements Response**
**P305+P351+P338** IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
**P312** Call a POISON CENTER/doctor/physician/first aider/if you feel unwell.
**P337+P313** If eye irritation persists: Get medical advice/attention.
**P302+P352** IF ON SKIN: Wash with plenty of water and soap.
**P304+P340** IF INHALED: Remove person to fresh air and keep comfortable for breathing.

**Precautionary statement(s) Storage**
**P405** Store locked up.
**P410+P412** Protect from sunlight. Do not expose to temperatures exceeding 50 °C/122 °F.
**P403+P233** Store in a well-ventilated place. Keep container tightly closed.

**Precautionary statement(s) Disposal**
**P501** Dispose of contents/container to authorised hazardous or special waste collection point in accordance with any local regulation.

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**2.3. Other hazards**

Inhalation, skin contact and/or ingestion may produce health damage*.

Cumulative effects may result following exposure*.

May produce discomfort of the respiratory system and skin*.

**acetone**
Listed in the Europe Regulation (EC) No 1907/2006 - Annex XVII (Restrictions may apply)

**Hydrocarbons, C6-C7, n-alkanes, isoalkanes, cyclics, <5% n-hexane**
Listed in the Europe Regulation (EC) No 1907/2006 - Annex XVII (Restrictions may apply)

**Hydrocarbons, C6-C7, n-alkanes, isoalkanes, cyclics, <5% n-hexane**
Determined to have endocrine-disrupting properties according to Europe Regulation (EU) 528/2012, Europe Regulation (EU) 2017/2100, and Europe Regulation (EU) 2018/605

**dimethyl ether**
Listed in the Europe Regulation (EC) No 1907/2006 - Annex XVII (Restrictions may apply)

## Section 3: Composition / information on ingredients

**3.1.Substances**
See 'Composition on ingredients' in Section 3.2

**3.2. Mixtures**

| 1. CAS No<br>2.EC No<br>3.Index No<br>4.REACH No | % [weight] | Name | Classified according to GB-CLP Regulation, UK SI 2019/720 and UK SI 2020/1567 | SCL / M-Factor | Nanoform Particle Characteristics |
|---|---|---|---|---|---|
| 1. 67-64-1<br>2.200-662-2<br>3.606-001-00-8<br>4.01-2119471330-49-XXXX | 20-30 | acetone * | Flammable Liquids Category 2, Serious Eye Damage/Eye Irritation Category 2, Specific Target Organ Toxicity - Single Exposure (Narcotic Effects) Category 3; H225, H319, H336 [2] | Not Available | Not Available |
| 1. 64742-49-0*<br>2.921-024-6<br>3.649-328-00-1<br>4.01-2119475514-35-XXXX | 20-30 | Hydrocarbons, C6-C7, n-alkanes, isoalkanes, cyclics, <5% n-hexane **[e]** | Specific Target Organ Toxicity - Single Exposure (Narcotic Effects) Category 3, Hazardous to the Aquatic Environment Long-Term Hazard Category 2, Flammable Liquids Category 2, Skin | 0 | Not Available |

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| | | | | | |
|---|---|---|---|---|---|
| | | | Corrosion/Irritation Category 2, Aspiration Hazard Category 1; H336, H411, H225, H315, H304 [1] | | |
| 1. 115-10-6<br>2.204-065-8<br>3.603-019-00-8<br>4.01-2119472128-37-XXXX | 40-60 | dimethyl ether * | Flammable Gases Category 1, Gases Under Pressure; H220, H280 [2] | Not Available | Not Available |

**Legend:** 1. Classified by Chemwatch; 2. Classification drawn from GB-CLP Regulation, UK SI 2019/720 and UK SI 2020/1567; 3. Classification drawn from C&L; * EU IOELVs available; [e] Substance identified as having endocrine disrupting properties

## Section 4: First aid measures

### 4.1. Description of first aid measures

**Eye Contact**

- If product comes in contact with eyes remove the patient from gas source or contaminated area.
- Take the patient to the nearest eye wash, shower or other source of clean water.
- Open the eyelid(s) wide to allow the material to evaporate.
- Gently rinse the affected eye(s) with clean, cool water for at least 15 minutes. Have the patient lie or sit down and tilt the head back. Hold the eyelid(s) open and pour water slowly over the eyeball(s) at the inner corners, letting the water run out of the outer corners.
- The patient may be in great pain and wish to keep the eyes closed. It is important that the material is rinsed from the eyes to prevent further damage.
- Ensure that the patient looks up, and side to side as the eye is rinsed in order to better reach all parts of the eye(s)
- Transport to hospital or doctor.
- Even when no pain persists and vision is good, a doctor should examine the eye as delayed damage may occur.
- If the patient cannot tolerate light, protect the eyes with a clean, loosely tied bandage.
- Ensure verbal communication and physical contact with the patient.

**DO NOT** allow the patient to rub the eyes
**DO NOT** allow the patient to tightly shut the eyes
**DO NOT** introduce oil or ointment into the eye(s) without medical advice
**DO NOT** use hot or tepid water.

**Skin Contact**

If skin contact occurs:

- Immediately remove all contaminated clothing, including footwear.
- Flush skin and hair with running water (and soap if available).
- Seek medical attention in event of irritation.

(CONTINUED ON NEXT PAGE)

**Inhalation**

- Following exposure to gas, remove the patient from the gas source or contaminated area.
- NOTE: Personal Protective Equipment (PPE), including positive pressure self-contained breathing apparatus may be required to assure the safety of the rescuer.
- Prostheses such as false teeth, which may block the airway, should be removed, where possible, prior to initiating first aid procedures.
- If the patient is not breathing spontaneously, administer rescue breathing.
- If the patient does not have a pulse, administer CPR.
- If medical oxygen and appropriately trained personnel are available, administer 100% oxygen.
- Summon an emergency ambulance. If an ambulance is not available, contact a physician, hospital, or Poison Control Centre for further instruction.
- Keep the patient warm, comfortable and at rest while awaiting medical care.
- **MONITOR THE BREATHING AND PULSE, CONTINUOUSLY.**
- Administer rescue breathing (preferably with a demand-valve resuscitator, bag-valve mask-device, or pocket mask as trained) or CPR if necessary.

**Ingestion**

Not considered a normal route of entry.

- If spontaneous vomiting appears imminent or occurs, hold patient's head down, lower than their hips to help avoid possible aspiration of vomitus.

**4.2. Most important symptoms and effects, both acute and delayed**

See Section 11

**4.3. Indication of any immediate medical attention and special treatment needed**

For petroleum distillates

· In case of ingestion, gastric lavage with activated charcoal can be used promptly to prevent absorption - decontamination (induced emesis or lavage) is controversial and should be considered on the merits of each individual case; of course the usual precautions of an endotracheal tube should be considered prior to lavage, to prevent aspiration.

· Individuals intoxicated by petroleum distillates should be hospitalized immediately, with acute and continuing attention to neurologic and cardiopulmonary function.

· Positive pressure ventilation may be necessary.

· Acute central nervous system signs and symptoms may result from large ingestions of aspiration-induced hypoxia.

· After the initial episode, individuals should be followed for changes in blood variables and the delayed appearance of pulmonary oedema and chemical pneumonitis. Such patients should be followed for several days or weeks for delayed effects, including bone marrow toxicity, hepatic and renal impairment Individuals with chronic pulmonary disease will be more seriously impaired, and recovery from inhalation exposure may be complicated.

· Gastrointestinal symptoms are usually minor and pathological changes of the liver and kidneys are reported to be uncommon in acute intoxications.

· Chlorinated and non-chlorinated hydrocarbons may sensitize the heart to epinephrine and other circulating catecholamines so that arrhythmias may occur. Careful consideration of this potential adverse effect should precede administration of epinephrine or other cardiac stimulants and the selection of bronchodilators. for lower alkyl ethers:

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BASIC TREATMENT

---

- Establish a patent airway with suction where necessary.
- Watch for signs of respiratory insufficiency and assist ventilation as necessary.
- Administer oxygen by non-rebreather mask at 10 to 15 l/min.
- A low-stimulus environment must be maintained.
- Monitor and treat, where necessary, for shock.
- Anticipate and treat, where necessary, for seizures.
- **DO NOT** use emetics. Where ingestion is suspected rinse mouth and give up to 200 ml water (5 ml/kg recommended) for dilution where patient is able to swallow, has a strong gag reflex and does not drool.

---

ADVANCED TREATMENT

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- Consider orotracheal or nasotracheal intubation for airway control in unconscious patient or where respiratory arrest has occurred.
- Positive-pressure ventilation using a bag-valve mask might be of use.
- Monitor and treat, where necessary, for arrhythmias.
- Start an IV D5W TKO. If signs of hypovolaemia are present use lactated Ringers solution. Fluid overload might create complications.
- Drug therapy should be considered for pulmonary oedema.
- Hypotension without signs of hypovolaemia may require vasopressors.
- Treat seizures with diazepam.
- Proparacaine hydrochloride should be used to assist eye irrigation.

---

EMERGENCY DEPARTMENT

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- Laboratory analysis of complete blood count, serum electrolytes, BUN, creatinine, glucose, urinalysis, baseline for serum aminotransferases (ALT and AST), calcium, phosphorus and magnesium, may assist in establishing a treatment regime. Other useful analyses include anion and osmolar gaps, arterial blood gases (ABGs), chest radiographs and electrocardiograph.
- Ethers may produce anion gap acidosis. Hyperventilation and bicarbonate therapy might be indicated.
- Haemodialysis might be considered in patients with impaired renal function.
- Consult a toxicologist as necessary.
  BRONSTEIN, A.C. and CURRANCE, P.L.
  EMERGENCY CARE FOR HAZARDOUS MATERIALS EXPOSURE: 2nd Ed. 1994
  for simple ketones:

(CONTINUED ON NEXT PAGE)

---
BASIC TREATMENT
---

- Establish a patent airway with suction where necessary.
- Watch for signs of respiratory insufficiency and assist ventilation as necessary.
- Administer oxygen by non-rebreather mask at 10 to 15 l/min.
- Monitor and treat, where necessary, for pulmonary oedema .
- Monitor and treat, where necessary, for shock.
- **DO NOT** use emetics. Where ingestion is suspected rinse mouth and give up to 200 ml water (5mL/kg recommended) for dilution where patient is able to swallow, has a strong gag reflex and does not drool.
- Give activated charcoal.

---
ADVANCED TREATMENT
---

- Consider orotracheal or nasotracheal intubation for airway control in unconscious patient or where respiratory arrest has occurred.
- Consider intubation at first sign of upper airway obstruction resulting from oedema.
- Positive-pressure ventilation using a bag-valve mask might be of use.
- Monitor and treat, where necessary, for arrhythmias.
- Start an IV D5W TKO. If signs of hypovolaemia are present use lactated Ringers solution. Fluid overload might create complications.
- Drug therapy should be considered for pulmonary oedema.
- Hypotension with signs of hypovolaemia requires the cautious administration of fluids. Fluid overload might create complications.
- Treat seizures with diazepam.
- Proparacaine hydrochloride should be used to assist eye irrigation.

---
EMERGENCY DEPARTMENT
---

- Laboratory analysis of complete blood count, serum electrolytes, BUN, creatinine, glucose, urinalysis, baseline for serum aminotransferases (ALT and AST), calcium, phosphorus and magnesium, may assist in establishing a treatment regime. Other useful analyses include anion and osmolar gaps, arterial blood gases (ABGs), chest radiographs and electrocardiograph.
- Positive end-expiratory pressure (PEEP)-assisted ventilation may be required for acute parenchymal injury or adult respiratory distress syndrome.
- Consult a toxicologist as necessary.
  *BRONSTEIN, A.C. and CURRANCE, P.L.*
  *EMERGENCY CARE FOR HAZARDOUS MATERIALS EXPOSURE: 2nd Ed. 1994*
  For gas exposures:

(CONTINUED ON NEXT PAGE)

---
BASIC TREATMENT
---

- Establish a patent airway with suction where necessary.
- Watch for signs of respiratory insufficiency and assist ventilation as necessary.
- Administer oxygen by non-rebreather mask at 10 to 15 l/min.
- Monitor and treat, where necessary, for pulmonary oedema .
- Monitor and treat, where necessary, for shock.
- Anticipate seizures.

---
ADVANCED TREATMENT
---

- Consider orotracheal or nasotracheal intubation for airway control in unconscious patient or where respiratory arrest has occurred.
- Positive-pressure ventilation using a bag-valve mask might be of use.
- Monitor and treat, where necessary, for arrhythmias.
- Start an IV D5W TKO. If signs of hypovolaemia are present use lactated Ringers solution. Fluid overload might create complications.
- Drug therapy should be considered for pulmonary oedema.
- Hypotension with signs of hypovolaemia requires the cautious administration of fluids. Fluid overload might create complications.
- Treat seizures with diazepam.
- Proparacaine hydrochloride should be used to assist eye irrigation.
  BRONSTEIN, A.C. and CURRANCE, P.L.
  EMERGENCY CARE FOR HAZARDOUS MATERIALS EXPOSURE: 2nd Ed. 1994

## Section 5: Firefighting measures

### 5.1. Extinguishing media

**DO NOT EXTINGUISH BURNING GAS UNLESS LEAK CAN BE STOPPED SAFELY:**

**OTHERWISE: LEAVE GAS TO BURN.**

**FOR SMALL FIRE:**

- Dry chemical, CO2 or water spray to extinguish gas (only if absolutely necessary and safe to do so).
- DO NOT use water jets.

**FOR LARGE FIRE:**

- Cool cylinder by direct flooding quantities of water onto upper surface until well after fire is out.
- **DO NOT** direct water at source of leak or venting safety devices as icing may occur.

(CONTINUED ON NEXT PAGE)

**5.2. Special hazards arising from the substance or mixture**

**Fire Incompatibility**

Avoid contamination with oxidising agents i.e. nitrates, oxidising acids, chlorine bleaches, pool chlorine etc. as ignition may result

**5.3 Advice for fire-fighters**

**Fire Fighting**

**FOR FIRES INVOLVING MANY GAS CYLINDERS:**

To stop the flow of gas, specifically trained personnel may inert the atmosphere to reduce oxygen levels thus allowing the capping of leaking container(s).

Reduce the rate of flow and inject an inert gas, if possible, before completely stopping the flow to prevent flashback.

**DO NOT** extinguish the fire until the supply is shut off otherwise an explosive re-ignition may occur.

If the fire is extinguished and the flow of gas continues, used increased ventilation to prevent build-up, of explosive atmosphere.

Use non-sparking tools to close container valves.

---
GENERAL
---
Alert Fire Brigade and tell them location and nature of hazard.

May be violently or explosively reactive.

Wear breathing apparatus plus protective gloves.

Consider evacuation

Fight fire from a safe distance, with adequate cover.

If safe, switch off electrical equipment until vapour fire hazard removed.

**Fire/Explosion Hazard**

**HIGHLY FLAMMABLE**: will be easily ignited by heat, sparks or flames.

Will form explosive mixtures with air

Fire exposed containers may vent contents through pressure relief valves thereby increasing fire intensity and/ or vapour concentration.

Vapours may travel to source of ignition and flash back.

Containers may explode when heated - Ruptured cylinders may rocket

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Fire may produce irritating, poisonous or corrosive gases.

Runoff may create fire or explosion hazard.

Combustion products include:
- carbon monoxide (CO)
- carbon dioxide (CO2)
- other pyrolysis products typical of burning organic material.
- Contains low boiling substance: Closed containers may rupture due to pressure buildup under fire conditions.

## Section 6: Accidental release measures

**6.1 Personal precautions, protective equipment and emergency procedures:**
See section 8

**6.2 Environmental precautions:**
See section 12

**6.3 Methods and material for containment and cleaning up:**

**Minor Spills**

Avoid breathing vapour and any contact with liquid or gas. Protective equipment including respirator should be used.

**DO NOT** enter confined spaces where gas may have accumulated.

Shut off all sources of possible ignition and increase ventilation.

Clear area of personnel.

**Major Spills**

Clear area of all unprotected personnel and move upwind.

Alert Emergency Authority and advise them of the location and nature of hazard.

May be violently or explosively reactive.

Wear full body clothing with breathing apparatus.

Prevent by any means available, spillage from entering drains and water-courses.

Remove leaking cylinders to a safe place.

Fit vent pipes. Release pressure under safe, controlled conditions

(CONTINUED ON NEXT PAGE)

Burn issuing gas at vent pipes.

**DO NOT** exert excessive pressure on valve; **DO NOT** attempt to operate damaged valve.

**6.4 Reference to other sections:**

Personal Protective Equipment advice is contained in Section 8 of the SDS.

## Section 7: Handling and storage

**7.1 Precautions for safe handling:**

**Safe handling**

The conductivity of this material may make it a static accumulator., A liquid is typically considered nonconductive if its conductivity is below 100 pS/m and is considered semi-conductive if its conductivity is below 10 000 pS/m., Whether a liquid is nonconductive or semi-conductive, the precautions are the same., A number of factors, for example liquid temperature, presence of contaminants, and anti-static additives can greatly influence the conductivity of a liquid.

Containers, even those that have been emptied, may contain explosive vapours.

Do NOT cut, drill, grind, weld or perform similar operations on or near containers.

Electrostatic discharge may be generated during pumping - this may result in fire.

Ensure electrical continuity by bonding and grounding (earthing) all equipment.

Restrict line velocity during pumping in order to avoid generation of electrostatic discharge (<=1 m/sec until fill pipe submerged to twice its diameter, then <= 7 m/sec).

Avoid splash filling.

**DO NOT** use compressed air for filling discharging or handling operations.

Consider use in closed pressurised systems, fitted with temperature, pressure and safety relief valves which are vented for safe dispersal. Use only properly specified equipment which is suitable for this product, its supply pressure and temperature

(CONTINUED ON NEXT PAGE)

| | |
|---|---|
| | The tubing network design connecting gas cylinders to the delivery system should include appropriate pressure indicators and vacuum or suction lines. |
| . | Fully-welded types of pressure gauges, where the bourdon tube sensing element is welded to the gauge body, are recommended.<br><br>Before connecting gas cylinders, ensure manifold is mechanically secure and does not containing another gas. Before disconnecting gas cylinder, isolate supply line segment proximal to cylinder, remove trapped gas in supply line with aid of vacuum pump<br><br>When connecting or replacing cylinders take care to avoid airborne particulates violently ejected when system pressurises.<br><br>Avoid generation of static electricity. Earth all lines and equipment.<br><br>**DO NOT** transfer gas from one cylinder to another. |
| **Fire and explosion protection** | See section 5 |
| **Other information** | Cylinders should be stored in a purpose-built compound with good ventilation, preferably in the open.<br><br>Such compounds should be sited and built in accordance with statutory requirements.<br><br>The storage compound should be kept clear and access restricted to authorised personnel only.<br><br>Cylinders stored in the open should be protected against rust and extremes of weather.<br><br>Cylinders in storage should be properly secured to prevent toppling or rolling. |

**7.2 Conditions for safe storage, including any incompatibilities:**

| | |
|---|---|
| **Suitable container** | Cylinder:<br>Ensure the use of equipment rated for cylinder pressure.<br>Ensure the use of compatible materials of construction.<br>Valve protection cap to be in place until cylinder is secured, connected.<br>Cylinder must be properly secured either in use or in storage.<br>Cylinder valve must be closed when not in use or when empty. |

(CONTINUED ON NEXT PAGE)

**Storage incompatibility**

Dimethyl ether:
is a peroxidisable gas
may be heat and shock sensitive
is able to form unstable peroxides on prolonged exposure to air
reacts violently with oxidisers, aluminium hydride, lithium aluminium hydride
is incompatible with strong acids, metal salts

Low molecular weight alkanes are a type of chemical compounds that can be found in gases or liquids. These alkanes:
Can cause a dangerous reaction with strong oxidizers, chlorine, chlorine dioxide, and dioxygenyl tetrafluoroborate when there is oxygen and heat present.
Are incompatible with halogens.
Can create static charges due to their low conductivity, leading to an accumulation of static charge.
Should be kept away from flames and ignition sources.

Acetone:
may react violently with a varity of substances, including but not limited to activated carbon, halogenated compounds, perchlorates, chromic acids, liquid oxygen and strong acids.
will react violently with bromoform and chloroform when in contact with alkaline substances
may form unstable and explosive peroxides when in contact with strong oxidisers, fluorine, hydrogen peroxide (90%), sodium perchlorate, or 2-methyl-1,3-butadiene
can make nitromethane more explosive
will dissolve most rubbers, resins and plastics

Ketones in this group:
are reactive with many acids and bases liberating heat and flammable gases (e.g., H2).
react with reducing agents such as hydrides, alkali metals, and nitrides to produce flammable gas (H2) and heat.
are incompatible with isocyanates, aldehydes, cyanides, peroxides, and anhydrides.
react violently with aldehydes, HNO3 (nitric acid), HNO3 + H2O2 (mixture of nitric acid and hydrogen peroxide), and HClO4 (perchloric acid).
may react with hydrogen peroxide to form unstable peroxides; many are heat- and shock-sensitive explosives.

(CONTINUED ON NEXT PAGE)

Ethers
may react violently with strong oxidising agents and acids.
can act as bases.- they form salts with strong acids and addition complexes with Lewis acids; the complex between diethyl ether and boron trifluoride is an example.
are generally stable to water under neutral conditions and ambient temperatures.
are hydrolysed by heating in the presence of halogen acids, particularly hydrogen iodide
are relatively inert In other reactions, which typically involve the breaking of the carbon-oxygen bond
The tendency of many ethers to form explosive peroxides is well documented.
Ethers lacking non-methyl hydrogen atoms adjacent to the ether link are thought to be relatively safe.
When solvents have been freed from peroxides (by percolation through a column of activated alumina for example), the absorbed peroxides must promptly be desorbed by treatment with the polar solvents methanol or water, which should be discarded safely.
Compressed gases may contain a large amount of kinetic energy over and above that potentially available from the energy of reaction produced by the gas in chemical reaction with other substances

**Hazard categories in accordance with Regulation (EC) No 1272/2008**
P3b: Flammable Aerosols

**Qualifying quantity (tonnes) of dangerous substances as referred to in Article 3(10) for the application of**
P3b Lower- / Upper-tier requirements: 5 000 (net) / 50 000 (net)

**7.3 Specific end use(s):**
**Specific end use(s)** The identified uses for this product are detailed in Section 1.2.

## Section 8: Exposure Controls / Personal protection

**8.1 Control parameters**

| Ingredient | DNELs<br>Exposure Pattern Worker | PNECs<br>Compartment |
|---|---|---|
| acetone | Dermal 121 mg/kg bw/day (Systemic, Chronic)<br>Inhalation 1 210 mg/m³ (Systemic, Chronic)<br>Inhalation 850 mg/m³ (Local, Chronic)<br>Inhalation 1 700 mg/m³ (Systemic, Acute)<br>Inhalation 2 420 mg/m³ (Local, Acute)<br>Dermal 43 mg/kg bw/day (Systemic, Chronic) *<br>Inhalation 151 mg/m³ (Systemic, Chronic) * | 10.6 mg/L (Water (Fresh))<br>21 mg/L (Water - Intermittent release)<br>1.06 mg/L (Water (Marine))<br>30.4 mg/kg sediment dw (Sediment (Fresh Water))<br>3.04 mg/kg sediment dw (Sediment (Marine))<br>29.5 mg/kg soil dw (Soil) |

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| | | |
|---|---|---|
| | Oral 43 mg/kg bw/day (Systemic, Chronic) *<br>Inhalation 151 mg/m³ (Local, Chronic) *<br>Inhalation 302 mg/m³ (Systemic, Acute) * | 100 mg/L (STP) |
| Hydrocarbons, C6-C7, n-alkanes, isoalkanes, cyclics, <5% n-hexane | Dermal 13 964 mg/kg bw/day (Systemic, Chronic)<br>Inhalation 1.9 mg/m³ (Systemic, Chronic)<br>Inhalation 837.5 mg/m³ (Local, Chronic)<br>Inhalation 1 286.4 mg/m³ (Systemic, Acute)<br>Inhalation 1 066.67 mg/m³ (Local, Acute)<br>Dermal 1 377 mg/kg bw/day (Systemic, Chronic) *<br>Inhalation 0.41 mg/m³ (Systemic, Chronic) *<br>Oral 1 301 mg/kg bw/day (Systemic, Chronic) *<br>Inhalation 178.57 mg/m³ (Local, Chronic) *<br>Inhalation 1 152 mg/m³ (Systemic, Acute) *<br>Inhalation 640 mg/m³ (Local, Acute) * | Not Available |
| dimethyl ether | Inhalation 1 894 mg/m³ (Systemic, Chronic)<br>Inhalation 471 mg/m³ (Systemic, Chronic) * | 0.155 mg/L (Water (Fresh))<br>1.549 mg/L (Water - Intermittent release)<br>0.016 mg/L (Water (Marine))<br>0.681 mg/kg sediment dw (Sediment (Fresh Water))<br>0.069 mg/kg sediment dw (Sediment (Marine))<br>0.045 mg/kg soil dw (Soil)<br>160 mg/L (STP) |

* Values for General Population

**Occupational Exposure Limits (OEL)**

**INGREDIENT DATA**

| Source | Ingredient | Material name | TWA | STEL | Peak | Notes |
|---|---|---|---|---|---|---|
| UK Workplace Exposure Limits (WELs). | acetone | Acetone | 500 ppm / 1210 mg/m3 | 3620 mg/m3 / 1500 ppm | Not Available | Not Available |
| UK Workplace Exposure Limits (WELs). | dimethyl ether | Dimethyl ether | 400 ppm / 766 mg/m3 | 958 mg/m3 / 500 ppm | Not Available | Not Available |

**Emergency Limits**

| Ingredient | TEEL-1 | TEEL-2 | TEEL-3 |
|---|---|---|---|
| acetone | Not Available | Not Available | Not Available |
| Hydrocarbons, C6-C7, n-alkanes, isoalkanes, cyclics, <5% n-hexane | 1,000 mg/m3 | 11,000 mg/m3 | 66,000 mg/m3 |
| dimethyl ether | 3,000 ppm | 3800* ppm | 7200* ppm |

(CONTINUED ON NEXT PAGE)

| Ingredient | Original IDLH | Revised IDLH |
|---|---|---|
| acetone | 2,500 ppm | Not Available |
| Hydrocarbons, C6-C7, n-alkanes, isoalkanes, cyclics, <5% n-hexane | Not Available | Not Available |
| dimethyl ether | Not Available | Not Available |

**Occupational Exposure Banding**

| Ingredient | Occupational Exposure Band Rating | Occupational Exposure Band Limit |
|---|---|---|
| Hydrocarbons, C6-C7, n-alkanes, isoalkanes, cyclics, <5% n-hexane | E | ≤ 0.1 ppm |
| Notes: | Occupational exposure banding is a process of assigning chemicals into specific categories or bands based on a chemical's potency and the adverse health outcomes associated with exposure. The output of this process is an occupational exposure band (OEB), which corresponds to a range of exposure concentrations that are expected to protect worker health. | |

**8.2. Exposure controls**

**8.2.1. Appropriate engineering controls**

Engineering controls are used to remove a hazard or place a barrier between the worker and the hazard. Well-designed engineering controls can be highly effective in protecting workers and will typically be independent of worker interactions to provide this high level of protection.

The basic types of engineering controls are:
Process controls which involve changing the way a job activity or process is done to reduce the risk.

Enclosure and/or isolation of emission source which keeps a selected hazard "physically" away from the worker and ventilation that strategically "adds" and "removes" air in the work environment. Ventilation can remove or dilute an air contaminant if designed properly.

**8.2.2. Individual protection measures, such as personal protective equipment**



(CONTINUED ON NEXT PAGE)

| | |
|---|---|
| **Eye and face protection** | Safety glasses with side shields.<br><br>Chemical goggles. [AS/NZS 1337.1, EN166 or national equivalent]<br><br>Contact lenses may pose a special hazard; soft contact lenses may absorb and concentrate irritants. A written policy document, describing the wearing of lenses or restrictions on use, should be created for each workplace or task. This should include a review of lens absorption and adsorption for the class of chemicals in use and an account of injury experience. |
| **Skin protection** | See Hand protection below |
| **Hands/feet protection** | When handling sealed and suitably insulated cylinders wear cloth or leather gloves. |
| **Body protection** | See Other protection below |
| **Other protection** | The clothing worn by process operators insulated from earth may develop static charges far higher (up to 100 times) than the minimum ignition energies for various flammable gas-air mixtures. This holds true for a wide range of clothing materials including cotton.<br><br>Avoid dangerous levels of charge by ensuring a low resistivity of the surface material worn outermost.<br><br>BRETHERICK: Handbook of Reactive Chemical Hazards.<br>Protective overalls, closely fitted at neck and wrist.<br>Eye-wash unit.<br><br>**IN CONFINED SPACES:**<br>Non-sparking protective boots<br><br>Static-free clothing.<br><br>Ensure availability of lifeline.<br><br>**Staff should be trained in all aspects of rescue work**.<br>Some plastic personal protective equipment (PPE) (e.g. gloves, aprons, overshoes) are not recommended as they may produce static electricity.<br><br>For large scale or continuous use wear tight-weave non-static clothing (no metallic fasteners, cuffs or pockets). |

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Non sparking safety or conductive footwear should be considered. Conductive footwear describes a boot or shoe with a sole made from a conductive compound chemically bound to the bottom components, for permanent control to electrically ground the foot and shall dissipate static electricity from the body to reduce the possibility of ignition of volatile compounds. Electrical resistance must range between 0 to 500,000 ohms.

**Recommended material(s)**
**GLOVE SELECTION INDEX**
Glove selection is based on a modified presentation of the:

**"Forsberg Clothing Performance Index".**

The effect(s) of the following substance(s) are taken into account in the computer-generated selection:

| Material CPI | CPI |
|---|---|
| BUTYL | A |
| BUTYL/NEOPRENE | C |
| CPE | C |
| HYPALON | C |
| NATURAL RUBBER | C |
| NATURAL+NEOPRENE | C |
| NEOPRENE | C |
| NITRILE | C |
| NITRILE+PVC | C |
| PE/EVAL/PE | C |
| PVA | C |
| PVC | C |
| PVDC/PE/PVDC | C |
| SARANEX-23 | C |
| SARANEX-23 2-PLY | C |
| TEFLON | C |
| VITON/NEOPRENE | C |

* CPI - Chemwatch Performance Index
A: Best Selection
B: Satisfactory; may degrade after 4 hours continuous immersion
C: Poor to Dangerous Choice for other than short term immersion
**NOTE:** As a series of factors will influence the actual performance of the glove, a final selection must be based on detailed observation. -
* Where the glove is to be used on a short term, casual or infrequent basis, factors such as "feel" or convenience (e.g. disposability), may dictate a choice of gloves which might otherwise be unsuitable following long-term or frequent use. A qualified practitioner should be consulted.

(CONTINUED ON NEXT PAGE)

**Respiratory protection**
Type AX Filter of sufficient capacity. (AS/NZS 1716 & 1715, EN 143:2000 & 149:2001, ANSI Z88 or national equivalent)

Where the concentration of gas/particulates in the breathing zone, approaches or exceeds the "Exposure Standard" (or ES), respiratory protection is required. Degree of protection varies with both face-piece and Class of filter; the nature of protection varies with Type of filter.

| Required Minimum Protection Factor | Half-Face Respirator | Full-Face Respirator | Powered Air Respirator |
|---|---|---|---|
| up to 10 x ES | Air-line* | AX-2 | AX-PAPR-2 ^ |
| up to 20 x ES | - | AX-3 | - |
| 20+ x ES | - | Air-line** | - |

* - Continuous-flow; ** - Continuous-flow or positive pressure demand
^ - Full-face
A(All classes) = Organic vapours, B AUS or B1 = Acid gasses, B2 = Acid gas or hydrogen cyanide(HCN), B3 = Acid gas or hydrogen cyanide(HCN), E = Sulfur dioxide(SO2), G = Agricultural chemicals, K = Ammonia(NH3), Hg = Mercury, NO = Oxides of nitrogen, MB = Methyl bromide, AX = Low boiling point organic compounds(below 65 degC)

Cartridge respirators should never be used for emergency ingress or in areas of unknown vapour concentrations or oxygen content.

The wearer must be warned to leave the contaminated area immediately on detecting any odours through the respirator. The odour may indicate that the mask is not functioning properly, that the vapour concentration is too high, or that the mask is not properly fitted. Because of these limitations, only restricted use of cartridge respirators is considered appropriate.

Cartridge performance is affected by humidity. Cartridges should be changed after 2 hr of continuous use unless it is determined that the humidity is less than 75%, in which case, cartridges can be used for 4 hr. Used cartridges should be discarded daily, regardless of the length of time used

Positive pressure, full face, air-supplied breathing apparatus should be used for work in enclosed spaces if a leak is suspected or the primary containment is to be opened (e.g. for a cylinder change)

Air-supplied breathing apparatus is required where release of gas from primary containment is either suspected or demonstrated.

Selection of the Class and Type of respirator will depend upon the level of breathing zone contaminant and the chemical nature of the contaminant. Protection Factors (defined as the ratio of contaminant outside and inside the mask) may also be important.

(CONTINUED ON NEXT PAGE)

| Required minimum protection factor | Maximum gas/vapour concentration present in air p.p.m. (by volume) | Half-face Respirator | Full-Face Respirator |
|---|---|---|---|
| up to 10 | 1000 | AX-AUS / Class 1 | - |
| up to 50 | 1000 | - | AX-AUS / Class 1 |
| up to 50 | 5000 | Airline * | - |
| up to 100 | 5000 | - | AX-2 |
| up to 100 | 10000 | - | AX-3 |
| 100+ | | - | Airline** |

** - Continuous-flow or positive pressure demand.

A(All classes) = Organic vapours, B AUS or B1 = Acid gases, B2 = Acid gas or hydrogen cyanide(HCN), B3 = Acid gas or hydrogen cyanide(HCN), E = Sulfur dioxide(SO2), G = Agricultural chemicals, K = Ammonia(NH3), Hg = Mercury, NO = Oxides of nitrogen, MB = Methyl bromide, AX = Low boiling point organic compounds(below 65 deg C)

**8.2.3. Environmental exposure controls**
See section 12

## Section 9: Physical and Chemical Properties

**9.1 Information on basic physical and chemical properties**

| | |
|---|---|
| Appearance | Coloured |
| Physical state | Dissolved Gas |
| Relative density (Water = 1) | 0.87 |
| Odour | Not Available |
| Partition coefficient n-octanol / water | Not Available |
| Odour threshold | Not Available |
| Auto-ignition temperature (°C) | Not Available |
| pH (as supplied) | 7 |
| Decomposition temperature (°C) | Not available |
| Melting point / freezing point (°C) | Not available |
| Viscosity (cSt) | 283 |
| Initial boiling point and boiling range (°C) | 56.05 |
| Molecular weight (g/mol) | Not Available |
| Flash point (°C) | -17 |
| Taste | Not Available |
| Evaporation rate | Not Available |
| Explosive properties | Not Available |
| Flammability | HIGHLY FLAMMABLE. |

(CONTINUED ON NEXT PAGE)

| | |
|---|---|
| Oxidising properties | Not Available |
| Upper Explosive Limit (%) | 13 |
| Surface Tension (dyn/cm or mN/m) | Not Available |
| Lower Explosive Limit (%) | 2.5 |
| Volatile Component (%vol) | Not Available |
| Vapour pressure (kPa) | Not Available |
| Gas group | Not Available |
| Solubility in water | Immiscible |
| pH as a solution (1%) | Not Available |
| Vapour density (Air = 1) | Not Available |
| VOC g/L | 552.10 |
| Nanoform Solubility | Not Available |
| Nanoform Particle Characteristics | Not Available |
| Particle Size | Not Available |

**9.2 Other information**
Not Available

## Section 10: Stability and reactivity

**10.1 Reactivity**
**Reactivity** — See section 7.2

**10.2 Chemical stability**
**Stability** — Unstable in the presence of incompatible materials.
Product is considered stable.
Hazardous polymerisation will not occur.

**10.3 Possibility of hazardous reactions**
**Possibility of hazardous reactions** — See section 7.2

**10.4 Conditions to avoid**
**Conditions to avoid** — See section 7.2

**10.5 Incompatible materials**
**Materials to avoid** — See section 7.2

**10.6 Hazardous decomposition products:**
**Hazardous decomposition products** — See section 7.2

## Section 11: Toxicological information

**11.1. Information on toxicological effects**
**Inhaled** — The material can cause respiratory irritation in some persons. The body's response to such irritation can cause further lung damage.

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Inhalation of vapours may cause drowsiness and dizziness. This may be accompanied by sleepiness, reduced alertness, loss of reflexes, lack of co-ordination, and vertigo.

Inhalation of non-toxic gases may cause:
CNS effects: headache, confusion, dizziness, stupor, seizures and coma;
respiratory: shortness of breath and rapid breathing;
cardiovascular: collapse and irregular heart beats;
gastrointestinal: mucous membrane irritation, nausea and vomiting.

Inhaling high concentrations of mixed hydrocarbons can cause narcosis, with nausea, vomiting and lightheadedness. Low molecular weight (C2-C12) hydrocarbons can irritate mucous membranes and cause incoordination, giddiness, nausea, vertigo, confusion, headache, appetite loss, drowsiness, tremors and stupor.

Central nervous system (CNS) depression may include general discomfort, symptoms of giddiness, headache, dizziness, nausea, anaesthetic effects, slowed reaction time, slurred speech and may progress to unconsciousness. Serious poisonings may result in respiratory depression and may be fatal.

Following inhalation, ethers cause lethargy and stupor. Inhaling lower alkyl ethers results in headache, dizziness, weakness, blurred vision, seizures and possible coma.

Nerve damage can be caused by some non-ring hydrocarbons. Symptoms are temporary, and include weakness, tremors, increased saliva, some convulsions, excessive tears with discolouration and inco-ordination lasting up to 24 hours.

Inhalation of high concentrations of gas/vapour causes lung irritation with coughing and nausea, central nervous depression with headache and dizziness, slowing of reflexes, fatigue and inco-ordination.

Material is highly volatile and may quickly form a concentrated atmosphere in confined or unventilated areas. The vapour may displace and replace air in breathing zone, acting as a simple asphyxiant. This may happen with little warning of overexposure. The use of a quantity of material in an unventilated or confined space may result in increased exposure and an irritating atmosphere developing. Before starting consider control of exposure by mechanical ventilation.

Inhalation of vapours or aerosols (mists, fumes), generated by the material during the course of normal handling, may be damaging to the health of the individual.

(CONTINUED ON NEXT PAGE)

| | |
|---|---|
| **Ingestion** | Ingestion of alkyl ethers may produce stupor, blurred vision, headache, dizziness and irritation of the nose and throat. Respiratory distress and asphyxia may result.<br><br>Not normally a hazard due to physical form of product.<br><br>Considered an unlikely route of entry in commercial/industrial environments Isoparaffinic hydrocarbons cause temporary lethargy, weakness, inco-ordination and diarrhoea.<br><br>Ingestion of petroleum hydrocarbons can irritate the pharynx, oesophagus, stomach and small intestine, and cause swellings and ulcers of the mucous. Symptoms include a burning mouth and throat; larger amounts can cause nausea and vomiting, narcosis, weakness, dizziness, slow and shallow breathing, abdominal swelling, unconsciousness and convulsions.<br><br>Swallowing of the liquid may cause aspiration into the lungs with the risk of chemical pneumonitis; serious consequences may result. (ICSC13733) |
| **Skin Contact** | The material may accentuate any pre-existing dermatitis condition<br><br>Skin contact with the material may damage the health of the individual; systemic effects may result following absorption.<br><br>Skin exposure to isoparaffins may produce slight to moderate irritation in animals and humans. Rare sensitisation reactions in humans have occurred.<br><br>Alkyl ethers may defat and dehydrate the skin producing dermatoses. Absorption may produce headache, dizziness, and central nervous system depression.<br><br>Open cuts, abraded or irritated skin should not be exposed to this material<br><br>Entry into the blood-stream, through, for example, cuts, abrasions or lesions, may produce systemic injury with harmful effects.<br><br>Examine the skin prior to the use of the material and ensure that any external damage is suitably protected.<br><br>There is some evidence to suggest that the material may cause mild but significant inflammation of the skin either following direct contact or after a delay of some time. Repeated exposure can cause contact dermatitis which is characterised by redness, swelling and blistering. |

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| | |
|---|---|
| **Eye** | Instillation of isoparaffins into rabbit eyes produces only slight irritation.<br><br>Not considered to be a risk because of the extreme volatility of the gas. Eye contact with alkyl ethers (vapour or liquid) may produce irritation, redness and tears.<br><br>Direct eye contact with petroleum hydrocarbons can be painful, and the corneal epithelium may be temporarily damaged.<br><br>Aromatic species can cause irritation and excessive tear secretion.<br><br>The liquid may produce eye discomfort and is capable of causing temporary impairment of vision and/or transient eye inflammation, ulceration<br><br>There is evidence that material may produce eye irritation in some persons and produce eye damage 24 hours or more after instillation. Severe inflammation may be expected with pain. |
| **Chronic** | Long-term exposure to respiratory irritants may result in airways disease, involving difficulty breathing and related whole-body problems.<br><br>Toxic: danger of serious damage to health by prolonged exposure through inhalation, in contact with skin and if swallowed.<br><br>This material can cause serious damage if one is exposed to it for long periods. It can be assumed that it contains a substance which can produce severe defects.<br><br>Ample evidence from experiments exists that there is a suspicion this material directly reduces fertility.<br><br>Substance accumulation, in the human body, may occur and may cause some concern following repeated or long-term occupational exposure.<br><br>Constant or exposure over long periods to mixed hydrocarbons may produce stupor with dizziness, weakness and visual disturbance, weight loss and anaemia, and reduced liver and kidney function. Skin exposure may result in drying and cracking and redness of the skin.<br><br>Main route of exposure to the gas in the workplace is by inhalation.<br><br>Chronic exposure to alkyl ethers may result in loss of appetite, excessive thirst, fatigue, and weight loss. |

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Workers exposed to acetone for long periods showed inflammation of the airways, stomach and small bowel, attacks of giddiness and loss of strength. Exposure to acetone may enhance the liver toxicity of chlorinated solvents.

Prolonged or repeated skin contact may cause drying with cracking, irritation and possible dermatitis following.

| | TOXICITY | IRRITATION |
|---|---|---|
| **XtraBOND 35** | Not Available | Not Available |
| **acetone** | Dermal (rabbit) LD50: 20000 mg/kg[2] | Eye (human): 500 ppm - irritant |
| | Inhalation(Mouse) LC50; 44 mg/L4h[2] | Eye (rabbit): 20mg/24hr -moderate |
| | Oral (Rat) LD50: 5800 mg/kg[2] | Eye (rabbit): 3.95 mg - SEVERE |
| | | Eye: adverse effect observed (irritating)[1] |
| | | Skin (rabbit): 500 mg/24hr - mild |
| | | Skin (rabbit):395mg (open) - mild |
| | | Skin: no adverse effect observed (not irritating)[1] |
| **Hydrocarbons, C6-C7, n-alkanes, isoalkanes, cyclics, <5% n-hexane** | Dermal (rabbit) LD50: >1900 mg/kg[1] | Eye: no adverse effect observed (not irritating)[1] |
| | Inhalation(Rat) LC50: >4.42 mg/L4h[1] | Skin: adverse effect observed (irritating)[1] |
| | Oral (Rat) LD50: >2000 mg/kg[1] | |
| **dimethyl ether** | Inhalation(Rat) LC50: >20000 ppm4h[1] | Not Available |
| **Legend:** | 1. Value obtained from Europe ECHA Registered Substances - Acute toxicity 2. Value obtained from manufacturer's SDS. Unless otherwise specified data extracted from RTECS - Register of Toxic Effect of chemical Substances | |

**XtraBOND 35**

Asthma-like symptoms may continue for months or even years after exposure to the material ends. This may be due to a non-allergic condition known as reactive airways dysfunction syndrome (RADS) which can occur after exposure to high levels of highly irritating compound. Main criteria for diagnosing RADS include the absence of previous airways disease in a non-atopic individual, with sudden onset of persistent asthma-like symptoms within minutes to hours of a documented exposure to the irritant. Other criteria for diagnosis of RADS include a reversible airflow pattern on lung function tests, moderate to severe bronchial hyperreactivity on methacholine challenge testing, and the lack of minimal lymphocytic inflammation, without eosinophilia. RADS (or asthma) following an irritating inhalation is an infrequent disorder with rates related to the concentration of and duration of exposure to the irritating substance.

(CONTINUED ON NEXT PAGE)

| | |
|---|---|
| **ACETONE** | The material may cause skin irritation after prolonged or repeated exposure and may produce on contact skin redness, swelling, the production of vesicles, scaling and thickening of the skin. |
| **Hydrocarbons, C6-C7, n-alkanes, isoalkanes, cyclics, <5% n-hexane** | Most Low Boiling Point Naphthas (LBPNs) have low actute toxicity to oral, dermal and inhalation routes of exposure, and mild to moderate skin and eye irritating effects. However, some heavier 'cracked' LBPNs (LKBPNs with greater olefinic content) have been found to be more irritating to the skin and eyes compared to non-cracked LBPNs.<br>LBPNs are not known to be sensitising to the skin.<br>Animal studies examined the effects of short-term and longer-term exposure to LBPNs through inhalation or oral routes. In male rats specifically, exposure to LBPNs resulted in kidney-related issues like increased kidney weight, kidney lesions, and hyaline droplet formation. However, the same effects were not seen in female rats, mice, or humans due to a mechanism of action involving a particular enzyme only found in male rats. Limited studies found that exposure through inhalation caused an increase in liver weight in both male and female rats.<br>Petroleum contains aromatic (benzene, toluene, ethyl benzene, napthalene) and aliphatic hydrocarbons (n-hexane), which can result in many detrimental health effects, including, cancer, tumour formation, hearing loss, and nervous system toxicity. Animal testing shows breathing in petroleum causes tumours of the liver and kidney; these are however not considered to be relevant in humans. Similarly, exposure to gasoline over a lifetime can cause kidney cancer in animals, but the relevance in humans is questionable.<br>Most studies involving gasoline have shown that gasoline does not cause genetic mutation, including all recent studies in living human subjects (such as in petrol service station attendants).<br>Animal studies show concentrations of toluene (>0.1%) can cause developmental effects such as lower birth weight and developmental toxicity to the nervous system of the foetus. Other studies show no adverse effects on the foetus.<br>Prolonged contact with petroleum may result in skin inflammation and make the skin more sensitive to irritation and penetration by other materials. |

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| | |
|---|---|
| **XtraBOND 35 & Hydrocarbons, C6-C7, n-alkanes, isoalkanes, cyclics, <5% n-hexane** | Animal studies indicate that normal, branched and cyclic paraffins are absorbed from the gastrointestinal tract and that the absorption of n-paraffins is inversely proportional to the carbon chain length, with little absorption above C30. With respect to the carbon chain lengths likely to be present in mineral oil, n-paraffins may be absorbed to a greater extent than iso- or cycloparaffins.<br>The major classes of hydrocarbons are well absorbed into the gastrointestinal tract in various species. In many cases, the hydrophobic hydrocarbons are ingested in association with fats in the diet. Some hydrocarbons may appear unchanged as in the lipoprotein particles in the gut lymph, but most hydrocarbons partly separate from fats and undergo metabolism in the gut cell. The gut cell may play a major role in determining the proportion of hydrocarbon that becomes available to be deposited unchanged in peripheral tissues such as in the body fat stores or the liver. |
| **XtraBOND 35 & ACETONE** | For acetone:<br>The acute toxicity of acetone is low. Acetone is not a skin irritant or sensitizer, but it removes fat from the skin, and it also irritates the eye. Animal testing shows acetone may cause anaemia. Studies in humans have shown that exposure to acetone at a level of 2375 mg/m3 does not negatively impact an individual's emotional regulation, behavior, or learning ability. |

| | | | |
|---|---|---|---|
| **Acute Toxicity** | ✗ | **Carcinogenicity** | ✗ |
| **Skin Irritation/Corrosion** | ✓ | **Reproductivity** | ✗ |
| **Serious Eye Damage/Irritation** | ✓ | **STOT - Single Exposure** | ✓ |
| **Respiratory or Skin sensitisation** | ✗ | **STOT - Repeated Exposure** | ✗ |
| **Mutagenicity** | ✗ | **Aspiration Hazard** | ✗ |

**Legend:** ✓ – Data available to make classification
✗ – Data either not available or does not fill the criteria for classification

**11.2 Information on other hazards**

**11.2.1. Endocrine disrupting properties**

Many chemicals may mimic or interfere with the body s hormones, known as the endocrine system. Endocrine disruptors are chemicals that can interfere with endocrine (or hormonal) systems.
Endocrine disruptors interfere with the synthesis, secretion, transport, binding, action, or elimination of natural hormones in the body. Any system in the body controlled by hormones can be derailed by hormone disruptors. Specifically, endocrine disruptors may be associated with the development of learning disabilities, deformations of the body various cancers and sexual development problems.
Endocrine disrupting chemicals cause adverse effects in animals. But limited scientific information exists on potential health problems in humans. Because people are typically exposed to multiple endocrine disruptors at the same time, assessing public health effects is difficult.

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**11.2.2. Other information**
See Section 11.1

## Section 12: Ecological Information

**12.1 Toxicity**
**Toxicity**

| | Endpoint | Test Duration (hr) | Species | Value | Source |
|---|---|---|---|---|---|
| **XtraBOND 35** | Not Available | Not Available | Not Available | Not Available | Not Available |
| **acetone** | LC50 | 96h | Fish | 3744.6-5000.7mg/L | 4 |
| | NOEC(ECx) | 12h | Fish | 0.001mg/L | 4 |
| | EC50 | 72h | Algae or other aquatic plants | 5600-10000mg/l | 4 |
| | EC50 | 48h | Crustacea | 6098.4mg/L | 5 |
| | EC50 | 96h | Algae or other aquatic plants | 9.873-27.684mg/l | 4 |
| **Hydrocarbons, C6-C7, n-alkanes, isoalkanes, cyclics, <5% n-hexane** | EC50 | 48h | Crustacea | 0.64mg/l | 2 |
| | EC50 | 96h | Algae or other aquatic plants | 64mg/l | 2 |
| | LC50 | 96h | Fish | 4.26mg/l | 2 |
| | NOEC(ECx) | 504h | Crustacea | 0.17mg/l | 2 |
| **dimethyl ether** | EC50 | 48h | Crustacea | >4400mg/L | 2 |
| | EC50 | 96h | Algae or other aquatic plants | 154.917mg/l | 2 |
| | LC50 | 96h | Fish | 1783.04mg/l | 2 |
| | NOEC(ECx) | 48h | Crustacea | >4000mg/l | 1 |
| **Legend:** | Extracted from 1. IUCLID Toxicity Data 2. Europe ECHA Registered Substances - Ecotoxicological Information - Aquatic Toxicity 4. US EPA, Ecotox database - Aquatic Toxicity Data 5. ECETOC Aquatic Hazard Assessment Data 6. NITE (Japan) - Bioconcentration Data 7. METI (Japan) - Bioconcentration Data 8. Vendor Data | | | | |

Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
Do NOT allow product to come in contact with surface waters or to intertidal areas below the mean high water mark. Do not contaminate water when cleaning equipment or disposing of equipment wash-waters.
Wastes resulting from use of the product must be disposed of on site or at approved waste sites.
When released in the environment, alkanes don't undergo rapid biodegradation, because they have no functional groups (like hydroxyl or carbonyl) that are needed by most organisms in order to metabolize the compound.
However, some bacteria can metabolise some alkanes (especially those linear and short), by oxidizing the terminal carbon atom. The product is an alcohol, that could be next oxidised to an aldehyde, and finally to a carboxylic acid. The resulting fatty acid could be metabolised through the fatty acid degradation pathway.
For petroleum distillates:

(CONTINUED ON NEXT PAGE)

Environmental fate:
When petroleum substances are released into the environment, four major fate processes will take place: dissolution in water, volatilization, biodegradation and adsorption. These processes will cause changes in the composition of these UVCB substances. In the case of spills on land or water surfaces, photodegradationanother fate process-can also be significant. As noted previously, the solubility and vapour pressure of components within a mixture will differ from those of the component alone. These interactions are complex for complex UVCBs such as petroleum hydrocarbons.
Most ethers are very resistant to hydrolysis, and the rate of cleavage of the carbon-oxygen bond by abiotic processes is expected to be insignificant.
Direct photolysis will not be an important removal process since aliphatic ethers do not absorb light at wavelengths >290 nm
For n-Heptane: Log Kow: 4.66; Koc: 2400-8100; Half-life (hr) Air: 52.8; Half-life (hr) Surface Water: 2.9-312; Henry's atm m3 /mol: 2.06; BOD 5 (if unstated): 1.92; COD: 0.06; BCF: 340-2000; Log BCF: 2.53-3.31.
Atmospheric Fate: Breakdown of n-heptane by sunlight is not expected to be an important fate process. If released to the atmosphere, n-heptane is expected to exist entirely in the vapor phase, in ambient air. Reactions hydroxyl radicals in the atmosphere have been shown to be important. Night-time reactions with nitrate radicals may contribute to the atmospheric transformation of n-heptane, especially in urban environments.
For Ketones: Ketones, unless they are alpha, beta--unsaturated ketones, can be considered as narcosis or baseline toxicity compounds.
Aquatic Fate: Hydrolysis of ketones in water is thermodynamically favourable only for low molecular weight ketones. Reactions with water are reversible with no permanent change in the structure of the ketone substrate. Ketones are stable to water under ambient environmental conditions. When pH levels are greater than 10, condensation reactions can occur which produce higher molecular weight products.
For Acetone:
log Kow : -0.24;
Half-life (hr) air : 312-1896;
Half-life (hr) H2O surface water : 20;
Henry's atm m3 /mol : 3.67E-05
BOD 5: 0.31-1.76,46-55%
COD: 1.12-2.07
ThOD: 2.2BCF: 0.69.
Environmental Fate: The relatively long half-life allows acetone to be transported long distances from its emission source.
Atmospheric Fate: Acetone preferentially locates in the air compartment when released to the environment. In air, acetone is lost by photolysis and reaction with photochemically produced hydroxyl radicals; the estimated half-life of these combined processes is about 22 days. Air Quality Standards: none available.
DO NOT discharge into sewer or waterways.

**12.2 Persistence and degradability**

| Ingredient | Persistence: Water/Soil | Persistence: Air |
|---|---|---|
| acetone | LOW (Half-life = 14 days) | MEDIUM (Half-life = 116.25 days) |
| dimethyl ether | LOW | LOW |

(CONTINUED ON NEXT PAGE)

### 12.3 Bioaccumulative potential

| Ingredient | Bioaccumulation |
|---|---|
| acetone | LOW (BCF = 0.69) |
| dimethyl ether | LOW (LogKOW = 0.1) |

### 12.4 Mobility in soil

| Ingredient | Mobility |
|---|---|
| acetone | HIGH (KOC = 1.981) |
| dimethyl ether | HIGH (KOC = 1.292) |

### 12.5 Results of PBT and vPvB assessment

| | P | B | T |
|---|---|---|---|
| Relevant available data | Not Available | Not Available | Not Available |
| PBT | ✗ | ✗ | ✗ |
| vPvB | ✗ | ✗ | ✗ |

| | |
|---|---|
| PBT Criteria fulfilled? | No |
| vPvB | No |

### 12.6 Other adverse effects

The evidence linking adverse effects to endocrine disruptors is more compelling in the environment than it is in humans. Endocrine distruptors profoundly alter reproductive physiology of ecosystems and ultimately impact entire populations. Some endocrine-disrupting chemicals are slow to break-down in the environment. That characteristic makes them potentially hazardous over long periods of time. Some well-established adverse effects of endocrine disruptors in various wildlife species include; eggshell-thinning, displayed of characteristics of the opposite sex and impaired reproductive development. Other adverse changes in wildlife species that have been suggested, but not proven include; reproductive abnormalities, immune dysfunction and skeletal deformaties.

### 12.7 Other adverse effects

No evidence of ozone depleting properties were found in the current literature.

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## Section 13: Disposal Considerations

### 13.1. Waste treatment methods

| | |
|---|---|
| **Product / Packaging disposal** | ▸ **DO NOT** allow wash water from cleaning or process equipment to enter drains.<br>▸ It may be necessary to collect all wash water for treatment before disposal.<br>▸ In all cases disposal to sewer may be subject to local laws and regulations and these should be considered first. ▸ Where in doubt contact the responsible authority.<br>▸ Evaporate or incinerate residue at an approved site. ▸ Return empty containers to supplier.<br>▸ Ensure damaged or non-returnable cylinders are gas-free before disposal. |
| **Waste treatment options** | Not Available |
| **Sewage disposal options** | Not Available |

## Section 14: Transport information

### Labels Required

| | |
|---|---|
| |  |
| **Marine Pollutant** | NO |
| **HAZCHEM** | 2YE |

### Land transport (ADR-RID)

| | |
|---|---|
| 14.1. **UN number or ID number** | 3501 |
| 14.2. **UN proper shipping name** | CHEMICAL UNDER PRESSURE, FLAMMABLE, N.O.S. (contains Hydrocarbons, C6-C7, n-alkanes, isoalkanes, cyclics, <5% n-hexane) |
| 14.3. **Transport hazard class(es)** | Class 2.1<br>Subsidiary risk Not Applicable |
| 14.4. **Packing group** | Not Applicable |
| 14.5. **Environmental hazard** | Not Applicable |

(CONTINUED ON NEXT PAGE)

| | | |
|---|---|---|
| 14.6. **Special precautions for user** | Hazard identification (Kemler) | 23 |
| | Classification code | 8F |
| | Hazard Label | 2.1 |
| | Special provisions | 274 659 |
| | Limited quantity | 0 |
| | Tunnel Restriction Code | 2 (B/D) |

**Air transport (ICAO-IATA / DGR)**

| | | |
|---|---|---|
| 14.1. **UN number** | 3501 | |
| 14.2. **UN proper shipping name** | Chemical under pressure, flammable, n.o.s. * (contains Hydrocarbons, C6-C7, n-alkanes, isoalkanes, cyclics, <5% n-hexane) | |
| 14.3. **Transport hazard class(es)** | ICAO/IATA Class | 2.1 |
| | ICAO / IATA Subsidiary Hazard | Not Applicable |
| | ERG Code | 10L |
| 14.4. **Packing group** | Not Applicable | |
| 14.5. **Environmental hazard** | Not Applicable | |
| 14.6. **Special precautions for user** | Special provisions | A1 A187 |
| | Cargo Only Packing Instructions | 218 |
| | Cargo Only Maximum Qty / Pack | 75 kg |
| | Passenger and Cargo Packing Instructions | Forbidden |
| | Passenger and Cargo Maximum Qty / Pack | Forbidden |
| | Passenger and Cargo Limited Quantity Packing Instructions | Forbidden |
| | Passenger and Cargo Limited Maximum Qty / Pack | Forbidden |

(CONTINUED ON NEXT PAGE)

**Sea transport (IMDG-Code / GGVSee)**

| | |
|---|---|
| 14.1. **UN number** | 3501 |
| 14.2. **UN proper shipping name** | CHEMICAL UNDER PRESSURE, FLAMMABLE, N.O.S. (contains Hydrocarbons, C6-C7, n-alkanes, isoalkanes, cyclics, <5% n-hexane) |
| 14.3. **Transport hazard class(es)** | IMDG Class 2.1<br>IMDG Subrisk Not Applicable |
| 14.4. **Packing group** | Not Applicable |
| 14.5 **Environmental hazard** | Not Applicable |
| 14.6. **Special precautions for user** | EMS Number F-D, S-U<br>Special provisions 274 362<br>Limited Quantities 0 |

**Inland waterways transport (ADN)**

| | |
|---|---|
| **14.1. UN number** | 3501 |
| **14.2. UN proper shipping name** | CHEMICAL UNDER PRESSURE, FLAMMABLE, N.O.S. (contains Hydrocarbons, C6-C7, n-alkanes, isoalkanes, cyclics, <5% n-hexane) |
| **14.3. Transport hazard class(es)** | 2.1 Not Applicable |
| **14.4. Packing group** | Not Applicable |
| **14.5. Environmental hazard** | Not Applicable |
| **14.6. Special precautions for user** | Classification code 8F<br>Special provisions 274; 659<br>Limited quantity 0<br>Equipment required PP, EX, A<br>Fire cones number 1 |

**14.7. Maritime transport in bulk according to IMO instruments**

**14.7.1. Transport in bulk according to Annex II of MARPOL and the IBC code**

Not Applicable

**14.7.2. Transport in bulk in accordance with MARPOL Annex V and the IMSBC Code**

| Product name | Group |
|---|---|
| **acetone** | Not Available |
| **Hydrocarbons, C6-C7, n-alkanes, isoalkanes, cyclics, <5% n-hexane** | Not Available |
| **dimethyl ether** | Not Available |

**14.7.3. Transport in bulk in accordance with the IGC Code**

| Product name | Ship Type |
|---|---|
| **acetone** | Not Available |
| **Hydrocarbons, C6-C7, n-alkanes, isoalkanes, cyclics, <5% n-hexane** | Not Available |
| **dimethyl ether** | Not Available |

## Section 15: Regulatory information

**15.1. Safety, health and environmental regulations/legislation specific for the substance ormixture**

**acetone is found on the following regulatory lists**

Great Britain GB mandatory classification and labelling list (GB MCL)
UK Workplace Exposure Limits (WELs).

**Hydrocarbons, C6-C7, n-alkanes, isoalkanes, cyclics, <5% n-hexane is found on the following regulatory lists**

Chemical Footprint Project - Chemicals of High Concern List
Great Britain GB mandatory classification and labelling list (GB MCL)
International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs - Not Classified as Carcinogenic

**dimethyl ether is found on the following regulatory lists**

Great Britain GB mandatory classification and labelling list (GB MCL)
UK Workplace Exposure Limits (WELs).

This safety data sheet is in compliance with the following EU legislation and its adaptations - as far as applicable - : Directives 98/24/EC, - 92/85/EEC, - 94/33/EC, - 2008/98/EC, - 2010/75/EU; Commission Regulation (EU) 2020/878; Regulation (EC) No 1272/2008 as updated through ATPs.

**Information according to 2012/18/EU (Seveso III):**

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# SAFETY DATA SHEET
## According to Regulation (EC) No 1907/2006, Annex II, as amended. Commission Regulation (EU) No 2015/830 of 28 May 2015.
**XtraBOND 35 Contact Spray Adhesive**

| | |
|---|---|
| **Seveso Category** | P3b |

**15.2. Chemical safety assessment**

No Chemical Safety Assessment has been carried out for this substance/mixture by the supplier.

**ECHA SUMMARY**

| Ingredient | CAS number | Index No | ECHA Dossier |
|---|---|---|---|
| acetone | 67-64-1 | 606-001-00-8 | 01-2119471330-49-XXXX |

| Harmonisation (C&L Inventory) | Hazard Class and Category Code(s) | Pictograms Signal Word Code(s) | Hazard Statement Code(s) |
|---|---|---|---|
| 1 | Flam. Liq. 2; Eye Irrit. 2; STOT SE 3 | GHS07; GHS02; Dgr | H225; H319; H336 |
| 2 | Flam. Liq. 2; Eye Irrit. 2A; STOT SE 3; STOT SE 3; STOT SE 3; Skin Irrit. 2; Skin Sens. 1; Aquatic Chronic 2 | Dgr; GHS01; GHS08; GHS06; GHS09 | H225; H319; H336; H371; H228; H315; H312; H335; H302; H332; H340; H317; H411 |

Harmonisation Code 1 = The most prevalent classification. Harmonisation Code 2 = The most severe classification.

| Ingredient | CAS number | Index No | ECHA Dossier |
|---|---|---|---|
| Hydrocarbons, C6-C7, n-alkanes, isoalkanes, cyclics, <5% n-hexane | 64742-49-0* | 649-328-00-1 | 01-2119475514-35-XXXX |

| Harmonisation (C&L Inventory) | Hazard Class and Category Code(s) | Pictograms Signal Word Code(s) | Hazard Statement Code(s) |
|---|---|---|---|

Harmonisation Code 1 = The most prevalent classification. Harmonisation Code 2 = The most severe classification.

| Harmonisation (C&L Inventory) | Hazard Class and Category Code(s) | Pictograms Signal Word Code(s) | Hazard Statement Code(s) |
|---|---|---|---|
| 1 | Asp. Tox. 1; Muta. 1B; Carc. 1B | GHS08; Dgr | H304; H340; H350 |
| 2 | Asp. Tox. 1; Muta. 1B; Carc. 1B; Flam. Liq. 1; Skin Irrit. 2; STOT SE 3; Repr. 2; Eye Irrit. 2; STOT RE 1; Acute Tox. 4; STOT SE 3; Acute Tox. 4; Aquatic Acute 1; Aquatic Chronic 1 | GHS08; Dgr; GHS02; GHS09; GHS03; GHS05 | H304; H340; H350; H224; H315; H336; H361; H319; H372; H332; H335; H302; H400; H410 |

Harmonisation Code 1 = The most prevalent classification. Harmonisation Code 2 = The most severe classification.

| Ingredient | CAS number | Index No | ECHA Dossier |
|---|---|---|---|

| | | | |
|---|---|---|---|
| dimethyl ether | 115-10-6 | 603-019-00-8 | 01-2119472128-37-XXXX |

| Harmonisation (C&L Inventory) | Hazard Class and Category Code(s) | Pictograms Signal Word Code(s) | Hazard Statement Code(s) |
|---|---|---|---|
| 1 | Flam. Gas 1 | GHS02; GHS04; Dgr | H220 |
| 2 | Flam. Gas 1; Comp.; Muta. 1B; Carc. 1A; STOT SE 3; STOT SE 1; Skin Irrit. 2; Eye Irrit. 2 | GHS04; Dgr; GHS01; GHS08 | H220; H280; H336; H370; H315; H319 |

Harmonisation Code 1 = The most prevalent classification. Harmonisation Code 2 = The most severe classification.

**National Inventory Status**

| National Inventory | Status |
|---|---|
| Australia - AIIC / Australia Non-Industrial Use | Yes |
| Canada - DSL | Yes |
| Canada - NDSL | No (acetone; Hydrocarbons, C6-C7, n-alkanes, isoalkanes, cyclics, <5% n-hexane; dimethyl ether) n-hexane;="" dimethyl=""> |
| China - IECSC | Yes |
| Europe - EINEC / ELINCS / NLP | Yes |
| Japan - ENCS | No (Hydrocarbons, C6-C7, n-alkanes, isoalkanes, cyclics, <5% n-hexane)> |
| Korea - KECI | Yes |
| New Zealand - NZIoC | Yes |
| Philippines - PICCS | Yes |
| USA - TSCA | Yes |
| Taiwan - TCSI | Yes |
| Mexico - INSQ | Yes |
| Vietnam - NCI | Yes |
| Russia - FBEPH | Yes |
| ***Legend:*** | *Yes = All CAS declared ingredients are on the inventory*<br>*No = One or more of the CAS listed ingredients are not on the inventory. These ingredients may be exempt or will require registration.* |

**Section 16: Other information**

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# SAFETY DATA SHEET

## According to Regulation (EC) No 1907/2006, Annex II, as amended. Commission Regulation (EU) No 2015/830 of 28 May 2015.

**XtraBOND 35 Contact Spray Adhesive**

| | |
|---|---|
| **Revision Date** | 17/08/2023 |
| **Initial Date** | 17/08/2023 |

**Full text Risk and Hazard codes**

| | |
|---|---|
| H220 | Extremely flammable gas. |
| H224 | Extremely flammable liquid and vapour. |
| H225 | Highly flammable liquid and vapour. |
| H228 | Flammable solid. |
| H280 | Contains gas under pressure; may explode if heated. |
| H302 | Harmful if swallowed. |
| H304 | May be fatal if swallowed and enters airways. |
| H312 | Harmful in contact with skin. |
| H317 | May cause an allergic skin reaction. |
| H335 | Harmful if inhaled. |
| H340 | May cause respiratory irritation. |
| H350 | May cause genetic defects. |
| H361 | May cause cancer. |
| H370 | Suspected of damaging fertility or the unborn child. |
| H371 | Causes damage to organs. |
| H372 | May cause damage to organs. |
| H400 | Causes damage to organs through prolonged or repeated exposure. |
| H410 | Very toxic to aquatic life. |
| H411 | Very toxic to aquatic life with long lasting effects. |
| H361 | Toxic to aquatic life with long lasting effects. |

**SDS Version Summary**

| Version | Date of Update | Sections Updated |
|---|---|---|
| 0.3 | 17/08/2023 | Hazards identification - Classification, Composition / information on ingredients - Ingredients, Name |

**Other information**

Classification of the preparation and its individual components has drawn on official and authoritative sources as well as independent review by the Chemwatch Classification committee using available literature references.

The SDS is a Hazard Communication tool and should be used to assist in the Risk Assessment. Many factors determine whether the reported Hazards are Risks in the workplace or other settings. Risks may be determined by reference to Exposures Scenarios. Scale of use, frequency of use and current or available engineering controls must be considered.

For detailed advice on Personal Protective Equipment, refer to the following EU CEN Standards:
EN 166 Personal eye-protection
EN 340 Protective clothing
EN 374 Protective gloves against chemicals and micro-organisms
EN 13832 Footwear protecting against chemicals
EN 133 Respiratory protective devices

**Definitions and abbreviations**

PC—TWA: Permissible Concentration-Time Weighted Average
PC—STEL: Permissible Concentration-Short Term Exposure Limit
IARC: International Agency for Research on Cancer
ACGIH: American Conference of Governmental Industrial Hygienists
STEL: Short Term Exposure Limit
TEEL: Temporary Emergency Exposure Limit。
IDLH: Immediately Dangerous to Life or Health Concentrations
ES: Exposure Standard
OSF: Odour Safety Factor
NOAEL :No Observed Adverse Effect Level
LOAEL: Lowest Observed Adverse Effect Level
TLV: Threshold Limit Value
LOD: Limit Of Detection
OTV: Odour Threshold Value
BCF: BioConcentration Factors
BEI: Biological Exposure Index
AIIC: Australian Inventory of Industrial Chemicals
DSL: Domestic Substances List
NDSL: Non-Domestic Substances List
IECSC: Inventory of Existing Chemical Substance in China
EINECS: European INventory of Existing Commercial chemical Substances
ELINCS: European List of Notified Chemical Substances
NLP: No-Longer Polymers
ENCS: Existing and New Chemical Substances Inventory
KECI: Korea Existing Chemicals Inventory
NZIoC: New Zealand Inventory of Chemicals
PICCS: Philippine Inventory of Chemicals and Chemical Substances
TSCA: Toxic Substances Control Act
TCSI: Taiwan Chemical Substance Inventory
INSQ: Inventario Nacional de Sustancias Químicas
NCI: National Chemical Inventory
FBEPH: Russian Register of Potentially Hazardous Chemical and Biological Substances

**Classification and procedure used to derive the classification for mixtures according to Regulation (EC) 1272/2008 [CLP]**

| **Classification according to regulation (EC) No 1272/2008 [CLP] and amendments** | **Classification Procedure** |
|---|---|
| Aerosols Category 1, H222+H229 | Expert judgement |
| Skin Corrosion/Irritation Category 2, H315 | Calculation method |
| Serious Eye Damage/Eye Irritation Category 2, H319 | Calculation method |

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**According to Regulation (EC) No 1907/2006, Annex II, as amended. Commission Regulation (EU) No 2015/830 of 28 May 2015.**
**XtraBOND 35 Contact Spray Adhesive**

| | |
|---|---|
| Specific Target Organ Toxicity - Single Exposure (Narcotic Effects) Category 3, H336 | Calculation method |
| Hazardous to the Aquatic Environment Long-Term Hazard Category 3, H412 | Calculation method |

This information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process. Such information is, to the best of the company's knowledge and belief, accurate and reliable as of the date indicated. However, no warranty, guarantee or representation is made to its accuracy, reliability or completeness. It is the user's responsibility to satisfy himself as to the suitability of such information for his own particular use.

END OF SAFETY DATA SHEET

# DYNE TEST SOLUTIONS NON TOXIC 26-44 DYNES/cm2(mN/m)

Safety Data Sheet

According to REACH Regulation (EC) No 1907/2006, as retained and amended in UK law.
Issue date: 06/04/2024 Revision date: 29/08/2024 Supersedes: 06/04/2024 Version: 1.1

## SECTION 1: Identification of the substance/mixture and of the company/undertaking

### 1.1. Product identifier

Product form : Mixture
PRODUCT NAME : DYNE TEST SOLUTIONS NON TOXIC 26-44 DYNES/cm2(mN/m)

### 1.2. Relevant identified uses of the substance or mixture and uses advised against

#### 1.2.1. Relevant identified uses

Main use category : Professional use
Use of the substance/mixture : Ink
Dyne Testing

#### 1.2.2. Uses advised against

No additional information available

### 1.3. Details of the supplier of the safety data sheet

Intertronics
Unit 12a Station Field Industrial Estate, Banbury Road
OX5 1JD Kidlington – Oxfordshire
United Kingdom
T +44 (0)1865 842842
orders@intertronics.co.uk - https://www.intertronics.co.uk

### 1.4. Emergency telephone number

Emergency number : +44 (0)1865 842842
Office hours only.

## SECTION 2: Hazards identification

### 2.1. Classification of the substance or mixture

**Classification according to GB CLP (SI 2019:720 as amended)**

Flammable liquids, Category 3 H226
Full text of H- and EUH-statements: see section 16

**Adverse physicochemical, human health and environmental effects**

No additional information available

### 2.2. Label elements

**Labelling according to GB CLP (SI 2019:720 as amended)**

Hazard pictograms (GB CLP) :



GHS02

Signal word (GB CLP) : Warning
Hazard statements (GB CLP) : H226 - Flammable liquid and vapour.
Precautionary statements (GB CLP) : P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P233 - Keep container tightly closed.
P240 - Ground and bond container and receiving equipment.
P241 - Use explosion-proof electrical, ventilating and lighting equipment.
P280 - Wear protective gloves, protective clothing, eye protection, face protection and hearing protection.

P303+P361+P353 - IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water .

### 2.3. Other hazards

| Component | |
|---|---|
| Substance(s) not meeting the PBT criteria of UK REACH regulation, in accordance with Annex XIII | Ethyl alcohol (64-17-5) |
| Substance(s) not meeting the vPvB criteria of UK REACH regulation, in accordance with Annex XIII | Ethyl alcohol (64-17-5) |

| Component | |
|---|---|
| Substance(s) not included in the list established in accordance with Article 59(1) of UK REACH for having endocrine disrupting properties, or is not identified as having endocrine disrupting properties in accordance with the criteria set out in GB BPR and GB PPP | Ethyl alcohol(64-17-5) |

## SECTION 3: Composition/information on ingredients

### 3.1. Substances

Not applicable

### 3.2. Mixtures

| Name | Product identifier | % | Labelling according to GB CLP (SI 2019:720 as amended) |
|---|---|---|---|
| Ethyl alcohol | CAS-No.: 64-17-5<br>EC-No.: 200-578-6<br>UK Index-No.: 603-002-00-5 | 50 – 60 | Flam. Liq. 2, H225 |

Full text of H- and EUH-statements: see section 16

## SECTION 4: First aid measures

### 4.1. Description of first aid measures

First-aid measures general : Never give anything by mouth to an unconscious person. If you feel unwell, seek medical advice (show the label where possible).

First-aid measures after inhalation : Allow affected person to breathe fresh air. Allow the victim to rest.

First-aid measures after skin contact : Rinse skin with water/shower. Take off immediately all contaminated clothing.

First-aid measures after eye contact : Rinse immediately with plenty of water. Obtain medical attention if pain, blinking or redness persists.

First-aid measures after ingestion : Rinse mouth. Do NOT induce vomiting. Obtain emergency medical attention.

### 4.2. Most important symptoms and effects, both acute and delayed

Symptoms/effects : Not expected to present a significant hazard under anticipated conditions of normal use.

Symptoms/effects after inhalation : May be irritating to the respiratory system. May cause drowsiness or dizziness.

Symptoms/effects after skin contact : May cause irritation to skin.

Symptoms/effects after eye contact : May cause eye irritation.

Symptoms/effects after ingestion : May cause irritation to the digestive tract.

### 4.3. Indication of any immediate medical attention and special treatment needed

Treat symptomatically.

## SECTION 5: Firefighting measures

### 5.1. Extinguishing media

Suitable extinguishing media : Foam. Dry powder. Carbon dioxide. Water spray. Sand.

Unsuitable extinguishing media : Do not use a heavy water stream.

### 5.2. Special hazards arising from the substance or mixture

Fire hazard : Flammable liquid and vapour.

Explosion hazard : May form flammable/explosive vapour-air mixture.

Hazardous decomposition products in case of fire : Toxic fumes may be released.

### 5.3. Advice for firefighters

Precautionary measures fire : Exercise caution when fighting any chemical fire.

Firefighting instructions : Use water spray or fog for cooling exposed containers. Avoid fire-fighting water entering the environment.

Protection during firefighting : Do not enter fire area without proper protective equipment, including respiratory protection.

## SECTION 6: Accidental release measures

### 6.1. Personal precautions, protective equipment and emergency procedures

General measures : Remove ignition sources. Use special care to avoid static electric charges. No open flames. No smoking.

#### 6.1.1. For non-emergency personnel

Protective equipment : Do not attempt to take action without suitable protective equipment. For further information refer to section 8: "Exposure controls/personal protection".

Emergency procedures : Evacuate unnecessary personnel. Ventilate area.

#### 6.1.2. For emergency responders

Protective equipment : Equip cleanup crew with proper protection. For further information refer to section 8: "Exposure controls/personal protection".

Emergency procedures : Ventilate area. Evacuate unnecessary personnel.

### 6.2. Environmental precautions

Prevent entry to sewers and public waters. Notify authorities if liquid enters sewers or public waters.

### 6.3. Methods and material for containment and cleaning up

For containment : Absorb spillage.

Methods for cleaning up : Absorb with liquid-binding material (e.g. sand, diatomaceous earth, acid- or universal binding agents). Place in a suitable container for disposal in accordance with the waste regulations (see Section 13).

Other information : Dispose of materials or solid residues at an authorized site.

### 6.4. Reference to other sections

For further information refer to section 8: "Exposure controls/personal protection". For disposal of solid materials or residues refer to section 13 : "Disposal considerations".

## SECTION 7: Handling and storage

### 7.1. Precautions for safe handling

Additional hazards when processed : Handle empty containers with care because residual vapours are flammable.

Precautions for safe handling : Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work. Provide good ventilation in process area to prevent formation of vapour. No open flames. No smoking. Use only non-sparking tools. Do not eat, drink or smoke when using this product.

Hygiene measures : Handle in accordance with good industrial hygiene and safety practice.

### 7.2. Conditions for safe storage, including any incompatibilities

Technical measures : Proper grounding procedures to avoid static electricity should be followed. Ground/bond container and receiving equipment. Use explosion-proof electrical/ventilating/lighting equipment.

Storage conditions : Keep only in the original container in a cool, well ventilated place away from : Sources of ignition, Direct sunlight. Keep in fireproof place. Keep container tightly closed.

Incompatible products : Strong bases. Strong acids. Strong oxidizing agents.

Incompatible materials : Sources of ignition. Direct sunlight. Heat sources.

Heat and ignition sources : No flames, no sparks. Eliminate all sources of ignition.

Packaging materials : Keep only in original container.

### 7.3. Specific end use(s)

No additional information available

## SECTION 8: Exposure controls/personal protection

### 8.1. Control parameters

#### 8.1.1 National occupational exposure and biological limit values

| Ethyl alcohol (64-17-5) | |
|---|---|
| **United Kingdom - Occupational Exposure Limits** | |
| Local name | Ethanol |
| WEL TWA (OEL TWA) | 1920 mg/m³ |
| | 1000 ppm |
| Regulatory reference | EH40/2005 (Fourth edition, 2020). HSE |

#### 8.1.2. Recommended monitoring procedures

No additional information available

#### 8.1.3. Air contaminants formed

No additional information available

#### 8.1.4. DNEL and PNEC

No additional information available

#### 8.1.5. Control banding

No additional information available

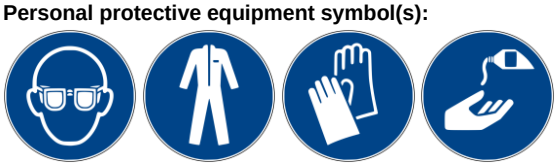
### 8.2. Exposure controls

#### 8.2.1. Appropriate engineering controls

**Appropriate engineering controls:**
Ensure adequate ventilation.

#### 8.2.2. Personal protection equipment

**Personal protective equipment:**
Avoid all unnecessary exposure. PPE compliant to the recommended EN/ISO or equivalent standards should be selected.
**Personal protective equipment symbol(s):**



#### 8.2.2.1. Eye and face protection

**Eye protection:**
Chemical goggles or safety glasses

| Eye protection | | | |
|---|---|---|---|
| **Type** | **Field of application** | **Characteristics** | **Standard** |
| Safety glasses, Safety goggles | Droplet, mist | Clear, With side shields | EN 166 |

#### 8.2.2.2. Skin protection

**Skin and body protection:**
Wear suitable protective clothing

**Hand protection:**
Wear protective gloves.

| Hand protection | | | | | |
|---|---|---|---|---|---|
| **Type** | **Material** | **Permeation** | **Thickness (mm)** | **Penetration** | **Standard** |
| Disposable gloves, Reusable gloves | Nitrile rubber (NBR) | 4 (> 120 minutes) | 0.5 | 2 (< 1.5) | EN ISO 374 |

#### 8.2.2.3. Respiratory protection

**Respiratory protection:**
Wear appropriate mask. Where exposure through inhalation may occur from handling or use, respiratory protection equipment is required. Exposure limits for airborne contaminants must not be exceeded.

#### 8.2.2.4. Thermal hazards

No additional information available

#### 8.2.3. Environmental exposure controls

**Other information:**
Do not eat, drink or smoke during use.

## SECTION 9: Physical and chemical properties

### 9.1. Information on basic physical and chemical properties

| | | |
|---|---|---|
| Physical state | : | Liquid |
| Appearance | : | Colorless liquid. |
| Colour | : | Colourless. |
| Odour | : | alcoholic. |
| Odour threshold | : | Not available |
| pH | : | Not available |
| Melting point | : | -4 – -37 °C |
| Freezing point | : | Not available |
| Boiling point | : | 78 °C |
| Flash point | : | 27 – 57 °C |
| Lower explosion limit | : | 3.3 vol % |
| Upper explosion limit | : | 19 vol % |
| Vapour pressure | : | 59.5 hPa at 20 °C |
| Vapour pressure at 50°C | : | Not available |
| Relative vapour density at 20°C | : | Not available |
| Relative density | : | 0.789 |
| Density | : | Not available |
| Solubility | : | completely miscible. |
| Partition coefficient n-octanol/water (Log Kow) | : | Not available |
| Auto-ignition temperature | : | 363 °C |
| Decomposition temperature | : | Not available |
| Viscosity, kinematic | : | Not available |
| Explosive properties | : | Not available |

### 9.2. Other information

| | | |
|---|---|---|
| Particle characteristics | : | Not applicable |

## SECTION 10: Stability and reactivity

### 10.1. Reactivity

Flammable liquid and vapour. Stable at ambient temperature and under normal conditions of use.

### 10.2. Chemical stability

May form flammable/explosive vapour-air mixture.

### 10.3. Possibility of hazardous reactions

Stable under normal conditions of use.

### 10.4. Conditions to avoid

Direct sunlight. Extremely high or low temperatures. Open flame.

### 10.5. Incompatible materials

Strong acids. Strong bases. Strong oxidizing agents.

### 10.6. Hazardous decomposition products

Fume. Carbon monoxide. Carbon dioxide. May release flammable gases.

## SECTION 11: Toxicological information

### 11.1. Information on toxicological effects

Acute toxicity (oral) : Not classified
Acute toxicity (dermal) : Not classified
Acute toxicity (inhalation) : Not classified

| Ethyl alcohol (64-17-5) | |
|---|---|
| LD50 oral rat | 10470 mg/kg bodyweight Animal: rat, Guideline: OECD Guideline 401 (Acute Oral Toxicity), 95% CL: 9720 - 11380 |
| LD50 oral | 10470 mg/kg bodyweight |
| LD50 dermal | 15800 mg/kg bodyweight |
| LC50 Inhalation - Rat (Dust/Mist) | > 99999 mg/l |

Skin corrosion/irritation : Not classified
Serious eye damage/irritation : Not classified
Respiratory or skin sensitisation : Not classified
Germ cell mutagenicity : Not classified
Carcinogenicity : Not classified

| Ethyl alcohol (64-17-5) | |
|---|---|
| IARC group | 1 - Carcinogenic to humans |

Reproductive toxicity : Not classified
STOT-single exposure : Not classified
STOT-repeated exposure : Not classified

| Ethyl alcohol (64-17-5) | |
|---|---|
| LOAEL (oral, rat, 90 days) | 3200 mg/kg bodyweight Animal: rat, Animal sex: male, Guideline: OECD Guideline 408 (Repeated Dose 90-Day Oral Toxicity Study in Rodents) |
| NOAEL (oral, rat, 90 days) | 1730 mg/kg bodyweight Animal: rat, Animal sex: male, Guideline: OECD Guideline 408 (Repeated Dose 90-Day Oral Toxicity Study in Rodents), Remarks on results: other: |

Aspiration hazard : Not classified

### 11.2. Information on other hazards

#### 11.2.1. Endocrine disrupting properties

No additional information available

#### 11.2.2. Other information

Potential adverse human health effects and symptoms : Based on available data, the classification criteria are not met

## SECTION 12: Ecological information

### 12.1. Toxicity

Hazardous to the aquatic environment, short–term (acute) : Not classified

Hazardous to the aquatic environment, long–term (chronic) : Not classified

| Ethyl alcohol (64-17-5) | |
|---|---|
| LC50 - Fish [1] | 14200 mg/l |
| EC50 - Crustacea [1] | > 10000 mg/l Test organisms (species): Daphnia magna |
| EC50 - Other aquatic organisms [1] | 5012 mg/l waterflea |
| EC50 - Other aquatic organisms [2] | 275 mg/l |
| EC50 96h - Algae [1] | ≈ 22000 mg/l Test organisms (species): Pseudokirchneriella subcapitata (previous names: Raphidocelis subcapitata, Selenastrum capricornutum) |

### 12.2. Persistence and degradability

| DYNE TEST SOLUTIONS NON TOXIC 26-44 DYNES/cm2(mN/m) | |
|---|---|
| Persistence and degradability | Not established. |

| Ethyl alcohol (64-17-5) | |
|---|---|
| Persistence and degradability | Rapidly degradable |

### 12.3. Bioaccumulative potential

| DYNE TEST SOLUTIONS NON TOXIC 26-44 DYNES/cm2(mN/m) | |
|---|---|
| Bioaccumulative potential | Not established. |

| Ethyl alcohol (64-17-5) | |
|---|---|
| Partition coefficient n-octanol/water (Log Pow) | -0.32 |

### 12.4. Mobility in soil

No additional information available

### 12.5. Results of PBT and vPvB assessment

| Component | |
|---|---|
| Ethyl alcohol (64-17-5) | This product does not contain substances at ≥0.1% that meet the PBT criteria of UK REACH regulation, annex XIII<br>This product does not contain substances at ≥0.1% that meet the vPvB criteria of UK REACH regulation, annex XIII |

### 12.6. Other adverse effects

Additional information : Avoid release to the environment.

## SECTION 13: Disposal considerations

### 13.1. Waste treatment methods

| | | |
|---|---|---|
| Regional waste regulation | : | Disposal must be done according to official regulations. |
| Waste treatment methods | : | Dispose of contents/container in accordance with licensed collector's sorting instructions. |
| Product/Packaging disposal recommendations | : | Dispose of contents/container to hazardous or special waste collection point, in accordance with local, regional, national and/or international regulation. |
| Additional information | : | Handle empty containers with care because residual vapours are flammable. |
| Ecological waste information | : | Avoid release to the environment. |
| HP Code | : | HP3 - "Flammable:"<br>– flammable liquid waste: liquid waste having a flash point below 60 °C or waste gas oil, diesel and light heating oils having a flash point > 55 °C and ≤ 75 °C;<br>– flammable pyrophoric liquid and solid waste: solid or liquid waste which, even in small quantities, is liable to ignite within five minutes after coming into contact with air;<br>– flammable solid waste: solid waste which is readily combustible or may cause or contribute to fire through friction;<br>– flammable gaseous waste: gaseous waste which is flammable in air at 20 °C and a standard pressure of 101.3 kPa;<br>– water reactive waste: waste which, in contact with water, emits flammable gases in dangerous quantities;<br>– other flammable waste: flammable aerosols, flammable self-heating waste, flammable organic peroxides and flammable self-reactive waste. |

## SECTION 14: Transport information

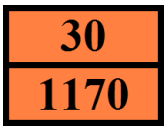
In accordance with ADR / IMDG / IATA / ADN / RID

| ADR | IMDG | IATA | ADN | RID |
|---|---|---|---|---|
| **14.1. UN number** | | | | |
| UN 1170 | UN 1170 | UN 1170 | UN 1170 | UN 1170 |
| **14.2. UN proper shipping name** | | | | |
| ETHANOL SOLUTION (ETHYL ALCOHOL SOLUTION) | ETHANOL SOLUTION (ETHYL ALCOHOL SOLUTION) | Ethanol solution | ETHANOL SOLUTION (ETHYL ALCOHOL SOLUTION) | ETHANOL SOLUTION (ETHYL ALCOHOL SOLUTION) |
| **Transport document description** | | | | |
| UN 1170 ETHANOL SOLUTION (ETHYL ALCOHOL SOLUTION), 3, III, (D/E) | UN 1170 ETHANOL SOLUTION (ETHYL ALCOHOL SOLUTION), 3, III | UN 1170 Ethanol solution, 3, III | UN 1170 ETHANOL SOLUTION (ETHYL ALCOHOL SOLUTION), 3, III | UN 1170 ETHANOL SOLUTION (ETHYL ALCOHOL SOLUTION), 3, III |
| **14.3. Transport hazard class(es)** | | | | |
| 3 | 3 | 3 | 3 | 3 |
|  |  |  |  |  |
| **14.4. Packing group** | | | | |
| III | III | III | III | III |

| ADR | IMDG | IATA | ADN | RID |
|---|---|---|---|---|
| **14.5. Environmental hazards** | | | | |
| Dangerous for the environment: False | Dangerous for the environment: False<br>Marine pollutant: No | Dangerous for the environment: False | Dangerous for the environment: False | Dangerous for the environment: False |
| No supplementary information available | | | | |

## 14.6. Special precautions for user

**Overland transport**

| | | |
|---|---|---|
| Classification code (ADR) | : | F1 |
| Special provisions (ADR) | : | 144, 601 |
| Limited quantities (ADR) | : | 5l |
| Excepted quantities (ADR) | : | E1 |
| Packing instructions (ADR) | : | P001, IBC03, LP01, R001 |
| Mixed packing provisions (ADR) | : | MP19 |
| Portable tank and bulk container instructions (ADR) | : | T2 |
| Portable tank and bulk container special provisions (ADR) | : | TP1 |
| Tank code (ADR) | : | LGBF |
| Vehicle for tank carriage | : | FL |
| Transport category (ADR) | : | 3 |
| Special provisions for carriage - Packages (ADR) | : | V12 |
| Special provisions for carriage - Operation (ADR) | : | S2 |
| Hazard identification number (Kemler No.) | : | 30 |
| Orange plates | : |  |
| Tunnel restriction code (ADR) | : | D/E |
| EAC code | : | •2YE |

**Transport by sea**

| | | |
|---|---|---|
| Special provisions (IMDG) | : | 144, 223 |
| Limited quantities (IMDG) | : | 5 L |
| Excepted quantities (IMDG) | : | E1 |
| Packing instructions (IMDG) | : | P001, LP01 |
| IBC packing instructions (IMDG) | : | IBC03 |
| Tank instructions (IMDG) | : | T2 |
| Tank special provisions (IMDG) | : | TP1 |
| EmS-No. (Fire) | : | F-E |
| EmS-No. (Spillage) | : | S-D |
| Stowage category (IMDG) | : | A |
| Properties and observations (IMDG) | : | Colourless, volatile liquids. Pure ETHANOL: flashpoint 13°C c.c. Explosive limits: 3.3% to 19%. Miscible with water. |
| MFAG-No | : | 127 |

**Air transport**

| | | |
|---|---|---|
| PCA Excepted quantities (IATA) | : | E1 |
| PCA Limited quantities (IATA) | : | Y344 |
| PCA limited quantity max net quantity (IATA) | : | 10L |
| PCA packing instructions (IATA) | : | 355 |
| PCA max net quantity (IATA) | : | 60L |
| CAO packing instructions (IATA) | : | 366 |
| CAO max net quantity (IATA) | : | 220L |
| Special provisions (IATA) | : | A3, A58, A180 |
| ERG code (IATA) | : | 3L |

**Inland waterway transport**

| | | |
|---|---|---|
| Classification code (ADN) | : | F1 |

| | | |
|---|---|---|
| Special provisions (ADN) | : | 144, 601 |
| Limited quantities (ADN) | : | 5 L |
| Excepted quantities (ADN) | : | E1 |
| Equipment required (ADN) | : | PP, EX, A |
| Ventilation (ADN) | : | VE01 |
| Number of blue cones/lights (ADN) | : | 0 |

**Rail transport**

| | | |
|---|---|---|
| Classification code (RID) | : | F1 |
| Special provisions (RID) | : | 144, 601 |
| Limited quantities (RID) | : | 5L |
| Excepted quantities (RID) | : | E1 |
| Packing instructions (RID) | : | P001, IBC03, LP01, R001 |
| Mixed packing provisions (RID) | : | MP19 |
| Portable tank and bulk container instructions (RID) | : | T2 |
| Portable tank and bulk container special provisions (RID) | : | TP1 |
| Tank codes for RID tanks (RID) | : | LGBF |
| Transport category (RID) | : | 3 |
| Special provisions for carriage – Packages (RID) | : | W12 |
| Colis express (express parcels) (RID) | : | CE4 |
| Hazard identification number (RID) | : | 30 |

### 14.7. Transport in bulk according to Annex II of Marpol and the IBC Code

Not applicable

## SECTION 15: Regulatory information

### 15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

#### 15.1.1. EU-Regulations

**UK REACH Annex XVII (Restriction List)**

This product contains no substance(s) listed on UK REACH Annex XVII (Restriction List) equal to or above the level of SDS disclosure

**UK REACH Annex XIV (Authorisation List)**

This product contains no substance(s) listed on UK REACH Annex XIV (Authorisation List) equal to or above the 0.1% level of disclosure

**UK REACH Candidate List (SVHC)**

Contains no substance(s) listed on the UK REACH Candidate List

**GB PIC regulation (Prior Informed Conset)**

This product contains no substance(s) listed on the GB PIC List equal to or above the level of SDS disclosure

**POP Regulation (Persistent Organic Pollutants)**

This product contains no substance(s) listed on the GB POP List equal to or above the level of SDS disclosure

**Ozone Regulation (S.I. No. 168 of 2015)**

This product contains no substance(s) listed on the GB Ozone Depletion List equal to or above the level of SDS disclosure

**Control of Poisons and Explosives Precursors Act**

This product contains no substance(s) listed as a reportable poison on the Control of Poisons and Explosives Precursors Regulations equal to or above the level of SDS disclosure
This product contains no substance(s) listed as a regulated poison on the Control of Poisons and Explosives Precursors Regulations equal to or above the level of SDS disclosure
This product contains no substance(s) listed as a reportable explosive precursor on the Control of Poisons and Explosives Precursors Regulations equal to or above the level of SDS disclosure
This substance is not listed as a regulated poison on the Control of Poisons and Explosives Precursors Regulations

**Drug Precursors Regulation (273/2004)**

This product contains no substance(s) listed on the GB Drug Precursors List equal to or above the level of SDS disclosure

#### 15.1.2. Other information

### 15.2. Chemical safety assessment

No additional information available

## SECTION 16: Other information

| Indication of changes (UK) | | |
|---|---|---|
| **Section** | **Changed item** | **Comments** |
| | Supersedes | **Added** |
| | Revision date | **Added** |
| 1.1 | Name | **Modified** |
| 1.2 | Use of the substance/mixture | **Added** |
| 1.2 | Main use category | **Modified** |

Data sources : REGULATION (EC) No 1272/2008 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 16 December 2008 on classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006.

Other information : None.

| Full text of H- and EUH-statements: | |
|---|---|
| Flam. Liq. 2 | Flammable liquids, Category 2 |
| Flam. Liq. 3 | Flammable liquids, Category 3 |
| H225 | Highly flammable liquid and vapour. |
| H226 | Flammable liquid and vapour. |

Safety Data Sheet (SDS), UK

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.

# SAFETY DATA SHEET
# BARTOLINE - White Spirit

According to Regulation (EC) No 1907/2006 Annex II as amended by Regulation (EU) 2015/830.

## SECTION 1: Identification of the substance/mixture and of the company/undertaking

### 1.1. Product identifier

**Product name** BARTOLINE - White Spirit

**REACH registration number** 01-2119458049-33-XXXX

**REACH registration notes** The EC substance definition and related classification & labelling has been developed in the framework of the Regulation (EC) No 1907/2006 (REACH). For information about the related CAS number see section 16 of this MSDS.

**EC number** 919-446-0

### 1.2. Relevant identified uses of the substance or mixture and uses advised against

**Identified uses** General degreasing solvent. Paint brush cleaner Paint thinner.

**Uses advised against** Not to be used for cleaning skin as this may lead to skin disorders.

### 1.3. Details of the supplier of the safety data sheet

**Supplier**
Bartoline Limited
Barmston Close
Beverley
East Yorkshire
HU17 0LW
01482 678710
info@bartoline.co.uk

**Contact person** Product Compliance Manager

### 1.4. Emergency telephone number

**Emergency telephone** 01482 678710 (8.30am - 4.45pm Monday to Friday) or NHS 111 (General Public) (24 Hour service)

## SECTION 2: Hazards identification

### 2.1. Classification of the substance or mixture

**Classification (EC 1272/2008)**

**Physical hazards** Flam. Liq. 3 - H226

**Health hazards** STOT SE 3 - H336 STOT RE 1 - H372 Asp. Tox. 1 - H304

**Environmental hazards** Aquatic Chronic 2 - H411

**Human health** Prolonged skin contact may cause redness and irritation. Ingestion of even small quantities may be fatal. Vapours and spray/mists in high concentrations are narcotic. Prolonged contact causes serious eye and tissue damage.

**Environmental** The product contains a substance which is toxic to aquatic organisms and which may cause long-term adverse effects in the aquatic environment.

# BARTOLINE - White Spirit

**Physicochemical** Vapours may form explosive mixtures with air. Vapours may be ignited by a spark, a hot surface or an ember. Vapours are heavier than air and may travel along the floor and accumulate in the bottom of containers. Containers can burst violently or explode when heated, due to excessive pressure build-up.

## 2.2. Label elements

**EC number** 919-446-0

**Hazard pictograms**



**Signal word** Danger

**Hazard statements**
H226 Flammable liquid and vapour.
H336 May cause drowsiness or dizziness.
H372 Causes damage to organs through prolonged or repeated exposure.
H304 May be fatal if swallowed and enters airways.
H411 Toxic to aquatic life with long lasting effects.

**Precautionary statements**
P102 Keep out of reach of children.
P103 Read label before use.
P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P260 Do not breathe vapour/ spray.
P271 Use only outdoors or in a well-ventilated area.
P280 Wear Nitrile/PVC protective gloves and chemical resistant safety glasses with side shields.
P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.
IF SWALLOWED: Immediately call a doctor/NHS 111.
P331 Do NOT induce vomiting.
Call a doctor/NHS 111 if you feel unwell.
IF ON SKIN: Wash with plenty of soap and water.
P403+P233 Store in a well-ventilated place. Keep container tightly closed.
P405 Store locked up.
P501 Dispose of contents/container to hazardous waste collection point.

**Supplemental label information** EUH066 Repeated exposure may cause skin dryness or cracking.

**Contains** Hydrocarbons, C9-C12, n-alkanes, isoalkanes, cyclics, aromatics (2-25%) 100%

## 2.3. Other hazards

This substance is not classified as PBT or vPvB according to current EU criteria.

# BARTOLINE - White Spirit

## SECTION 3: Composition/information on ingredients

### 3.1. Substances

| | | | |
|---|---|---|---|
| **Hydrocarbons, C9-C12, n-alkanes, isoalkanes, cyclics, aromatics (2-25%) 100%** | | | **100%** |
| CAS number: — | EC number: 919-446-0 | REACH registration number: 01-2119458049-33-XXXX | |

**Classification**
Flam. Liq. 3 - H226
STOT SE 3 - H336
STOT RE 1 - H372
Asp. Tox. 1 - H304
Aquatic Chronic 2 - H411

The Full Text for all R-Phrases and Hazard Statements are Displayed in Section 16.

**Product name** BARTOLINE - White Spirit

**REACH registration number** 01-2119458049-33-XXXX

**REACH registration notes** The EC substance definition and related classification & labelling has been developed in the framework of the Regulation (EC) No 1907/2006 (REACH). For information about the related CAS number see section 16 of this MSDS.

**EC number** 919-446-0

**Composition comments** A complex and variable combination of paraffinic, cyclic and aromatic hydrocarbons having a carbon number range predominantly of C9 to C12 and boiling in the range of approximately 135°C to 220°C.
The aromatic content is between 2% and 25%.

## SECTION 4: First aid measures

### 4.1. Description of first aid measures

**General information** Remove affected person from source of contamination. IN CASE OF SERIOUS OR PERSISTENT CONDITIONS, CALL A DOCTOR OR THE NHS 111 SERVICE.

**Inhalation** Move the exposed person to fresh air at once. Get medical attention. Provide rest, warmth and fresh air. When breathing is difficult, properly trained personnel may assist affected person by administering oxygen.

**Ingestion** DO NOT INDUCE VOMITING! NEVER MAKE AN UNCONSCIOUS PERSON VOMIT OR DRINK FLUIDS! If vomiting occurs, keep head low so that stomach content doesn't get into the lungs. Get medical attention immediately! Provide rest, warmth and fresh air.

**Skin contact** Remove contaminated clothing. Wash the skin immediately with soap and water. Get medical attention promptly if symptoms occur after washing.

**Eye contact** Rinse immediately with plenty of water. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention if symptoms are severe or persist after washing.

**Protection of first aiders** First aid personnel should wear appropriate protective equipment during any rescue. It may be dangerous for first aid personnel to carry out mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it from the affected person, or wear gloves.

### 4.2. Most important symptoms and effects, both acute and delayed

**General information** The severity of the symptoms described will vary dependent on the concentration and the length of exposure.

**Inhalation** Vapours inhaled in strong concentration have a narcotic effect on the central nervous system. Irritation of the respiratory tract due to excessive fume, causes headache, drowsiness or other effects to the central nervous system, loss of consciousness.

**Ingestion** If swallowed accidentally, the product may enter the lungs due to its low viscosity and lead to the rapid development of very serious pulmonary lesions (medical survey during 48 hours). Nausea, Vomiting, Abdominal pain.

**Skin contact** Prolonged or repeated contact may cause irritation and dry skin.

**Eye contact** Burning feeling and temporary redness.

### 4.3. Indication of any immediate medical attention and special treatment needed

**Notes for the doctor** Treat symptomatically.

**Specific treatments** The most severe risk is through ingestion, the product may enter the lungs due to its low viscosity and lead to the rapid development of very serious inhalation pulmonary lesions (medical survey during 48 hours).

## SECTION 5: Firefighting measures

### 5.1. Extinguishing media

**Suitable extinguishing media** Extinguish with alcohol-resistant foam, carbon dioxide, dry powder or water fog.

**Unsuitable extinguishing media** Do not use water jet as an extinguisher, as this will spread the fire.

### 5.2. Special hazards arising from the substance or mixture

**Specific hazards** Vapours are heavier than air and may spread near ground and travel a considerable distance to a source of ignition and flash back.

**Hazardous combustion products** Incomplete combustion and thermolysis may produce gases of varying toxicity such as carbon monoxide, carbon dioxide, various hydrocarbons, aldehydes and soot. These may be highly dangerous if inhaled in confined spaces or at high concentrations.

### 5.3. Advice for firefighters

**Protective actions during firefighting** Avoid breathing fire vapours. Cool containers exposed to flames with water until well after the fire is out. Keep run-off water out of sewers and water sources. Dike for water control. Containers close to fire should be removed or cooled with water.

**Special protective equipment for firefighters** In case of a large fire or in confined or poorly ventilated spaces, wear full fire resistant protective clothing and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

## SECTION 6: Accidental release measures

### 6.1. Personal precautions, protective equipment and emergency procedures

**Personal precautions** Evacuate area. Keep unnecessary and unprotected personnel away from the spillage. No smoking, sparks, flames or other sources of ignition near spillage. Do not touch or walk into spilled material. Do not enter storage areas or confined spaces unless adequately ventilated. Wear suitable protective equipment, including gloves, goggles/face shield, respirator, boots, clothing or apron, as appropriate. Take precautionary measures against static discharges. Take care as floors and other surfaces may become slippery.

**For non-emergency personnel** Land Spill: Eliminate all ignition sources (no smoking, flares, sparks or flames in the immediate area). Stop leak if you can do so without risk. Do not touch or walk through spilled material. Prevent entry into waterways, sewers, basements or confined areas. A vapour-suppressing foam may be used to reduce vapour. Dam or absorb spillage with non-combustible material such as earth, sand or booms, pads or absorbent granules. Use clean non-sparking tools to collect absorbed material. Water Spill: Stop leak if you can do so without risk. Eliminate sources of ignition. Warn or evacuate occupants in surrounding and downwind areas if required, due to the toxicity or flammability of the material. If the flashpoint exceeds the ambient air temperature by 10 degrees C or more, use containment booms and remove from the surface by skimming or with suitable absorbents. If the flashpoint does not exceed the ambient air temperature by at least 10 degrees C, use booms as a barrier to protect shorelines and allow material to evaporate. Seek the advice of a specialist before using dispersants.

**For emergency responders** Wear protective clothing as described in Section 8 of this safety data sheet. See section 11 for additional information on health hazards.
For waste disposal, see section 13.

### 6.2. Environmental precautions

**Environmental precautions** The product contains a substance which is toxic to aquatic organisms and which may cause long-term adverse effects in the aquatic environment. The product is insoluble in water and will spread on the water surface. Do not discharge into drains, water courses or onto the ground. Spillages or uncontrolled discharges into watercourses must be IMMEDIATELY alerted to the Environmental Agency or other appropriate regulatory body.

### 6.3. Methods and material for containment and cleaning up

**Methods for cleaning up** Stop leak if safe to do so. Eliminate all sources of ignition. No smoking, sparks, flames or other sources of ignition near spillage. To prevent release, place container with damaged side up. Cover large spillages with alcohol-resistant foam. Absorb spillage with non-combustible, absorbent material. Collect spillage for reclamation or disposal in sealed containers via a licensed waste contractor.

### 6.4. Reference to other sections

**Reference to other sections** For personal protection, see Section 8. For waste disposal, see Section 13. See Section 11 for additional information on health hazards. See Section 12 for additional information on ecological hazards.

## SECTION 7: Handling and storage

### 7.1. Precautions for safe handling

**Usage precautions** Avoid contact with skin and eyes. Keep away from heat, sparks and open flame. Eliminate all sources of ignition. Use explosion proof electric equipment. Storage tanks and other containers must be grounded. Wear full protective clothing for prolonged exposure and/or high concentrations. Contaminated clothing and shoes must be discarded. Contaminated rags and cloths must be put in fireproof containers for disposal. Ventilate well, avoid breathing vapours. Use approved respirator if air contamination is above accepted level. Avoid spilling and release to the environment such as drains and watercourses.

**Advice on general occupational hygiene** Persons with impaired lung function should not handle this product.. Do not eat, drink or smoke when using this product. Provide shower facilities near the workplace. Wash promptly with soap and water if skin becomes contaminated. Take off immediately all contaminated clothing and wash it before reuse. Promptly remove any clothing that becomes wet or contaminated. Remove contaminated clothing and protective equipment before entering eating areas. Wash at the end of each work shift and before eating, smoking and using the toilet. Use appropriate hand lotion to prevent defatting and cracking of skin.

### 7.2. Conditions for safe storage, including any incompatibilities

**Storage precautions** Store in tightly-closed, original container in a dry, cool and well-ventilated place. Keep container tightly sealed when not in use. Keep locked up and out of the reach of children. Store in a demarcated bunded area to prevent release to drains and/or watercourses. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Avoid contact with oxidising agents. Keep away from food, drink and animal feeding stuffs. Use containers made of the following materials: Carbon steel. Glass. Mild steel. Stainless steel. High-density polyethylene (HDPE) Polyethylene terephthalate (PET)

**Storage class** Flammable liquid storage.

### 7.3. Specific end use(s)

**Specific end use(s)** The identified uses for this product are detailed in Section 1.2. FOR FURTHER IN FORMATION REFER TO EXPOSURE SCENARIOS.

**Usage description** In General:
Keep containers closed when not in use.
Keep containers upright.
Use only in well ventilated areas, ideally outdoors.
Open containers slowly in order to release any pressure build up that may occur.
Keep out of reach of children.
Apply "common sense" measures when using this product.
When using transfer required amount to a suitable container such as glass, metal or HDPE.
Avoid all contact with skin and eyes.

## SECTION 8: Exposure controls/Personal protection

### 8.1. Control parameters

#### Occupational exposure limits

**Hydrocarbons, C9-C12, n-alkanes, isoalkanes, cyclics, aromatics (2-25%) 100%**

Long-term exposure limit (8-hour TWA): 350 mg/m3 vapour

**Ingredient comments** The Workplace Exposure Limited quoted is an advisory level from the CEFIC-HSPA The figures quoted below are taken from the registration document and/or the substance manufacturers data sheet.

**Hydrocarbons, C9-C12, n-alkanes, isoalkanes, cyclics, aromatics (2-25%) 100%**

**DNEL**

Industry/Professional - Dermal; Long term systemic effects: 44 mg/kg/day
Industry/Professional - Inhalation; Long term systemic effects: 330 mg/m3/8h
General population - Dermal; Long term systemic effects: 26 mg/kg/day
General population - Inhalation; Long term systemic effects: mg/m3/24h
General population - Oral; Long term systemic effects: mg/kg/day

### 8.2. Exposure controls

**Protective equipment**



# BARTOLINE - White Spirit

| | |
|---|---|
| **Appropriate engineering controls** | This product is not to be used under conditions of poor ventilation. This product must not be handled in a confined space without adequate ventilation. Mechanical ventilation or local exhaust ventilation may be required. In case of insufficient ventilation, wear suitable respiratory equipment. Avoid inhalation of vapours and spray/mists. Use explosion-proof electrical, ventilating and lighting equipment. Personal protective equipment should only be used if worker exposure cannot be controlled adequately by the engineering control measures. |
| **Personal protection** | Protective engineering solutions should be implemented and in use before Personal Protective Equipment (PPE) is considered. |
| **Eye/face protection** | Wear EN 166 approved chemical safety goggles with side shields where eye exposure is reasonably probable. |
| **Hand protection** | Chemical-resistant, impervious gloves complying with an approved standard should be worn if a risk assessment indicates skin contact is possible. The most suitable glove should be chosen in consultation with the glove supplier/manufacturer, who can provide information about the breakthrough time of the glove material. To protect hands from chemicals, gloves should comply with European Standard EN374. It is recommended that gloves are made of the following material: Nitrile rubber. Polyvinyl chloride (PVC). Viton rubber (fluoro rubber). Considering the data specified by the glove manufacturer, check during use that the gloves are retaining their protective properties and change them as soon as any deterioration is detected. It should be noted that liquid may penetrate the gloves. Frequent changes are recommended. |
| **Other skin and body protection** | Wear appropriate clothing to prevent any possibility of liquid contact and repeated or prolonged vapour contact. Wear an apron and protective sleevelets made of the following material: Nitrile rubber. Polyvinyl chloride (PVC). Viton rubber (fluoro rubber). Wear anti-static protective clothing if there is a risk of ignition from static electricity. |
| **Hygiene measures** | Persons with impaired lung function should not handle this product.. Pregnant or breastfeeding women should not work with this product if there is any risk of exposure. Wash hands thoroughly after handling. Wash promptly if skin becomes contaminated. Care should be taken to avoid contact with contaminants when removing contaminated clothing. Promptly remove any clothing that becomes wet or contaminated. Remove contaminated clothing and protective equipment before entering eating areas. Change work clothing daily before leaving workplace. Wash contaminated clothing before reuse. Wash at the end of each work shift and before eating, smoking and using the toilet. Use appropriate hand lotion to prevent defatting and cracking of skin. Do not eat, drink or smoke when using this product. |
| **Respiratory protection** | When workers are facing concentrations above the exposure limit they must use appropriate BS EN 405:2001+A1:2009 certified respirators. In the case of vapour formation use a respirator with filter model :. Type A.<br>In case of vapours and aerosol formation:. Respirator with combination filter for vapour/particulate, Type A/P2.<br>Warning ! filters have a limited use duration. |
| **Thermal hazards** | Not Applicable |
| **Environmental exposure controls** | Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels. Store in a demarcated bunded area to prevent release to drains and/or watercourses. Keep container tightly sealed when not in use. Residues and empty containers should be taken care of as hazardous waste according to local and national provisions. |

# BARTOLINE - White Spirit

## SECTION 9: Physical and chemical properties

### 9.1. Information on basic physical and chemical properties

| | |
|---|---|
| **Appearance** | Colourless liquid. |
| **Colour** | Clear. |
| **Odour** | aromatic hydrocarbons |
| **Odour threshold** | Not available. |
| **pH** | Not applicable. |
| **Melting point** | Not applicable. |
| **Initial boiling point and range** | 158 – 191 degrees C 316 – 376 degrees F |
| **Flash point** | ~ 40°C ISO 13736 ~ 104°F ISO 13736 |
| **Evaporation rate** | ~ 57 EtEt=1 DIN 53170 |
| **Evaporation factor** | Not available. |
| **Flammability (solid, gas)** | Not applicable. |
| **Upper/lower flammability or explosive limits** | Upper flammable/explosive limit: 7 % Lower flammable/explosive limit: 0.7 % |
| **Other flammability** | Not applicable. |
| **Vapour pressure** | 1.9 hPa @ 20°C |
| **Vapour density** | Not available. |
| **Relative density** | ~ 0.785 @ 15°C |
| **Bulk density** | Not applicable. |
| **Solubility(ies)** | Substance is a UVCB. Standard tests for this endpoint are not appropriate. |
| **Partition coefficient** | Not available. |
| **Auto-ignition temperature** | >230°C/>446°F |
| **Decomposition Temperature** | Not available. |
| **Viscosity** | Kinematic viscosity ≤ 20.5 mm²/s. 0.95 mm2/s @ 40°C |
| **Explosive properties** | Not considered explosive based on chemical structure and oxygen balance considerations. |
| **Explosive under the influence of a flame** | Not considered to be explosive. |
| **Oxidising properties** | Does not meet the criteria for classification as oxidising. |
| **Comments** | Information declared as "Not available" or "Not applicable" is not considered to be relevant to the implementation of the proper control measures. |

### 9.2. Other information

| | |
|---|---|
| **Volatility** | Volatile. |
| **Volatile organic compound** | This product contains a maximum VOC content of 785 g/l. |

# BARTOLINE - White Spirit

## SECTION 10: Stability and reactivity

### 10.1. Reactivity

**Reactivity** The reactivity data for this product will be typical of those for the following class of materials: Hydrocarbons. There are no known reactivity hazards associated with this product.

### 10.2. Chemical stability

**Stability** Stable under the prescribed storage conditions. See Section 10.3 (Possibility of hazardous reactions) for further information.

### 10.3. Possibility of hazardous reactions

**Possibility of hazardous reactions** Under normal conditions of storage and use, no hazardous reactions will occur.

### 10.4. Conditions to avoid

**Conditions to avoid** Containers can burst violently or explode when heated, due to excessive pressure build-up. Keep away from heat, sparks and open flame. Static electricity and formation of sparks must be prevented. Do not pressurise, cut, weld, drill, grind or otherwise expose containers to heat or sources of ignition. Avoid the accumulation of vapours in low or confined areas.

### 10.5. Incompatible materials

**Materials to avoid** Avoid contact with the following materials: Strong acids. Oxidising agents.

### 10.6. Hazardous decomposition products

**Hazardous decomposition products** Incomplete combustion and thermolysis may produce gases of varying toxicity such as carbon monoxide, carbon dioxide, various hydrocarbons, aldehydes and soot.

## SECTION 11: Toxicological information

### 11.1. Information on toxicological effects

**Toxicological effects** The toxicity of this substance has been assessed during REACH registration. See information on individual substances below.

**Germ cell mutagenicity**

**Genotoxicity - in vitro** Based on available data the classification criteria are not met.

**Genotoxicity - in vivo** Based on available data the classification criteria are not met.

**Toxicological information on ingredients.**

**Hydrocarbons, C9-C12, n-alkanes, isoalkanes, cyclics, aromatics (2-25%) 100%**

| | |
|---|---|
| **Toxicological effects** | The toxicity of this substance has been assessed during REACH registration. |
| **Acute toxicity - oral** | |
| **Acute toxicity oral ($LD_{50}$ mg/kg)** | 15,000.0 |
| **Species** | Rat |
| **ATE oral (mg/kg)** | 15,000.0 |
| **Acute toxicity - dermal** | |
| **Acute toxicity dermal ($LD_{50}$ mg/kg)** | 3,400.0 |
| **Species** | Rat |

# BARTOLINE - White Spirit

| | |
|---|---|
| **ATE dermal (mg/kg)** | 3,400.0 |

**Skin corrosion/irritation**

| | |
|---|---|
| **Animal data** | Conclusive data but not sufficient for classification. Not irritating. |

**Serious eye damage/irritation**

| | |
|---|---|
| **Serious eye damage/irritation** | This substance does not meet the EU criteria for classification. - Burning feeling and temporary redness. |

**Respiratory sensitisation**

| | |
|---|---|
| **Respiratory sensitisation** | Based on available data the classification criteria are not met. |

**Skin sensitisation**

| | |
|---|---|
| **Skin sensitisation** | Based on available data the classification criteria are not met. |

**Germ cell mutagenicity**

| | |
|---|---|
| **Genotoxicity - in vitro** | Based on available data the classification criteria are not met. |

**Carcinogenicity**

| | |
|---|---|
| **Carcinogenicity** | Based on available data the classification criteria are not met. |

**Reproductive toxicity**

| | |
|---|---|
| **Reproductive toxicity - fertility** | Based on available data the classification criteria are not met. |
| **Reproductive toxicity - development** | This substance has no evidence of toxicity to reproduction. |

**Specific target organ toxicity - single exposure**

| | |
|---|---|
| **STOT - single exposure** | Vapours may cause drowsiness and dizziness. |
| **Target organs** | Central nervous system |

**Specific target organ toxicity - repeated exposure**

| | |
|---|---|
| **STOT - repeated exposure** | Causes damage to organs through prolonged or repeated exposure. |
| **Target organs** | Central nervous system |

**Aspiration hazard**

| | |
|---|---|
| **Aspiration hazard** | May be fatal if swallowed and enters airways. Entry into the lungs following ingestion or vomiting may cause chemical pneumonitis. |

| | |
|---|---|
| **Inhalation** | Vapours inhaled in strong concentrations have a narcotic effect on the central nervous system. Irritation of the respiratory tract due to excessive fume. Causes headache, drowsiness or other effects to the central nervous system, loss of consciousness. |
| **Ingestion** | Symptoms: Nausea, vomiting, abdominal pain. Harmful: If swallowed accidentally, the product may enter the lungs due to its low viscosity<br>and lead to the rapid development of very serious inhalation pulmonary lesions (medical survey during 48 hours). |
| **Skin contact** | Prolonged or repeated contact may dry skin and cause irritation. Frequent or prolonged skin contact destroys the lipacid cutaneous layer and may cause dermatitis. |

| | |
|---|---|
| **Eye contact** | This mixture does not meet the EU criteria for classification. Any eye contact may cause a burning feeling and temporary redness. |
| **Route of exposure** | Inhalation Ingestion Oral Skin and/or eye contact |
| **Target organs** | Central nervous system Eyes Skin Respiratory system, lungs |
| **Medical symptoms** | Symptoms following overexposure to vapour may include the following: Central nervous system depression. Confusion, agitation and/or excitation. |
| **Medical considerations** | The following pre-existing or historic medical conditions of the worker may lead to an increased risk of adverse health effects following exposure to this product: Chronic respiratory and obstructive airway diseases. History of smoking. Pre-existing eye problems. Skin disorders and allergies. |

## SECTION 12: Ecological information

**Ecological information on ingredients.**

**Hydrocarbons, C9-C12, n-alkanes, isoalkanes, cyclics, aromatics (2-25%) 100%**

| | |
|---|---|
| **Ecotoxicity** | Toxic to aquatic life with long lasting effects. |

### 12.1. Toxicity

**Toxicity** See information on ingredient substances below.

**Ecological information on ingredients.**

**Hydrocarbons, C9-C12, n-alkanes, isoalkanes, cyclics, aromatics (2-25%) 100%**

**Acute aquatic toxicity**

| | |
|---|---|
| **Acute toxicity - fish** | $LL_{50}$, 96 hours: 10-30 mg/l, Oncorhynchus mykiss (Rainbow trout) |
| **Acute toxicity - aquatic invertebrates** | $EC_{50}$, 48 hours: 10-22 mg/l, Daphnia magna |
| **Acute toxicity - aquatic plants** | $EC_{50}$, 72 hours: 4.1 mg/l, Pseudokirchneriella subcapitata |

**Chronic aquatic toxicity**

| | |
|---|---|
| **Chronic toxicity - fish early life stage** | NOEC, 28 days: 0.13 mg/l, Oncorhynchus mykiss (Rainbow trout) |
| **Chronic toxicity - aquatic invertebrates** | NOEC, 21 days: 0.28 mg/l, Daphnia magna |

### 12.2. Persistence and degradability

**Ecological information on ingredients.**

**Hydrocarbons, C9-C12, n-alkanes, isoalkanes, cyclics, aromatics (2-25%) 100%**

| | |
|---|---|
| **Persistence and degradability** | Readily biodegradable ( 75 % after 28 days). |

### 12.3. Bioaccumulative potential

**Partition coefficient** Not available.

**Ecological information on ingredients.**

**Hydrocarbons, C9-C12, n-alkanes, isoalkanes, cyclics, aromatics (2-25%) 100%**

**Bioaccumulative potential** Measured experimental data on hydrocarbon UVCB substances are not meaningful, since each of the constituents is likely to behave differently.

### 12.4. Mobility in soil

**Mobility** Substance is a UVCB. Standard tests for this endpoint are not appropriate.

**Ecological information on ingredients.**

**Hydrocarbons, C9-C12, n-alkanes, isoalkanes, cyclics, aromatics (2-25%) 100%**

**Mobility** Substance is a UVCB. Standard tests for this endpoint are not appropriate.

### 12.5. Results of PBT and vPvB assessment

**Ecological information on ingredients.**

**Hydrocarbons, C9-C12, n-alkanes, isoalkanes, cyclics, aromatics (2-25%) 100%**

**Results of PBT and vPvB assessment** This substance is considered not to be PBT and vPvB.

### 12.6. Other adverse effects

**Other adverse effects** None known.

## SECTION 13: Disposal considerations

### 13.1. Waste treatment methods

**General information** The generation of waste should be minimised or avoided wherever possible. Disposal of this product, process solutions, residues and by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any local authority requirements. External recovery, treatment, recycling and disposal of waste should comply with all applicable local and/or national regulations. Waste material and any included combustible absorbent and containers should be suitable for incineration at an approved facility. This material and its container must be disposed of as hazardous waste. Waste packaging should be collected for reuse or recycling. The packaging must be empty (drop-free when inverted). When handling waste, the safety precautions applying to handling of the product should be considered.

**Disposal methods** Waste, residues, empty containers, discarded work clothes and contaminated cleaning materials should be collected in designated containers, labelled with their contents. Label the containers containing waste and contaminated materials and remove from the area as soon as possible. Dispose of waste to licensed waste disposal site in accordance with the requirements of the local Waste Disposal Authority. Waste material and any included combustible absorbent and containers should be suitable for incineration at an approved facility. This material and its container must be disposed of as hazardous waste.

# BARTOLINE - White Spirit

| | |
|---|---|
| **Waste class** | When this product, in its liquid state, as supplied becomes waste it should be disposed of as hazardous waste using the waste code 08 01 11 waste paint and varnish containing organic solvents or other dangerous substances.<br>Empty used containers should be disposed of as waste code 15 01 10 packaging containing residues of or contaminated by dangerous substances.<br>When used the removed sludge should be disposed of using waste code 08 01 13 sludges from paint and varnish remover containing organic solvents or other dangerous substances.<br>Any absorbents used for clearing up spills should be disposed of using waste code 15 02 02 absorbents contaminated by dangerous substances. |

## SECTION 14: Transport information

| | |
|---|---|
| **General** | Limited quantity size 5 litres (LQ 7) Excepted Quantity size 30ml (E1) |

### 14.1. UN number

| | |
|---|---|
| **UN No. (ADR/RID)** | 1300 |
| **UN No. (IMDG)** | 1300 |
| **UN No. (ICAO)** | 1300 |
| **UN No. (ADN)** | 1300 |

### 14.2. UN proper shipping name

| | |
|---|---|
| **Proper shipping name (ADR/RID)** | TURPENTINE SUBSTITUTE |
| **Proper shipping name (IMDG)** | TURPENTINE SUBSTITUTE |
| **Proper shipping name (ICAO)** | TURPENTINE SUBSTITUTE |
| **Proper shipping name (ADN)** | TURPENTINE SUBSTITUTE |

### 14.3. Transport hazard class(es)

| | |
|---|---|
| **ADR/RID class** | 3 |
| **ADR/RID classification code** | F1 |
| **ADR/RID label** | 3 |
| **IMDG class** | 3 |
| **ICAO class/division** | 3 |
| **ADN class** | 3 |

**Transport labels**




### 14.4. Packing group

| | |
|---|---|
| **ADR/RID packing group** | III |
| **IMDG packing group** | III |
| **ICAO packing group** | III |
| **ADN packing group** | III |

### 14.5. Environmental hazards

**Environmentally hazardous substance/marine pollutant**



### 14.6. Special precautions for user

| | |
|---|---|
| **EmS** | F-E, S-E |
| **ADR transport category** | 3 |
| **Emergency Action Code** | 3Y |
| **Hazard Identification Number (ADR/RID)** | 30 |
| **Tunnel restriction code** | (D/E) |

### 14.7. Transport in bulk according to Annex II of MARPOL and the IBC Code

| | |
|---|---|
| **Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code** | Not applicable. |

## SECTION 15: Regulatory information

### 15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

| | |
|---|---|
| **National regulations** | Control of Substances Hazardous to Health Regulations 2002 (as amended).<br>Dangerous Substances and Explosive Atmospheres Regulations 2002.<br>EH40/2005 Workplace exposure limits.<br>Health and Safety at Work etc. Act 1974 (as amended).<br>The Carriage of Dangerous Goods and Use of Transportable Pressure Equipment Regulations 2009 (SI 2009 No. 1348) (as amended) ["CDG 2009"].<br>The Chemicals (Hazard Information and Packaging for Supply) Regulations 2009 (SI 2009 No. 716).<br>Users of this product are reminded of their duties under the current Control of Substances Hazardous to Health Regulations and a suitable and sufficient assessment of all the risk should be undertaken before using this product. The guidelines given in the HSE publication COSHH ESSENTIALS - Easy Steps To Control Chemicals gives sound advice for deciding safe working control measures. |
| **EU legislation** | Commission Decision 2000/532/EC as amended by Decision 2001/118/EC establishing a list of wastes and hazardous waste pursuant to Council Directive 75/442/EEC on waste and Directive 91/689/EEC on hazardous waste with amendments.<br>Commission Directive 2000/39/EC of 8 June 2000 establishing a first list of indicative occupational exposure limit values in implementation of Council Directive 98/24/EC on the protection of the health and safety of workers from the risks related to chemical agents at work (as amended).<br>Dangerous Substances Directive 67/548/EEC.<br>Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures (as amended).<br>Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) (as amended). |

# BARTOLINE - White Spirit

| | |
|---|---|
| **Guidance** | CHIP for everyone HSG228.<br>Introduction to Local Exhaust Ventilation HS(G)37.<br>The spraying of flammable liquids HSG178.<br>Workplace Exposure Limits EH40. |
| **Health and environmental listings** | Regulation (EC) 649/2012 of the European Parliament and of the Council of 4 July 2012 concerning the export and import of hazardous chemicals (as amended). |
| **Authorisations (Annex XIV Regulation 1907/2006)** | No specific authorisations are known for this product. |
| **Restrictions (Annex XVII Regulation 1907/2006)** | No specific restrictions on use are known for this product. |

## 15.2. Chemical safety assessment

A chemical safety assessment has been carried out.

## Inventories

### EU - EINECS/ELINCS

All the ingredients are listed or exempt.

*Hydrocarbons, C9-C12, n-alkanes, isoalkanes, cyclics, aromatics (2-25%) 100%*

# BARTOLINE - White Spirit

## SECTION 16: Other information

**General information**

The European Inventory of Existing Commercial Substances (EINECS) descriptions and numbers have been used historically to identify chemical substances. EINECS descriptions exist for a number of hydrocarbon substances derived from petroleum refining and chemical conversion. In the past this substances was identified by CAS 64742-82-1 but this description was overly broad as solvents have narrower hydrocarbon ranges. different classifications and different processing. A more focused and narrow definition was therefore required. REACH requires a clear and logical substance description and substance identification is a key component in registration. In order to facilitate appropriate registration of hydrocarbon solvents the Hydrocarbon Solvents Producers Association (HSPA) has conducted an in-depth assessment of hydrocarbon solvents in order to better characterize its substances and adopt a consistent substance identification system. This means that although the product has not changed (just how is described) there may be some difference as to what is displayed on the product labels as they were compiled using the old system.

**Training advice**

The information on directions for use can be found on the product label. It is important to ensure that anyone using this product in the workplace has been adequately trained and in particular: The use of personal protective equipment, methods of cleaning up and disposal of waste. The basic first aid arrangements.

**Revision comments**

DUE TO CHANGE OF CLASSIFICATION DATABASE THE REVISION NUMBERING HAS BEEN RESET. You should therefore look at the revision date rather than the revision number to ensure you have the most up to date version. NOTE: Lines within the margin indicate significant changes from the previous revision.

**Issued by**

Product Compliance Manager

**Revision date**

05/01/2018

**Revision**

3

**SDS number**

4652

**SDS status**

Approved.

**Hazard statements in full**

H226 Flammable liquid and vapour.
H304 May be fatal if swallowed and enters airways.
H336 May cause drowsiness or dizziness.
H372 Causes damage to organs (Central nervous system) through prolonged or repeated exposure.
H372 Causes damage to organs through prolonged or repeated exposure.
H411 Toxic to aquatic life with long lasting effects.

The information contained in this data sheet is provided in accordance with the requirements of the Regulation (EC) No 1907/2006 Annex II as amended by Regulation (EU) 2015/830 and Regulation (EC) No 1272/2008 (CLP). The product should not be used for purposes other than those shown in Section 1.2. As the specific conditions of use are outside the supplier's control, the user is responsible for ensuring that the requirements of relevant legislation are complied with. The information contained in this safety data sheet is based on the present knowledge and the current EU and UK Legislation. It provides guidance on health, safety and environmental aspects of the product and should not be taken as a product specification.

# APPENDIX VIII
# McLAREN SDS



Date of compilation: 27/01/2023 Revised: 22/08/2024 Version: 4 (Replaced 3)

## SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

**1.1 Product identifier:** S 1922 (TF)

**Other means of identification:**

UFI: 7250-R0D8-000M-E92P

**1.2 Relevant identified uses of the substance or mixture and uses advised against:**

Relevant uses: Adhesive. For professional users/industrial user only.

Uses advised against: All uses not specified in this section or in section 7.3

**1.3 Details of the supplier of the safety data sheet:**

ALPHA ADHESIVES & SEALANTS LTD
Llewellyn Close, Sandy Lane Industrial Estate
DY13 9RH Stourport-on-Severn - Worcestershire - United Kingdom
Phone: +44 (0)1299 828626 - Fax: +44 (0)1299 828666
sales@alpha-adhesives.co.uk

**1.4 Emergency telephone number:** +44 (0)1299 828626 (Available 08:00-16:45 GMT) - +44 (0)7770 654279 (24 hours)

## SECTION 2: HAZARDS IDENTIFICATION

**2.1 Classification of the substance or mixture:**

**GB CLP Regulation (UK S.I. 2019/720 and UK S.I. 2020/1567):**

Classification of this product has been carried out in accordance with GB CLP Regulation (UK S.I. 2019/720 and UK S.I. 2020/1567).
Aquatic Acute 1: Hazardous to the aquatic environment, acute hazard, Category 1, H400
Aquatic Chronic 1: Hazardous to the aquatic environment, long-term hazard, Category 1, H410
Eye Irrit. 2: Eye irritation, Category 2, H319
Flam. Liq. 2: Flammable liquids, Category 2, H225
Skin Irrit. 2: Skin irritation, Category 2, H315
Skin Sens. 1: Sensitisation, skin, Category 1, H317
STOT SE 3: Specific toxicity causing drowsiness and dizziness, single exposure, Category 3, H336

**2.2 Label elements:**

**GB CLP Regulation (UK S.I. 2019/720 and UK S.I. 2020/1567):**

**Danger**



**Hazard statements:**

Aquatic Chronic 1: H410 - Very toxic to aquatic life with long lasting effects.
Eye Irrit. 2: H319 - Causes serious eye irritation.
Flam. Liq. 2: H225 - Highly flammable liquid and vapour.
Skin Irrit. 2: H315 - Causes skin irritation.
Skin Sens. 1: H317 - May cause an allergic skin reaction.
STOT SE 3: H336 - May cause drowsiness or dizziness.

**Precautionary statements:**

P210: Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P280: Wear protective gloves/protective clothing/respiratory protection/eye protection/protective footwear.
P302+P352: IF ON SKIN: Wash with plenty of soap and water.
P303+P361+P353: IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
P304+P340: IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
P305+P351+P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P370+P378: In case of fire: Use Foam extinguisher (AB), Dry Chemical Powder (ABC) Fire Extinguisher, Carbon dioxide extinguisher (BC) to extinguish.
P501: Dispose of contents/ container in accordance with local/regional/national/international regulation.

**Substances that contribute to the classification**

cyclohexane; acetone; Hydrocarbons, C7-C9,n-alkanes, iso-alkanes, cyclics; Butanone; Hydrocarbons, C7, n-alkanes, isoalkanes, cyclics; Formaldehyde, oligomeric reaction products with phenol

- CONTINUED ON NEXT PAGE -





## SECTION 2: HAZARDS IDENTIFICATION (continued)

**2.3 Other hazards:**

Product does not meet PBT/vPvB criteria

## SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

**3.1 Substance:**

Non-applicable

**3.2 Mixture:**

**Chemical description:** Mixture composed of polymers and resins in solvent

**Components:**

In accordance with Annex II of The REACH etc. (Amendment etc.) (EU Exit) Regulations 2020, the product contains:

| Identification | Chemical name/Classification | Concentration |
|---|---|---|
| CAS: 110-82-7 | **cyclohexane**<br>Aquatic Acute 1: H400; Aquatic Chronic 1: H410; Asp. Tox. 1: H304; Flam. Liq. 2: H225; Skin Irrit. 2: H315; STOT SE 3: H336 - Danger | **25 - <60 %** |
| CAS: 67-64-1 | **acetone**<br>Eye Irrit. 2: H319; Flam. Liq. 2: H225; STOT SE 3: H336; EUH066 - Danger | **10 - <25 %** |
| CAS: Non-applicable | **Hydrocarbons, C7-C9,n-alkanes, iso-alkanes, cyclics**<br>Aquatic Chronic 2: H411; Asp. Tox. 1: H304; Flam. Liq. 2: H225; STOT SE 3: H336; EUH066 - Danger | **5 - <10 %** |
| CAS: 78-93-3 | **Butanone**<br>Eye Irrit. 2: H319; Flam. Liq. 2: H225; STOT SE 3: H336; EUH066 - Danger | **5 - <10 %** |
| CAS: 64742-49-0 | **Hydrocarbons, C7, n-alkanes, isoalkanes, cyclics**<br>Aquatic Chronic 2: H411; Asp. Tox. 1: H304; Flam. Liq. 2: H225; Skin Irrit. 2: H315; STOT SE 3: H336 - Danger | **5 - <10 %** |
| CAS: 64-17-5 | **ethanol**<br>Eye Irrit. 2: H319; Flam. Liq. 2: H225 - Danger | **1 - <5 %** |
| CAS: 9003-35-4 | **Formaldehyde, oligomeric reaction products with phenol**<br>Eye Irrit. 2: H319; Skin Sens. 1: H317 - Warning | **1 - <5 %** |
| CAS: 68610-51-5 | **Phenol, 4-methyl-, reaction products with dicyclopentadiene and isobutylene**<br>Aquatic Chronic 4: H413; Repr. 2: H361 - Warning | **0.1 - <1 %** |

To obtain more information on the hazards of the substances consult sections 11, 12 and 16.

## SECTION 4: FIRST AID MEASURES

**4.1 Description of first aid measures:**

The symptoms resulting from intoxication can appear after exposure, therefore, in case of doubt, seek medical attention for direct exposure to the chemical product or persistent discomfort, showing the SDS of this product.

**By inhalation:**

Remove the person affected from the area of exposure, provide with fresh air and keep at rest. In serious cases such as cardiorespiratory failure, artificial resuscitation techniques will be necessary (mouth to mouth resuscitation, cardiac massage, oxygen supply,etc.) requiring immediate medical assistance.

**By skin contact:**

Remove contaminated clothing and footwear, rinse skin or shower the person affected if appropriate with plenty of cold water and neutral soap. In serious cases see a doctor. If the product causes burns or freezing, clothing should not be removed as this could worsen the injury caused if it is stuck to the skin. If blisters form on the skin, these should never be burst as this will increase the risk of infection.

**By eye contact:**

Rinse eyes thoroughly with water for at least 15 minutes. If the injured person uses contact lenses, these should be removed unless they are stuck to the eyes, in which case removal could cause further damage. In all cases, after cleaning, a doctor should be consulted as quickly as possible with the SDS for the product.

**By ingestion/aspiration:**

Do not induce vomiting, but if it does happen keep the head down to avoid aspiration. Keep the person affected at rest. Rinse out the mouth and throat, as they may have been affected during ingestion.

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## SECTION 4: FIRST AID MEASURES (continued)

**4.2 Most important symptoms and effects, both acute and delayed:**

Acute and delayed effects are indicated in sections 2 and 11.

**4.3 Indication of any immediate medical attention and special treatment needed:**

Not relevant

## SECTION 5: FIREFIGHTING MEASURES

**5.1 Extinguishing media:**

**Suitable extinguishing media:**

Foam extinguisher (AB), Dry Chemical Powder (ABC) Fire Extinguisher, Carbon dioxide extinguisher (BC)

**Unsuitable extinguishing media:**

Water jet

**5.2 Special hazards arising from the substance or mixture:**

As a result of combustion or thermal decomposition reactive sub-products are created that can become highly toxic and, consequently, can present a serious health risk.

**5.3 Advice for firefighters:**

Depending on the magnitude of the fire it may be necessary to use full protective clothing and self-contained breathing apparatus (SCBA). Minimum emergency facilities and equipment should be available (fire blankets, portable first aid kit,...).

**Additional provisions:**

Act in accordance with the Internal Emergency Plan and the Information Sheets on actions to take after an accident or other emergencies. Eliminate all sources of ignition. In case of fire, cool the storage containers and tanks for products susceptible to combustion, explosion or BLEVE as a result of high temperatures. Avoid spillage of the products used to extinguish the fire into an aqueous medium.

## SECTION 6: ACCIDENTAL RELEASE MEASURES

**6.1 Personal precautions, protective equipment and emergency procedures:**

**For non-emergency personnel:**

Isolate leaks provided that there is no additional risk for the people performing this task. Evacuate the area and keep out those without protection. Personal protection equipment must be used against potential contact with the spilt product (See section 8). Above all prevent the formation of any vapour-air flammable mixtures, through either ventilation or the use of an inert medium. Remove any source of ignition. Eliminate electrostatic charges by interconnecting all the conductive surfaces on which static electricity could form, and also ensuring that all surfaces are connected to the ground.

**For emergency responders:**

Wear protective equipment. Keep unprotected persons away. See section 8.

**6.2 Environmental precautions:**

Avoid at all cost any type of spillage into an aqueous medium. Contain the product absorbed appropriately in hermetically sealed containers. Notify the relevant authority in case of exposure to the general public or the environment.

**6.3 Methods and material for containment and cleaning up:**

It is recommended:

Absorb the spillage using sand or inert absorbent and move it to a safe place. Do not absorb in sawdust or other combustible absorbents. For any concern related to disposal consult section 13.

**6.4 Reference to other sections:**

See sections 8 and 13.

## SECTION 7: HANDLING AND STORAGE

**7.1 Precautions for safe handling:**

A.- General precautions for safe use

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## SECTION 7: HANDLING AND STORAGE (continued)

Comply with the current legislation concerning the prevention of industrial risks. Keep containers hermetically sealed. Control spills and residues, destroying them with safe methods (section 6). Avoid leakages from the container. Maintain order and cleanliness where dangerous products are used.

B.- Technical recommendations for the prevention of fires and explosions

Transfer in well ventilated areas, preferably through localized extraction. Fully control sources of ignition (mobile phones, sparks,…) and ventilate during cleaning operations. Avoid the existence of dangerous atmospheres inside containers, applying inertization systems where possible. Transfer at a slow speed to avoid the creation of electrostatic charges. Against the possibility of electrostatic charges: ensure a perfect equipotential connection, always use groundings, do not wear work clothes made of acrylic fibres, preferably wearing cotton clothing and conductive footwear. Comply with the essential security requirements for equipment and systems defined in The Equipment and Protective Systems Intended for Use in Potentially Explosive Atmospheres Regulations 2016 and with the minimum requirements for protecting the security and health of workers under the selection criteria of The Dangerous Substances and Explosive Atmospheres Regulations 2002, 2002 No. 2776. Consult section 10 for conditions and materials that should be avoided.

C.- Technical recommendations on general occupational hygiene

Do not eat or drink during the process, washing hands afterwards with suitable cleaning products.

D.- Technical recommendations to prevent environmental risks

Due to the danger of this product for the environment it is recommended to use it within an area containing contamination control barriers in case of spillage, as well as having absorbent material in close proximity.

### 7.2 Conditions for safe storage, including any incompatibilities:

A.- Specific storage requirements

Store in a cool, dry, well-ventilated location

B.- General conditions for storage

Avoid sources of heat, radiation, static electricity and contact with food. For additional information see subsection 10.5

### 7.3 Specific end use(s):

Except for the instructions already specified it is not necessary to provide any special recommendation regarding the uses of this product.

## SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

### 8.1 Control parameters:

Substances whose occupational exposure limits have to be assessed in the workplace:

EH40/2005 Workplace exposure limits, fourth edition, published 2020:

| Identification | Occupational exposure limits | | |
|---|---|---|---|
| cyclohexane<br>CAS: 110-82-7 | WEL (8h)<br>WEL (15 min) | 100 ppm<br>300 ppm | 350 mg/m³<br>1050 mg/m³ |
| acetone<br>CAS: 67-64-1 | WEL (8h)<br>WEL (15 min) | 500 ppm<br>1500 ppm | 1210 mg/m³<br>3620 mg/m³ |
| Butanone<br>CAS: 78-93-3 | WEL (8h)<br>WEL (15 min) | 200 ppm<br>300 ppm | 600 mg/m³<br>899 mg/m³ |
| Xylene (1)<br>CAS: 1330-20-7 | WEL (8h)<br>WEL (15 min) | 50 ppm<br>100 ppm | 220 mg/m³<br>441 mg/m³ |
| Ethylbenzene (1)<br>CAS: 100-41-4 | WEL (8h)<br>WEL (15 min) | 100 ppm<br>125 ppm | 441 mg/m³<br>552 mg/m³ |
| Formaldehyde (2)<br>CAS: 50-00-0 | WEL (8h)<br>WEL (15 min) | 2 ppm<br>2 ppm | 2.5 mg/m³<br>2.5 mg/m³ |
| Magnesium oxide<br>CAS: 1309-48-4 | WEL (8h)<br>WEL (15 min) | | 4 mg/m³ |
| methanol (1)<br>CAS: 67-56-1 | WEL (8h)<br>WEL (15 min) | 200 ppm<br>250 ppm | 266 mg/m³<br>333 mg/m³ |
| ethanol<br>CAS: 64-17-5 | WEL (8h)<br>WEL (15 min) | 1000 ppm | 1920 mg/m³ |
| Rosin<br>CAS: 8050-09-7 | WEL (8h)<br>WEL (15 min) | | 0.05 mg/m³<br>0.15 mg/m³ |
| Talc<br>CAS: 14807-96-6 | WEL (8h)<br>WEL (15 min) | | 1 mg/m³ |

**Biological limit values:**

- CONTINUED ON NEXT PAGE -





## SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION (continued)

BIOLOGICAL MONITORING GUIDANCE VALUES (BMGVS) - EH40/2005

| Identification | NULL | NULL | NULL |
|---|---|---|---|
| Butanone<br>CAS: 78-93-3 | 5 mg/L | Butan-2-one in urine | Post shift |
| Xylene<br>CAS: 1330-20-7 | 1030 mg/g (NULL) | Methyl hippuric acid in urine | Post shift |

**DNEL (Workers):**

| Identification | | Short exposure | | Long exposure | |
|---|---|---|---|---|---|
| | | Systemic | Local | Systemic | Local |
| cyclohexane | Oral | Not relevant | Not relevant | Not relevant | Not relevant |
| CAS: 110-82-7 | Dermal | Not relevant | Not relevant | 2016 mg/kg | Not relevant |
| EC: 203-806-2 | Inhalation | 1400 mg/m³ | 1400 mg/m³ | 700 mg/m³ | 700 mg/m³ |
| acetone | Oral | Not relevant | Not relevant | Not relevant | Not relevant |
| CAS: 67-64-1 | Dermal | Not relevant | Not relevant | 186 mg/kg | Not relevant |
| EC: 200-662-2 | Inhalation | Not relevant | 2420 mg/m³ | 1210 mg/m³ | Not relevant |
| Hydrocarbons, C7-C9,n-alkanes, iso-alkanes, cyclics | Oral | Not relevant | Not relevant | Not relevant | Not relevant |
| CAS: Non-applicable | Dermal | Not relevant | Not relevant | 773 mg/kg | Not relevant |
| EC: 920-750-0 | Inhalation | Not relevant | Not relevant | 2035 mg/m³ | Not relevant |
| Butanone | Oral | Not relevant | Not relevant | Not relevant | Not relevant |
| CAS: 78-93-3 | Dermal | Not relevant | Not relevant | 1161 mg/kg | Not relevant |
| EC: 201-159-0 | Inhalation | Not relevant | Not relevant | 600 mg/m³ | Not relevant |
| Hydrocarbons, C7, n-alkanes, isoalkanes, cyclics | Oral | Not relevant | Not relevant | Not relevant | Not relevant |
| CAS: 64742-49-0 | Dermal | Not relevant | Not relevant | 300 mg/kg | Not relevant |
| EC: 927-510-4 | Inhalation | Not relevant | Not relevant | 2085 mg/m³ | Not relevant |
| ethanol | Oral | Not relevant | Not relevant | Not relevant | Not relevant |
| CAS: 64-17-5 | Dermal | Not relevant | Not relevant | 343 mg/kg | Not relevant |
| EC: 200-578-6 | Inhalation | Not relevant | Not relevant | 950 mg/m³ | Not relevant |
| Formaldehyde, oligomeric reaction products with phenol | Oral | Not relevant | Not relevant | Not relevant | Not relevant |
| CAS: 9003-35-4 | Dermal | Not relevant | Not relevant | 28 mg/kg | Not relevant |
| EC: 500-005-2 | Inhalation | Not relevant | Not relevant | 98.7 mg/m³ | Not relevant |
| Phenol, 4-methyl-, reaction products with dicyclopentadiene and isobutylene | Oral | Not relevant | Not relevant | Not relevant | Not relevant |
| CAS: 68610-51-5 | Dermal | Not relevant | Not relevant | 0.42 mg/kg | Not relevant |
| EC: 271-867-2 | Inhalation | Not relevant | Not relevant | 0.29 mg/m³ | Not relevant |

**DNEL (General population):**

| Identification | | Short exposure | | Long exposure | |
|---|---|---|---|---|---|
| | | Systemic | Local | Systemic | Local |
| cyclohexane | Oral | Not relevant | Not relevant | 59.4 mg/kg | Not relevant |
| CAS: 110-82-7 | Dermal | Not relevant | Not relevant | 1186 mg/kg | Not relevant |
| EC: 203-806-2 | Inhalation | 412 mg/m³ | 412 mg/m³ | 206 mg/m³ | 206 mg/m³ |
| acetone | Oral | Not relevant | Not relevant | 62 mg/kg | Not relevant |
| CAS: 67-64-1 | Dermal | Not relevant | Not relevant | 62 mg/kg | Not relevant |
| EC: 200-662-2 | Inhalation | Not relevant | Not relevant | 200 mg/m³ | Not relevant |
| Hydrocarbons, C7-C9,n-alkanes, iso-alkanes, cyclics | Oral | Not relevant | Not relevant | 699 mg/kg | Not relevant |
| CAS: Non-applicable | Dermal | Not relevant | Not relevant | 699 mg/kg | Not relevant |
| EC: 920-750-0 | Inhalation | Not relevant | Not relevant | 608 mg/m³ | Not relevant |
| Butanone | Oral | Not relevant | Not relevant | 31 mg/kg | Not relevant |
| CAS: 78-93-3 | Dermal | Not relevant | Not relevant | 412 mg/kg | Not relevant |
| EC: 201-159-0 | Inhalation | Not relevant | Not relevant | 106 mg/m³ | Not relevant |
| Hydrocarbons, C7, n-alkanes, isoalkanes, cyclics | Oral | Not relevant | Not relevant | 149 mg/kg | Not relevant |
| CAS: 64742-49-0 | Dermal | Not relevant | Not relevant | 149 mg/kg | Not relevant |
| EC: 927-510-4 | Inhalation | Not relevant | Not relevant | 447 mg/m³ | Not relevant |

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## SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION (continued)

| Identification | | Short exposure | | Long exposure | |
|---|---|---|---|---|---|
| | | Systemic | Local | Systemic | Local |
| ethanol | Oral | Not relevant | Not relevant | 87 mg/kg | Not relevant |
| CAS: 64-17-5 | Dermal | Not relevant | Not relevant | 206 mg/kg | Not relevant |
| EC: 200-578-6 | Inhalation | Not relevant | Not relevant | 114 mg/m³ | Not relevant |
| Formaldehyde, oligomeric reaction products with phenol | Oral | Not relevant | Not relevant | 10 mg/kg | Not relevant |
| CAS: 9003-35-4 | Dermal | Not relevant | Not relevant | 10 mg/kg | Not relevant |
| EC: 500-005-2 | Inhalation | Not relevant | Not relevant | 14.8 mg/m³ | Not relevant |
| Phenol, 4-methyl-, reaction products with dicyclopentadiene and isobutylene | Oral | Not relevant | Not relevant | 0.04 mg/kg | Not relevant |
| CAS: 68610-51-5 | Dermal | Not relevant | Not relevant | 0.21 mg/kg | Not relevant |
| EC: 271-867-2 | Inhalation | Not relevant | Not relevant | 0.07 mg/m³ | Not relevant |

**PNEC:**

| Identification | | | | |
|---|---|---|---|---|
| cyclohexane | STP | 3.24 mg/L | Fresh water | 0.207 mg/L |
| CAS: 110-82-7 | Soil | 3.38 mg/kg | Marine water | 0.207 mg/L |
| EC: 203-806-2 | Intermittent | 0.207 mg/L | Sediment (Fresh water) | 16.68 mg/kg |
| | Oral | Not relevant | Sediment (Marine water) | 16.68 mg/kg |
| acetone | STP | 100 mg/L | Fresh water | 10.6 mg/L |
| CAS: 67-64-1 | Soil | 29.5 mg/kg | Marine water | 1.06 mg/L |
| EC: 200-662-2 | Intermittent | 21 mg/L | Sediment (Fresh water) | 30.4 mg/kg |
| | Oral | Not relevant | Sediment (Marine water) | 3.04 mg/kg |
| Butanone | STP | 709 mg/L | Fresh water | 55.8 mg/L |
| CAS: 78-93-3 | Soil | 22.5 mg/kg | Marine water | 55.8 mg/L |
| EC: 201-159-0 | Intermittent | 55.8 mg/L | Sediment (Fresh water) | 284.74 mg/kg |
| | Oral | 1 g/kg | Sediment (Marine water) | 284.7 mg/kg |
| ethanol | STP | 580 mg/L | Fresh water | 0.96 mg/L |
| CAS: 64-17-5 | Soil | 0.63 mg/kg | Marine water | 0.79 mg/L |
| EC: 200-578-6 | Intermittent | 2.75 mg/L | Sediment (Fresh water) | 3.6 mg/kg |
| | Oral | 0.38 g/kg | Sediment (Marine water) | 2.9 mg/kg |
| Formaldehyde, oligomeric reaction products with phenol | STP | Not relevant | Fresh water | 0.172 mg/L |
| CAS: 9003-35-4 | Soil | 0.0284 mg/kg | Marine water | 0.0172 mg/L |
| EC: 500-005-2 | Intermittent | 1.72 mg/L | Sediment (Fresh water) | 0.647 mg/kg |
| | Oral | Not relevant | Sediment (Marine water) | 0.0647 mg/kg |
| Phenol, 4-methyl-, reaction products with dicyclopentadiene and isobutylene | STP | 100 mg/L | Fresh water | 0.01 mg/L |
| CAS: 68610-51-5 | Soil | 85.16 mg/kg | Marine water | 0.002 mg/L |
| EC: 271-867-2 | Intermittent | 0.002 mg/L | Sediment (Fresh water) | 426.26 mg/kg |
| | Oral | 0.0017 g/kg | Sediment (Marine water) | 85.25 mg/kg |

### 8.2 Exposure controls:

A.- Individual protection measures, such as personal protective equipment

As a preventative measure it is recommended to use basic Personal Protective Equipment, with the corresponding <<UKCA marking>> or <<CE marking>>. For more information on Personal Protective Equipment (storage, use, cleaning, maintenance, class of protection,...) consult the information leaflet provided by the manufacturer. For more information see subsection 7.1. All information contained herein is a recommendation which needs some specification from the labour risk prevention services as it is not known whether the company has additional measures at its disposal.

B.- Respiratory protection

| Pictogram | PPE | Remarks |
|---|---|---|
|  Mandatory respiratory tract protection | Filter mask for gases, vapours and particles (Filter type: AX) | Replace when an increase in resistence to breathing is observed and/or a smell or taste of the contaminant is detected. |

C.- Specific protection for the hands

- CONTINUED ON NEXT PAGE -

## SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION (continued)

| Pictogram | PPE | Remarks |
|---|---|---|
|  Mandatory hand protection | Chemical protective gloves | Replace the gloves at any sign of deterioration. |

As the product is a mixture of several substances, the resistance of the glove material can not be calculated in advance with total reliability and has therefore to be checked prior to the application.

D.- Eye and face protection

| Pictogram | PPE | Remarks |
|---|---|---|
|  Mandatory face protection | Panoramic glasses against splash/projections. | Clean daily and disinfect periodically according to the manufacturer´s instructions. Use if there is a risk of splashing. |

E.- Body protection

| Pictogram | PPE | Remarks |
|---|---|---|
|  Mandatory complete body protection | Disposable clothing for protection against chemical risks, with antistatic and fireproof properties | For professional use only. Clean periodically according to the manufacturer´s instructions. |
|  Mandatory foot protection | Safety footwear for protection against chemical risk, with antistatic and heat resistant properties | Replace boots at any sign of deterioration. |

F.- Additional emergency measures

| Emergency measure | Standards | Emergency measure | Standards |
|---|---|---|---|
|  Emergency shower | ANSI Z358-1<br>ISO 3864-1:2011, ISO 3864-4:2011 |  Eyewash stations | DIN 12 899<br>ISO 3864-1:2011, ISO 3864-4:2011 |

**Environmental exposure controls:**

In accordance with the community legislation for the protection of the environment it is recommended to avoid environmental spillage of both the product and its container. For additional information see subsection 7.1.D

**The Volatile Organic Compounds in Paints, Varnishes and Vehicle Refinishing Products Regulations 2012:**

V.O.C. (Supply): 81.68 % weight

V.O.C. density at 20 ºC: Not relevant

## SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

**9.1 Information on basic physical and chemical properties:**

For complete information see the product datasheet.

**Appearance:**

| | |
|---|---|
| Physical state at 20 ºC: | Liquid |
| Appearance: | Transparent |
| Colour: | Amber |
| Odour: | Solvent |
| Odour threshold: | Not relevant * |

**Volatility:**

*Not relevant due to the nature of the product, not providing information property of its hazards.

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## SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES (continued)

| | |
|---|---|
| Boiling point at atmospheric pressure: | 56 ºC |
| Vapour pressure at 20 ºC: | 13125 Pa |
| Vapour pressure at 50 ºC: | 45685.56 Pa (45.69 kPa) |
| Evaporation rate at 20 ºC: | Not relevant * |
| **Product description:** | |
| Density at 20 ºC: | Not relevant * |
| Relative density at 20 ºC: | 0.818 |
| Dynamic viscosity at 20 ºC: | 120 - 280 cP |
| Kinematic viscosity at 20 ºC: | >20.5 mm²/s |
| Kinematic viscosity at 40 ºC: | Not relevant * |
| Concentration: | Not relevant * |
| pH: | Not relevant * |
| Vapour density at 20 ºC: | Not relevant * |
| Partition coefficient n-octanol/water 20 ºC: | Not relevant * |
| Solubility in water at 20 ºC: | Not relevant * |
| Solubility properties: | Not relevant * |
| Decomposition temperature: | Not relevant * |
| Melting point/freezing point: | Not relevant * |
| **Flammability:** | |
| Flash Point: | -17 ºC |
| Flammability (solid, gas): | Not relevant * |
| Autoignition temperature: | >200 ºC |
| Lower flammability limit: | 0.6 % Volume |
| Upper flammability limit: | 14.3 % Volume |
| **Particle characteristics:** | |
| Median equivalent diameter: | Non-applicable |

**9.2 Other information:**

**Information with regard to physical hazard classes:**

| | |
|---|---|
| Explosive properties: | Not relevant * |
| Oxidising properties: | Not relevant * |
| Corrosive to metals: | Not relevant * |
| Heat of combustion: | Not relevant * |
| Aerosols-total percentage (by mass) of flammable components: | Not relevant * |
| **Other safety characteristics:** | |
| Surface tension at 20 ºC: | Not relevant * |
| Refraction index: | Not relevant * |

*Not relevant due to the nature of the product, not providing information property of its hazards.

## SECTION 10: STABILITY AND REACTIVITY

**10.1 Reactivity:**

No hazardous reactions are expected because the product is stable under recommended storage conditions. See section 7 from Safety Data Sheet.

**10.2 Chemical stability:**

Chemically stable under the indicated conditions of storage, handling and use.

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## SECTION 10: STABILITY AND REACTIVITY (continued)

**10.3 Possibility of hazardous reactions:**

Under the specified conditions, hazardous reactions that lead to excessive temperatures or pressure are not expected.

**10.4 Conditions to avoid:**

Applicable for handling and storage at room temperature:

| Shock and friction | Contact with air | Increase in temperature | Sunlight | Humidity |
|---|---|---|---|---|
| Not applicable | Not applicable | Risk of combustion | Avoid direct impact | Not applicable |

**10.5 Incompatible materials:**

| Acids | Water | Oxidising materials | Combustible materials | Others |
|---|---|---|---|---|
| Avoid strong acids | Not applicable | Avoid direct impact | Not applicable | Avoid alkalis or strong bases |

**10.6 Hazardous decomposition products:**

See subsection 10.3, 10.4 and 10.5 to find out the specific decomposition products. Depending on the decomposition conditions, complex mixtures of chemical substances can be released: carbon dioxide ($CO_2$), carbon monoxide and other organic compounds.

## SECTION 11: TOXICOLOGICAL INFORMATION

**11.1 Information on toxicological effects:**

The experimental information related to the toxicological properties of the product itself is not available

**Dangerous health implications:**

In case of exposure that is repetitive, prolonged or at concentrations higher than the recommended occupational exposure limits, adverse effects on health may result, depending on the means of exposure:

A- Ingestion (acute effect):

- Acute toxicity: Based on available data, the classification criteria are not met, as it does not contain substances classified as hazardous for consumption. For more information see section 3
- Corrosivity/Irritability: The consumption of a considerable dose can cause irritation in the throat, abdominal pain, nausea and vomiting.

B- Inhalation (acute effect):

- Acute toxicity : Based on available data, the classification criteria are not met, as it does not contain substances classified as hazardous for inhalation. For more information see section 3.
- Corrosivity/Irritability: Based on available data, the classification criteria are not met, as it does not contain substances classified as hazardous for this effect. For more information see section 3.

C- Contact with the skin and the eyes (acute effect):

- Contact with the skin: Produces skin inflammation.
- Contact with the eyes: Produces eye damage after contact.

D- CMR effects (carcinogenicity, mutagenicity and toxicity to reproduction):

- Carcinogenicity: Based on available data, the classification criteria are not met, as it does not contain substances classified as hazardous for the effects mentioned. For more information see section 3.
  IARC: Hydrocarbons, C7, n-alkanes, isoalkanes, cyclics (3); Xylene (3); Ethylbenzene (2B); Formaldehyde (1); ethanol (1); Talc (3)
- Mutagenicity: Based on available data, the classification criteria are not met, as it does not contain substances classified as hazardous for this effect. For more information see section 3.
- Reproductive toxicity: Based on available data, the classification criteria are not met. However, it does contain substances classified as hazardous for this effect. For more information see section 3.

E- Sensitizing effects:

- Respiratory: Based on available data, the classification criteria are not met, as it does not contain substances classified as hazardous with sensitising effects. For more information see section 3.
- Skin: Prolonged contact with the skin can result in episodes of allergic contact dermatitis.

F- Specific target organ toxicity (STOT) - single exposure:

Exposure in high concentration can interfere with the central nervous system causing headache, dizziness, vertigo, nausea, vomiting, confusion, and in serious cases, loss of consciousness.

G- Specific target organ toxicity (STOT)-repeated exposure:

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## SECTION 11: TOXICOLOGICAL INFORMATION (continued)

- Specific target organ toxicity (STOT)-repeated exposure: Based on available data, the classification criteria are not met, as it does not contain substances classified as hazardous for this effect. For more information see section 3.
- Skin: Based on available data, the classification criteria are not met. However, it does contain substances which are classified as dangerous due to repetitive exposure. For more information see section 3.

H- Aspiration hazard:

Based on available data, the classification criteria are not met. However, it does contain substances classified as hazardous for this effect. For more information see section 3.

**Other information:**

Not relevant

**Specific toxicology information on the substances:**

| Identification | Acute toxicity | | Genus |
|---|---|---|---|
| Hydrocarbons, C7-C9,n-alkanes, iso-alkanes, cyclics<br>CAS: Non-applicable | LD50 oral | >5840 mg/kg | Rat |
| | LD50 dermal | >2000 mg/kg | Rabbit |
| | LC50 inhalation | >23.3 mg/L (4 h) | Rat |
| acetone<br>CAS: 67-64-1 | LD50 oral | 5800 mg/kg | Rat |
| | LD50 dermal | 7426 mg/kg | Rabbit |
| | LC50 inhalation | 76 mg/L (4 h) | Rat |
| Butanone<br>CAS: 78-93-3 | LD50 oral | 4000 mg/kg | Rat |
| | LD50 dermal | 6400 mg/kg | Rabbit |
| | LC50 inhalation | 23.5 mg/L (4 h) | Rat |
| ethanol<br>CAS: 64-17-5 | LD50 oral | 6200 mg/kg | Rat |
| | LD50 dermal | 20000 mg/kg | Rabbit |
| | LC50 inhalation | 124.7 mg/L (4 h) | Rat |
| cyclohexane<br>CAS: 110-82-7 | LD50 oral | 5100 mg/kg | Rat |
| | LD50 dermal | | |
| | LC50 inhalation | | |
| Phenol, 4-methyl-, reaction products with dicyclopentadiene and isobutylene<br>CAS: 68610-51-5 | LD50 oral | >5000 mg/kg | Rat |
| | LD50 dermal | | |
| | LC50 inhalation | | |

## SECTION 12: ECOLOGICAL INFORMATION

The experimental information related to the eco-toxicological properties of the product itself is not available

Very toxic to aquatic life with long lasting effects.

**12.1 Toxicity:**

**Acute toxicity:**

| Identification | Concentration | | Species | Genus |
|---|---|---|---|---|
| cyclohexane<br>CAS: 110-82-7 | LC50 | >0.1 - 1 mg/L (96 h) | | Fish |
| | EC50 | >0.1 - 1 mg/L (48 h) | | Crustacean |
| | EC50 | >0.1 - 1 mg/L (72 h) | | Algae |
| acetone<br>CAS: 67-64-1 | LC50 | 5540 mg/L (96 h) | Oncorhynchus mykiss | Fish |
| | EC50 | 8800 mg/L (48 h) | Daphnia pulex | Crustacean |
| | EC50 | 3400 mg/L (48 h) | Chlorella pyrenoidosa | Algae |
| Hydrocarbons, C7-C9,n-alkanes, iso-alkanes, cyclics<br>CAS: Non-applicable | LC50 | >1 - 10 mg/L (96 h) | | Fish |
| | EC50 | >1 - 10 mg/L (48 h) | | Crustacean |
| | EC50 | >1 - 10 mg/L (72 h) | | Algae |
| Butanone<br>CAS: 78-93-3 | LC50 | 3220 mg/L (96 h) | Pimephales promelas | Fish |
| | EC50 | 5091 mg/L (48 h) | Daphnia magna | Crustacean |
| | EC50 | 4300 mg/L (168 h) | Scenedesmus quadricauda | Algae |

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## SECTION 12: ECOLOGICAL INFORMATION (continued)

| Identification | Concentration | | Species | Genus |
|---|---|---|---|---|
| Hydrocarbons, C7, n-alkanes, isoalkanes, cyclics | LC50 | >1 - 10 mg/L (96 h) | | Fish |
| CAS: 64742-49-0 | EC50 | >1 - 10 mg/L (48 h) | | Crustacean |
| | EC50 | >1 - 10 mg/L (72 h) | | Algae |
| ethanol | LC50 | 11000 mg/L (96 h) | Alburnus alburnus | Fish |
| CAS: 64-17-5 | EC50 | 9268 mg/L (48 h) | Daphnia magna | Crustacean |
| | EC50 | 1450 mg/L (192 h) | Microcystis aeruginosa | Algae |

**Chronic toxicity:**

| Identification | Concentration | | Species | Genus |
|---|---|---|---|---|
| acetone | NOEC | Not relevant | | |
| CAS: 67-64-1 | NOEC | 2212 mg/L | Daphnia magna | Crustacean |
| Hydrocarbons, C7, n-alkanes, isoalkanes, cyclics | NOEC | Not relevant | | |
| CAS: 64742-49-0 | NOEC | 0.17 mg/L | Daphnia magna | Crustacean |
| ethanol | NOEC | 250 mg/L | Danio rerio | Fish |
| CAS: 64-17-5 | NOEC | 2 mg/L | Ceriodaphnia dubia | Crustacean |

### 12.2 Persistence and degradability:

**Substance-specific information:**

| Identification | Degradability | | Biodegradability | |
|---|---|---|---|---|
| cyclohexane | BOD5 | Not relevant | Concentration | 100 mg/L |
| CAS: 110-82-7 | COD | Not relevant | Period | 28 days |
| | BOD5/COD | Not relevant | % Biodegradable | 0 % |
| acetone | BOD5 | Not relevant | Concentration | 100 mg/L |
| CAS: 67-64-1 | COD | Not relevant | Period | 28 days |
| | BOD5/COD | Not relevant | % Biodegradable | 96 % |
| Hydrocarbons, C7-C9,n-alkanes, iso-alkanes, cyclics | BOD5 | Not relevant | Concentration | Not relevant |
| CAS: Non-applicable | COD | Not relevant | Period | 28 days |
| | BOD5/COD | Not relevant | % Biodegradable | 98 % |
| Butanone | BOD5 | 2.03 g O2/g | Concentration | Not relevant |
| CAS: 78-93-3 | COD | 2.31 g O2/g | Period | 20 days |
| | BOD5/COD | 0.88 | % Biodegradable | 89 % |
| Hydrocarbons, C7, n-alkanes, isoalkanes, cyclics | BOD5 | Not relevant | Concentration | Not relevant |
| CAS: 64742-49-0 | COD | Not relevant | Period | 14 days |
| | BOD5/COD | Not relevant | % Biodegradable | 95 % |
| ethanol | BOD5 | Not relevant | Concentration | 100 mg/L |
| CAS: 64-17-5 | COD | Not relevant | Period | 14 days |
| | BOD5/COD | Not relevant | % Biodegradable | 89 % |
| Formaldehyde, oligomeric reaction products with phenol | BOD5 | 0.5 g O2/g | Concentration | Not relevant |
| CAS: 9003-35-4 | COD | Not relevant | Period | Not relevant |
| | BOD5/COD | Not relevant | % Biodegradable | Not relevant |

### 12.3 Bioaccumulative potential:

**Substance-specific information:**

| Identification | Bioaccumulation potential | |
|---|---|---|
| cyclohexane | BCF | 66 |
| CAS: 110-82-7 | Pow Log | 3.44 |
| | Potential | Moderate |
| acetone | BCF | 1 |
| CAS: 67-64-1 | Pow Log | -0.24 |
| | Potential | Low |
| Butanone | BCF | 3 |
| CAS: 78-93-3 | Pow Log | 0.29 |
| | Potential | Low |

- CONTINUED ON NEXT PAGE -





## SECTION 12: ECOLOGICAL INFORMATION (continued)

| Identification | Bioaccumulation potential | |
|---|---|---|
| ethanol<br>CAS: 64-17-5 | BCF | 3 |
| | Pow Log | -0.31 |
| | Potential | Low |
| Formaldehyde, oligomeric reaction products with phenol<br>CAS: 9003-35-4 | BCF | 8142 |
| | Pow Log | 3.56 |
| | Potential | Very High |

**12.4 Mobility in soil:**

| Identification | Absorption/desorption | | Volatility | |
|---|---|---|---|---|
| cyclohexane<br>CAS: 110-82-7 | Koc | Not relevant | Henry | Not relevant |
| | Conclusion | Not relevant | Dry soil | Not relevant |
| | Surface tension | 2.465E-2 N/m (25 ºC) | Moist soil | Not relevant |
| acetone<br>CAS: 67-64-1 | Koc | 1 | Henry | 2.93 Pa·m³/mol |
| | Conclusion | Very High | Dry soil | Yes |
| | Surface tension | 2.304E-2 N/m (25 ºC) | Moist soil | Yes |
| Butanone<br>CAS: 78-93-3 | Koc | 30 | Henry | 5.77 Pa·m³/mol |
| | Conclusion | Very High | Dry soil | Yes |
| | Surface tension | 2.396E-2 N/m (25 ºC) | Moist soil | Yes |
| ethanol<br>CAS: 64-17-5 | Koc | 1 | Henry | 4.61E-1 Pa·m³/mol |
| | Conclusion | Very High | Dry soil | Yes |
| | Surface tension | 2.339E-2 N/m (25 ºC) | Moist soil | Yes |
| Formaldehyde, oligomeric reaction products with phenol<br>CAS: 9003-35-4 | Koc | 636795 | Henry | Not relevant |
| | Conclusion | Immobile | Dry soil | No |
| | Surface tension | Not relevant | Moist soil | No |

**12.5 Results of PBT and vPvB assessment:**

Product does not meet PBT/vPvB criteria

**12.6 Other adverse effects:**

Not described

## SECTION 13: DISPOSAL CONSIDERATIONS

**13.1 Waste treatment methods:**

| Code | Description | Waste class |
|---|---|---|
| 08 04 09* | waste adhesives and sealants containing organic solvents or other hazardous substances | Hazardous |

**Type of waste:**

HP14 Ecotoxic, HP3 Flammable, HP5 Specific Target Organ Toxicity (STOT)/Aspiration Toxicity, HP4 Irritant — skin irritation and eye damage

**Waste management (disposal and evaluation):**

Consult the authorized waste service manager on the assessment and disposal operations in accordance The Waste (England & Wales) Regulations 2011, 2011 No. 988. As under 15 01 of the code and in case the container has been in direct contact with the product, it will be processed the same way as the actual product. Otherwise, it will be processed as non-hazardous residue. Waste should not be disposed of to drains. See paragraph 6.2.

**Regulations related to waste management:**

In accordance with Annex II of UK REACH the provisions related to waste management are stated:

UK legislation: The Waste (England & Wales) Regulations 2011.

## SECTION 14: TRANSPORT INFORMATION

**Transport of dangerous goods by land:**

With regard to ADR 2023 and RID 2023:

- CONTINUED ON NEXT PAGE -

## SECTION 14: TRANSPORT INFORMATION (continued)



| | | |
|---|---|---|
| **14.1** | **UN number:** | UN1133 |
| **14.2** | **UN proper shipping name:** | ADHESIVES |
| **14.3** | **Transport hazard class(es):** | 3 |
| | Labels: | 3 |
| **14.4** | **Packing group:** | II |
| **14.5** | **Environmental hazards:** | Yes |
| **14.6** | **Special precautions for user** | |
| | Tunnel restriction code: | D/E |
| | Physico-Chemical properties: | see section 9 |
| | Limited quantities: | 5 L |
| **14.7** | **Transport in bulk according to Annex II of Marpol and the IBC Code:** | Not relevant |

**Transport of dangerous goods by sea:**

With regard to IMDG 41-22:



| | | |
|---|---|---|
| **14.1** | **UN number:** | UN1133 |
| **14.2** | **UN proper shipping name:** | ADHESIVES |
| **14.3** | **Transport hazard class(es):** | 3 |
| | Labels: | 3 |
| **14.4** | **Packing group:** | II |
| **14.5** | **Marine pollutant:** | Yes |
| **14.6** | **Special precautions for user** | |
| | Special regulations: | Not relevant |
| | EmS Codes: | F-E, S-D |
| | Physico-Chemical properties: | see section 9 |
| | Limited quantities: | 5 L |
| | Segregation group: | Not relevant |
| **14.7** | **Transport in bulk according to Annex II of Marpol and the IBC Code:** | Not relevant |

**Transport of dangerous goods by air:**

With regard to IATA/ICAO 2024:



| | | |
|---|---|---|
| **14.1** | **UN number:** | UN1133 |
| **14.2** | **UN proper shipping name:** | ADHESIVES |
| **14.3** | **Transport hazard class(es):** | 3 |
| | Labels: | 3 |
| **14.4** | **Packing group:** | II |
| **14.5** | **Environmental hazards:** | Yes |
| **14.6** | **Special precautions for user** | |
| | Physico-Chemical properties: | see section 9 |
| **14.7** | **Transport in bulk according to Annex II of Marpol and the IBC Code:** | Not relevant |

## SECTION 15: REGULATORY INFORMATION

**15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture:**

- Substances listed in UK candidate list of substances of very high concern (SVHCs): Not relevant
- Substances listed in UK REACH Authorisation List (Annex 14): Not relevant

**The Control of Major Accident Hazards Regulations 2015:**

| Section | Description | Lower-tier requirements | Upper-tier requirements |
|---|---|---|---|
| P5c | FLAMMABLE LIQUIDS | 5000 | 50000 |
| E1 | ENVIRONMENTAL HAZARDS | 100 | 200 |

- CONTINUED ON NEXT PAGE -





## SECTION 15: REGULATORY INFORMATION (continued)

**Restrictions to commercialisation and the use of certain dangerous substances and mixtures (Annex XVII UK REACH, etc ....):**

Regulation (EU) 2019/1148 on the marketing and use of explosives precursors: Contains acetone. Product under the provisions of Article 9. However, products that contain explosives precursors only to such a small extent and in such complex mixtures that the extraction of the explosives precursors is technically extremely difficult should be excluded from the scope of this Regulation.
Shall not be used in:
—ornamental articles intended to produce light or colour effects by means of different phases, for example in ornamental lamps and ashtrays,
—tricks and jokes,
—games for one or more participants, or any article intended to be used as such, even with ornamental aspects.

**Specific provisions in terms of protecting people or the environment:**

It is recommended to use the information included in this safety data sheet as a basis for conducting workplace-specific risk assessments in order to establish the necessary risk prevention measures for the handling, use, storage and disposal of this product.

**Other legislation:**

The REACH etc. (Amendment etc.) (EU Exit) Regulations 2020.
The Chemicals (Health and Safety) and Genetically Modified Organisms (Contained Use) (Amendment etc.) (EU Exit) Regulations 2020.
Control of Substances Hazardous to Health Regulations 2002 (as amended)
EH40/2005 Workplace exposure limits.

## SECTION 16: OTHER INFORMATION

**Legislation related to safety data sheets:**

This safety data sheet has been designed in accordance with ANNEX II-The REACH etc. (Amendment etc.) (EU Exit) Regulations 2020.

**Texts of the legislative phrases mentioned in section 2:**

H315: Causes skin irritation.
H336: May cause drowsiness or dizziness.
H400: Very toxic to aquatic life.
H410: Very toxic to aquatic life with long lasting effects.
H317: May cause an allergic skin reaction.
H225: Highly flammable liquid and vapour.
H319: Causes serious eye irritation.

**Texts of the legislative phrases mentioned in section 3:**

The phrases indicated do not refer to the product itself; they are present merely for informative purposes and refer to the individual components which appear in section 3

**GB CLP Regulation (UK S.I. 2019/720 and UK S.I. 2020/1567):**

Aquatic Acute 1: H400 - Very toxic to aquatic life.
Aquatic Chronic 1: H410 - Very toxic to aquatic life with long lasting effects.
Aquatic Chronic 2: H411 - Toxic to aquatic life with long lasting effects.
Aquatic Chronic 4: H413 - May cause long lasting harmful effects to aquatic life.
Asp. Tox. 1: H304 - May be fatal if swallowed and enters airways.
Eye Irrit. 2: H319 - Causes serious eye irritation.
Flam. Liq. 2: H225 - Highly flammable liquid and vapour.
Repr. 2: H361 - Suspected of damaging fertility or the unborn child.
Skin Irrit. 2: H315 - Causes skin irritation.
Skin Sens. 1: H317 - May cause an allergic skin reaction.
STOT SE 3: H336 - May cause drowsiness or dizziness.

**Classification procedure:**

Skin Irrit. 2: Calculation method
STOT SE 3: Calculation method
Aquatic Acute 1: Calculation method
Aquatic Chronic 1: Calculation method
Skin Sens. 1: Calculation method
Flam. Liq. 2: Calculation method (2.6.4.3)
Eye Irrit. 2: Calculation method

**Advice related to training:**

Training is recommended in order to prevent industrial risks for staff using this product and to facilitate their comprehension and interpretation of this safety data sheet, as well as the label on the product.

- CONTINUED ON NEXT PAGE -





## SECTION 16: OTHER INFORMATION (continued)

**Principal bibliographical sources:**

http://echa.europa.eu
http://eur-lex.europa.eu

**Abbreviations and acronyms:**

ADR: European agreement concerning the international carriage of dangerous goods by road
IMDG: International maritime dangerous goods code
IATA: International Air Transport Association
ICAO: International Civil Aviation Organisation
COD: Chemical Oxygen Demand
BOD5: 5day biochemical oxygen demand
BCF: Bioconcentration factor
LD50: Lethal Dose 50
LC50: Lethal Concentration 50
EC50: Effective concentration 50
LogPOW: Octanolwater partition coefficient
Koc: Partition coefficient of organic carbon
UFI: unique formula identifier
IARC: International Agency for Research on Cancer

The information contained in this safety data sheet is based on sources, technical knowledge and current legislation at UK, without being able to guarantee its accuracy. This information cannot be considered a guarantee of the properties of the product, it is simply a description of the security requirements. The occupational methodology and conditions for users of this product are not within our awareness or control, and it is ultimately the responsibility of the user to take the necessary measures to obtain the legal requirements concerning the manipulation, storage, use and disposal of chemical products. The information on this safety data sheet only refers to this product, which should not be used for needs other than those specified.

- END OF SAFETY DATA SHEET -

# APPENDIX IX
# ASTON MARTIN WHEEL ARCH & ENGINE COVERS CONSTRUCTION SDS

# Safety data sheet
## according to UK REACH

Printing date 27.11.2024 Version number 27 (replaces version 26) Revision: 27.11.2024

## SECTION 1: Identification of the substance/mixture and of the company/ undertaking

· **1.1 Product identifier**
· **Trade name Jowatherm® POR 628.90**
· **1.2 Relevant identified uses of the substance or mixture and uses advised against**
No further relevant information available.
· **Application of the substance / the mixture** Adhesives

· **1.3 Details of the supplier of the safety data sheet**
· **Manufacturer/Supplier:**
Jowat SE
Ernst-Hilker-Str. 10 - 14; D - 32758 Detmold
Fon +49 (0)5231 749 0
e-mail: info@jowat.de
www.jowat.de
· **Department issuing data specification sheet:**
Environmental management
Tel. +49 5231 749 -5374 / -218 / -5460 / -5592
e-mail: umweltmanagement@jowat.de
· **Department providing the information:**
Jowat UK Ltd.
Lymedale Business Centre
Lymedale Business Park
Hooters Hall Road
Newcastle-under-Lyme
Staffordshire
ST5 9QF
Phone: +44 1782 565265
E-mail: nick.orton@jowat.co.uk
· **1.4 Emergency telephone number:**
-
Members of the public seeking specific information on poisons should contact:
In England and Wales: NHS 111 - dial 111
In Scotland: NHS 24 - dial 111

## SECTION 2: Hazards identification

· **2.1 Classification of the substance or mixture**
· **Classification according to Regulation (EC) No 1272/2008**
The product does not meet the criteria for classification according to Regulation (EC) 1272/2008.
The creation of a safety data sheet is therefore not mandatory. This document is prepared as a voluntary and additional service to provide general safety information.

· **2.2 Label elements**
· **Labelling according to Regulation (EC) No 1272/2008** not applicable
· **Hazard pictograms** not applicable
· **Signal word** not applicable
· **Hazard statements** not applicable
· **Additional information:**
Contains maleic anhydride. May produce an allergic reaction.
Safety data sheet available on request.
· **2.3 Other hazards**
· **Results of PBT and vPvB assessment**
· **PBT:** Not applicable.
· **vPvB:** Not applicable.

## SECTION 3: Composition/information on ingredients

· **3.2 Mixtures**
· **Description:** Hot melt adhesive

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# Safety data sheet
## according to UK REACH

Printing date 27.11.2024 Version number 27 (replaces version 26) Revision: 27.11.2024

**Trade name Jowatherm® POR 628.90**

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| · **Dangerous components:** | | |
|---|---|---|
| CAS: 108-31-6<br>EINECS: 203-571-6<br>registration number: 01-2119472428-31 | maleic anhydride<br>Resp. Sens. 1, H334; STOT RE 1, H372; Skin Corr. 1B, H314; Eye Dam. 1, H318; Acute Tox. 4, H302; Skin Sens. 1A, H317, EUH071<br>Specific concentration limit: Skin Sens. 1A; H317: C ≥ 0.001 % | <0.1% |

· **Additional information**
If any R-phrases (risk-phrases) are listed, please refer for the exact wording to section 16.

## SECTION 4: First aid measures

· **4.1 Description of first aid measures**
· **After inhalation** Supply fresh air; consult physician in case of symptoms.
· **After skin contact**
After contact with the molten product, cool rapidly with cold water.
Do not pull solidified product away from the skin.
Seek medical treatment.
· **After eye contact** Rinse opened eye for several minutes under running water.
· **After swallowing** In case of persistent symptoms consult physician.
· **4.2 Most important symptoms and effects, both acute and delayed**
No further relevant information available.
· **4.3 Indication of any immediate medical attention and special treatment needed**
No further relevant information available.

## SECTION 5: Firefighting measures

· **5.1 Extinguishing media**
· **Suitable extinguishing agents**
CO2, extinguishing powder or water jet. Fight larger fires with water jet or alcohol-resistant foam.
· **For safety reasons unsuitable extinguishing agents** Water with a full water jet.
· **5.2 Special hazards arising from the substance or mixture**
Can be released in case of fire
Carbon monoxide (CO)
Under certain fire conditions, traces of other toxic gases cannot be excluded.
· **5.3 Advice for firefighters**
· **Protective equipment:** Do not inhale explosion gases or combustion gases.

## SECTION 6: Accidental release measures

· **6.1 Personal precautions, protective equipment and emergency procedures**
Wear protective clothing.
· **6.2 Environmental precautions:** No special measures required.
· **6.3 Methods and material for containment and cleaning up:**
Collect mechanically.
Allow to solidify. Collect mechanically.
· **6.4 Reference to other sections**
See Section 7 for information on safe handling
See Section 8 for information on personal protection equipment.
See Section 13 for information on disposal.
No dangerous materials are released.

## SECTION 7: Handling and storage

· **7.1 Precautions for safe handling**
Store in cool, dry place in tightly closed containers.
Use only in well ventilated areas.
· **Information about protection against explosions and fires:** No special measures required.

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# Safety data sheet
## according to UK REACH

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**Trade name Jowatherm® POR 628.90**

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· **7.2 Conditions for safe storage, including any incompatibilities**
· **Storage**
· **Requirements to be met by storerooms and containers:** No special requirements.
· **Information about storage in one common storage facility:** Not required.
· **Further information about storage conditions:** None.
· **7.3 Specific end use(s)** No further relevant information available.

* 
## SECTION 8: Exposure controls/personal protection

· **8.1 Control parameters**

| · **Components with critical values that require monitoring in the workplace:** | |
|---|---|
| **108-31-6 maleic anhydride (<0.1%)** | |
| WEL | Short-term value: 3 mg/m³<br>Long-term value: 1 mg/m³<br>Sen |

· **Regulatory information** WEL: EH40/2020
· **Additional information:** The lists that were valid during the compilation were used as basis.

· **8.2 Exposure controls**
· **Appropriate engineering controls** No further data; see section 7.
· **Additional information about design of technical systems:** No further data; see section 7.
· **Individual protection measures, such as personal protective equipment**
· **General protective and hygienic measures**
Standard precautionary measures for handling chemicals are to be observed.
Keep away from food, beverages and animal feed.
Instantly remove any soiled and impregnated garments.
Wash hands during breaks and at the end of work.
Vacuum clean contaminated clothing. Do not blow or brush off contamination.
Avoid skin contact with the liquefied material.
Do not eat or drink while working.
· **Breathing equipment:** Not necessary if room is well-ventilated.
· **Hand protection** Heat resistant gloves
· **Material of gloves**
Leather gloves
Strong gloves
· **Penetration time of glove material** No special requirements.
· **Eye/face protection** Not required.

* 
## SECTION 9: Physical and chemical properties

· **9.1 Information on basic physical and chemical properties**
· **General Information**

| | |
|---|---|
| · **Physical state** | Solid. |
| · **Colour:** | According to product specification |
| · **Smell:** | Characteristic |
| · **Odour threshold:** | Not determined. |
| · **Melting point/freezing point:** | 90 °C |
| · **Boiling point or initial boiling point and boiling range** | Not determined |
| · **Flammability** | Product is not inflammable. |
| · **Lower and upper explosion limit** | |
| · **Lower:** | Not determined. |
| · **Upper:** | 28.2 Vol % |
| · **Flash point:** | >180 °C |
| · **Auto-ignition temperature:** | >300 °C (128685-99-4 ALPHA-OLEFINS(C30+)) |
| · **Decomposition temperature:** | > 250 °C |
| · **pH** | Not applicable. |

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# Safety data sheet
## according to UK REACH

Printing date 27.11.2024 Version number 27 (replaces version 26) Revision: 27.11.2024

**Trade name Jowatherm® POR 628.90**

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| | |
|---|---|
| · **Viscosity:** | |
| · **Kinematic viscosity** | Not applicable. |
| · **dynamic:** | Not applicable. |
| · **Solubility** | |
| · **Water:** | Unsoluble |
| · **Partition coefficient n-octanol/water (log value)** | Not determined. |
| · **Vapour pressure at 20 °C:** | 12 hPa<br>< 0,01 hPa |
| · **Density and/or relative density** | |
| · **Density at 20 °C** | 0.92 g/cm³ |
| · **Relative density** | Not determined. |
| · **Vapour density** | Not applicable. |

| | |
|---|---|
| · **9.2 Other information** | |
| · **VOC - Volatile Organic Compounds** | |
| · **European Union** | 0.00 % |
| · **Switzerland** | 0.00 % |
| · **U.S.A (less water and less exempts)** | 0.0 g/l / 0.00 lb/gal |
| · **Appearance:** | |
| · **Form:** | Solid. |
| · **Important information on protection of health and environment, and on safety.** | |
| · **Spontaneous combustion:** | Product does not undergo spontaneous combustion. |
| · **Explosive properties:** | Product is not explosive. |
| · **Solvent content:** | |
| · **Solid content:** | 100.0 % |
| · **Change in condition** | |
| · **Evaporation rate** | Not applicable. |

| | |
|---|---|
| · **Information with regard to physical hazard classes** | |
| · **Explosives** | not applicable |
| · **Flammable gases** | not applicable |
| · **Aerosols** | not applicable |
| · **Oxidising gases** | not applicable |
| · **Gases under pressure** | not applicable |
| · **Flammable liquids** | not applicable |
| · **Flammable solids** | not applicable |
| · **Self-reactive substances and mixtures** | not applicable |
| · **Pyrophoric liquids** | not applicable |
| · **Pyrophoric solids** | not applicable |
| · **Self-heating substances and mixtures** | not applicable |
| · **Substances and mixtures, which emit flammable gases in contact with water** | not applicable |
| · **Oxidising liquids** | not applicable |
| · **Oxidising solids** | not applicable |
| · **Organic peroxides** | not applicable |
| · **Corrosive to metals** | not applicable |
| · **Desensitised explosives** | not applicable |

## SECTION 10: Stability and reactivity

· **10.1 Reactivity** No further relevant information available.
· **10.2 Chemical stability**
· **Thermal decomposition / conditions to be avoided:**
No decomposition if used according to specifications.
To avoid thermal decomposition do not overheat.

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# Safety data sheet
## according to UK REACH



(Contd. from page 4)

· **10.3 Possibility of hazardous reactions**
Toxic fumes may be released if heated above the decomposition point
No dangerous reactions known
· **10.4 Conditions to avoid** No further relevant information available.
· **10.5 Incompatible materials:** No further relevant information available.
· **10.6 Hazardous decomposition products:**
Carbon monoxide
Inflammable gases/vapours
Carbon monoxide and carbon dioxide
Danger of toxic pyrolysis products

* 
## SECTION 11: Toxicological information

· **11.1 Information on hazard classes as defined in Regulation (EC) No 1272/2008**

· **Acute toxicity** Based on available data, the classification criteria are not met.
· **to the skin:** Based on available data, the classification criteria are not met.
· **to the eye:** Based on available data, the classification criteria are not met.
· **Respiratory or skin sensitisation** Based on available data, the classification criteria are not met.
· **Germ cell mutagenicity** Based on available data, the classification criteria are not met.
· **Carcinogenicity** Based on available data, the classification criteria are not met.
· **Reproductive toxicity** Based on available data, the classification criteria are not met.
· **STOT-single exposure** Based on available data, the classification criteria are not met.
· **STOT-repeated exposure** Based on available data, the classification criteria are not met.
· **Aspiration hazard** Based on available data, the classification criteria are not met.

· **11.2 Information on other hazards**

| · **Endocrine disrupting properties** |
|---|
| None of the ingredients is listed. |

## SECTION 12: Ecological information

· **12.1 Toxicity**
· **Aquatic toxicity:** No further relevant information available.
· **12.2 Persistence and degradability** No further relevant information available.
· **12.3 Bioaccumulative potential** No further relevant information available.
· **12.4 Mobility in soil** No further relevant information available.
· **12.5 Results of PBT and vPvB assessment**
· **PBT:** Not applicable.
· **vPvB:** Not applicable.
· **12.6 Endocrine disrupting properties**
The product does not contain substances with endocrine disrupting properties.
· **12.7 Other adverse effects**
· **Additional ecological information:**
· **General notes:** Generally not hazardous for water.

## SECTION 13: Disposal considerations

· **13.1 Waste treatment methods**
· **Recommendation**
Smaller quantities can be disposed with household garbage.
Can be reused without processing.

· **Uncleaned containers/packaging material:**
· **Recommendation:**
Non contaminated packagings can be reused.
Non contaminated packagings can be used for recycling.
Packaging with cured adhesive residues can be recycled.
Packaging with cured adhesive residues can be treated as household waste.

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# Safety data sheet
## according to UK REACH

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**Trade name Jowatherm® POR 628.90**

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## SECTION 14: Transport information

| | |
|---|---|
| · **14.1 UN number or ID number** | |
| · **ADR, ADN, IMDG, IATA** | not applicable |
| · **14.2 UN proper shipping name** | |
| · **ADR** | not applicable<br>not applicable |
| · **ADN, IMDG, IATA** | not applicable |
| · **14.3 Transport hazard class(es)** | |
| · **ADR, ADN, IMDG, IATA** | |
| · **Class** | not applicable |
| · **14.4 Packing group** | |
| · **ADR, IMDG, IATA** | not applicable |
| · **14.5 Environmental hazards:** | |
| · **Marine pollutant:** | No |
| · **14.6 Special precautions for user** | Not applicable. |
| · **14.7 Maritime transport in bulk according to IMO instruments** | Not applicable. |
| · **Transport/Additional information:** | Not dangerous according to the above specifications. |
| · **UN "Model Regulation":** | not applicable |

## SECTION 15: Regulatory information

· **15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture**
No further relevant information available.

· **Poisons Act**

| · **Regulated explosives precursors** |
|---|
| None of the ingredients is listed. |

| · **Regulated poisons** |
|---|
| None of the ingredients is listed. |

| · **Reportable explosives precursors** |
|---|
| None of the ingredients is listed. |

| · **Reportable poisons** |
|---|
| None of the ingredients is listed. |

· **15.2 Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.

## SECTION 16: Other information

These data are based on our present knowledge. They shall, however, not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.
All standard industrial precautions apply, concerning protection of health, and safe handling. The recommendations have to be examined in the context of the application for which the product is intended, and observed as necessary.

· **Relevant phrases**
H302 Harmful if swallowed.
H314 Causes severe skin burns and eye damage.
H317 May cause an allergic skin reaction.
H318 Causes serious eye damage.
H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.
H372 Causes damage to organs through prolonged or repeated exposure.
EUH071 Corrosive to the respiratory tract.

(Contd. on page 7)

# Safety data sheet
## according to UK REACH



(Contd. from page 6)

· **Abbreviations and acronyms:**
RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)
ICAO: International Civil Aviation Organisation
ADR: Accord relatif au transport international des marchandises dangereuses par route (European Agreement Concerning the International Carriage of Dangerous Goods by Road)
IMDG: International Maritime Code for Dangerous Goods
IATA: International Air Transport Association
GHS: Globally Harmonised System of Classification and Labelling of Chemicals
EINECS: European Inventory of Existing Commercial Chemical Substances
ELINCS: European List of Notified Chemical Substances
CAS: Chemical Abstracts Service (division of the American Chemical Society)
PBT: Persistent, Bioaccumulative and Toxic
vPvB: very Persistent and very Bioaccumulative
Acute Tox. 4: Acute toxicity – Category 4
Skin Corr. 1B: Skin corrosion/irritation – Category 1B
Eye Dam. 1: Serious eye damage/eye irritation – Category 1
Resp. Sens. 1: Respiratory sensitisation – Category 1
Skin Sens. 1A: Skin sensitisation – Category 1A
STOT RE 1: Specific target organ toxicity (repeated exposure) – Category 1

· *** Data modified in comparison to the previous version.**

# APPENDIX X
# ASTON MARTIN WHEEL ARCH & ENGINE COVERS (MOULDING) SDS

## SECTION 1: Identification of the substance/mixture and of the company/undertaking

### 1.1. Product identifier

ACMOS 37-9830

### 1.2. Relevant identified uses of the substance or mixture and uses advised against

**Relevant identified uses**

Release agent for PUR

**Uses advised against**

Consumer uses: Private households (= general public = consumers)
Sector of uses [SU]: 21
Do not use for private purposes (household).

Relevant identified uses - Further information:
Industrial uses: Uses of substances as such or in preparations at industrial sites
Sector of uses [SU]: 3
The product is intended for professional use.

In compliance with the conditions described in the annex to this safety data sheet.
Summary of registered and identified uses and their respective exposure scenarios: see annex to this safety data sheet.
See section 16 for a comprehensive list of uses, for which an exposure scenarion is provided as an annex.

### 1.3. Details of the supplier of the safety data sheet

**Manufacturer**

| | | | |
|---|---|---|---|
| Company name: | ACMOS CHEMIE KG | | |
| Street: | Industriestrasse 49 | | |
| Place: | D-28199 Bremen | | |
| Post-office box: | 10 10 69<br>D-28010 Bremen | | |
| Telephone: | +49 (0)421-5189-0 | Telefax: | +49 (0)421-511415 |
| e-mail: | acmos@acmos.com | | |
| Contact person: | Mr. Stephan Dryhaus | | |
| e-mail: | sds@acmos.com | | |
| Internet: | www.acmos.com | | |
| Responsible Department: | Laboratory (Division: Occupational- / Product security) - see under section 16 | | |

### 1.4. Emergency telephone number:

+49 (0)551 19240 (Emergency information service / official advisory body: Giftinformationszentrum Nord, Universität Göttingen, 24 h from mo. - su.)
Language(s) of Telephone Service: DE, EN

**Supplier**

| | | | |
|---|---|---|---|
| Company name: | ACMOS U.K. Ltd., Willow Bank House | | |
| Street: | Old Lane, Heswall | | |
| Place: | GB-CH60 1 XX Wirral, Merseyside | | |
| Telephone: | +44-(0)151-348 4849 | Telefax: | +44-(0)151-348 4850 |
| e-mail: | info@acmos.co.uk | | |
| Contact person: | Mr. Stephen Spriggs | Telephone: | +44-783 158 0003 (mobile) |

### 1.4. Emergency telephone number:

+44 111 (Emergency information service / official advisory body: National Poisons Information Service - NPIS Birmingham) (https://www.npis.org)
Language(s) of Telephone Service: EN

## SECTION 2: Hazards identification

### 2.1. Classification of the substance or mixture

**GB CLP Regulation**

Eye Irrit. 2; H319
Aquatic Chronic 2; H411

Full text of hazard statements: see SECTION 16.

### 2.2. Label elements

**GB CLP Regulation**

**Signal word:** Warning

**Pictograms:**





**Hazard statements**

| | |
|---|---|
| H319 | Causes serious eye irritation. |
| H411 | Toxic to aquatic life with long lasting effects. |

**Precautionary statements**

| | |
|---|---|
| P273 | Avoid release to the environment. |
| P280 | Wear protective gloves/protective clothing/eye protection/face protection/hearing protection. |
| P305+P351+P338 | IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. |
| P337+P313 | If eye irritation persists: Get medical advice/attention. |
| P391 | Collect spillage. |

**Special labelling of certain mixtures**

| | |
|---|---|
| EUH208 | Contains stannane, dibutylbis(dodecylthio)- (dibutyltin bis(lauryl mercaptide)); reaction mass of 5 -chloro-2-methyl-2H-isothiazol-3-one and 2-methyl-2H-isothiazol-3-one (3:1). May produce an allergic reaction.<br>Labeling according to Regulation (EU) No 528/2012 on biocides, Article 58 (3) and Regulation (EC) No 1272/2008, Article 25 (due to the specific conditions of the active substance approval): a) Contains biocidal products: Product-type 6: Preservatives for products during storage. b) Property attributed to the treated article: None c) Name of all active ingredients: See product label. d) Names of contained nanomaterials: None e) Relevant use instructions: Use personal protective equipment as required. |

**Additional advice on labelling**

Labelling according to Regulation (EC) No. 1272/2008 [CLP]

### 2.3. Other hazards

Adverse physicochemical effects:
See section 9 for physical and chemical properties.

Adverse human health effects and symptoms:
See section 11 for toxicological information.
May cause sensitisation especially in sensitive humans.

Adverse environmental effects:
See section 12 for environmental information.

Other adverse effects:
Special danger of slipping by leaking/spilling product.

Results of PBT-/vPvB-assesment:
See under section 12.5 - Results of PBT and vPvB assessment.

## SECTION 3: Composition/information on ingredients

### 3.2. Mixtures

**Chemical characterization**

Emulsion of active ingredients in water

**Hazardous components**

| CAS No | Chemical name | | | Quantity |
|---|---|---|---|---|
| | EC No | Index No | REACH No | |
| | Classification (GB CLP Regulation) | | | |
| 124-30-1 | octadecylamine | | | 1 - < 3 % |
| | 204-695-3 | 612-282-00-8 | 01-2119473804-32 | |
| | Skin Irrit. 2, Eye Dam. 1, STOT RE 2, Asp. Tox. 1, Aquatic Acute 1, Aquatic Chronic 1; H315 H318 H373 H304 H400 H410 | | | |
| 90622-57-4 | hydrocarbons, C11-C12, isoalkanes, <2% aromatics | | | 1 - < 5 % |
| | 918-167-1 | | 01-2119472146-39 | |
| | Asp. Tox. 1, Aquatic Chronic 4; H304 H413 EUH066 | | | |
| 1185-81-5 | stannane, dibutylbis(dodecylthio)- (dibutyltin bis(lauryl mercaptide)) | | | < 0,3 % |
| | 214-688-7 | | 01-2119841260-50 | |
| | Muta. 2, Repr. 1B, Acute Tox. 4, Skin Irrit. 2, Skin Sens. 1, STOT RE 1, Aquatic Acute 1, Aquatic Chronic 1; H341 H360FD H312 H315 H317 H372 H400 H410 | | | |
| 63843-89-0 | bis(1,2,2,6,6-pentamethyl-4-piperidyl) [[3,5-bis(1,1-dimethylethyl)4-hydroxyphenyl]methyl]butylmalonate | | | < 0.1 % |
| | 264-513-3 | | 01-2119978231-37 | |
| | Acute Tox. 4, STOT RE 1, Aquatic Chronic 1; H302 H372 H410 | | | |
| 90640-32-7 | amines, C16-18-alkyl | | | < 0.1 % |
| | 292-550-5 | | 01-2119473799-15 | |
| | Skin Irrit. 2, Eye Dam. 1, STOT RE 2, Asp. Tox. 1, Aquatic Acute 1, Aquatic Chronic 1; H315 H318 H373 H304 H400 H410 | | | |
| 55965-84-9 | reaction mass of 5-chloro-2-methyl-2H-isothiazol-3-one and 2-methyl-2H-isothiazol-3-one (3:1) | | | < 0,0015 % |
| | 911-418-6 | 613-167-00-5 | 01-2120764691-48 | |
| | Acute Tox. 2, Acute Tox. 2, Acute Tox. 3, Skin Corr. 1C, Eye Dam. 1, Skin Sens. 1A, Aquatic Acute 1, Aquatic Chronic 1; H330 H310 H301 H314 H318 H317 H400 H410 EUH071 | | | |

Full text of H and EUH statements: see section 16.

**Specific Conc. Limits, M-factors and ATE**

| CAS No | EC No | Chemical name | Quantity |
|---|---|---|---|
| | Specific Conc. Limits, M-factors and ATE | | |
| 124-30-1 | 204-695-3 | octadecylamine | 1 - < 3 % |
| | inhalation: LC50 = > 0,099 mg/l (dusts or mists); dermal: LD50 = > 2000 mg/kg; oral: LD50 = > 2000 mg/kg<br>M acute; H400: M=10<br>M chron.; H410: M=10 | | |
| 90622-57-4 | 918-167-1 | hydrocarbons, C11-C12, isoalkanes, <2% aromatics | 1 - < 5 % |
| | inhalation: LC50 = > 5,6 mg/l (dusts or mists); dermal: LD50 = > 5000 mg/kg; oral: LD50 = > 5000 mg/kg | | |
| 1185-81-5 | 214-688-7 | stannane, dibutylbis(dodecylthio)- (dibutyltin bis(lauryl mercaptide)) | < 0,3 % |
| | dermal: LD50 = 1000 - 2000 mg/kg; oral: LD50 = > 2000 mg/kg M acute; H400: M=1<br>M chron.; H410: M=1 | | |
| 63843-89-0 | 264-513-3 | bis(1,2,2,6,6-pentamethyl-4-piperidyl) [[3,5-bis(1,1-dimethylethyl)4-hydroxyphenyl]methyl]butylmalonate | < 0.1 % |
| | inhalation: LC50 = > 0,46 mg/l (dusts or mists); dermal: LD50 = > 3170 mg/kg; oral: LD50 = 1490 mg/kg M chron.; H410: M=10 | | |
| 90640-32-7 | 292-550-5 | amines, C16-18-alkyl | < 0.1 % |
| | dermal: LD50 = > 2000 mg/kg; oral: LD50 = > 5000 mg/kg M acute; H400: M=10<br>M chron.; H410: M=10 | | |
| 55965-84-9 | 911-418-6 | reaction mass of 5-chloro-2-methyl-2H-isothiazol-3-one and 2-methyl-2H-isothiazol-3-one (3:1) | < 0,0015 % |
| | inhalation: ATE = 0,5 mg/l (vapours); inhalation: LC50 = > 0,33 mg/l (dusts or mists); dermal: LD50 = > 87 mg/kg; oral: LD50 = 64 - 66 mg/kg Skin Corr. 1C; H314: >= 0,6 - 100 Skin Irrit. 2; H315: >= 0,06 - < 0,6 Eye Dam. 1; H318: >= 0,6 - 100 Eye Irrit. 2; H319: >= 0,06 - < 0,6 Skin Sens. 1A; H317: >= 0,0015 - 100<br>M acute; H400: M=100<br>M chron.; H410: M=100 | | |

**Further Information**

The above mentioned EC-No. (Provisional List Number 9xx-xxx-x) is a specific subset of the specified CAS-No. and was associated with the registration process automatically (without CAS-No. or numeric identifier). An official announcement by the EC inventory will follow after evaluation of substance identity by the ECHA. The new nomenclature of hydrocarbon solvents is only related with group names of the HSPA (Hydrocarbon Solvents Producers Association). The previously used CAS-No. continues serving as a reference for different global inventories. The classification of hydrocarbon mixtures made in consideration of the applicable notes in annex VI of regulation (EC) No. 1272/2008.

## SECTION 4: First aid measures

### 4.1. Description of first aid measures

**General information**

Remove affected person from the danger area and lay down.
Take off immediately all contaminated clothing and wash it before reuse.
Put victim at rest, cover with a blanket and keep warm.
Do not leave affected person unattended.
If a person vomits when lying on his back, place him in the recovery position.
If breathing is irregular or stopped, administer artificial respiration.
If unconscious but breathing normally, place in recovery position and seek medical advice.
Never give anything by mouth to an unconscious person or a person with cramps.
In the event of cardiac arrest immediately perform cardiopulmonary resuscitation.
In case of accident or unwellness, seek medical advice immediately (show directions for use or safety data sheet if possible).

Self-protection of the first aider:
Wear personal protection equipment (refer to section 8).
First Aid.

Notes for the doctor:
No special measures are necessary.

**After inhalation**

Remove victim out of the danger area.
Provide fresh air.
Consult a doctor immediately in the case of inhaling spray mist and show him packing or label.

**After contact with skin**

Wash immediately with:
Water and soap
Rub greasy ointment into the skin.
Do not wash with:
Solvents/Thinner
In case of skin irritation, consult a physician.

**After contact with eyes**

In case of contact with eyes flush immediately with plenty of flowing water for 10 to 15 minutes holding eyelids apart and consult an ophthalmologist.
Remove contact lenses, if present and easy to do. Continue rinsing.
Protect uninjured eye.

**After ingestion**

Do NOT induce vomiting.
Give nothing to eat or drink.
Never give anything by mouth to an unconscious person or a person with cramps.
Call a physician immediately.

### 4.2. Most important symptoms and effects, both acute and delayed

The following symptoms may occur:
Cough
Allergic reactions
Acidosis
Nausea

### 4.3. Indication of any immediate medical attention and special treatment needed

Treat symptomatically.

## SECTION 5: Firefighting measures

### 5.1. Extinguishing media

**Suitable extinguishing media**

Full water jet
Water spray jet
Water mist
Extinguishing powder (ABC-powder)
Foam
Carbon dioxide ($CO_2$)

Fire class: not relevant

**Unsuitable extinguishing media**

None known

### 5.2. Special hazards arising from the substance or mixture

Hazardous combustion products:
None known
The product itself does not burn.

### 5.3. Advice for firefighters

Usual measures of preventive and averting fire protection.
Co-ordinate fire-fighting measures to the fire surroundings.
Collect contaminated fire extinguishing water separately. Do not allow entering drains or surface water.
Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.

Special protective equipment for firefighters
not relevant

## SECTION 6: Accidental release measures

### 6.1. Personal precautions, protective equipment and emergency procedures

**General advice**

Avoid contact with skin, eyes and clothes.
Do not breathe vapour/aerosol.
Prevent further leakage or spillage if safe to do so.
Provide adequate ventilation.
Special danger of slipping by leaking/spilling product.

For non-emergency personnel:
Use personal protection equipment.
Walk out of the danger zone and notify trained personnel.
Emergency procedures:
Keep the factory emergency plan and the information chain.

For emergency responders:
Use personal protection equipment.
The personal protective equipment must be adapted to the situation.
Suitable material:
See under section 8.2 - Personal protection equipment.

### 6.2. Environmental precautions

Do not allow to enter into surface water or drains.
Do not allow to enter into soil/subsoil.
Ensure waste is collected and contained.
In case of gas escape or of entry into waterways, soil or drains, inform the responsible authorities.

### 6.3. Methods and material for containment and cleaning up

**Other information**

For containment:
Repair leaks if without risk.
Move containers from spill area.
Make sure spills can be contained, e.g. in sump pallets or kerbed areas.

Prevent spread over a wide area (e.g. by containment or oil barriers).
Remove from the water surface (e.g. skimming, sucking).
Cover drains.

For cleaning up:
Clean-up methods - large spillage:
Absorb with liquid-binding material (sand, diatomaceous earth, acid- or universal binding agents).
Shovel into suitable container for disposal.
Local authorities should be advised if significant spillages cannot be contained.
Clean-up methods - small spillage:
Clear spills immediately.
Wipe up with absorbent material (eg. cloth, fleece).
Collect in closed and suitable containers for disposal.
Clear contaminated areas thoroughly.
Recommended cleansing agent:
Clean with detergents. Avoid solvent cleaners.
Retain contaminated washing water and dispose it.
Ensure all waste water is collected and treated via a waste water treatment plant.
Ventilate affected area.

Suitable material for taking up:
Sand
Kieselguhr
Universal binder
Absorbing material, organic

Unsuitable material for taking up:
None known

**6.4. Reference to other sections**

Personal protection equipment: see section 8
Disposal: see section 13

## SECTION 7: Handling and storage

**7.1. Precautions for safe handling**

**Advice on safe handling**

Measures to prevent aerosol and dust generation:
All work processes must always be designed so that the following is as low as possible:
Inhalation of vapours or spray/mists
Eye contact
Skin contact

Technical ventilation of workplace
Use only in a exhaust booth with integrated air filter.
Use in ventilated spray booths only.
Recirculation of exhaust air is not recommended.
Always close containers tightly after the removal of product.

**Advice on protection against fire and explosion**

Measures to prevent fire:
The product is not: Combustible
Usual measures for fire prevention.
Fire-fighting equipment on the basis of class B.

**Further information on handling**

Environmental precautions:
Transfer wash-downs in sealed containers.
Provide for retaining containers, e.g. floor pan without outflow.
For restriction of emission on volatile organic compounds (VOC) the solvent vapours should be supplied to an exhaust air purification facility (filter, gas washer, incineration).

Advices on general occupational hygiene:

Wear personal protection equipment (refer to section 8).
Minimum standard for preventive measures while handling with working materials are specified in the TRGS 500.
General industrial hygiene practice.
Handle in accordance with good industrial hygiene and safety practice.
Working places should be designed to allow cleaning at any time.
Floors, walls and other surfaces in the hazard area must be cleaned regularly.
Clean spray booth and exhaust hood completely with every product change.
When using do not eat, drink, smoke, sniff.
Thorough skin-cleansing after handling the product.
Used working clothes should not be worn outside the work area.

**7.2. Conditions for safe storage, including any incompatibilities**

**Requirements for storage rooms and vessels**

Suitable floor material:
Floors should be impervious, resistant to liquids and easy to clean.

Protect against:
Heat
Cold

Recommended storage temperature: +10 ... +30 °C

Keep away from:
Food and feedingstuffs

Packaging materials:
Suitable container/equipment material:
Keep/Store only in original container.
Unsuitable container/equipment material:
See under section 8.2 - Hand protection.

**Hints on joint storage**

Do not store together with:
Storage class:
1 (Explosive hazardous substances)
6.2 (Infectious substances)
7 (Radioactive substances)

**Further information on storage conditions**

Technical measures and storage conditions:
The valid water and zoning ordinances must be observed.
Keep container tightly closed.
Protect containers against damage.
Ensure adequate ventilation of the storage area.
Do not store outside.
See also instuctions on the label.

**7.3. Specific end use(s)**

Recommendation:
Possibilities for substitution and references to less hazardous products:
This product was designed for a special application purpose and optimized appropriately.
In case of questions regarding product and application, please contact our field service in line with customer service or our technical sales department.
Observe technical data sheet.

Industrial sector specific solutions:

Hazardous substance information systems of professional associations:

## SECTION 8: Exposure controls/personal protection

**8.1. Control parameters**

**Exposure limits (EH40)**

| CAS No | Substance | ppm | mg/m³ | fibres/ml | Category | Origin |
|---|---|---|---|---|---|---|
| - | Cycloalkanes >= C7 | - | 800 | | TWA (8 h) | WEL |
| - | Normal and branched chain alkanes >= C7 (it excludes n-heptane) | - | 1200 | | TWA (8 h) | WEL |
| - | Tin compounds, organic, except Cyhexatin (ISO), (as Sn) | - | 0.1 | | TWA (8 h) | WEL |
| | | - | 0.2 | | STEL (15 min) | WEL |

**DNEL/DMEL values**

| CAS No | Substance | | | |
|---|---|---|---|---|
| DNEL type | | Exposure route | Effect | Value |
| 124-30-1 | octadecylamine | | | |
| Worker DNEL, long-term | | dermal | systemic | 0,09 mg/kg bw/day |
| Worker DNEL, long-term | | inhalation | systemic | 0,38 mg/m³ |
| Consumer DNEL, long-term | | oral | systemic | 0,04 mg/kg bw/day |
| 63843-89-0 | bis(1,2,2,6,6-pentamethyl-4-piperidyl) [[3,5-bis(1,1-dimethylethyl)4-hydroxyphenyl]methyl]butylmalonate | | | |
| Worker DNEL, long-term | | dermal | systemic | 0,07 mg/kg bw/day |
| Worker DNEL, long-term | | inhalation | systemic | 0,05 mg/m³ |
| Consumer DNEL, long-term | | dermal | systemic | 0,033 mg/kg bw/day |
| Consumer DNEL, long-term | | inhalation | systemic | 0,01 mg/m³ |
| Consumer DNEL, long-term | | oral | systemic | 0,003 mg/kg bw/day |
| 90640-32-7 | amines, C16-18-alkyl | | | |
| Worker DNEL, long-term | | inhalation | local | 1 mg/m³ |
| Consumer DNEL, long-term | | inhalation | systemic | 0,035 mg/m³ |
| Worker DNEL, long-term | | inhalation | systemic | 0,38 mg/m³ |
| Consumer DNEL, long-term | | oral | systemic | 0,04 mg/kg bw/day |
| 55965-84-9 | reaction mass of 5-chloro-2-methyl-2H-isothiazol-3-one and 2-methyl-2H-isothiazol-3-one (3:1) | | | |
| Worker DNEL, long-term | | inhalation | local | 0,02 mg/m³ |
| Worker DNEL, acute | | inhalation | local | 0,04 mg/m³ |
| Consumer DNEL, long-term | | inhalation | local | 0,02 mg/m³ |
| Consumer DNEL, acute | | inhalation | local | 0,04 mg/m³ |
| Consumer DNEL, long-term | | oral | systemic | 0,09 mg/kg bw/day |
| Consumer DNEL, acute | | oral | systemic | 0,11 mg/kg bw/day |

**PNEC values**

| CAS No | Substance |
|---|---|
| Environmental compartment | Value |
| 124-30-1 | octadecylamine |
| Freshwater | 0,00026 mg/l |
| Marine water | 0,000026 mg/l |
| Freshwater sediment | 0,179 mg/kg |
| Marine sediment | 0,0179 mg/kg |
| Micro-organisms in sewage treatment plants (STP) | 0,55 mg/l |
| Soil | 10 mg/kg |
| 63843-89-0 | bis(1,2,2,6,6-pentamethyl-4-piperidyl) [[3,5-bis(1,1-dimethylethyl)4-hydroxyphenyl]methyl]butylmalonate |
| Freshwater | 0,00004 mg/l |
| Marine water | 0,00000 mg/l |
| Freshwater sediment | 504,4 mg/kg |
| Marine sediment | 50,44 mg/kg |
| Micro-organisms in sewage treatment plants (STP) | 1 mg/l |
| Soil | 1 mg/kg |
| 90640-32-7 | amines, C16-18-alkyl |
| Freshwater | 0,00026 mg/l |
| Freshwater sediment | 0,0039 mg/kg |
| Micro-organisms in sewage treatment plants (STP) | 0,550 mg/l |
| Soil | 10 mg/kg |
| 55965-84-9 | reaction mass of 5-chloro-2-methyl-2H-isothiazol-3-one and 2-methyl-2H-isothiazol-3-one (3:1) |
| Freshwater | 0,00339 mg/l |
| Marine water | 0,00339 mg/l |
| Freshwater sediment | 0,027 mg/kg |
| Marine sediment | 0,027 mg/kg |
| Soil | 0,01 mg/kg |

**Additional advice on limit values**

GESTIS - International Limit Values - Institut für Arbeitsschutz der Deutschen Gesetzlichen Unfallversicherung (IFA): http://limitvalue.ifa.dguv.de
Country information (EU) (http://www.dguv.de/ifa/fachinfos/occupational-exposure-limit-values/foreign-and-eu-limit-values/index.jsp)
Country information (GB) (http://www.hse.gov.uk/pubns/books/eh40.htm)
Occupational Exposure Limits of EU-memberstates - European Agency for Safety and Health at Work (OSHA) (http://osha.europa.eu/en/topics/ds/oel/index.stm/members.stm)
Source of law: EH40 (GB) (http://www.hse.gov.uk)

Recommended monitoring procedures:
Workplace atmospheres - Guide for the application and use of procedures for the assessment of exposure to chemical and biological agents (BS EN 14042):
Personal air monitoring
Room air monitoring
Test tube
Gas warning system

Preliminary concentration measurements:
Suitable detector tubes for measuring the current concentration in the air at the workplace: DRÄGER test tubes - short-term tubes (http://www.gasmesstechnik.de)
DRÄGER test tubes - Short-term tubes - Petroleum hydrocarbons 10 / a (n-octane, measuring range: 10 - 300 ppm, response time: 60 sec) (http://www.gasmesstechnik.de)
DRÄGER test tubes - Short-term tubes - Petroleum hydrocarbons 100 / a (n-octane, measuring range: 100 - 2500 ppm, response time: 30 sec) (http://www.gasmesstechnik.de)

Exposure limits at intended use:

DNEL-/PNEC-values:
Further information: see exposure scenarios attached to this safety data sheet.

Risk management measures according to used control banding approach:
Control banding for chemicals according to the ILO CHEMICAL CONTROL TOOLKIT (ICCT): ICCT-Guidelines and Control Guidance Sheets ( http://www.ilo.org/legacy/english/protection/safework/ctrl_banding/toolkit/main_guide.pdf)

Used model:
Consider appropriate model solutions according to good engineering practices on designing the working process, if available.

**8.2. Exposure controls**





**Appropriate engineering controls**

Substance/mixture related measures to prevent exposure during identified uses:
Technical measures to prevent exposure:
Design of appropriate work processes and engineering controls and the use of adequate materials (physical cut-off of man and machine, model solutions as certified working methods, working appliance according to the state of the art, optimization of process / spray robots, working appliance for prevention of skin contact, models of working times).

Organisational measures to prevent exposure:
Execution of collective protection measures at source and appropriate organisational measures (local exhaust ventilation, ventilation by technical means, general ventilation, measures on averting a danger at breakdowns / at emergencies / after accidents, first-aid-measures, manner related measures: operating instruction / instruction of employees, occupational medicine health precaution).

Structural measures to prevent exposure:
Execution of individual and personnel protection measures (personal protective equipment - PPE).

If technical exhaust or ventilation measures are not possible or insufficient, respiratory protection must be worn.
Technical measures and the application of suitable work processes have priority over personal protection equipment.

References for design of technical equipment:
See under section 7.1 - Precautions for safe handling.

Summary of the risk management measures for exposure scenario:
Use only the following product amount per time unit:
No information available.
Minimum room-width and room-height for handling/application:
No information available.
Minimum room ventilation rate for handling/application (air changes per hour):
No information available.

**Individual protection measures, such as personal protective equipment**

**Eye/face protection**

If required according to hazard assessment:
Suitable eye protection:
Eye glasses with side protection (EN 166)
Recommended eye protection articles:

UVEX I-VO / UVEX I-3 / UVEX SUPER OTG
Or comparable articles from other companies.

**Hand protection**

Skin protection:
Preventive skin protection.:
Draw up skin protection programme.
Before starting work, apply water-resistant skincare preparations.
e.g. saniwip®, dualin® (PETER GREVEN PHYSIODERM)
Wash hands before breaks and after work.
e.g. ecosan®, topscrub® soft / topscrub® extra / topscrub® nature (PETER GREVEN PHYSIODERM)
After cleaning apply high-fat content skin care cream.
e.g. physioderm® creme, cura soft® / cUrea soft® (PETER GREVEN PHYSIODERM)
Apply skin care products after work.

If required according to hazard assessment:
When handling with chemical substances, protective gloves must be worn with the CE-label including the four control digits.
The quality of the protective gloves resistant to chemicals must be chosen as a function of the specific working place concentration and quantity of hazardous substances.
Decrease wearing protection gloves to an inevitable degree to avoid skin rash.
Technical and organizational protective actions have to be preferred.
Breakthrough times and swelling properties of the material must be taken into consideration.
Check leak tightness/impermeability prior to use.
Wear cotton undermitten if possible.
Change preventive gloves once by hour or use special skin-protective preparations for protective gloves carrier,
e.g. physioderm® proGlove (PETER GREVEN PHYSIODERM)
Take recovery periods for skin regeneration.
Do not wear gloves near rotary machines and tools.
Dispose preventive gloves after defect or expiry of wearing time. Replace when worn.
In the case of wanting to use the gloves again, clean them before taking off and air them well.

Wearing time with permanent contact:
Suitable gloves type
Gloves with long cuffs
Recommended glove articles:
Suitable materials at long term, direct contact (Recommended: Preventive index 6, accordingly > 480 min. permeation time in accordance to EN 374):
Nitrile rubber / NBR (KCL-CAMATRIL VELOURS® - Art. No. 730) - Layer thickness: 0,4 mm
Or comparable articles from other companies.

Unsuitable material:
NR (natural rubber, Natural latex)

Wearing time with occasional contact (splashes):
Suitable gloves type
Disposable gloves
Recommended glove articles:
Suitable materials at short term contact or splash (Recommended: Preventive index 3, accordingly > 60 min. permeation time in accordance to EN 374):
Disposable gloves of special nitrile rubber / NBR (KCL-DERMATRIL® P - Art. No. 743) - Layer thickness: 0,2 mm
Or comparable articles from other companies.

The statements are based on self-tests, literary reference and information of glove manufacturers or have been derived from similar substances by analogy.
Source: CHEMIKALIEN-MANAGER - KCL software for hand protection.
It has to be noticed, that daily time of use of chemical protective gloves may be quite shorter in practice because of many factors of influence (e.g. thermal and mechanical stress as well as special conditions on the floor) than the permeation time determined in accordance to EN 374.

The respective permeation time doubles/halvens at about 1,5 times larger/lower layer thickness.
Declared permeation times according to EN 374 are not carried out under practical conditions. Therefore a maximum wearing time up to 50 % of breakthrough time is recommended.
They relate to the pure solvent as mean component.

Barrier creams are not substitutes for body protection.

**Skin protection**

If required according to hazard assessment:
Suitable protective clothing:
Overall, Natural fibres (e.g. cotton) (EN 340)
For the protection against direct skin contact, body protective clothing is essential (in addition to the usual working clothes).
When handling with chemical substances, protective clothing with CE-labels including the four control digits must be worn.
DIN-/EN-Norms EN 468
Chemical protection clothing (Disposable suit antistatic)
type 6 limited splash-tight
type 5 particle-tight (method B)
type 4 spray-tight
Recommended protective clothing articles:
TYVEK CLASSIC PLUS (DU PONT)
Or comparable articles from other companies.

Chemical resistant safety shoes with conductible sole (EN ISO 20345)

Wash contaminated clothing prior to re-use.
Used working clothes should not be worn outside the work area.
Street clothing should be stored separately from work clothing.

Thermal hazards:
No thermal hazards during use of this product.

**Respiratory protection**

If required according to hazard assessment:
Respiratory protection necessary at:
aerosol or mist formation + exceeding exposure limit values +
high concentrations / prolonged exposure / insufficient ventilation / insufficient exhaust
Use only respiratory protection equipment with CE-symbol including four digit test number.
Filter types: A, B, E, K. Class 1: Maximum permitted contaminant concentration in inhaled air = 1000 mL/m3 (0.1 % by vol.); class 2: maximum permitted contaminant concentration in inhaled air = 5000 mL/m³ (0.5 % by vol.); class 3: maximum permitted contaminant concentration in inhaled air = 10000 mL/m³ (1.0 % by vol.)
The filter class must be suitable for the maximum contaminant concentration (gas/vapour/aerosol/particulates) that may arise when handling the product. If the concentration is exceeded, self-contained breathing apparatus must be used.
Observe the wear time limits according GefStoffV in combination with the rules for using respiratory protection apparatus (BGR 190).
The use of filter equipment requires a minimum oxygen content of 17 Vol-% in the surrounding atmosphere and that the maximum permitted gas concentration - normally 0,5 Vol-% - is not exceeded.

Suitable respiratory protection apparatus:
Half-face mask or quarter facepiece: maximum use concentration for substances with exposure limits: P1 filter: up to a max. of 4 times the exposure limit. P2 filter: up to a max. of 10 times the exposure limit. P3 filter: up to a max. of 30 times the expo.

Recommended respiratory protection articles:
Half mask or quarter mask with combination filter A1P1/A2P2 for gases, vapors and particles. (EN 140, EN 14387)
Filtering half mask or quarter mask with combination filter FFA1 P1/FFA2P2 for gases, vapors and particles. (EN 405)
Gas filtrating Half-face mask FFA (EN 405)
Model 4251 (FFA1P1 - 1000 ml/m3) / 4255 (FFA2P2SL - 5000 ml/m3) (3M)
Half-face mask or Quarter-face mask with gas filter (EN 140, EN 14387)

Filter type 6051 (A1 - 1000 ml/m3) / 6055 (A2 - 5000 ml/m3) (3M)
Full-face mask with gas filter (EN 136, EN 14387)
Gas filter type: A, Indication colour: brown
Or comparable articles from other companies.

**Environmental exposure controls**

Environmental exposure controls:
Technical measures to prevent exposure:
Discharge exhaust air only with suitable seperators to atmosphere.
Organisational measures to prevent exposure:
Should not be released into the environment.
Structural measures to prevent exposure:

Use the following recovery and/or abatement technique for cleaning waste gases:
Exhaust air scrubber
Adsorption

Further information see under section 6.2 - Environmental precautions.

## SECTION 9: Physical and chemical properties

### 9.1. Information on basic physical and chemical properties

| | | |
|---|---|---|
| Physical state: | liquid | |
| Colour: | white | |
| Odour: | characteristic | |
| | | **Test method** |
| Melting point/freezing point: | < 0 °C | literature value |
| Boiling point or initial boiling point and boiling range: | > 100 °C | literature value |
| Flammability | | |
| Solid/liquid: | not applicable (Liquid) | |
| Gas: | not applicable (Liquid) | |
| Lower explosion limits: | not relevant | |
| Upper explosion limits: | not relevant | |
| Flash point: | not applicable | |
| Auto-ignition temperature: | not relevant | |
| Decomposition temperature: | not relevant | |
| pH-Value: | 6 | DIN 19268 |
| Viscosity / kinematic: (at 40 °C) | 43,7 mm²/s | DIN 53015 |
| Water solubility: (at 20 °C) | emulsifiable | |
| Solubility in other solvents | | |
| miscible with most organic solvents (Alcohols, aldehydes, Ketone) | | |
| Partition coefficient n-octanol/water: | not applicable (Mixtures) | |
| Vapour pressure: (at 20 °C) | Corresponds to the vapour pressure of water. < 23 hPa | literature value |
| Vapour pressure: (at 50 °C) | Corresponds to the vapour pressure of water. < 123 hPa | literature value |
| Density (at 20 °C): | 1 g/cm³ | DIN 51757 |
| Bulk density: | not applicable (Liquid) | |
| Relative vapour density: | not determined | |

### 9.2. Other information

**Information with regard to physical hazard classes**

Explosive properties
No flash point up to 100 °C.

Self-ignition temperature

| | |
|---|---|
| Solid: | Not pyrophoric. |
| Gas: | Not pyrophoric. |

Oxidizing properties
not relevant

**Other safety characteristics**

| | | |
|---|---|---|
| Evaporation rate: | not determined | |
| Solvent separation test: | not applicable | |
| Solvent content: | not determined | |
| Solid content: | not determined | |
| Sublimation point: | not applicable | |
| Softening point: | not applicable | |
| Pour point: | not applicable | |
| Viscosity / dynamic: | not determined | |
| Flow time: (at 23 °C) | > 30 s | 3 DIN EN ISO 2431 |

**Further Information**

Odour threshold: No data available

Surface tension: No data available
Fat solubility: No data available
Calculated oxidation potential of the mixture (OP): not relevant

Substance group relevant properties:
Data relevant with regard to physical hazard classes (supplemental):
Explosives
not applicable
Flammable gases
Non-flammable. / not applicable (Liquid)
Aerosols
Non-flammable. / not applicable (Liquid)
Oxidising gas
Not oxidising. / not applicable (Liquid)
Gases under pressure
not applicable (Liquid)
Flammable liquids
Non-flammable.
flammable solids
Non-flammable. / not applicable (Liquid)
Self-reactive substances and mixtures
not applicable
Pyrophoric liquids
Not pyrophoric.
Pyrophoric solids
Not pyrophoric. / not applicable (Liquid)
self-heating substances and mixtures
not applicable
Substances or mixtures which, in contact with water, emit flammable gases
not applicable
Oxidising liquids
Not oxidising.
Oxidising solids
Not oxidising. / not applicable (Liquid)
Organic peroxides
not applicable
Corrosive to metals.
Not corrosive to metals.

## SECTION 10: Stability and reactivity

**10.1. Reactivity**

The product is chemically stable under recommended conditions of storage, use and temperature.

**10.2. Chemical stability**

The product is chemically stable under recommended conditions of storage, use and temperature.

**10.3. Possibility of hazardous reactions**

No hazardous reaction when handled and stored according to provisions.

**10.4. Conditions to avoid**

Further information see under section 7.2 - Conditions for safe storage, including any incompatibilities.
Further information see under section 10.5 - Incompatible materials.

**10.5. Incompatible materials**

Violent reaction with:
Hazardous substances that release flammable gases when in contact with water
Further information see under section 7.1 - Precautions for safe handling.

**10.6. Hazardous decomposition products**

Does not decompose when used for intended uses.
No known hazardous decomposition products.
Under fire conditions: See under section 5.2 - Special hazards arising from the substance or mixture.

## SECTION 11: Toxicological information

**11.1. Information on hazard classes as defined in GB CLP Regulation**

**Toxicocinetics, metabolism and distribution**

There are no data available on the preparation/mixture itself.
The product has not been tested.

Information on likely routes of exposure /
Symptoms related to the physical, chemical and toxicological characteristics:
See under section 4.2 - Most important symptoms and effects, both acute and delayed.

Exposure route:
In case of ingestion:
Ingestion causes nausea, weakness and central nervous system effects.

In case of skin contact:
May cause skin irritation in susceptible persons.
Prolonged or repeated skin contact may cause removal of natural fat from the skin resulting in dermatitis (skin inflammation).

In case of inhalation:
slightly irritant but not relevant for classification.

In case of eye contact:
irritant.
Conjunctival redness.

Delayed and immediate effects as well as chronic effects from short and long-term exposure:
Not relevant

Interactive effects:
Not relevant

Absence of specific data:
No data is available on the product itself. Description of possible hazardous to health effects is based on experience and/or toxicological characteristics of several components.
However, some datas are not complete regarding particular main components. Nevertheless according to the experience of the manufacturer there are no other hazards expected then those which are already mentioned on the label.

Mixture versus substance information:
Not relevant

**Acute toxicity**

Based on available data, the classification criteria are not met.

| CAS No | Chemical name | | | | |
|---|---|---|---|---|---|
| | Exposure route | Dose | Species | Source | Method |
| 124-30-1 | octadecylamine | | | | |
| | oral | LD50 > 2000 mg/kg | Rat | ECHA | OECD 401 |
| | dermal | LD50 > 2000 mg/kg | Rat | ECHA | OECD 402 |
| | inhalation (1 h) dust/mist | LC50 > 0,099 mg/l | Rat | ECHA | OECD 403 |
| 90622-57-4 | hydrocarbons, C11-C12, isoalkanes, <2% aromatics | | | | |
| | oral | LD50 > 5000 mg/kg | Rat | Supplier / ECHA | OECD 401 |
| | dermal | LD50 > 5000 mg/kg | Rabbit | Supplier / ECHA | OECD 402 |
| | inhalation (4 h) dust/mist | LC50 > 5,6 mg/l | Rat | ECHA | OECD 403 |
| 1185-81-5 | stannane, dibutylbis(dodecylthio)- (dibutyltin bis(lauryl mercaptide)) | | | | |
| | oral | LD50 > 2000 mg/kg | Rat | Supplier / ECHA | OECD 423 |
| | dermal | LD50 1000 - 2000 mg/kg | Rabbit [female] | Supplier / ECHA | OECD 402 |
| 63843-89-0 | bis(1,2,2,6,6-pentamethyl-4-piperidyl) [[3,5-bis(1,1-dimethylethyl)4-hydroxyphenyl]methyl]butylmalonate | | | | |
| | oral | LD50 1490 mg/kg | Rat | Supplier / ECHA | OECD 401 |
| | dermal | LD50 > 3170 mg/kg | Rat | Supplier / ECHA | OECD 402 |
| | inhalation (4 h) dust/mist | LC50 > 0,46 mg/l | Rat | Supplier / ECHA | OECD 403 |
| 90640-32-7 | amines, C16-18-alkyl | | | | |
| | oral | LD50 > 5000 mg/kg | Rat | Supplier / ECHA | OECD 401 |
| | dermal | LD50 > 2000 mg/kg | Rat | ECHA | OECD 402 |
| 55965-84-9 | reaction mass of 5-chloro-2-methyl-2H-isothiazol-3-one and 2-methyl-2H-isothiazol-3-one (3:1) | | | | |
| | oral | LD50 64 - 66 mg/kg | Rat | ECHA / Supplier | OECD 401 |
| | dermal | LD50 > 87 mg/kg | Rat | ECHA | OECD 402 |
| | inhalation vapour | ATE 0,5 mg/l | | | |
| | inhalation (4 h) dust/mist | LC50 > 0,33 mg/l | Rat | ECHA | OECD 403 |

**Irritation and corrosivity**

Causes serious eye irritation.

Skin corrosion/irritation: Based on available data, the classification criteria are not met.

**Sensitising effects**

Contains stannane, dibutylbis(dodecylthio)- (dibutyltin bis(lauryl mercaptide)); reaction mass of 5-chloro-2-methyl-2H-isothiazol-3-one and 2-methyl-2H-isothiazol-3-one (3:1). May produce an allergic reaction.

**Carcinogenic/mutagenic/toxic effects for reproduction**

Based on available data, the classification criteria are not met.

**STOT-single exposure**

Based on available data, the classification criteria are not met.

**STOT-repeated exposure**

Based on available data, the classification criteria are not met.

**Aspiration hazard**

Based on available data, the classification criteria are not met.

**11.2. Information on other hazards**

**Endocrine disrupting properties**

Endocrine disrupting potential (Health):

not relevant

## SECTION 12: Ecological information

### 12.1. Toxicity

Aquatic toxicity:

Acute (short-term) fish toxicity:

There are no data available on the preparation/mixture itself. The product has not been tested.

Acute (short-term) toxicity to crustacea:

There are no data available on the preparation/mixture itself. The product has not been tested.

Acute (short-term) toxicity to algae and cyanobacteria:

There are no data available on the preparation/mixture itself. The product has not been tested.

Chronic (long-term) toxicity to aquatic invertebrate:

There are no data available on the preparation/mixture itself. The product has not been tested.

Chronic (long-term) fish toxicity:

There are no data available on the preparation/mixture itself. The product has not been tested.

Toxicity to other aquatic plants/organisms:

No data available (Substances/Ingredient)

Terrestrial toxicity:

Acute and subchronic bird toxicity:

No data available (Substances/Ingredient)

Bird reproduction toxicity:

No data available (Substances/Ingredient)

Acute earthworm toxicity:

No data available (Substances/Ingredient)

Chronical earthworm toxicity (reproduction):

No data available (Substances/Ingredient)

Useful insect toxicity:

No data available (Substances/Ingredient)

Acute plant toxicity:

No data available (Substances/Ingredient)

Chronic plant toxicity:

No data available (Substances/Ingredient)

Toxicity to soil macroorganisms except of arthropods:

No data available (Substances/Ingredient)

Effects on soil microorganisms:

No data available (Substances/Ingredient)

Behaviour in waste water treatment plants:

No data available

Observe local regulations concerning effluent treatment.

| CAS No | Chemical name | | | | | |
|---|---|---|---|---|---|---|
| | Aquatic toxicity | Dose | [h] \| [d] | Species | Source | Method |
| 124-30-1 | octadecylamine | | | | | |
| | Acute fish toxicity | LC50 > 0,01 - 0,1 mg/l | 96 h | Pimephales promelas | Supplier | EPA OPPTS 850.1085 |
| | Acute algae toxicity | ErC50 > 0,01 - 0,1 mg/l | 72 h | Scenedesmus subspicatus | Supplier | OECD 201 |
| | Acute crustacea toxicity | EC50 > 0,01 - 0,1 mg/l | 48 h | Daphnia magna | Supplier | OECD 202 |
| | Algae toxicity | NOEC 0,01 mg/l | 3 d | Desmodesmus subspicatus | ECHA | OECD 201 |
| | Crustacea toxicity | NOEC 0,001 mg/l | 21 d | Daphnia magna | ECHA | OECD 211 |
| | Acute bacteria toxicity | (EC50 14 mg/l) | 3 h | Activated sludge | ECHA | OECD 209 |
| 90622-57-4 | hydrocarbons, C11-C12, isoalkanes, <2% aromatics | | | | | |
| | Acute fish toxicity | LC50 > 1000 mg/l | 96 h | Oncorhynchus mykiss | Supplier / ECHA | OECD 203 |
| | Acute algae toxicity | ErC50 > 1000 mg/l | 72 h | Pseudokirchneriella subcapitata | Supplier / ECHA | OECD 201 |
| | Acute crustacea toxicity | EC50 > 1000 mg/l | 48 h | Daphnia magna | Supplier / ECHA | OECD 202 |
| | Fish toxicity | NOEC 0,209 mg/l | 28 d | Oncorhynchus mykiss | ECHA | [growth rate] |
| | Algae toxicity | NOEC 1000 mg/l | 3 d | Pseudokirchneriella subcapitata | Supplier / ECHA | OECD 201 |
| | Crustacea toxicity | NOEC > 1 mg/l | 21 d | Daphnia magna | Supplier / ECHA | OECD 211 |
| | Acute bacteria toxicity | (EC50 > 1,5 mg/l) | 0 h | Pseudomonas putida | ECHA | [5h] |
| 1185-81-5 | stannane, dibutylbis(dodecylthio)- (dibutyltin bis(lauryl mercaptide)) | | | | | |
| | Acute algae toxicity | ErC50 > 1,6 mg/l | 72 h | Desmodesmus subspicatus | ECHA | OECD 201 |
| | Acute crustacea toxicity | EC50 0,11 mg/l | 48 h | Daphnia magna | Supplier / ECHA | OECD 202 |
| 63843-89-0 | bis(1,2,2,6,6-pentamethyl-4-piperidyl) [[3,5-bis(1,1-dimethylethyl)4-hydroxyphenyl]methyl]butylmalonate | | | | | |
| | Acute fish toxicity | LC50 > 100 mg/l | 96 h | Danio rerio | Supplier / ECHA | OECD 203 |
| | Acute algae toxicity | ErC50 61 mg/l | 72 h | Desmodesmus subspicatus | Supplier / ECHA | [biomass] |
| | Acute crustacea toxicity | EC50 69 mg/l | 48 h | Daphnia magna | Supplier | OECD 202 [24h] |
| | Algae toxicity | NOEC < 1,23 mg/l | 3 d | Desmodesmus subspicatus | ECHA | 87/302/EEC |
| | Crustacea toxicity | NOEC 0,002 mg/l | 21 d | Daphnia magna | Supplier / ECHA | OECD 211 |
| | Acute bacteria toxicity | (EC50 > 100 mg/l) | 3 h | Activated sludge | Supplier / ECHA | OECD 209 |
| 90640-32-7 | amines, C16-18-alkyl | | | | | |
| | Acute fish toxicity | LC50 (0,84) mg/l | 96 h | Dario rerio | Supplier | OECD 203 |
| | Acute algae toxicity | ErC50 (0,12) mg/l | 72 h | Desmodesmus subspicatus | ECHA | OECD 201 |
| | Acute crustacea toxicity | EC50 (0,32) mg/l | 48 h | Daphnia magna | Supplier | OECD 202 |
| | Algae toxicity | NOEC 0,01 mg/l | 3 d | Desmodesmus subspicatus | ECHA | OECD 201 |
| | Crustacea toxicity | NOEC 0,01 mg/l | 21 d | Daphnia magna | Supplier | OECD 211 |
| | Acute bacteria toxicity | (EC50 490,1 mg/l) | 3 h | Activated sludge | ECHA | OECD 209 |
| 55965-84-9 | reaction mass of 5-chloro-2-methyl-2H-isothiazol-3-one and 2-methyl-2H-isothiazol-3-one (3:1) | | | | | |
| | Acute fish toxicity | LC50 0,19 mg/l | 96 h | Oncorhynchus mykiss | ECHA | EPA OPP 72-1 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | Acute algae toxicity | ErC50 | 0,037 mg/l | 72 h | Skeletonema costatum | ECHA | OECD 201 |
| | Acute crustacea toxicity | EC50 | 0,16 mg/l | 48 h | Daphnia magna | ECHA | EPA OPP 72-2 |
| | Fish toxicity | NOEC mg/l | 0,0464 | 35 d | Danio rerio | ECHA | OECD 210 |
| | Algae toxicity | NOEC | 0,004 mg/l | 3 d | Skeletonema costatum | ECHA | OECD 201 |
| | Crustacea toxicity | NOEC mg/l | 0,0111 | 21 d | Daphnia magna | ECHA | OECD 211 |
| | Acute bacteria toxicity | (EC50 | 4,5 mg/l) | 3 h | Activated sludge | ECHA | OECD 209 |

**12.2. Persistence and degradability**

Abiotic degradation:

Physicochemical elimination:

Oxidation:

not applicable (Mixtures)

No data available (Substances/Ingredient)

Hydrolysis:

not applicable (Mixtures)

No data available (Substances/Ingredient)

Photochemical elimination:

Photolysis:

not applicable (Mixtures)

No data available (Substances/Ingredient)

Ozonolysis:

not applicable (Mixtures)

No data available (Substances/Ingredient)

Biodegradation:

not applicable (Mixtures)

| CAS No | Chemical name | | | |
|---|---|---|---|---|
| | Method | Value | d | Source |
| | Evaluation | | | |
| 124-30-1 | octadecylamine | | | |
| | OECD 301 F | 70 % | 28 | ECHA |
| | readily biodegradable | | | |
| 90622-57-4 | hydrocarbons, C11-C12, isoalkanes, <2% aromatics | | | |
| | OECD 301 F | 31,3-41,7 % | 28 | Supplier / ECHA |
| | inherently biodegradable | | | |
| 1185-81-5 | stannane, dibutylbis(dodecylthio)- (dibutyltin bis(lauryl mercaptide)) | | | |
| | OECD 301 F | 0 % | 28 | ECHA |
| | under test conditions no biodegradation observed | | | |
| 63843-89-0 | bis(1,2,2,6,6-pentamethyl-4-piperidyl) [[3,5-bis(1,1-dimethylethyl)4-hydroxyphenyl]methyl]butylmalonate | | | |
| | OECD 301 B | 1 % | 28 | Supplier / ECHA |
| | not readily biodegradable | | | |
| 90640-32-7 | amines, C16-18-alkyl | | | |
| | OECD 301 D | 75 % | 28 | ECHA |
| | readily biodegradable | | | |
| 55965-84-9 | reaction mass of 5-chloro-2-methyl-2H-isothiazol-3-one and 2-methyl-2H-isothiazol-3-one (3:1) | | | |
| | OECD 301 B (CO2 Evolution Test) | > 38% | 29 | ECHA |
| | readily biodegradable, but failing 10-day window | | | |
| | OECD 303 A (Activated sludge Units) | > 80% | | Supplier |
| | readily biodegradable | | | |
| | OECD 302 B (Zahn-Wellns Test) | 100% | | Supplier |
| | readily biodegradable | | | |

**12.3. Bioaccumulative potential**

not applicable (Mixtures)

**Partition coefficient n-octanol/water**

| CAS No | Chemical name | Log Pow |
|---|---|---|
| 124-30-1 | octadecylamine | 8,35 |
| 1185-81-5 | stannane, dibutylbis(dodecylthio)- (dibutyltin bis(lauryl mercaptide)) | 3,11 |
| 63843-89-0 | bis(1,2,2,6,6-pentamethyl-4-piperidyl) [[3,5-bis(1,1-dimethylethyl)4-hydroxyphenyl]methyl]butylmalonate | 10,03 |
| 90640-32-7 | amines, C16-18-alkyl | 4,33 |
| 55965-84-9 | reaction mass of 5-chloro-2-methyl-2H-isothiazol-3-one and 2-methyl-2H-isothiazol-3-one (3:1) | 0,401 |

**BCF**

| CAS No | Chemical name | BCF | Species | Source |
|---|---|---|---|---|
| 124-30-1 | octadecylamine | > 500 | | Supplier |
| 63843-89-0 | bis(1,2,2,6,6-pentamethyl-4-piperidyl) [[3,5-bis(1,1-dimethylethyl)4-hydroxyphenyl]methyl]butylmalonate | 49,3-437,1 | Cyprinus carpio | Supplier / ECHA |
| 90640-32-7 | amines, C16-18-alkyl | 173 | | ECHA |
| 55965-84-9 | reaction mass of 5-chloro-2-methyl-2H-isothiazol-3-one and 2-methyl-2H-isothiazol-3-one (3:1) | 54 | Lepomis macrochirus | ECHA |

**12.4. Mobility in soil**

Surface tension:

See under section 9.1 - Information on basic physical and chemical properties.

Distribution:

Water-air (volatility rate, Henry-constant):

not applicable (Mixtures)

No data available (Substances/Ingredient)

Soil-Water (Adsorption coefficient):

not applicable (Mixtures)

No data available (Substances/Ingredient)

Soil-Air (volatility rate):

not applicable (Mixtures)

No data available (Substances/Ingredient)

**12.5. Results of PBT and vPvB assessment**

The substances in the mixture do not meet the PBT/vPvB criteria according to UK REACH.

The substances in the mixture do not meet the PBT/vPvB criteria according to REACH, annex XIII.

**12.6. Endocrine disrupting properties**

This product does not contain a substance that has endocrine disrupting properties with respect to non-target organisms as no components meets the criteria.

Endocrine disrupting potential (Environment):

not relevant

**12.7. Other adverse effects**

Ozone depletion potential (ODP):

No data available (Substances/Ingredient)

Photochemical ozone creation potential (POCP):

No data available (Substances/Ingredient)

Global warming potential (GWP):

No data available (Substances/Ingredient)

Endocrine disrupting potential

No data available

AOX: The product contains organic halogens.

## SECTION 13: Disposal considerations

**13.1. Waste treatment methods**

**Disposal recommendations**

Waste treatment options:
Transfer to an emulsion fission reactor or an emulsion evaporation system, observing official regulations.

Dispose of waste according to applicable legislation.
Waste disposal according to directive 2008/98/EC, covering waste and dangerous waste.
Properties of waste which render it hazardous:
Irritant — skin irritation and eye damage
Ecotoxic

Evidence for disposal must be provided.
Consult the appropriate local waste disposal expert about waste disposal.
Waste for recycling is to be classified and labelled.
For recycling, contact recycling exchanges.
May not be disposed or deposited together with domestic garbage.
Do not mix with other wastes.
Do not flush into surface water or sanitary sewer system.
Do not dispose of waste into sewer.
Before discharge in public drains (e.g. residues of washing- and rinsing liquids) please observe the relevant regulations. In case of further questions please contact your waste- or environmental representative or the responsible authority.
Clean IBCs or drums at approved facility only.
The waste producer is resposible for correct coding and designation of his wastes.
The allocation of waste identity numbers/waste descriptions must be carried out according to the EEC, specific to the industry and process.
List of proposed waste codes/waste designations in accordance with EWC:

**List of Wastes Code - residues/unused products**

070201 WASTES FROM ORGANIC CHEMICAL PROCESSES; wastes from the MFSU of plastics, synthetic rubber and man-made fibres; aqueous washing liquids and mother liquors; hazardous waste

**List of Wastes Code - used product**

070201 WASTES FROM ORGANIC CHEMICAL PROCESSES; wastes from the MFSU of plastics, synthetic rubber and man-made fibres; aqueous washing liquids and mother liquors; hazardous waste

**List of Wastes Code - contaminated packaging**

150110 WASTE PACKAGING; ABSORBENTS, WIPING CLOTHS, FILTER MATERIALS AND PROTECTIVE CLOTHING NOT OTHERWISE SPECIFIED; packaging (including separately collected municipal packaging waste); packaging containing residues of or contaminated by hazardous substances; hazardous waste

**Contaminated packaging**

Other disposal recommendations:
Contaminated packages must be completely emptied and can be re-used following proper cleaning.
Cleaning by recycling company.
Recommended cleansing agent:
Clean with detergents. Avoid solvent cleaners.

Handle contaminated packages in the same way as the substance itself.
Non-contaminated packages may be recycled.
Packing which cannot be properly cleaned must be disposed of.
As well uncleaned (empty) containers remain contaminated by product residues and may be hazardous by vapours.
They have to be disposed by specialists or have to be supplied to a licensed reconditioning.
The conditions of the regional reconditioning companies have to be observed.

## SECTION 14: Transport information

**Land transport (ADR/RID)**

| | |
|---|---|
| **14.1. UN number or ID number:** | UN3082 |
| **14.2. UN proper shipping name:** | ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Alkyl amines) |
| **14.3. Transport hazard class(es):** | 9 |
| **14.4. Packing group:** | III |
| Hazard label: | 9 |




| | |
|---|---|
| Classification code: | M6 |
| Special Provisions: | 274 335 375 601 |
| Limited quantity: | 5 L |
| Excepted quantity: | E1 |
| Transport category: | 3 |
| Hazard No: | 90 |
| Tunnel restriction code: | - |

**Other applicable information (land transport)**

Provision(s), multilateral agreement(s): Not applicable

Maximum permissible total quantity per unit of carriage according to subsection 1.1.3.6 ADR/RID: 1000 L.
Factor out of category of carriage (= 3) to calculate the quantity per unit of carriage: 1.

**Inland waterways transport (ADN)**

**Other applicable information (inland waterways transport)**

Not classified for this transport carrier.

**Marine transport (IMDG)**

| | |
|---|---|
| **14.1. UN number or ID number:** | UN3082 |
| **14.2. UN proper shipping name:** | ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Alkyl amines) |
| **14.3. Transport hazard class(es):** | 9 |
| **14.4. Packing group:** | III |
| Hazard label: | 9 |




| | |
|---|---|
| Marine pollutant: | P |
| Special Provisions: | 274, 335, 969 |
| Limited quantity: | 5 L |
| Excepted quantity: | E1 |
| EmS: | F-A, S-F |
| Segregation group: | IMDG-Code segregation group not applicable |

**Other applicable information (marine transport)**

Exception(s): Not applicable

**Air transport (ICAO-TI/IATA-DGR)**

| | |
|---|---|
| **14.1. UN number or ID number:** | UN3082 |
| **14.2. UN proper shipping name:** | ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Alkyl amines) |
| **14.3. Transport hazard class(es):** | 9 |
| **14.4. Packing group:** | III |
| Hazard label: | 9 |




| | |
|---|---|
| Special Provisions: | A97 A158 A197 |
| Limited quantity Passenger: | 30 kg G |
| Passenger LQ: | Y964 |
| Excepted quantity: | E1 |
| IATA-packing instructions - Passenger: | 964 |
| IATA-max. quantity - Passenger: | 450 L |
| IATA-packing instructions - Cargo: | 964 |
| IATA-max. quantity - Cargo: | 450 L |

**Other applicable information (air transport)**

ERG Kodex: 9L

The state variations in chapter 2.8.1 and the operator variations in chapter 2.8.3 for shipping of dangerous goods in limited quantities according to chapter 2.7 of the valid ICAO/IATA Dangerous Goods Regulations have to be observed.

The rulings for dangerous goods by air mail according to chapter 2.4 of the valid ICAO/IATA Dangerous Goods Regulations and the conventions of the Universal Postal Union (UPU) as well as the clauses of the relevant National Postal Administation have to be observed. Airmail: prohibited.

**14.5. Environmental hazards**

ENVIRONMENTALLY HAZARDOUS: Yes



Danger releasing substance: Alkyl amines

**14.6. Special precautions for user**

Further information see under section 6, 7, 8.

**14.7. Maritime transport in bulk according to IMO instruments**

No bulk transport in accordance with IBC code.
It is sold exclusively in traffic legally authorized and appropriate packaging.

**Other applicable information**

Postal, express and courier services:
Postal service (national):
Refer to your National Postal Administation.
Express freight / special delivery:
Refer to your National Postal Administation.
Courier service (national):
The general conditions of business of the particular courier service have to be observed.

## SECTION 15: Regulatory information

**15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture**

**EU regulatory information**

Restrictions on use (REACH, annex XVII):
Entry 3, Entry 20, Entry 75

2010/75/EU (VOC): 3 % (32 g/l)

**Additional information**

Authorisations and/or restrictions on use:
Authorisations:
Authorisation of Chemicals (REACH) as regards Annex XIV:
not relevant

Restrictions on use:
Restriction of chemicals (REACH) as regards annex XVII:
No. 20 - organo-tin compounds

Informations on Regulation (EC) No. 1272/2008 - Annex VI, Part 1:
Note P is valid: The harmonised classification as a carcinogen or mutagen applies unless it can be shown that the substance contains less than 0,1 % w/w benzene (Einecs No 200-753-7), in which case a classification in accordance with Title II of this Regulation shall be performed also for those hazard classes. Where the substance is not classified as a carcinogen or mutagen, at least the precautionary statements (P102-)P260-P262-P301 + P310-P331 shall apply.

Other regulations (EU):
Regulation (EC) No. 1005/2009 - Substances that deplete the ozone layer:
not relevant
Regulation (EC) No. 648/2004 and No 907/2006 - Detergents:
not relevant
Regulation (EC) No. 649/2012 - Export and import of dangerous chemicals:
not relevant
Regulation (EU) 2019/1021 - Persistent organic pollutants:
not relevant
Regulation (EC) No. 428/2009 and No. 388/2012 and No. 1382/2014 - Control of exports, or transfer, brokering and transit of dual-use goods (Dual-Use Regulation):
not relevant
Regulation (EC) No. 273/2004 - Drug precursors:
not relevant
Regulation (EC) No. 111/2005 - Definition of rules for the monitoring of trade in drug precursors between the Union and third countries:
not relevant
Directive 2012/18/EC - Control of major accident hazards involving dangerous substances (Seveso III):
ANNEX I, PART 1 (Categories of dangerous substances):
E2 (ENVIRONMENTAL HAZARDS) - Hazardous to the Aquatic Environment in Category Chronic 2 (Column 1)
Quantities: > 200.000 kg (Column 2) /> 500.000 kg (Column 3)
Directive 2004/42/EC - Use of organic solvents in certain paints and lacquers:
not relevant
Directive 2010/75/EU - Industrial Emissions Directive (Directive IE) - succession to Directive 1999/13/EC - Limitation of emissions of volatile organic compounds (VOC-Directive):
When using this substance / mixture it has to be checked whether the activities are subject to the the requirements of IE-RL, Chapter V (installations and activities with the use of organic solvents - VOC).
Aerosol Directive (75/324/):
not relevant
Biocide directive (98/8/EC):
not relevant
Regulation (EU) No. 528/2012 on biocides:
In accordance with Regulation (EU) No. 528/2012 on biocides
This product is a with biocidal products treated article.

Observe in addition any national regulations!

EC-Chemical inventories: All ingredients are listed in EINECS / ELINCS or excepted from listing.

**National regulatory information**

| | |
|---|---|
| Employment restrictions: | Observe restrictions to employment for juveniles according to the 'juvenile work protection guideline' (94/33/EC). Observe employment restrictions under the Maternity Protection Directive (92/85/EEC) for expectant or nursing mothers. |

**Additional information**

Other regulations, restrictions and prohibition regulations:

European product inventories (Registration status on mixtures):
Kemikalieinspektionen / Produktregistret / Swedish Chemicals Inspectorate - KemI (http://www.kemi.se):
This product was not registered.
Schweizerische Eidgenossenschaft - Bundesamt für Gesundheit - BAG (http://www.bag.admin.ch) / Anmeldestelle Chemikalien (http://www.cheminfo.ch) / Informationssystem für gefährliche und umweltrelevante Stoffe - IGS (http://igs.naz.ch/index.html):
This product was not registered.

International chemical inventories (Registration status on substances): No data available

A downstream user chemical safety assessment according to REACH (article 37.4) was performed for the following substance(s):
amines, C16-18-alkyl, EC-No.: 292-550-5
octadecylamine, EC-No.: 204-695-3

Links to the annexed exposure scenarios (ES) according to REACH (article 31.7):
Short title: Manufacture of plastics products, including compounding and conversation (industrial application).
PFA-DU-ES2
ODA-DU-ES2
Short title: Manufacture of plastics products, including compounding and conversation (professional application).
PFA-DU-ES4
ODA-DU-ES4

**15.2. Chemical safety assessment**

For the following substances of this mixture a chemical safety assessment has been carried out:
octadecylamine
hydrocarbons, C11-C12, isoalkanes, <2% aromatics
bis(1,2,2,6,6-pentamethyl-4-piperidyl) [[3,5-bis(1,1-dimethylethyl)4-hydroxyphenyl]methyl]butylmalonate
amines, C16-18-alkyl

## SECTION 16: Other information

**Changes**

This version replaces all former issues.

Changes made in this revision see section: 3, 11, 12, 15, 16.

**Abbreviations and acronyms**

ADN: European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways.
ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road.
ATE: Acute Toxicity Estimate.
CAS: Chemical Abstracts Service.
CEN: Comité Européen de Normalisation (European Committee for Standardisation).
CLP: Classification Labelling Packaging Regulation; Regulation (EC) No 1272/2008.
CSA: Chemical Safety Assessment.
CSR: Chemical Safety Report.
C&L: Classification & Labeling.
DNEL: Derived No-Effect Level.
EAK: European Waste Catalogue (replaced by LoW – see below).
EC50: Effective concentration, 50 percent.
ECHA: European Chemicals Agency.
EC: European community.

EINECS: European Inventory of Existing Commercial Chemical Substances.
ELINCS: European List of Notified Chemical Substances.
EN: European standard.
EWC: European Economic Community.
EEA: European Economic Area (EU + Iceland, Liechtenstein and Norway).
EU: European Union.
GHS: Globally Harmonized System of Classification and Labelling of Chemicals.
HSPA: Hydrocarbon Solvents Producers Association.
IATA-DGR: International Air Transport Association Dangerous Goods Regulations.
IBC-Code: International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk (International Bulk Chemical Code).
IC50 / ErC50: Inhibitory concentration, 50 percent.
ICAO-TI: International Cicil Aviation Organization Technical Instruction.
IMDG: International Maritime Dangerous Goods.
ISO: A standard of International Standards Organisation.
IUPAC: International Union for Pure and Applied Chemistry.
LC50: Lethal concentration, 50 percent.
LD50: Lethal Dose, 50 percent.
log Kow (Pow): octanol-water partition coefficient.
LoW: List of Wastes (see http://ec.europa.eu/environment/waste/framework/list.htm).
LQ: Limited Quantities.
MARPOL: Maritime Pollution Convention (Convention for the Prevention of Pollution from Ships).
OC: Operational Conditions.
OECD: Organisation for Economic Co-operation and Development.
OSHA: Occupational Safety and Health Agency.
PBT: Persistent, bioaccumulabe and toxic.
PEC: Predicted Effect Concentration.
PNEC: Predicted No-Effect Concentration.
PPE: Personal Protection Equipment.
(Q)SAR: Quantitative-Structure-Activity-Relationship.
REACH: Registration, Evaluation, Authorisation and Restriction of Chemicals; Regulation (EC) No 1907/2006.
RID: Regulations concerning the International Carriage of Dangerous Goods by Rail.
RMM: Risk Management Measure.
SVHC: Substances of Very High Concern.
STOT - RE: Specific Target Organ Toxicity - Repeated Exposure.
STOT - SE: Specific Target Organ Toxicity - Single Exposure.
UN: United Nations.
UVCB: Substances of Unknown or Variable composition, Complex reaction products or Biological materials.
vPvB: Very persistent and very bioaccumulable.
WoE: Weight of Evidence.

For abbreviations and acronyms, see table at http://abbrev.esdscom.eu

**Classification for mixtures and used evaluation method according to GB CLP Regulation**

| Classification | Classification procedure |
|---|---|
| Eye Irrit. 2; H319 | Calculation method |
| Aquatic Chronic 2; H411 | Calculation method |

**Relevant H and EUH statements (number and full text)**

| | |
|---|---|
| H301 | Toxic if swallowed. |
| H302 | Harmful if swallowed. |
| H304 | May be fatal if swallowed and enters airways. |
| H310 | Fatal in contact with skin. |
| H312 | Harmful in contact with skin. |
| H314 | Causes severe skin burns and eye damage. |
| H315 | Causes skin irritation. |
| H317 | May cause an allergic skin reaction. |
| H318 | Causes serious eye damage. |
| H319 | Causes serious eye irritation. |

| | |
|---|---|
| H330 | Fatal if inhaled. |
| H341 | Suspected of causing genetic defects. |
| H360FD | May damage fertility. May damage the unborn child. |
| H372 | Causes damage to organs through prolonged or repeated exposure. |
| H373 | May cause damage to organs through prolonged or repeated exposure. |
| H400 | Very toxic to aquatic life. |
| H410 | Very toxic to aquatic life with long lasting effects. |
| H411 | Toxic to aquatic life with long lasting effects. |
| H413 | May cause long lasting harmful effects to aquatic life. |
| EUH066 | Repeated exposure may cause skin dryness or cracking. |
| EUH071 | Corrosive to the respiratory tract. |
| EUH208 | Contains stannane, dibutylbis(dodecylthio)- (dibutyltin bis(lauryl mercaptide)); reaction mass of 5 -chloro-2-methyl-2H-isothiazol-3-one and 2-methyl-2H-isothiazol-3-one (3:1). May produce an allergic reaction. |

**Further Information**

Full text of all R-, H-, EUH-phrases which are referred to in section 2 and 3 of this safety data sheet - see previous list.
These (this) R-, H-, EUH-phrases/R-, H-, EUH-phrase apply/applies to the substance(s) of content, however, it does not necessarily show the classification of the product.

Key literature references and sources for data:
The classification corresponds to current EC-lists, but is completed by statements of technical literature and company data.

Other public accessible sources:
Regulation (EC) No. 1907/2006 (REACH) in the valid version in each case
Regulation (EC) No. 1272/2008 (CLP) in the valid version in each case

Further information and practical guides on the internet:
European Chemicals Agency - ECHA (http://echa.europa.eu)
ECHA - Information on Chemicals (http://echa.europa.eu/information-on-chemicals)
ECHA - Candidate List of Substances of Very High Concern for Authorisation (http://echa.europa.eu/de/candidate-list-table)
ECHA - List of restrictions table (http://echa.europa.eu/de/addressing-chemicals-of-concern/restrictions/list-of-restrictions/list-of-restrictions-table)
ECHA - Authorisation List (http://echa.europa.eu/hr/addressing-chemicals-of-concern/authorisation/recommendation-for-inclusion-in-the-authorisation-list/authorisation-list)
ECHA - C&L Inventory (http://echa.europa.eu/en/web/guest/regulations/clp/cl-inventory)
eChemPortal (http://www.echemportal.org)
The access to European Union law - EUR-Lex (http://eur-lex.europa.eu)
Health and Safety Executive (http://www.hse.gov.uk) / Control of Substances Hazardous to Health Regulations - COSHH (http://www.coshh-essentials.org.uk/Home.asp)
Pollution Prevention and Control Act and Pollution Prevention and Control Regulations

Recommended restriction of application:
See under section 1.2 - Uses advised against.
Use this product only for intended purpose in accordance with our product informations.
Please refer to our internet website for more information (http://www.acmos.com).

Training advice:
Yearly briefing and instruction of employees by means of operating instructions according to article 8 of EC-directive 98/24/EC.

Inquiry office: Laboratory (Division: Occupational- /Product security)
Contact person: Mr. Dryhaus (Telephone: +49-421-5189-0, Telefax: +49-421-5189-871)
Office hours: Mo - Th from 7.30 - 16.15 h and Fr from 7.30 - 13.30 h. Out of office hours no call diversion.

Disclaimer:

The information is based on the present level of our knowledge. It does not, however, give assurance of product properties and establishes no contract legal rights. The information contained herein are, to our knowledge at the time of their creation to be correct and been taken from sources deemed to be reliable. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release The receiver of our product is singularly responsible for adhering to existing laws and regulations. All descriptions are approximate values, they are not specified for construction of specifications. This safety data sheet does not represent any operating instruction according to national chemical regulations. It may be used for creation, but must not replace it. The employer is not relieved from his duties. All technical information to occupational protection are directed predominately to experts first (safety engineers, occupational medicines).

**Identified uses**

| No | Short title | LCS | SU | PC | PROC | ERC | AC | TF | Specification |
|---|---|---|---|---|---|---|---|---|---|
| 1 | Manufacture of plastics products, including compounding and conversion (industrial application) | IS | 12 | 24 | 7, 9, 10 | 4 | - | - | PFA-DU-ES2 |
| 2 | Manufacture of plastics products, including compounding and conversion (professional application) | PW | - | - | 9, 10, 11 | 4 | - | - | PFA-DU-ES4 |
| 3 | Manufacture of plastics products, including compounding and conversion (industrial application) | IS | 12 | 24 | 7, 9, 10 | 4 | - | - | ODA-DU-ES2 |
| 4 | Manufacture of plastics products, including compounding and conversion (professional application) | PW | - | - | 9, 10, 11 | 4 | - | - | ODA-DU-ES4 |

LCS: Life cycle stages
SU: Sectors of use
PC: Product categories
PROC: Process categories
ERC: Environmental release categories
AC: Article categories
TF: Technical functions

## SECTION 1: Identification of the substance/mixture and of the company/ undertaking

### 1.1 Product identifier
Aluminiumbronze 283

### 1.2 Relevant identified uses of the substance or mixture and uses advised against
#### Relevant identified uses
**Products Category [PC]**
PC 9 - Coatings and paints, fillers, putties, thinners.

#### Uses advised against
There are no information about relevant identified uses of the product according to the Regulation (EC) No. 1907/2006 (REACH-Regulation), which are advised against. For using the product observe the information in the Technical data sheet of the product.

### 1.3 Details of the supplier of the safety data sheet
#### Supplier
Brillux GmbH & Co KG
www.brillux.de

**Street :** Weseler Straße 401

**Postal code/City :** D - 48163 Münster

**Telephone :** +49 (0)251-7188-0

**Telefax :** +49 (0)251-7188-280

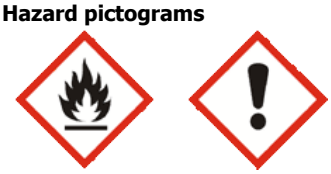
#### Information contact :
Electronic mail address of the well-informed person for safety data sheets:sdb@brillux.de

### 1.4 Emergency telephone number
Outside the business hours (9 a.m. to 5 p.m.):
(Giftinformationszentrum-Nord, Göttingen, consultation in german or english language)
Telephone: +49 (0)551-19240.

## SECTION 2: Hazards identification

### 2.1 Classification of the substance or mixture
#### Classification according to Regulation (EC) No 1272/2008 [CLP]
Flam. Liq. 3 ; H226 - Flammable liquids : Category 3 ; Flammable liquid and vapour.
STOT SE 3 ; H336 - STOT-single exposure : Category 3 ; May cause drowsiness or dizziness.
Aquatic Chronic 3 ; H412 - Hazardous to the aquatic environment : Chronic 3 ; Harmful to aquatic life with long lasting effects.

### 2.2 Label elements
#### Labelling according to Regulation (EC) No. 1272/2008 [CLP]
**Hazard pictograms**



Flame (GHS02) · Exclamation mark (GHS07)

**Signal word**
Warning

**Hazard components for labelling**
N-BUTYL ACETATE ; CAS No. : 123-86-4

**Hazard statements**

| | |
|---|---|
| H226 | Flammable liquid and vapour. |
| H336 | May cause drowsiness or dizziness. |
| H412 | Harmful to aquatic life with long lasting effects. |

**Precautionary statements**

| | |
|---|---|
| P261 | Avoid breathing vapours. |
| P501 | Dispose of contents/container to approved disposal company or local collection. |
| P102 | Keep out of reach of children. |
| P210 | Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. |
| P271 | Use only outdoors or in a well-ventilated area. |
| P273 | Avoid release to the environment. |
| P280 | Wear protective gloves/protective clothing/eye protection/face protection. |
| P312 | Call a POISON CENTER/doctor if you feel unwell. |
| P304+P340 | IF INHALED: Remove person to fresh air and keep comfortable for breathing. |
| P303+P361+P353 | IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water [or shower]. |

**Supplemental hazard information**

| | |
|---|---|
| EUH066 | Repeated exposure may cause skin dryness or cracking. |

### 2.3 Other hazards

The product does not contain any substances with endocrine-disrupting properties according to Article 59 Paragraph 1 or substances with endocrine-disrupting properties according to Regulations (EU) 2017/2100 or (EU) 2018/605.
The product does not contain any substances, which fulfil the criteria for PBT or vPvB in accordance with the Annex XIII of the Regulation (EC) No 1907/2006 (REACH-Regulation).

## SECTION 3: Composition/information on ingredients

### 3.2 Mixtures

**Description**

Mixture based on components, which are called following, and other components.

**Hazardous ingredients**

N-BUTYL ACETATE ; REACH No. : 01-2119485493-29 ; EC No. : 204-658-1; CAS No. : 123-86-4

| | |
|---|---|
| Weight fraction : | ≥ 20 - < 25 % |
| Classification 1272/2008 [CLP] : | Flam. Liq. 3 ; H226 STOT SE 3 ; H336 EUH066 |

ALUMINIUM POWDER ; REACH No. : 01-2119529243-45 ; EC No. : 231-072-3; CAS No. : 7429-90-5

| | |
|---|---|
| Weight fraction : | ≥ 10 - < 20 % |
| Classification 1272/2008 [CLP] : | Flam. Sol. 1 ; H228 |

ETHYLBENZENE ; REACH No. : 01-2119489370-35 ; EC No. : 202-849-4; CAS No. : 100-41-4

| | |
|---|---|
| Weight fraction : | ≥ 1 - < 10 % |
| Classification 1272/2008 [CLP] : | Flam. Liq. 2 ; H225 Asp. Tox. 1 ; H304 STOT RE 2 ; H373 Acute Tox. 4 ; H332 |

HYDROCARBONS, C9, AROMATICS ; REACH No. : 01-2119455851-35 ; EC No. : 918-668-5

| | |
|---|---|
| Weight fraction : | ≥ 2,5 - < 10 % |
| Classification 1272/2008 [CLP] : | Flam. Liq. 3 ; H226 Asp. Tox. 1 ; H304 STOT SE 3 ; H335 STOT SE 3 ; H336 Aquatic Chronic 2 ; H411 EUH066 |

XYLENE ; REACH No. : 01-2119488216-32 ; EC No. : 215-535-7; CAS No. : 1330-20-7

| | |
|---|---|
| Weight fraction : | ≥ 1 - < 10 % |
| Classification 1272/2008 [CLP] : | Flam. Liq. 3 ; H226 Asp. Tox. 1 ; H304 STOT RE 2 ; H373 Acute Tox. 4 ; H312 Acute Tox. 4 ; H332 Skin Irrit. 2 ; H315 Eye Irrit. 2 ; H319 STOT SE 3 ; H335 |

**Additional information**

The used hydrocarbons contain no benzene or benzene in concentrations less than 0.1 percent by weight and fulfil therefore the default(handicap) of the remark P to the appendix VI of the order (EC) No. 1272/2008 (GHS order).
For full text of Hazard- and EU Hazard-statements: see SECTION 16.

## SECTION 4: First aid measures

### 4.1 Description of first aid measures

#### General information

Immediately remove all contaminated clothing. In all cases of doubt, or when symptoms persist, seek medical attention. In case of unconsciousness: lay on side - call a doctor. Never give anything by mouth to an unconscious person. If medical advice is needed, have product container or label at hand.

#### Following inhalation

When symptoms persists, take the casualty into the fresh air and keep warm. Irregular breathing/no breathing: artificial respiration. Call a doctor and tell him the exactly substance.

#### In case of skin contact

Take off immediately all contaminated clothes. Wash away with soap and water and rinse. Do NOT use solvents or thinners. If skin irritation continues, consult a doctor.

#### After eye contact

Remove contact lenses, keep eyelids open. Rinse open eye immediately with plenty of running water. Seek medical adivce if complaint continues.

#### Following ingestion

Drink water in small draught. Keep at rest. Do not induce vomiting. When swallowed immediately consult and show packing or label to physician.

### 4.2 Most important symptoms and effects, both acute and delayed

Potential symptoms: Headache, dizziness, giddiness, skin irritation, eye iriitation and irritation to respiratory tract are possible.

### 4.3 Indication of any immediate medical attention and special treatment needed

No further relevant information available.

## SECTION 5: Firefighting measures

### 5.1 Extinguishing media

#### Suitable extinguishing media

In case of fire: Use alcohol resistant foam, CO2, powders or water spray for extinction.

#### Unsuitable extinguishing media

In case of fire: Do not use waterjet for extinction.

### 5.2 Special hazards arising from the substance or mixture

#### Hazardous combustion products

Fire will produce dense black smoke. Exposure to decomposition products may cause a health hazard.

### 5.3 Advice for firefighters

#### Special protective equipment for firefighters

At a fire caused by the product a breathing apparatus with an independent source of air is to have ready and to use if necessary for the firefighting.

### 5.4 Additional information

Cool endangered containers with water in case of fire. Do not allow run-off from fire-fighting to enter drains or water courses.

## SECTION 6: Accidental release measures

### 6.1 Personal precautions, protective equipment and emergency procedures

Refer to protective measures listed in sections 7 and 8. Keep away from ignition sources on account of the organic solvent content and air room well. Do not inhale vapours. Avoid contact with eyes and skin.

### 6.2 Environmental precautions

Do not empty into drains. If the product contaminates lakes, rivers or sewages, inform appropriate authorities in accordance with local regulations. Holding polluted washing water back and disposing of duly.

### 6.3 Methods and material for containment and cleaning up

#### For cleaning up

Contain and collect spillage with non-combustible absorbent materials, e.g. sand, earth, vermiculite, diatomaceous earth and place in container for disposal according to local regulations (see section 13). Ensure adequate ventilation. The areas concerned cleaning with a customary water based cleaning agent, not using organic solvents if possible.

### 6.4 Reference to other sections

See Section 7 for information on safe handling.
You find information about the safety equipment of persons in the section 8,
information about the refuse disposal in section 13.

## SECTION 7: Handling and storage

### 7.1 Precautions for safe handling

#### Protective measures

Ensure a good ventilation in room and working area. Prevent the creation of inflammable or explosive concentrations of vapour in air and avoid vapour concentrations higher than the OEL (=Occupational Exposure Limit). Only use the material in places where open light, fire and other flammable sources can be kept away. For personal protection see Section 8. Avoid contact with skin and eyes. Read label before use.

**Measures to prevent fire**

Vapours are heavier than air and may spread along floors. Vapours may form explosive mixtures with air. Avoid concentrations which form ignitable or explosive vapour and air mixtures. Likewise, avoid any concentration of vapour above the MAC-valve. Keep away from ignition sources - No smoking. Ground/bond container and receiving equipment. Use explosion-proof pipes, electrical, ventilating and lighting equipment. Use only non-sparking tools. Take precautionary measures against static discharge.

**Measures to prevent aerosol and dust generation**

Do not breathe gas or spray.

#### Advices on general occupational hygiene

While working do not eat , drink or smoke. Wash hands and face before breaks and after work and take a shower if necessary. Immediately remove all contaminated clothing.

### 7.2 Conditions for safe storage, including any incompatibilities

#### Requirements for storage rooms and vessels

Electrical equipment should be protected to the appropriate standard. Floors should be of the conducting type. Containers which are opened must be carefully resealed and kept upright to prevent leakage. Never use pressure to empty: container is not a pressure vessel. No smoking. Prevent unauthorized access. Do not store the product in lounge room. Keep only in the original container. Keep out of the reach of children. Keep container tightly closed. Store in a well-ventilated place. Keep cool.

#### Hints on joint storage

Keep away from oxidizing agents, from strongly alkaline and strongly acid materials. Store away from foodstuffs.

**Storage class (TRGS 510) :** 3

#### Further information on storage conditions

Keep container tightly sealed. Store at 5°-35°C. Containers should be kept dry and sealed.

### 7.3 Specific end use(s)

For using the product observe the information in the Technical data sheet of the product.

#### Industrial sector specific solutions

**GISCODE :** Product code in accordance with GISBAU (hazardous materials information system of the German professional associations of the building and construction industry) for colours and varnishes (GISCODE): BSL50

## SECTION 8: Exposure controls/personal protection

### 8.1 Control parameters

#### Occupational exposure limit values

N-BUTYL ACETATE ; CAS No. : 123-86-4

Limit value type (country of origin) : TRGS 900 ( D )
Limit value : 62 ppm / 300 mg/m³
Peak limitation : 2(I)
Remark : Y
Version : 02.07.2021

ALUMINIUM POWDER ; CAS No. : 7429-90-5
Limit value type (country of origin) : TRGS 900 ( D )
Parameter : E: inhalable fraction
Limit value : 10 mg/m³
Peak limitation : 2(II)
Version :

Limit value type (country of origin) : TRGS 900 ( D )
Parameter : A: respirable fraction
Limit value : 1,35 mg/m³
Peak limitation : 2(II)
Version :

ETHYLBENZENE ; CAS No. : 100-41-4
Limit value type (country of origin) : TRGS 900 ( D )
Limit value : 20 ppm / 88 mg/m³
Peak limitation : 2(II)
Remark : H, Y, DFG
Version : 02.07.2009

HYDROCARBONS, C9, AROMATICS
Limit value type (country of origin) : TRGS 900 ( D )
Parameter : Group limit for the calculation of the occupational exposure limit for hydrocarbon mixtures (see section 2.9 of Technical Rule 900).
Limit value : 50 mg/m³
Version :

XYLENE ; CAS No. : 1330-20-7
Limit value type (country of origin) : TRGS 900 ( D )
Limit value : 100 ppm / 440 mg/m³
Peak limitation : 4
Version : 01.10.1993

**Remark**
Short time value (STEL): Excess factor 2 (II) according to the german TRGS 900.
Taking into account the details mentioned in the TRGS 900 for the supervision of AGW.

## Biological limit values

ALUMINIUM POWDER ; CAS No. : 7429-90-5
Limit value type (country of origin) : TRGS 903 ( D )
Parameter : Aluminium / Urine (U) / At long term exposure: after several previous shifts
Limit value : 50 µg/g Creatinine
Version : 31.03.2004

ETHYLBENZENE ; CAS No. : 100-41-4
Limit value type (country of origin) : TRGS 903 ( D )
Parameter : Mandelic acid plus phenylglyoxylic acid / Urine (U) / End of exposure or end of shift
Limit value : 250 mg/g Creatinine
Version : 31.03.2004

XYLENE ; CAS No. : 1330-20-7
Limit value type (country of origin) : TRGS 903 ( D )
Parameter : Methylhippuric (toluric) acid (all isomers) / Urine (U) / End of exposure or end of shift
Limit value : 2000 mg/l
Version : 01.10.1993

## DNEL-/PNEC-values

**DNEL/DMEL**

N-BUTYL ACETATE ; CAS No. : 123-86-4

| | |
|---|---|
| Limit value type : | DNEL Consumer (systemic) |
| Exposure route : | Inhalation |
| Exposure frequency : | Long-term |
| Limit value : | 102,34 mg/m³ |
| Limit value type : | DNEL/DMEL (Industrial) |
| Exposure route : | Inhalation |
| Exposure frequency : | Short-term |
| Limit value : | 96 mg/kg |
| Limit value type : | DNEL/DMEL (Industrial) |
| Exposure route : | Inhalation |
| Exposure frequency : | Long-term |
| Limit value : | 48 mg/m³ |
| Limit value type : | DNEL/DMEL (Industrial) |
| Exposure route : | Dermal |
| Exposure frequency : | Long-term |
| Limit value : | 7 mg/kg |
| Limit value type : | DNEL/DMEL (Industrial) |
| Exposure route : | Inhalation |
| Exposure frequency : | Long-term |
| Limit value : | 480 mg/m³ |

HYDROCARBONS, C9, AROMATICS

| | |
|---|---|
| Limit value type : | DNEL/DMEL (Consumer) |
| Exposure route : | Dermal |
| Exposure frequency : | Long-term |
| Limit value : | 11 mg/kg |
| Assessment factor : | 1 D |
| Limit value type : | DNEL/DMEL (Consumer) |
| Exposure route : | Inhalation |
| Exposure frequency : | Long-term |
| Limit value : | 32 mg/m³ |
| Limit value type : | DNEL/DMEL (Consumer) |
| Exposure route : | Oral |
| Exposure frequency : | Long-term |
| Limit value : | 11 mg/kg |
| Assessment factor : | 1 D |

ETHYLBENZENE ; CAS No. : 100-41-4

| | |
|---|---|
| Limit value type : | DNEL/DMEL (Industrial) |
| Exposure route : | Inhalation |
| Exposure frequency : | Short-term |
| Limit value : | 289 mg/m³ |
| Limit value type : | DNEL/DMEL (Industrial) |
| Exposure route : | Inhalation |
| Exposure frequency : | Long-term |
| Limit value : | 77 mg/m³ |
| Limit value type : | DNEL/DMEL (Industrial) |
| Exposure route : | Dermal |
| Exposure frequency : | Long-term |
| Limit value : | 180 mg/kg |

HYDROCARBONS, C9, AROMATICS

| | |
|---|---|
| Limit value type : | DNEL/DMEL (Professional) |
| Exposure route : | Dermal |
| Exposure frequency : | Long-term |
| Limit value : | 25 mg/kg |
| Assessment factor : | 1 D |

| | |
|---|---|
| Limit value type : | DNEL/DMEL (Professional) |
| Exposure route : | Inhalation |
| Exposure frequency : | Long-term |
| Limit value : | 150 mg/m³ |

XYLENE ; CAS No. : 1330-20-7

| | |
|---|---|
| Limit value type : | DNEL/DMEL (Consumer) |
| Exposure route : | Inhalation |
| Exposure frequency : | Short-term |
| Limit value : | 174 mg/m³ |
| Limit value type : | DNEL/DMEL (Consumer) |
| Exposure route : | Inhalation |
| Exposure frequency : | Long-term |
| Limit value : | 14,8 mg/m³ |
| Limit value type : | DNEL/DMEL (Consumer) |
| Exposure route : | Oral |
| Exposure frequency : | Long-term |
| Limit value : | 1,6 mg/kg |
| Assessment factor : | 1 D |
| Limit value type : | DNEL/DMEL (Consumer) |
| Exposure route : | Dermal |
| Exposure frequency : | Long-term |
| Limit value : | 108 mg/kg |
| Assessment factor : | 1 D |
| Limit value type : | DNEL/DMEL (Professional) |
| Exposure route : | Inhalation |
| Exposure frequency : | Short-term |
| Limit value : | 289 mg/m³ |
| Limit value type : | DNEL/DMEL (Professional) |
| Exposure route : | Dermal |
| Exposure frequency : | Short-term |
| Limit value : | 174 mg/m³ |
| Limit value type : | DNEL/DMEL (Professional) |
| Exposure route : | Inhalation |
| Exposure frequency : | Long-term |
| Limit value : | 77 mg/m³ |

**PNEC**

N-BUTYL ACETATE ; CAS No. : 123-86-4

| | |
|---|---|
| Limit value type : | PNEC (Aquatic, freshwater) |
| Exposure route : | Water (Including sewage plant) |
| Limit value : | 0,18 mg/l |
| Limit value type : | PNEC (Aquatic, intermittent release) |
| Exposure route : | Water (Including sewage plant) |
| Limit value : | 0,36 mg/l |
| Limit value type : | PNEC (Aquatic, marine water) |
| Exposure route : | Water (Including sewage plant) |
| Limit value : | 0,018 mg/l |
| Limit value type : | PNEC (Sediment, freshwater) |
| Exposure route : | Soil |
| Limit value : | 0,981 mg/kg |
| Limit value type : | PNEC (Sediment, marine water) |
| Exposure route : | Soil |
| Limit value : | 0,0981 mg/kg |
| Limit value type : | PNEC soil |
| Exposure route : | Soil |
| Limit value : | 0,0903 mg/kg |

| | |
|---|---|
| Limit value type : | PNEC (Sewage treatment plant) |
| Exposure route : | Water (Including sewage plant) |
| Limit value : | 35,6 mg/l |
| XYLENE ; CAS No. : 1330-20-7 | |
| Limit value type : | PNEC (Aquatic, freshwater) |
| Exposure route : | Water (Including sewage plant) |
| Limit value : | 0,327 mg/l |
| Limit value type : | PNEC (Sediment, freshwater) |
| Exposure route : | Water (Including sewage plant) |
| Limit value : | 12,46 mg/kg |
| Limit value type : | PNEC soil |
| Exposure route : | Soil |
| Limit value : | 2,31 mg/kg |
| Limit value type : | PNEC (Sewage treatment plant) |
| Exposure route : | Water (Including sewage plant) |
| Limit value : | 6,58 mg/l |

## 8.2 Exposure controls

### Appropriate engineering controls

Provide adequate ventilation. Where reasonably practicable this should be achieved by the use of local exhaust ventilation and good general extraction. If these are not sufficient to maintain concentrations of particulates and solvent vapour below the OEL (=Occupational Exposure Limit), suitable respiratory protection must be worn. Observe data available of section 7.

### Personal protection equipment

### Eye/face protection

Use protection glasses in case of spattering.

### Skin protection

#### Hand protection

At use as agreed a protective gloves from nitrile rubber with a material thickness 0,38 mm has to be used. Notes of the manufacturer have to be taken into account. Penetration time of the glove material: > = 60 min.
By longer or repeated contact the penetration times can be considerably shorter. The protective gloves should replaced after the first wear out or a damage of the gloves. Gloves of cotton should be used under the gloves of polychloropren or nitrile rubber. After washing hands replace lost skin fat by fat containing skin creams.

#### Body protection

Using protective clothing.

### Respiratory protection

Breathing protection equipment is not required in good ventilated places. A respiratory protection (combination filter A2-P3) is required by inadequate ventilation. Do not inhale the vapour.

### General information

Avoid contact with eyes and skin. Immediately remove all contaminated clothing. Do not eat or drink during work - no smoking. Wash hands before breaks and after work. Ensure a good ventilation in room and working area. Do not breathe vapour.

### Environmental exposure controls

The product should not reach waters and the ground. If the product contaminates lakes, rivers or sewages, inform appropriate authorities in accordance with local regulations.

## SECTION 9: Physical and chemical properties

## 9.1 Information on basic physical and chemical properties

### Appearance

**Physical state :** Liquid.

**Colour :** conformable to product designation.

### Odour

characteristic

### Safety characteristics

| | | | | | |
|---|---|---|---|---|---|
| **Melting point/freezing point :** | ( 1013 hPa ) | | No data available | | |
| **Initial boiling point and boiling range :** | ( 1013 hPa ) | | 124 | °C | |
| **Decomposition temperature :** | ( 1013 hPa ) | | No data available | | |
| **Flash point :** | | | 27 | °C | |
| **Auto-ignition temperature :** | | | No data available | | |
| **Lower explosion limit :** | | | No data available | | |
| **Upper explosion limit :** | | | No data available | | |
| **Vapour pressure:** | ( 20 °C ) | | no data available | | |
| **Density :** | ( 20 °C ) | approx. | 1,05 | $g/cm^3$ | |
| **Solvent separation test :** | ( 20 °C ) | < | 3 | % | |
| **Water solubility :** | ( 20 °C ) | | practically insoluble | | |
| **pH :** | | | not applicable | | |
| **log P O/W :** | | | No data available | | |
| **Flow time :** | ( 20 °C ) | | 20 - 29 | s | DIN-cup 4 mm |
| **Viscosity :** | ( 20 °C ) | | No data available | | |
| **Kinematic viscosity :** | ( 40 °C ) | > | 20,5 | $mm^2/s$ | |
| **Relative vapour density :** | ( 20 °C ) | | No data available | | |
| **VOC-value :** | | max. | 500 | g/l | |
| **Flammable liquids :** | The product is ignitable. | | | | |
| **Particle Characterics :** | not applicable | | | | |

## 9.2 Other information

Other physical and chemical data have not been determined.

## SECTION 10: Stability and reactivity

### 10.1 Reactivity

No dangers connected by a possible reactivity of the product are known to proper handling and storage.

### 10.2 Chemical stability

Stable under recommended storage and handling conditions (see section 7).

### 10.3 Possibility of hazardous reactions

Vapours can form explosive mixtures with air. The formation of hydrogen is possible by the exposure of acids and bases.

### 10.4 Conditions to avoid

To avoid formation of ignitable vapour and air mixtures ensure good ventilation (inter alia extraction system). Keep away from frost, heat and direct sunlight.
Cleaning cloths saturated with solvent can ignite themselves. Therefore ensure safe disposal of waste. Prevent evaporation to dryness.

### 10.5 Incompatible materials

No dangerous reaction known. Keep away from oxidizing agents, strongly alkaline and strongly acid materials in order to avoid exothermic reactions.

### 10.6 Hazardous decomposition products

No dangerous decomposition product are known if stored and handled correctly. When exposed to high temperatures or in case of fire hazardous decomposition products such as carbon monoxide and dioxide, smoke, oxides of nitrogen, may produced.

## SECTION 11: Toxicological information

### 11.1 Information on hazard classes as defined in Regulation (EC) No 1272/2008

#### Acute toxicity

Acute toxicity:

- Acute oral toxicity: No data available;
- Acute dermal toxicity: No data available;
- Acute inhalation toxicity: No data available.

**Acute oral toxicity**

| | |
|---|---|
| Parameter : | LD50 ( SOLVENT NAPHTHA (PETROLEUM), LIGHT AROM. ; CAS No. : 64742-95-6 ) |
| Exposure route : | Oral |
| Species : | Rat |
| Effective dose : | > 6800 mg/kg |
| Parameter : | LD50 ( ETHYLBENZENE ; CAS No. : 100-41-4 ) |
| Exposure route : | Oral |
| Species : | Rat |
| Effective dose : | 3500 mg/kg |
| Parameter : | LD50 ( XYLENE ; CAS No. : 1330-20-7 ) |
| Exposure route : | Oral |
| Species : | Rat |
| Effective dose : | 8700 mg/kg |

**Acute dermal toxicity**

| | |
|---|---|
| Parameter : | LD50 ( SOLVENT NAPHTHA (PETROLEUM), LIGHT AROM. ; CAS No. : 64742-95-6 ) |
| Exposure route : | Dermal |
| Species : | Rabbit |
| Effective dose : | > 3400 mg/kg |
| Parameter : | LD50 ( ETHYLBENZENE ; CAS No. : 100-41-4 ) |
| Exposure route : | Dermal |
| Species : | Rabbit |
| Effective dose : | 5000 mg/kg |
| Parameter : | LD50 ( XYLENE ; CAS No. : 1330-20-7 ) |
| Exposure route : | Dermal |
| Species : | Rabbit |
| Effective dose : | 2000 mg/kg |

**Acute inhalation toxicity**

| | |
|---|---|
| Parameter : | LC50 ( SOLVENT NAPHTHA (PETROLEUM), LIGHT AROM. ; CAS No. : 64742-95-6 ) |
| Exposure route : | Inhalation |
| Species : | Rat |
| Effective dose : | > 10,2 mg/l |
| Exposure time : | 4 h |
| Parameter : | LC50 ( ALUMINIUM POWDER (STABILIZED) ; CAS No. : 7429-90-5 ) |
| Exposure route : | Inhalation |
| Species : | Rat |
| Effective dose : | > 5 mg/l |
| Exposure time : | 4 h |
| Parameter : | LC50 ( XYLENE ; CAS No. : 1330-20-7 ) |
| Exposure route : | Inhalation |
| Species : | Rat |
| Effective dose : | 6350 mg/l |

## Corrosion

Irritation:
- To the skin: Repeated exposure may cause skin dryness or cracking.
- At the eye: May cause mild, short-lasting discomfort to eyes.
- Respiratory tract: Irritation of the respiratory tract possible.

## Respiratory or skin sensitisation

A sensitizing effect by the product is not known.

## CMR effects (carcinogenicity, mutagenicity and toxicity for reproduction)

The product is not classified as human germ cell mutagenic, carcinogenic or human reproductive toxic (CMR effects).

## STOT-single exposure

Exposure to component solvents vapours concentration in excess of the stated occupational exposure limit may result in adverse health effect such as mucous membrane and respiratory system irritation, kidneys and liver damages, as well as leading the impairment of the central nervous system.
Symtoms and signs include headache: dizzines, fatique, muscular weakness, drowsiness and in extreme cases loss of consciouness.
The liquid splached in the eyes may cause irritation and reversible demage.

### STOT-repeated exposure

Repeated or prolonged contact with the preparation may cause removal of natural fat from the skin resulting in non-allergic contact dermatitis and absorption through the skin.

### Aspiration hazard

The product contains substances, which are classified as apiration toxicity, category 1 (May be fatal if swallowed and enters airways), in accordance to the Regulation (EC) No. 1272/2008 (CLP-Regulation) in there pure form. Based on available data the classification criteria according to Regulation (EC) No 1272/2008 [CLP] are not fulfilled.

## 11.2 Information on other hazards

### Endocrine disrupting properties

The product does not contain any substances with endocrine-disrupting properties according to Article 59 Paragraph 1 or substances with endocrine-disrupting properties according to Regulations (EU) 2017/2100 or (EU) 2018/605.

### Other adverse effects

This product is unlikely to harm health, given normal and proper handling and hygenic precautions.

### Additional information

The product is classified in toxicological terms on the basis of the results of the calculation procedure outlined within the Regulation (EC) No 1272/2008 (CLP-Regualtion), listed in sections 2 and 3.
At proper dealing and use as agreed the product does not cause any effects bad for health after our experiences and the information submitted to us.

## SECTION 12: Ecological information

## 12.1 Toxicity

### Aquatic toxicity

**Acute (short-term) fish toxicity**

| | |
|---|---|
| Parameter : | LC50 ( N-BUTYL ACETATE ; CAS No. : 123-86-4 ) |
| Species : | Pimephales promelas (fathead minnow) |
| Effective dose : | 18 mg/l |
| Exposure time : | 96 h |
| Parameter : | LC50 ( HYDROCARBONS, C9, AROMATICS ) |
| Species : | Oncorhynchus mykiss (Rainbow trout) |
| Effective dose : | 9,2 mg/l |
| Exposure time : | 96 h |
| Parameter : | LC50 ( XYLENE ; CAS No. : 1330-20-7 ) |
| Species : | Oncorhynchus mykiss (Rainbow trout) |
| Effective dose : | 2,6 mg/l |
| Exposure time : | 96 h |

**Acute (short-term) toxicity to crustacea**

| | |
|---|---|
| Parameter : | EC50 ( N-BUTYL ACETATE ; CAS No. : 123-86-4 ) |
| Species : | Daphnia magna (Big water flea) |
| Effective dose : | 44 mg/l |
| Exposure time : | 48 h |
| Parameter : | EC50 ( HYDROCARBONS, C9, AROMATICS ) |
| Species : | Daphnia magna (Big water flea) |
| Effective dose : | 3,2 mg/l |
| Exposure time : | 48 h |
| Parameter : | EC50 ( XYLENE ; CAS No. : 1330-20-7 ) |
| Species : | Daphnia magna (Big water flea) |

| | |
|---|---|
| Effective dose : | 1 - 10 mg/l |
| Exposure time : | 48 h |

**Acute (short-term) toxicity to algae and cyanobacteria**

| | |
|---|---|
| Parameter : | EC50 ( N-BUTYL ACETATE ; CAS No. : 123-86-4 ) |
| Species : | Desmodesmus subspicatus |
| Effective dose : | 647,7 mg/l |
| Exposure time : | 72 h |
| Parameter : | EL50 ( N-BUTYL ACETATE ; CAS No. : 123-86-4 ) |
| Species : | Desmodesmus subspicatus |
| Effective dose : | 200 mg/l |
| Parameter : | ErC50 ( HYDROCARBONS, C9, AROMATICS ) |
| Species : | Pseudokirchneriella subcapitata |
| Effective dose : | 2,6 - 2,9 mg/l |
| Exposure time : | 72 h |
| Parameter : | IC50 ( XYLENE ; CAS No. : 1330-20-7 ) |
| Species : | Scenedesmus subspicatus |
| Effective dose : | 2,2 mg/l |

**Toxicity to microorganisms**

| | |
|---|---|
| Parameter : | EC50 ( XYLENE ; CAS No. : 1330-20-7 ) |
| Species : | Bacteria toxicity |
| Effective dose : | 96 mg/l |
| Exposure time : | 24 h |

## 12.2 Persistence and degradability

These are not data avaible about the potential of the product concerning his persistency and degradability.

### Biodegradation

| | |
|---|---|
| Parameter : | Biodegradation ( XYLENE ; CAS No. : 1330-20-7 ) |
| Inoculum : | Biodegradation |
| Degradation rate : | > 60 % |
| Test duration : | 28 D |

## 12.3 Bioaccumulative potential

These are not data availble about the bio accumulation potential of the product.

## 12.4 Mobility in soil

These are not datas availble about the potential of the product concerning his mobility in the ground.
A penetrating into soil, waters and sewage system should be prevented.

## 12.5 Results of PBT and vPvB assessment

The substances in the mixture do not meet the PBT/vPvB criteria according to REACH, annex XIII.

## 12.6 Endocrine disrupting properties

The product does not contain any substances with endocrine-disrupting properties according to Article 59 Paragraph 1 or substances with endocrine-disrupting properties according to Regulations (EU) 2017/2100 or (EU) 2018/605.

## 12.7 Other adverse effects

Harmful to aquatic life, may cause long-term adverse effects in the aquatic environment.

## 12.8 Additional ecotoxicological information

Avoid exposing into ground, waterways and drainage.
The classification of the product is based on summation of classified components according to the Regulation (EC) No 1272/2008 (CLP-Regulation). See details in sections 2 and 3.

# SECTION 13: Disposal considerations

## 13.1 Waste treatment methods

### Directive 2008/98/EC (Waste Framework Directive)

**Before intended use**

Dispose of contents/container to approved disposal company or local collection according to the local regulations.

Packaging with not dry uped residues have to droped at official collecting sites. Packaging with dry uped residues can be disposed together with household garbage or building site garbage. Do not empty into waters or drains.

**Waste codes/waste designations according to EWC/AVV**

For the product:
Disposal-definition No.: 08 01 11* - Paint and varnish waste which contains organic solvents or other dangerous substances.

**After intended use**

Only empty packaging can be transfered to recycling. Uncleaned packaging must be disposed of in the same manner as the medium.

**Waste codes/waste designations according to EWC/AVV**

For the uncleaned packaging:
Disposal-definition No.: 15 01 10 * packings which contain dangerous substances or are polluted by dangerous substances.

## SECTION 14: Transport information

### 14.1 UN number

UN 1263

### 14.2 UN proper shipping name

**Land transport (ADR/RID)**
PAINT

**Sea transport (IMDG)**
PAINT

**Air transport (ICAO-TI / IATA-DGR)**
PAINT

### 14.3 Transport hazard class(es)

**Land transport (ADR/RID)**

| | |
|---|---|
| **Class(es) :** | 3 |
| **Classification code :** | F1 |
| **Hazard identification number (Kemler No.) :** | 30 |
| **Tunnel restriction code :** | D/E |
| **Special provisions :** | 640E · E 1 |
| **Hazard label(s) :** | 3 |

**Sea transport (IMDG)**

| | |
|---|---|
| **Class(es) :** | 3 |
| **EmS-No. :** | F-E / S-E |
| **Special provisions :** | LQ 5 l · E 1 |
| **Hazard label(s) :** | 3 |

**Air transport (ICAO-TI / IATA-DGR)**

| | |
|---|---|
| **Class(es) :** | 3 |
| **Hazard label(s) :** | 3 |

### 14.4 Packing group

III

### 14.5 Environmental hazards

**Land transport (ADR/RID) :** No
**Sea transport (IMDG) :** No
**Air transport (ICAO-TI / IATA-DGR) :** No

### 14.6 Special precautions for user

None

### 14.7 Transport in bulk according to Annex II of Marpol and the IBC Code

Not relevant because the product in type of delivery does not transport in bulks according to the Internationa Maritime

Organization (IMO) instruments.

### 14.8 Additional information

ADR/RID: Limited quantities.

## SECTION 15: Regulatory information

### 15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

**EU legislation**

**Other regulations (EU)**

**Directive 2004/42/EC on the limitation of emissions of volatile organic compounds**

Product sub-category and VOC limiting values in accordance with appendix II, letter A of the guideline:
Category i, type Lb;
VOC limiting value of the category for 2010: 500 g/l.
This product contains max. 500 g/l VOC.

**National regulations**

**Water hazard class**

Classification according to AwSV - Class : 2 (Obviously hazardous to water)

**Additional information**

The product is not classified as a solid substance according to the criteria of the Penetrometer test (ADR, part 2, section 2.3.4) and also fulfils not the criteria for solid substances according to the TRwS 779 number 2.1.1.
Maternity regulations and Young Persons Employment Act are to take into account.

### 15.2 Chemical Safety Assessment

A chemical safety assessments was not carried out.

## SECTION 16: Other information

### 16.1 Indication of changes

None

### 16.2 Abbreviations and acronyms

ADN: European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways (Accord européen relatif au transport international des marchandises dangereuses par voies de navigation intérieures)
ADR: European agreement concerning the international carriage of dangerous goods by road (Accord européen relatif transport des merchandises dangereuses par route)
AGW: Occupational threshold limit value (Arbeitsplatzgrenzwert – Germany) AOX: Adsorbable Organic halogen compounds
ATEmix: Calculated acute toxicity estimate of mixture
BCF: Bio-Concentration Factor
CAS: Chemical Abstract Service
CLP: Classification, Labelling and Packaging
CMR: Substances classified as Carcinogenic, Mutagenic or toxic for Reproduction
CSR: Chemical Safety Report
DNEL: Derived No Effect Level
EC: European Commission
EC50: Effective Concentration 50%
ECHA: European Chemical Agency
EEC: European Economic Community
EINECS: European Inventory of Existing Commercial Chemical Substances
ELINCS: European List of Notified Chemical Substances
EWC: European Waste Catalogue
GHS: Globally Harmonised System of Classification, Labelling and Packaging of Chemicals
IATA: International Air Transport Association
ICAO: International Civil Aviation Organization
IC50: Inhibition Concentration 50%
IMDG Code: International Maritime Dangerous Goods Code

IMO: International Maritime Organization
LC50: Lethal concentration 50%
LD50: Lethal Dose 50%
LOAEL: Lowest Observed Adverse Effect Level
LOEL: Lowest observable effect level
MAK: Treshold limit values Germany (Maximale Arbeitsplatzkonzentration - DFG)
MARPOL: Convention for the Preventation of Marine Pollution from Ships
MVZ: molar ratio
n.a.: Not applicable
n.d.: Not determined
n.r.: Not relevant
NLP: No Longer Polymers
NOAEC: No Observed Adverse Effect Concentration
NOAEL: No Observed Adverse Effect Level
NOEC: No Observed Effect Concentration
NOEL: No Observed Effect Level
OEL: Occupational Exposure Limit
PBT: Persistent, bioaccumulative, toxic
PNEC: Predicted No Effect Concentration
RCP: Reciprocal calculation procedure
REACH: Registration, Evaluation and Authorization of Chemical)
RID: Regulations concerning the international carriage of dangerous goods by rail (Règlement International concernant le transport de marchandises dangereuses par chemin de fer)
STEL: Short-term Exposure Limit
SVHC: Substance of Very High Concern
TLV - TWA: Threshold Limit Value - Time Weighed Average
VOC: Volatile Organic Compounds
vPvB: Very persistent, very bioaccumulative.

## 16.3 Key literature references and sources for data

None

## 16.4 Classification for mixtures and used evaluation method according to regulation (EC) No 1272/2008 [CLP]

The evaluation of hazard information of the product was carried out in accordance to Annex I of the REGULATION (EC) No 1272/2008 (CLP Regulation).

## 16.5 Relevant H- and EUH-phrases (Number and full text)

| | |
|---|---|
| H225 | Highly flammable liquid and vapour. |
| H226 | Flammable liquid and vapour. |
| H228 | Flammable solid. |
| H304 | May be fatal if swallowed and enters airways. |
| H312 | Harmful in contact with skin. |
| H315 | Causes skin irritation. |
| H319 | Causes serious eye irritation. |
| H332 | Harmful if inhaled. |
| H335 | May cause respiratory irritation. |
| H336 | May cause drowsiness or dizziness. |
| H373 | May cause damage to organs through prolonged or repeated exposure. |
| H411 | Toxic to aquatic life with long lasting effects. |
| EUH066 | Repeated exposure may cause skin dryness or cracking. |

## 16.6 Training advice

None

## 16.7 Additional information

None

The above information describes exclusively the safety requirements of the product and is based on our present-day knowledge. The information is intended to give you advice about the safe handling of the product named in this safety data sheet, for storage, processing, transport and disposal. The information cannot be transferred to other products. In the case of

mixing the product with other products or in the case of processing, the information on this safety data sheet is not necessarily valid for the new made-up material.

# APPENDIX XI
# BENTLEY INTERIOR PANELS (BOOT KIT)

# Safety data sheet
## according to UK REACH

Printing date 27.11.2024 Version number 27 (replaces version 26) Revision: 27.11.2024

## SECTION 1: Identification of the substance/mixture and of the company/ undertaking

· **1.1 Product identifier**
· **Trade name Jowatherm® POR 628.90**
· **1.2 Relevant identified uses of the substance or mixture and uses advised against**
No further relevant information available.
· **Application of the substance / the mixture** Adhesives

· **1.3 Details of the supplier of the safety data sheet**
· **Manufacturer/Supplier:**
Jowat SE
Ernst-Hilker-Str. 10 - 14; D - 32758 Detmold
Fon +49 (0)5231 749 0
e-mail: info@jowat.de
www.jowat.de
· **Department issuing data specification sheet:**
Environmental management
Tel. +49 5231 749 -5374 / -218 / -5460 / -5592
e-mail: umweltmanagement@jowat.de
· **Department providing the information:**
Jowat UK Ltd.
Lymedale Business Centre
Lymedale Business Park
Hooters Hall Road
Newcastle-under-Lyme
Staffordshire
ST5 9QF
Phone: +44 1782 565265
E-mail: nick.orton@jowat.co.uk
· **1.4 Emergency telephone number:**
-
Members of the public seeking specific information on poisons should contact:
In England and Wales: NHS 111 - dial 111
In Scotland: NHS 24 - dial 111

## SECTION 2: Hazards identification

· **2.1 Classification of the substance or mixture**
· **Classification according to Regulation (EC) No 1272/2008**
The product does not meet the criteria for classification according to Regulation (EC) 1272/2008.
The creation of a safety data sheet is therefore not mandatory. This document is prepared as a voluntary and additional service to provide general safety information.

· **2.2 Label elements**
· **Labelling according to Regulation (EC) No 1272/2008** not applicable
· **Hazard pictograms** not applicable
· **Signal word** not applicable
· **Hazard statements** not applicable
· **Additional information:**
Contains maleic anhydride. May produce an allergic reaction.
Safety data sheet available on request.
· **2.3 Other hazards**
· **Results of PBT and vPvB assessment**
· **PBT:** Not applicable.
· **vPvB:** Not applicable.

## SECTION 3: Composition/information on ingredients

· **3.2 Mixtures**
· **Description:** Hot melt adhesive

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**Trade name Jowatherm® POR 628.90**

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| · **Dangerous components:** | | |
|---|---|---|
| CAS: 108-31-6<br>EINECS: 203-571-6<br>registration number: 01-2119472428-31 | maleic anhydride<br>Resp. Sens. 1, H334; STOT RE 1, H372; Skin Corr. 1B, H314; Eye Dam. 1, H318; Acute Tox. 4, H302; Skin Sens. 1A, H317, EUH071<br>Specific concentration limit: Skin Sens. 1A; H317: C ≥ 0.001 % | <0.1% |

· **Additional information**
If any R-phrases (risk-phrases) are listed, please refer for the exact wording to section 16.

## SECTION 4: First aid measures

· **4.1 Description of first aid measures**
· **After inhalation** Supply fresh air; consult physician in case of symptoms.
· **After skin contact**
After contact with the molten product, cool rapidly with cold water.
Do not pull solidified product away from the skin.
Seek medical treatment.
· **After eye contact** Rinse opened eye for several minutes under running water.
· **After swallowing** In case of persistent symptoms consult physician.
· **4.2 Most important symptoms and effects, both acute and delayed**
No further relevant information available.
· **4.3 Indication of any immediate medical attention and special treatment needed**
No further relevant information available.

## SECTION 5: Firefighting measures

· **5.1 Extinguishing media**
· **Suitable extinguishing agents**
CO2, extinguishing powder or water jet. Fight larger fires with water jet or alcohol-resistant foam.
· **For safety reasons unsuitable extinguishing agents** Water with a full water jet.
· **5.2 Special hazards arising from the substance or mixture**
Can be released in case of fire
Carbon monoxide (CO)
Under certain fire conditions, traces of other toxic gases cannot be excluded.
· **5.3 Advice for firefighters**
· **Protective equipment:** Do not inhale explosion gases or combustion gases.

## SECTION 6: Accidental release measures

· **6.1 Personal precautions, protective equipment and emergency procedures**
Wear protective clothing.
· **6.2 Environmental precautions:** No special measures required.
· **6.3 Methods and material for containment and cleaning up:**
Collect mechanically.
Allow to solidify. Collect mechanically.
· **6.4 Reference to other sections**
See Section 7 for information on safe handling
See Section 8 for information on personal protection equipment.
See Section 13 for information on disposal.
No dangerous materials are released.

## SECTION 7: Handling and storage

· **7.1 Precautions for safe handling**
Store in cool, dry place in tightly closed containers.
Use only in well ventilated areas.
· **Information about protection against explosions and fires:** No special measures required.

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**Trade name Jowatherm® POR 628.90**

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· **7.2 Conditions for safe storage, including any incompatibilities**
· **Storage**
· **Requirements to be met by storerooms and containers:** No special requirements.
· **Information about storage in one common storage facility:** Not required.
· **Further information about storage conditions:** None.
· **7.3 Specific end use(s)** No further relevant information available.

* 
## SECTION 8: Exposure controls/personal protection

· **8.1 Control parameters**

| · **Components with critical values that require monitoring in the workplace:** | |
|---|---|
| **108-31-6 maleic anhydride (<0.1%)** | |
| WEL | Short-term value: 3 mg/m³<br>Long-term value: 1 mg/m³<br>Sen |

· **Regulatory information** WEL: EH40/2020
· **Additional information:** The lists that were valid during the compilation were used as basis.

· **8.2 Exposure controls**
· **Appropriate engineering controls** No further data; see section 7.
· **Additional information about design of technical systems:** No further data; see section 7.
· **Individual protection measures, such as personal protective equipment**
· **General protective and hygienic measures**
Standard precautionary measures for handling chemicals are to be observed.
Keep away from food, beverages and animal feed.
Instantly remove any soiled and impregnated garments.
Wash hands during breaks and at the end of work.
Vacuum clean contaminated clothing. Do not blow or brush off contamination.
Avoid skin contact with the liquefied material.
Do not eat or drink while working.
· **Breathing equipment:** Not necessary if room is well-ventilated.
· **Hand protection** Heat resistant gloves
· **Material of gloves**
Leather gloves
Strong gloves
· **Penetration time of glove material** No special requirements.
· **Eye/face protection** Not required.

* 
## SECTION 9: Physical and chemical properties

· **9.1 Information on basic physical and chemical properties**
· **General Information**

| | |
|---|---|
| · **Physical state** | Solid. |
| · **Colour:** | According to product specification |
| · **Smell:** | Characteristic |
| · **Odour threshold:** | Not determined. |
| · **Melting point/freezing point:** | 90 °C |
| · **Boiling point or initial boiling point and boiling range** | Not determined |
| · **Flammability** | Product is not inflammable. |
| · **Lower and upper explosion limit** | |
| · **Lower:** | Not determined. |
| · **Upper:** | 28.2 Vol % |
| · **Flash point:** | >180 °C |
| · **Auto-ignition temperature:** | >300 °C (128685-99-4 ALPHA-OLEFINS(C30+)) |
| · **Decomposition temperature:** | > 250 °C |
| · **pH** | Not applicable. |

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**Trade name Jowatherm® POR 628.90**

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| | |
|---|---|
| · **Viscosity:** | |
| · **Kinematic viscosity** | Not applicable. |
| · **dynamic:** | Not applicable. |
| · **Solubility** | |
| · **Water:** | Unsoluble |
| · **Partition coefficient n-octanol/water (log value)** | Not determined. |
| · **Vapour pressure at 20 °C:** | 12 hPa<br>< 0,01 hPa |
| · **Density and/or relative density** | |
| · **Density at 20 °C** | 0.92 g/cm³ |
| · **Relative density** | Not determined. |
| · **Vapour density** | Not applicable. |

| | |
|---|---|
| · **9.2 Other information** | |
| · **VOC - Volatile Organic Compounds** | |
| · **European Union** | 0.00 % |
| · **Switzerland** | 0.00 % |
| · **U.S.A (less water and less exempts)** | 0.0 g/l / 0.00 lb/gal |
| · **Appearance:** | |
| · **Form:** | Solid. |
| · **Important information on protection of health and environment, and on safety.** | |
| · **Spontaneous combustion:** | Product does not undergo spontaneous combustion. |
| · **Explosive properties:** | Product is not explosive. |
| · **Solvent content:** | |
| · **Solid content:** | 100.0 % |
| · **Change in condition** | |
| · **Evaporation rate** | Not applicable. |

| | |
|---|---|
| · **Information with regard to physical hazard classes** | |
| · **Explosives** | not applicable |
| · **Flammable gases** | not applicable |
| · **Aerosols** | not applicable |
| · **Oxidising gases** | not applicable |
| · **Gases under pressure** | not applicable |
| · **Flammable liquids** | not applicable |
| · **Flammable solids** | not applicable |
| · **Self-reactive substances and mixtures** | not applicable |
| · **Pyrophoric liquids** | not applicable |
| · **Pyrophoric solids** | not applicable |
| · **Self-heating substances and mixtures** | not applicable |
| · **Substances and mixtures, which emit flammable gases in contact with water** | not applicable |
| · **Oxidising liquids** | not applicable |
| · **Oxidising solids** | not applicable |
| · **Organic peroxides** | not applicable |
| · **Corrosive to metals** | not applicable |
| · **Desensitised explosives** | not applicable |

## SECTION 10: Stability and reactivity

· **10.1 Reactivity** No further relevant information available.
· **10.2 Chemical stability**
· **Thermal decomposition / conditions to be avoided:**
No decomposition if used according to specifications.
To avoid thermal decomposition do not overheat.

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# Safety data sheet
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· **10.3 Possibility of hazardous reactions**
Toxic fumes may be released if heated above the decomposition point
No dangerous reactions known
· **10.4 Conditions to avoid** No further relevant information available.
· **10.5 Incompatible materials:** No further relevant information available.
· **10.6 Hazardous decomposition products:**
Carbon monoxide
Inflammable gases/vapours
Carbon monoxide and carbon dioxide
Danger of toxic pyrolysis products

* 
## SECTION 11: Toxicological information

· **11.1 Information on hazard classes as defined in Regulation (EC) No 1272/2008**

· **Acute toxicity** Based on available data, the classification criteria are not met.
· **to the skin:** Based on available data, the classification criteria are not met.
· **to the eye:** Based on available data, the classification criteria are not met.
· **Respiratory or skin sensitisation** Based on available data, the classification criteria are not met.
· **Germ cell mutagenicity** Based on available data, the classification criteria are not met.
· **Carcinogenicity** Based on available data, the classification criteria are not met.
· **Reproductive toxicity** Based on available data, the classification criteria are not met.
· **STOT-single exposure** Based on available data, the classification criteria are not met.
· **STOT-repeated exposure** Based on available data, the classification criteria are not met.
· **Aspiration hazard** Based on available data, the classification criteria are not met.

· **11.2 Information on other hazards**

| · **Endocrine disrupting properties** |
|---|
| None of the ingredients is listed. |

## SECTION 12: Ecological information

· **12.1 Toxicity**
· **Aquatic toxicity:** No further relevant information available.
· **12.2 Persistence and degradability** No further relevant information available.
· **12.3 Bioaccumulative potential** No further relevant information available.
· **12.4 Mobility in soil** No further relevant information available.
· **12.5 Results of PBT and vPvB assessment**
· **PBT:** Not applicable.
· **vPvB:** Not applicable.
· **12.6 Endocrine disrupting properties**
The product does not contain substances with endocrine disrupting properties.
· **12.7 Other adverse effects**
· **Additional ecological information:**
· **General notes:** Generally not hazardous for water.

## SECTION 13: Disposal considerations

· **13.1 Waste treatment methods**
· **Recommendation**
Smaller quantities can be disposed with household garbage.
Can be reused without processing.

· **Uncleaned containers/packaging material:**
· **Recommendation:**
Non contaminated packagings can be reused.
Non contaminated packagings can be used for recycling.
Packaging with cured adhesive residues can be recycled.
Packaging with cured adhesive residues can be treated as household waste.

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## SECTION 14: Transport information

| | |
|---|---|
| · **14.1 UN number or ID number** | |
| · **ADR, ADN, IMDG, IATA** | not applicable |
| · **14.2 UN proper shipping name** | |
| · **ADR** | not applicable<br>not applicable |
| · **ADN, IMDG, IATA** | not applicable |
| · **14.3 Transport hazard class(es)** | |
| · **ADR, ADN, IMDG, IATA** | |
| · **Class** | not applicable |
| · **14.4 Packing group** | |
| · **ADR, IMDG, IATA** | not applicable |
| · **14.5 Environmental hazards:** | |
| · **Marine pollutant:** | No |
| · **14.6 Special precautions for user** | Not applicable. |
| · **14.7 Maritime transport in bulk according to IMO instruments** | Not applicable. |
| · **Transport/Additional information:** | Not dangerous according to the above specifications. |
| · **UN "Model Regulation":** | not applicable |

## SECTION 15: Regulatory information

· **15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture**
No further relevant information available.

· **Poisons Act**

| · **Regulated explosives precursors** |
|---|
| None of the ingredients is listed. |

| · **Regulated poisons** |
|---|
| None of the ingredients is listed. |

| · **Reportable explosives precursors** |
|---|
| None of the ingredients is listed. |

| · **Reportable poisons** |
|---|
| None of the ingredients is listed. |

· **15.2 Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.

## SECTION 16: Other information

These data are based on our present knowledge. They shall, however, not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.
All standard industrial precautions apply, concerning protection of health, and safe handling. The recommendations have to be examined in the context of the application for which the product is intended, and observed as necessary.

· **Relevant phrases**
H302 Harmful if swallowed.
H314 Causes severe skin burns and eye damage.
H317 May cause an allergic skin reaction.
H318 Causes serious eye damage.
H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.
H372 Causes damage to organs through prolonged or repeated exposure.
EUH071 Corrosive to the respiratory tract.

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# Safety data sheet
## according to UK REACH



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· **Abbreviations and acronyms:**
RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)
ICAO: International Civil Aviation Organisation
ADR: Accord relatif au transport international des marchandises dangereuses par route (European Agreement Concerning the International Carriage of Dangerous Goods by Road)
IMDG: International Maritime Code for Dangerous Goods
IATA: International Air Transport Association
GHS: Globally Harmonised System of Classification and Labelling of Chemicals
EINECS: European Inventory of Existing Commercial Chemical Substances
ELINCS: European List of Notified Chemical Substances
CAS: Chemical Abstracts Service (division of the American Chemical Society)
PBT: Persistent, Bioaccumulative and Toxic
vPvB: very Persistent and very Bioaccumulative
Acute Tox. 4: Acute toxicity – Category 4
Skin Corr. 1B: Skin corrosion/irritation – Category 1B
Eye Dam. 1: Serious eye damage/eye irritation – Category 1
Resp. Sens. 1: Respiratory sensitisation – Category 1
Skin Sens. 1A: Skin sensitisation – Category 1A
STOT RE 1: Specific target organ toxicity (repeated exposure) – Category 1

· *** Data modified in comparison to the previous version.**

## SECTION 1: Identification of the substance/mixture and of the company/undertaking

### 1.1 Product identifier

Trade name : SikaMelt®-885 IA

### 1.2 Relevant identified uses of the substance or mixture and uses advised against

Product use : Adhesive

### 1.3 Details of the supplier of the safety data sheet

Company name of supplier : Sika Automotive Hamburg GmbH
Reichsbahnstr. 99
22525 Hamburg

Telephone : +49 40 540 020
Telefax : +49 40 540 025 88
E-mail address of person responsible for the SDS : EHS_Automotive@de.sika.com

### 1.4 Emergency telephone number

Emergency CONTACT (24-Hour-Number):
GBK GmbH Global Regulatory Compliance +49(0)6132-84463

## SECTION 2: Hazards identification

### 2.1 Classification of the substance or mixture

**Classification (REGULATION (EC) No 1272/2008)**

Not a hazardous substance or mixture according to Regulation (EC) No. 1272/2008.

### 2.2 Label elements

**Labelling (REGULATION (EC) No 1272/2008)**

Not a hazardous substance or mixture according to Regulation (EC) No. 1272/2008.

### 2.3 Other hazards

This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

## SECTION 3: Composition/information on ingredients

### 3.2 Mixtures

**Components**

Remarks : No hazardous ingredients

## SECTION 4: First aid measures

### 4.1 Description of first aid measures

| | | |
|---|---|---|
| General advice | : | No hazards which require special first aid measures. |
| If inhaled | : | Move to fresh air. |
| In case of skin contact | : | Take off contaminated clothing and shoes immediately.<br>Wash off with soap and plenty of water. |
| In case of eye contact | : | Remove contact lenses.<br>Keep eye wide open while rinsing. |
| If swallowed | : | Do not induce vomiting without medical advice.<br>Rinse mouth with water.<br>Do not give milk or alcoholic beverages.<br>Never give anything by mouth to an unconscious person. |

### 4.2 Most important symptoms and effects, both acute and delayed

| | | |
|---|---|---|
| Symptoms | : | See Section 11 for more detailed information on health effects and symptoms. |
| Risks | : | No known significant effects or hazards. |

### 4.3 Indication of any immediate medical attention and special treatment needed

| | | |
|---|---|---|
| Treatment | : | Treat symptomatically. |

## SECTION 5: Firefighting measures

### 5.1 Extinguishing media

| | | |
|---|---|---|
| Suitable extinguishing media | : | In case of fire, use water/water spray/water jet/carbon dioxide/sand/foam/alcohol resistant foam/chemical powder for extinction. |

### 5.2 Special hazards arising from the substance or mixture

| | | |
|---|---|---|
| Hazardous combustion products | : | No hazardous combustion products are known |

### 5.3 Advice for firefighters

| | | |
|---|---|---|
| Special protective equipment for firefighters | : | In the event of fire, wear self-contained breathing apparatus. |
| Further information | : | Standard procedure for chemical fires. |

## SECTION 6: Accidental release measures

### 6.1 Personal precautions, protective equipment and emergency procedures

Personal precautions : For personal protection see section 8.

### 6.2 Environmental precautions

Environmental precautions : No special environmental precautions required.

### 6.3 Methods and material for containment and cleaning up

Methods for cleaning up : Wipe up with absorbent material (e.g. cloth, fleece).
Keep in suitable, closed containers for disposal.

### 6.4 Reference to other sections

For personal protection see section 8.

## SECTION 7: Handling and storage

### 7.1 Precautions for safe handling

Advice on safe handling : For personal protection see section 8.
No special handling advice required.
Follow standard hygiene measures when handling chemical products

Advice on protection against fire and explosion : Normal measures for preventive fire protection.

Hygiene measures : When using do not eat or drink. When using do not smoke.

### 7.2 Conditions for safe storage, including any incompatibilities

Requirements for storage areas and containers : Keep container tightly closed in a dry and well-ventilated place. Store in accordance with local regulations.

Advice on common storage : No special restrictions on storage with other products.

Further information on storage stability : No decomposition if stored and applied as directed.

### 7.3 Specific end use(s)

Specific use(s) : Consult most current local Product Data Sheet prior to any use.

## SECTION 8: Exposure controls/personal protection

### 8.1 Control parameters

Contains no substances with occupational exposure limit values.

### 8.2 Exposure controls

**Personal protective equipment**

| | | |
|---|---|---|
| Eye protection | : | Safety glasses |
| Hand protection | : | Chemical-resistant, impervious gloves complying with an approved standard must be worn at all times when handling chemical products. Reference number EN 374. Follow manufacturer specifications.<br><br>Butyl rubber/nitrile rubber gloves (0,4 mm)<br>Recommended: Butyl rubber/nitrile rubber gloves. |
| | : | When handling hot material, wear heat-resistant protective gloves that are able to withstand the temperature of molten product. |
| Skin and body protection | : | Protective clothing (e.g. Safety shoes acc. to EN ISO 20345, long-sleeved working clothing, long trousers). Rubber aprons and protective boots are additionaly recommended for mixing and stirring work. |
| Respiratory protection | : | Even at normal processing temperatures it may occur that hot melts form vapours, which often have an unpleasant odour. If the recommended processing temperatures are exceeded over a fairly long period, additionaly the formation of hazardous organic decomposition products is possible. It is recommended to remove such vapours e.g. by using an efficient exhauster.<br><br>In case of inadequate ventilation wear respiratory protection. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.<br>organic vapor (Type A) and particulate filter<br>A1: < 1000 ppm; A2: < 5000 ppm; A3: < 10000 ppm<br>P1: Inert material; P2, P3: hazardous substances<br>Ensure adequate ventilation. This can be achieved by local exhaust extraction or by general ventilation. (EN 689 - Methods for determining inhalation exposure). This applies in particular to the mixing / stirring area. In case this is not sufficent to keep the concentrations under the occupational exposure limits then respiration protection measures must be used. |

**Environmental exposure controls**

| | | |
|---|---|---|
| General advice | : | No special environmental precautions required. |

## SECTION 9: Physical and chemical properties

### 9.1 Information on basic physical and chemical properties

| | | |
|---|---|---|
| Appearance | : | solid |
| Colour | : | various |
| Odour | : | odourless |
| Odour Threshold | : | No data available |
| pH | : | Not applicable |
| Melting point/range / Freezing point | : | No data available |
| Boiling point/boiling range | : | No data available |
| Flash point | : | > 101 °C<br>Method: closed cup |
| Evaporation rate | : | No data available |
| Flammability (solid, gas) | : | No data available |
| Upper explosion limit / Upper flammability limit | : | No data available |
| Lower explosion limit / Lower flammability limit | : | No data available |
| Vapour pressure | : | 0,01 hPa |
| Relative vapour density | : | No data available |
| Density | : | ca. 0,9 g/cm3 (20 °C) |
| Solubility(ies) | | |
| Water solubility | : | insoluble |
| Solubility in other solvents | : | No data available |
| Partition coefficient: n-octanol/water | : | No data available |
| Auto-ignition temperature | : | No data available |
| Decomposition temperature | : | No data available |
| Viscosity | | |
| Viscosity, dynamic | : | Not applicable |
| Viscosity, kinematic | : | Not applicable |
| Explosive properties | : | No data available |

Oxidizing properties : No data available

**9.2 Other information**

No data available

## SECTION 10: Stability and reactivity

**10.1 Reactivity**

No dangerous reaction known under conditions of normal use.

**10.2 Chemical stability**

The product is chemically stable.

**10.3 Possibility of hazardous reactions**

Hazardous reactions : No hazards to be specially mentioned.

**10.4 Conditions to avoid**

Conditions to avoid : No data available

**10.5 Incompatible materials**

Materials to avoid : No data available

**10.6 Hazardous decomposition products**

No decomposition if stored and applied as directed.

## SECTION 11: Toxicological information

**11.1 Information on toxicological effects**

**Acute toxicity**

Not classified based on available information.

**Skin corrosion/irritation**

Not classified based on available information.

**Serious eye damage/eye irritation**

Not classified based on available information.

**Respiratory or skin sensitisation**

**Skin sensitisation**

Not classified based on available information.

**Respiratory sensitisation**

Not classified based on available information.

**Germ cell mutagenicity**

Not classified based on available information.

**Carcinogenicity**

Not classified based on available information.

**Reproductive toxicity**

Not classified based on available information.

**STOT - single exposure**

Not classified based on available information.

**STOT - repeated exposure**

Not classified based on available information.

**Aspiration toxicity**

Not classified based on available information.

## SECTION 12: Ecological information

### 12.1 Toxicity

No data available

### 12.2 Persistence and degradability

No data available

### 12.3 Bioaccumulative potential

No data available

### 12.4 Mobility in soil

No data available

### 12.5 Results of PBT and vPvB assessment

**Product:**

| | | |
|---|---|---|
| Assessment | : | This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.. |

### 12.6 Other adverse effects

**Product:**

| | | |
|---|---|---|
| Additional ecological information | : | There is no data available for this product. |

## SECTION 13: Disposal considerations

### 13.1 Waste treatment methods

| | | |
|---|---|---|
| Product | : | The generation of waste should be avoided or minimized wherever possible.<br>Empty containers or liners may retain some product residues.<br>This material and its container must be disposed of in a safe way.<br>Dispose of surplus and non-recyclable products via a licensed |

waste disposal contractor.
Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements.
Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

European Waste Catalogue : 08 04 10 waste adhesives and sealants other than those mentioned in 08 04 09

## SECTION 14: Transport information

**14.1 UN number**
Not regulated as a dangerous good

**14.2 UN proper shipping name**
Not regulated as a dangerous good

**14.3 Transport hazard class(es)**
Not regulated as a dangerous good

**14.4 Packing group**
Not regulated as a dangerous good

**14.5 Environmental hazards**
Not regulated as a dangerous good

**14.6 Special precautions for user**
Not applicable

**14.7 Transport in bulk according to Annex II of Marpol and the IBC Code**
Not applicable for product as supplied.

## SECTION 15: Regulatory information

**15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture**

| | | |
|---|---|---|
| International Chemical Weapons Convention (CWC) Schedules of Toxic Chemicals and Precursors | : | Not applicable |
| REACH - Candidate List of Substances of Very High Concern for Authorisation (Article 59). | : | None of the components are listed (=> 0.1 %). |
| REACH - List of substances subject to authorisation (Annex XIV) | : | Not applicable |
| Regulation (EC) No 1005/2009 on substances that deplete the ozone layer | : | Not applicable |
| Regulation (EC) No 850/2004 on persistent organic pollutants | : | Not applicable |

| | | |
|---|---|---|
| Regulation (EC) No 649/2012 of the European Parliament and the Council concerning the export and import of dangerous chemicals | : | Not applicable |
| REACH - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, preparations and articles (Annex XVII) | : | Not applicable |

REACH Information:
All substances contained in our Products are
- registered by our upstream suppliers, and/or
- registered by us, and/or
- excluded from the regulation, and/or
- exempted from the registration.

Seveso III: Directive 2012/18/EU of the European Parliament and of the Council on the control of major-accident hazards involving dangerous substances.
Not applicable

| | | |
|---|---|---|
| Volatile organic compounds | : | Law on the incentive tax for volatile organic compounds (VOCV)<br>no VOC duties<br><br>Directive 2010/75/EU of 24 November 2010 on industrial emissions (integrated pollution prevention and control)<br>Not applicable |

If other regulatory information applies that is not already provided elsewhere in the Safety Data Sheet, then it is described in this subsection.

| | | |
|---|---|---|
| Health, safety and environmental regulation/legislation specific for the substance or mixture: | : | Environmental Protection Act 1990 & Subsidiary Regulations<br>Health and Safety at Work Act 1974 & Subsidiary Regulations<br>Control of Substances Hazardous to Health Regulations (COSHH)<br>May be subject to the Control of Major Accident Hazards Regulations (COMAH), and amendments. |

### 15.2 Chemical safety assessment

No Chemical Safety Assessment has been carried out for this mixture by the supplier.

## SECTION 16: Other information

**Full text of other abbreviations**

| | | |
|---|---|---|
| ADR | : | European Agreement concerning the International Carriage of Dangerous Goods by Road |
| CAS | : | Chemical Abstracts Service |
| DNEL | : | Derived no-effect level |
| EC50 | : | Half maximal effective concentration |
| GHS | : | Globally Harmonized System |
| IATA | : | International Air Transport Association |

| | | |
|---|---|---|
| IMDG | : | International Maritime Code for Dangerous Goods |
| LD50 | : | Median lethal dosis (the amount of a material, given all at once, which causes the death of 50% (one half) of a group of test animals) |
| LC50 | : | Median lethal concentration (concentrations of the chemical in air that kills 50% of the test animals during the observation period) |
| MARPOL | : | International Convention for the Prevention of Pollution from Ships, 1973 as modified by the Protocol of 1978 |
| OEL | : | Occupational Exposure Limit |
| PBT | : | Persistent, bioaccumulative and toxic |
| PNEC | : | Predicted no effect concentration |
| REACH | : | Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), establishing a European Chemicals Agency |
| SVHC | : | Substances of Very High Concern |
| vPvB | : | Very persistent and very bioaccumulative |

**Further information**

The information contained in this Safety Data Sheet corresponds to our level of knowledge at the time of publication. All warranties are excluded. Our most current General Sales Conditions shall apply. Please consult the product data sheet prior to any use and processing.

Changes as compared to previous version !

GB / EN

# DYNE TEST SOLUTIONS NON TOXIC 26-44 DYNES/cm2(mN/m)

Safety Data Sheet

According to REACH Regulation (EC) No 1907/2006, as retained and amended in UK law.
Issue date: 06/04/2024 Revision date: 29/08/2024 Supersedes: 06/04/2024 Version: 1.1

## SECTION 1: Identification of the substance/mixture and of the company/undertaking

### 1.1. Product identifier

Product form : Mixture
PRODUCT NAME : DYNE TEST SOLUTIONS NON TOXIC 26-44 DYNES/cm2(mN/m)

### 1.2. Relevant identified uses of the substance or mixture and uses advised against

#### 1.2.1. Relevant identified uses

Main use category : Professional use
Use of the substance/mixture : Ink
Dyne Testing

#### 1.2.2. Uses advised against

No additional information available

### 1.3. Details of the supplier of the safety data sheet

Intertronics
Unit 12a Station Field Industrial Estate, Banbury Road
OX5 1JD Kidlington – Oxfordshire
United Kingdom
T +44 (0)1865 842842
orders@intertronics.co.uk - https://www.intertronics.co.uk

### 1.4. Emergency telephone number

Emergency number : +44 (0)1865 842842
Office hours only.

## SECTION 2: Hazards identification

### 2.1. Classification of the substance or mixture

**Classification according to GB CLP (SI 2019:720 as amended)**

Flammable liquids, Category 3 H226
Full text of H- and EUH-statements: see section 16

**Adverse physicochemical, human health and environmental effects**

No additional information available

### 2.2. Label elements

**Labelling according to GB CLP (SI 2019:720 as amended)**

Hazard pictograms (GB CLP) :



GHS02

Signal word (GB CLP) : Warning
Hazard statements (GB CLP) : H226 - Flammable liquid and vapour.
Precautionary statements (GB CLP) : P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P233 - Keep container tightly closed.
P240 - Ground and bond container and receiving equipment.
P241 - Use explosion-proof electrical, ventilating and lighting equipment.
P280 - Wear protective gloves, protective clothing, eye protection, face protection and hearing protection.

P303+P361+P353 - IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water .

### 2.3. Other hazards

| Component | |
|---|---|
| Substance(s) not meeting the PBT criteria of UK REACH regulation, in accordance with Annex XIII | Ethyl alcohol (64-17-5) |
| Substance(s) not meeting the vPvB criteria of UK REACH regulation, in accordance with Annex XIII | Ethyl alcohol (64-17-5) |

| Component | |
|---|---|
| Substance(s) not included in the list established in accordance with Article 59(1) of UK REACH for having endocrine disrupting properties, or is not identified as having endocrine disrupting properties in accordance with the criteria set out in GB BPR and GB PPP | Ethyl alcohol(64-17-5) |

## SECTION 3: Composition/information on ingredients

### 3.1. Substances

Not applicable

### 3.2. Mixtures

| Name | Product identifier | % | Labelling according to GB CLP (SI 2019:720 as amended) |
|---|---|---|---|
| Ethyl alcohol | CAS-No.: 64-17-5<br>EC-No.: 200-578-6<br>UK Index-No.: 603-002-00-5 | 50 – 60 | Flam. Liq. 2, H225 |

Full text of H- and EUH-statements: see section 16

## SECTION 4: First aid measures

### 4.1. Description of first aid measures

First-aid measures general : Never give anything by mouth to an unconscious person. If you feel unwell, seek medical advice (show the label where possible).

First-aid measures after inhalation : Allow affected person to breathe fresh air. Allow the victim to rest.

First-aid measures after skin contact : Rinse skin with water/shower. Take off immediately all contaminated clothing.

First-aid measures after eye contact : Rinse immediately with plenty of water. Obtain medical attention if pain, blinking or redness persists.

First-aid measures after ingestion : Rinse mouth. Do NOT induce vomiting. Obtain emergency medical attention.

### 4.2. Most important symptoms and effects, both acute and delayed

Symptoms/effects : Not expected to present a significant hazard under anticipated conditions of normal use.

Symptoms/effects after inhalation : May be irritating to the respiratory system. May cause drowsiness or dizziness.

Symptoms/effects after skin contact : May cause irritation to skin.

Symptoms/effects after eye contact : May cause eye irritation.

Symptoms/effects after ingestion : May cause irritation to the digestive tract.

### 4.3. Indication of any immediate medical attention and special treatment needed

Treat symptomatically.

## SECTION 5: Firefighting measures

### 5.1. Extinguishing media

Suitable extinguishing media : Foam. Dry powder. Carbon dioxide. Water spray. Sand.

Unsuitable extinguishing media : Do not use a heavy water stream.

### 5.2. Special hazards arising from the substance or mixture

Fire hazard : Flammable liquid and vapour.

Explosion hazard : May form flammable/explosive vapour-air mixture.

Hazardous decomposition products in case of fire : Toxic fumes may be released.

### 5.3. Advice for firefighters

Precautionary measures fire : Exercise caution when fighting any chemical fire.

Firefighting instructions : Use water spray or fog for cooling exposed containers. Avoid fire-fighting water entering the environment.

Protection during firefighting : Do not enter fire area without proper protective equipment, including respiratory protection.

## SECTION 6: Accidental release measures

### 6.1. Personal precautions, protective equipment and emergency procedures

General measures : Remove ignition sources. Use special care to avoid static electric charges. No open flames. No smoking.

#### 6.1.1. For non-emergency personnel

Protective equipment : Do not attempt to take action without suitable protective equipment. For further information refer to section 8: "Exposure controls/personal protection".

Emergency procedures : Evacuate unnecessary personnel. Ventilate area.

#### 6.1.2. For emergency responders

Protective equipment : Equip cleanup crew with proper protection. For further information refer to section 8: "Exposure controls/personal protection".

Emergency procedures : Ventilate area. Evacuate unnecessary personnel.

### 6.2. Environmental precautions

Prevent entry to sewers and public waters. Notify authorities if liquid enters sewers or public waters.

### 6.3. Methods and material for containment and cleaning up

For containment : Absorb spillage.

Methods for cleaning up : Absorb with liquid-binding material (e.g. sand, diatomaceous earth, acid- or universal binding agents). Place in a suitable container for disposal in accordance with the waste regulations (see Section 13).

Other information : Dispose of materials or solid residues at an authorized site.

### 6.4. Reference to other sections

For further information refer to section 8: "Exposure controls/personal protection". For disposal of solid materials or residues refer to section 13 : "Disposal considerations".

## SECTION 7: Handling and storage

### 7.1. Precautions for safe handling

Additional hazards when processed : Handle empty containers with care because residual vapours are flammable.

Precautions for safe handling : Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work. Provide good ventilation in process area to prevent formation of vapour. No open flames. No smoking. Use only non-sparking tools. Do not eat, drink or smoke when using this product.

Hygiene measures : Handle in accordance with good industrial hygiene and safety practice.

### 7.2. Conditions for safe storage, including any incompatibilities

Technical measures : Proper grounding procedures to avoid static electricity should be followed. Ground/bond container and receiving equipment. Use explosion-proof electrical/ventilating/lighting equipment.

Storage conditions : Keep only in the original container in a cool, well ventilated place away from : Sources of ignition, Direct sunlight. Keep in fireproof place. Keep container tightly closed.

Incompatible products : Strong bases. Strong acids. Strong oxidizing agents.

Incompatible materials : Sources of ignition. Direct sunlight. Heat sources.

Heat and ignition sources : No flames, no sparks. Eliminate all sources of ignition.

Packaging materials : Keep only in original container.

### 7.3. Specific end use(s)

No additional information available

## SECTION 8: Exposure controls/personal protection

### 8.1. Control parameters

#### 8.1.1 National occupational exposure and biological limit values

| Ethyl alcohol (64-17-5) | |
|---|---|
| **United Kingdom - Occupational Exposure Limits** | |
| Local name | Ethanol |
| WEL TWA (OEL TWA) | 1920 mg/m³ |
| | 1000 ppm |
| Regulatory reference | EH40/2005 (Fourth edition, 2020). HSE |

#### 8.1.2. Recommended monitoring procedures

No additional information available

#### 8.1.3. Air contaminants formed

No additional information available

#### 8.1.4. DNEL and PNEC

No additional information available

#### 8.1.5. Control banding

No additional information available

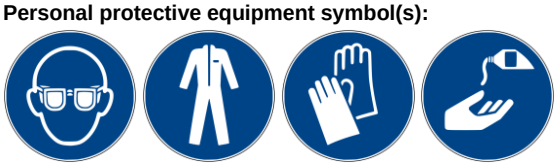
### 8.2. Exposure controls

#### 8.2.1. Appropriate engineering controls

**Appropriate engineering controls:**
Ensure adequate ventilation.

#### 8.2.2. Personal protection equipment

**Personal protective equipment:**
Avoid all unnecessary exposure. PPE compliant to the recommended EN/ISO or equivalent standards should be selected.
**Personal protective equipment symbol(s):**



#### 8.2.2.1. Eye and face protection

**Eye protection:**
Chemical goggles or safety glasses

| Eye protection | | | |
|---|---|---|---|
| **Type** | **Field of application** | **Characteristics** | **Standard** |
| Safety glasses, Safety goggles | Droplet, mist | Clear, With side shields | EN 166 |

#### 8.2.2.2. Skin protection

**Skin and body protection:**
Wear suitable protective clothing

**Hand protection:**
Wear protective gloves.

| Hand protection | | | | | |
|---|---|---|---|---|---|
| **Type** | **Material** | **Permeation** | **Thickness (mm)** | **Penetration** | **Standard** |
| Disposable gloves, Reusable gloves | Nitrile rubber (NBR) | 4 (> 120 minutes) | 0.5 | 2 (< 1.5) | EN ISO 374 |

#### 8.2.2.3. Respiratory protection

**Respiratory protection:**
Wear appropriate mask. Where exposure through inhalation may occur from handling or use, respiratory protection equipment is required. Exposure limits for airborne contaminants must not be exceeded.

#### 8.2.2.4. Thermal hazards

No additional information available

#### 8.2.3. Environmental exposure controls

**Other information:**
Do not eat, drink or smoke during use.

## SECTION 9: Physical and chemical properties

### 9.1. Information on basic physical and chemical properties

| | | |
|---|---|---|
| Physical state | : | Liquid |
| Appearance | : | Colorless liquid. |
| Colour | : | Colourless. |
| Odour | : | alcoholic. |
| Odour threshold | : | Not available |
| pH | : | Not available |
| Melting point | : | -4 – -37 °C |
| Freezing point | : | Not available |
| Boiling point | : | 78 °C |
| Flash point | : | 27 – 57 °C |
| Lower explosion limit | : | 3.3 vol % |
| Upper explosion limit | : | 19 vol % |
| Vapour pressure | : | 59.5 hPa at 20 °C |
| Vapour pressure at 50°C | : | Not available |
| Relative vapour density at 20°C | : | Not available |
| Relative density | : | 0.789 |
| Density | : | Not available |
| Solubility | : | completely miscible. |
| Partition coefficient n-octanol/water (Log Kow) | : | Not available |
| Auto-ignition temperature | : | 363 °C |
| Decomposition temperature | : | Not available |
| Viscosity, kinematic | : | Not available |
| Explosive properties | : | Not available |

### 9.2. Other information

| | | |
|---|---|---|
| Particle characteristics | : | Not applicable |

## SECTION 10: Stability and reactivity

### 10.1. Reactivity

Flammable liquid and vapour. Stable at ambient temperature and under normal conditions of use.

### 10.2. Chemical stability

May form flammable/explosive vapour-air mixture.

### 10.3. Possibility of hazardous reactions

Stable under normal conditions of use.

### 10.4. Conditions to avoid

Direct sunlight. Extremely high or low temperatures. Open flame.

### 10.5. Incompatible materials

Strong acids. Strong bases. Strong oxidizing agents.

### 10.6. Hazardous decomposition products

Fume. Carbon monoxide. Carbon dioxide. May release flammable gases.

## SECTION 11: Toxicological information

### 11.1. Information on toxicological effects

Acute toxicity (oral) : Not classified
Acute toxicity (dermal) : Not classified
Acute toxicity (inhalation) : Not classified

| Ethyl alcohol (64-17-5) | |
|---|---|
| LD50 oral rat | 10470 mg/kg bodyweight Animal: rat, Guideline: OECD Guideline 401 (Acute Oral Toxicity), 95% CL: 9720 - 11380 |
| LD50 oral | 10470 mg/kg bodyweight |
| LD50 dermal | 15800 mg/kg bodyweight |
| LC50 Inhalation - Rat (Dust/Mist) | > 99999 mg/l |

Skin corrosion/irritation : Not classified
Serious eye damage/irritation : Not classified
Respiratory or skin sensitisation : Not classified
Germ cell mutagenicity : Not classified
Carcinogenicity : Not classified

| Ethyl alcohol (64-17-5) | |
|---|---|
| IARC group | 1 - Carcinogenic to humans |

Reproductive toxicity : Not classified
STOT-single exposure : Not classified
STOT-repeated exposure : Not classified

| Ethyl alcohol (64-17-5) | |
|---|---|
| LOAEL (oral, rat, 90 days) | 3200 mg/kg bodyweight Animal: rat, Animal sex: male, Guideline: OECD Guideline 408 (Repeated Dose 90-Day Oral Toxicity Study in Rodents) |
| NOAEL (oral, rat, 90 days) | 1730 mg/kg bodyweight Animal: rat, Animal sex: male, Guideline: OECD Guideline 408 (Repeated Dose 90-Day Oral Toxicity Study in Rodents), Remarks on results: other: |

Aspiration hazard : Not classified

### 11.2. Information on other hazards

#### 11.2.1. Endocrine disrupting properties

No additional information available

#### 11.2.2. Other information

Potential adverse human health effects and symptoms : Based on available data, the classification criteria are not met

## SECTION 12: Ecological information

### 12.1. Toxicity

Hazardous to the aquatic environment, short–term (acute) : Not classified

Hazardous to the aquatic environment, long–term (chronic) : Not classified

| Ethyl alcohol (64-17-5) | |
|---|---|
| LC50 - Fish [1] | 14200 mg/l |
| EC50 - Crustacea [1] | > 10000 mg/l Test organisms (species): Daphnia magna |
| EC50 - Other aquatic organisms [1] | 5012 mg/l waterflea |
| EC50 - Other aquatic organisms [2] | 275 mg/l |
| EC50 96h - Algae [1] | ≈ 22000 mg/l Test organisms (species): Pseudokirchneriella subcapitata (previous names: Raphidocelis subcapitata, Selenastrum capricornutum) |

### 12.2. Persistence and degradability

| DYNE TEST SOLUTIONS NON TOXIC 26-44 DYNES/cm2(mN/m) | |
|---|---|
| Persistence and degradability | Not established. |

| Ethyl alcohol (64-17-5) | |
|---|---|
| Persistence and degradability | Rapidly degradable |

### 12.3. Bioaccumulative potential

| DYNE TEST SOLUTIONS NON TOXIC 26-44 DYNES/cm2(mN/m) | |
|---|---|
| Bioaccumulative potential | Not established. |

| Ethyl alcohol (64-17-5) | |
|---|---|
| Partition coefficient n-octanol/water (Log Pow) | -0.32 |

### 12.4. Mobility in soil

No additional information available

### 12.5. Results of PBT and vPvB assessment

| Component | |
|---|---|
| Ethyl alcohol (64-17-5) | This product does not contain substances at ≥0.1% that meet the PBT criteria of UK REACH regulation, annex XIII<br>This product does not contain substances at ≥0.1% that meet the vPvB criteria of UK REACH regulation, annex XIII |

### 12.6. Other adverse effects

Additional information : Avoid release to the environment.

## SECTION 13: Disposal considerations

### 13.1. Waste treatment methods

| | | |
|---|---|---|
| Regional waste regulation | : | Disposal must be done according to official regulations. |
| Waste treatment methods | : | Dispose of contents/container in accordance with licensed collector's sorting instructions. |
| Product/Packaging disposal recommendations | : | Dispose of contents/container to hazardous or special waste collection point, in accordance with local, regional, national and/or international regulation. |
| Additional information | : | Handle empty containers with care because residual vapours are flammable. |
| Ecological waste information | : | Avoid release to the environment. |
| HP Code | : | HP3 - "Flammable:"<br>– flammable liquid waste: liquid waste having a flash point below 60 °C or waste gas oil, diesel and light heating oils having a flash point > 55 °C and ≤ 75 °C;<br>– flammable pyrophoric liquid and solid waste: solid or liquid waste which, even in small quantities, is liable to ignite within five minutes after coming into contact with air;<br>– flammable solid waste: solid waste which is readily combustible or may cause or contribute to fire through friction;<br>– flammable gaseous waste: gaseous waste which is flammable in air at 20 °C and a standard pressure of 101.3 kPa;<br>– water reactive waste: waste which, in contact with water, emits flammable gases in dangerous quantities;<br>– other flammable waste: flammable aerosols, flammable self-heating waste, flammable organic peroxides and flammable self-reactive waste. |

## SECTION 14: Transport information

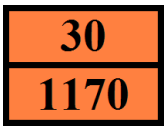
In accordance with ADR / IMDG / IATA / ADN / RID

| ADR | IMDG | IATA | ADN | RID |
|---|---|---|---|---|
| **14.1. UN number** | | | | |
| UN 1170 | UN 1170 | UN 1170 | UN 1170 | UN 1170 |
| **14.2. UN proper shipping name** | | | | |
| ETHANOL SOLUTION (ETHYL ALCOHOL SOLUTION) | ETHANOL SOLUTION (ETHYL ALCOHOL SOLUTION) | Ethanol solution | ETHANOL SOLUTION (ETHYL ALCOHOL SOLUTION) | ETHANOL SOLUTION (ETHYL ALCOHOL SOLUTION) |
| **Transport document description** | | | | |
| UN 1170 ETHANOL SOLUTION (ETHYL ALCOHOL SOLUTION), 3, III, (D/E) | UN 1170 ETHANOL SOLUTION (ETHYL ALCOHOL SOLUTION), 3, III | UN 1170 Ethanol solution, 3, III | UN 1170 ETHANOL SOLUTION (ETHYL ALCOHOL SOLUTION), 3, III | UN 1170 ETHANOL SOLUTION (ETHYL ALCOHOL SOLUTION), 3, III |
| **14.3. Transport hazard class(es)** | | | | |
| 3 | 3 | 3 | 3 | 3 |
|  |  |  |  |  |
| **14.4. Packing group** | | | | |
| III | III | III | III | III |

| ADR | IMDG | IATA | ADN | RID |
|---|---|---|---|---|
| **14.5. Environmental hazards** | | | | |
| Dangerous for the environment: False | Dangerous for the environment: False<br>Marine pollutant: No | Dangerous for the environment: False | Dangerous for the environment: False | Dangerous for the environment: False |
| No supplementary information available | | | | |

## 14.6. Special precautions for user

**Overland transport**

| | | |
|---|---|---|
| Classification code (ADR) | : | F1 |
| Special provisions (ADR) | : | 144, 601 |
| Limited quantities (ADR) | : | 5l |
| Excepted quantities (ADR) | : | E1 |
| Packing instructions (ADR) | : | P001, IBC03, LP01, R001 |
| Mixed packing provisions (ADR) | : | MP19 |
| Portable tank and bulk container instructions (ADR) | : | T2 |
| Portable tank and bulk container special provisions (ADR) | : | TP1 |
| Tank code (ADR) | : | LGBF |
| Vehicle for tank carriage | : | FL |
| Transport category (ADR) | : | 3 |
| Special provisions for carriage - Packages (ADR) | : | V12 |
| Special provisions for carriage - Operation (ADR) | : | S2 |
| Hazard identification number (Kemler No.) | : | 30 |
| Orange plates | : |  |
| Tunnel restriction code (ADR) | : | D/E |
| EAC code | : | •2YE |

**Transport by sea**

| | | |
|---|---|---|
| Special provisions (IMDG) | : | 144, 223 |
| Limited quantities (IMDG) | : | 5 L |
| Excepted quantities (IMDG) | : | E1 |
| Packing instructions (IMDG) | : | P001, LP01 |
| IBC packing instructions (IMDG) | : | IBC03 |
| Tank instructions (IMDG) | : | T2 |
| Tank special provisions (IMDG) | : | TP1 |
| EmS-No. (Fire) | : | F-E |
| EmS-No. (Spillage) | : | S-D |
| Stowage category (IMDG) | : | A |
| Properties and observations (IMDG) | : | Colourless, volatile liquids. Pure ETHANOL: flashpoint 13°C c.c. Explosive limits: 3.3% to 19%. Miscible with water. |
| MFAG-No | : | 127 |

**Air transport**

| | | |
|---|---|---|
| PCA Excepted quantities (IATA) | : | E1 |
| PCA Limited quantities (IATA) | : | Y344 |
| PCA limited quantity max net quantity (IATA) | : | 10L |
| PCA packing instructions (IATA) | : | 355 |
| PCA max net quantity (IATA) | : | 60L |
| CAO packing instructions (IATA) | : | 366 |
| CAO max net quantity (IATA) | : | 220L |
| Special provisions (IATA) | : | A3, A58, A180 |
| ERG code (IATA) | : | 3L |

**Inland waterway transport**

| | | |
|---|---|---|
| Classification code (ADN) | : | F1 |

| | | |
|---|---|---|
| Special provisions (ADN) | : | 144, 601 |
| Limited quantities (ADN) | : | 5 L |
| Excepted quantities (ADN) | : | E1 |
| Equipment required (ADN) | : | PP, EX, A |
| Ventilation (ADN) | : | VE01 |
| Number of blue cones/lights (ADN) | : | 0 |

**Rail transport**

| | | |
|---|---|---|
| Classification code (RID) | : | F1 |
| Special provisions (RID) | : | 144, 601 |
| Limited quantities (RID) | : | 5L |
| Excepted quantities (RID) | : | E1 |
| Packing instructions (RID) | : | P001, IBC03, LP01, R001 |
| Mixed packing provisions (RID) | : | MP19 |
| Portable tank and bulk container instructions (RID) | : | T2 |
| Portable tank and bulk container special provisions (RID) | : | TP1 |
| Tank codes for RID tanks (RID) | : | LGBF |
| Transport category (RID) | : | 3 |
| Special provisions for carriage – Packages (RID) | : | W12 |
| Colis express (express parcels) (RID) | : | CE4 |
| Hazard identification number (RID) | : | 30 |

### 14.7. Transport in bulk according to Annex II of Marpol and the IBC Code

Not applicable

## SECTION 15: Regulatory information

### 15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

#### 15.1.1. EU-Regulations

**UK REACH Annex XVII (Restriction List)**

This product contains no substance(s) listed on UK REACH Annex XVII (Restriction List) equal to or above the level of SDS disclosure

**UK REACH Annex XIV (Authorisation List)**

This product contains no substance(s) listed on UK REACH Annex XIV (Authorisation List) equal to or above the 0.1% level of disclosure

**UK REACH Candidate List (SVHC)**

Contains no substance(s) listed on the UK REACH Candidate List

**GB PIC regulation (Prior Informed Conset)**

This product contains no substance(s) listed on the GB PIC List equal to or above the level of SDS disclosure

**POP Regulation (Persistent Organic Pollutants)**

This product contains no substance(s) listed on the GB POP List equal to or above the level of SDS disclosure

**Ozone Regulation (S.I. No. 168 of 2015)**

This product contains no substance(s) listed on the GB Ozone Depletion List equal to or above the level of SDS disclosure

**Control of Poisons and Explosives Precursors Act**

This product contains no substance(s) listed as a reportable poison on the Control of Poisons and Explosives Precursors Regulations equal to or above the level of SDS disclosure
This product contains no substance(s) listed as a regulated poison on the Control of Poisons and Explosives Precursors Regulations equal to or above the level of SDS disclosure
This product contains no substance(s) listed as a reportable explosive precursor on the Control of Poisons and Explosives Precursors Regulations equal to or above the level of SDS disclosure
This substance is not listed as a regulated poison on the Control of Poisons and Explosives Precursors Regulations

**Drug Precursors Regulation (273/2004)**

This product contains no substance(s) listed on the GB Drug Precursors List equal to or above the level of SDS disclosure

#### 15.1.2. Other information

### 15.2. Chemical safety assessment

No additional information available

## SECTION 16: Other information

| Indication of changes (UK) | | |
|---|---|---|
| **Section** | **Changed item** | **Comments** |
| | Supersedes | **Added** |
| | Revision date | **Added** |
| 1.1 | Name | **Modified** |
| 1.2 | Use of the substance/mixture | **Added** |
| 1.2 | Main use category | **Modified** |

Data sources : REGULATION (EC) No 1272/2008 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 16 December 2008 on classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006.

Other information : None.

| Full text of H- and EUH-statements: | |
|---|---|
| Flam. Liq. 2 | Flammable liquids, Category 2 |
| Flam. Liq. 3 | Flammable liquids, Category 3 |
| H225 | Highly flammable liquid and vapour. |
| H226 | Flammable liquid and vapour. |

Safety Data Sheet (SDS), UK

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.

# APPENDIX XII
# CARPET CUTTING AND PREPARATION

# APPENDIX XIII
# STACK DETAILS

| Stack Information | | | | |
|---|---|---|---|---|
| **Stack No.** | **Machine/Description** | **Diameter** | **Distance From Roof At Exit** | **Potential Emissions (ISO / VOC / PM)** |
| **N/a** | Press 1 | N/A | N/A | N/A |
| **SB1S** | Press 1 Spray Booth (SB1) | 630mm | 1.5Metres | VOC |
| **OV1S** | Phoenix Oven Extraction (OV1) | 450mm | 1Metres | Heat |
| **OV2S** | Phoenix Oven Extraction (OV2) | 250mm | 1Metres | Heat |
| **CB1S** | Waterjet Cutting Booth (CB1) | 250mm | 1Metres | PM |
| **CB2S** | Waterjet Cutting Booth (CB2) | 250mm | 1Metres | PM |
| **SB3S** | Aftersales SprayBooth (SB3) | Decommissioned | Decommissioned | No release |
| **SB2S** | Bentley Fabbing SprayBooth (SB2) | 710mm | 2.5Metres | VOC / ISO / PM |
| **SB7S** | McLaren Fabbing SprayBooth (SB7) | 710mm | 2Metres | VOC / ISO / PM |
| **OV3S** | AutoVac Oven (OV3) | 400mm | 1.5Metres | No chemicals |
| **PH8FS** | Rhodes Press Front (PH8) | 500mm | 2Metres | VOC |
| **PH8RS** | Rhodes Press Rear (PH8) | 500mm | 1.5Metres | VOC |
| **SB5S** | Spray Booth 5 (SB5) | Decommissioned | Decommissioned | No release |
| **PH36S** | Rat Press Front Oven (PH36) | 450mm | 1.5Metres | Heat |
| **PH36S** | Rat Press Rear Oven (PH36) | 450mm | 1Metres | Heat |
| **PH10S** | Press 10 (PH10) | 560mm | 1Metres | Heat |
| **HB12S** | Press 11 IR Oven (HB12) | 355mm | 0.5Metres | Heat |
| **PH11S** | Press 11 (PH11) | 315mm | 0.5Metres | Heat |
| **HB13S** | Press 12 Contact Oven (HB13) | 355mm | 0.5Metres | Heat |
| **PH12S** | Press 12 (PH12) | 315mm | 0.5Metres | Heat |
| **PH16S** | Press 16 (PH16) | 300mm | 1Metres | Heat |

# APPENDIX XIV
# EMISSION MONITORING REPORT

2499

# EMISSIONS MONITORING SURVEY

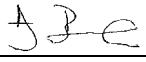
**Prepared for:**

**Adler Pelzer Group**
**CAB Automotive Limited**
**Vaughan Trading Estate**
**Sedgley Road East**
**Tipton**
**West Midlands**
**Dy4 7UJ**

| | |
|---|---|
| **Permit Number** | **: PPC 92935** |
| **Variation Number** | **: V1** |
| **Installation** | **: Spraybooths** |
| **Visit Details** | **: Compliance - November 2023** |
| **Job Number** | **: P5617** |
| **Report Number** | **: R001** |
| **Report Issue Date** | **: 8th February 2024** |
| **Survey Dates** | **: 9th – 10th November 2023, 18th December 2023 & 22nd January 2024** |

**Prepared by:**


**Environmental Compliance Limited**
**Unit G1**
**Main Avenue**
**Treforest Industrial Estate**
**Pontypridd**
**CF37 5BF.**
**Tel: 01443 801215**


| | | | |
|---|---|---|---|
| **Report Issue:** | | **FINAL** | |
| **Report Prepared by:** | | **Report Reviewed & Approved by**<br>**MCERTS Level Two**<br>**Technical Endorsements TE1, TE2, TE3 & TE4** | |
| ***Name:*** | Scott Hackett | ***Name:*** | Andy Barnes |
| | | ***MCERTS No:*** | MM 03 235 |
| | | ***Signature:*** |  |
| ***Date:*** | 7th February 2024 | ***Date:*** | 8th February 2024 |

This report is not to be used for contractual or engineering purposes unless this approval sheet is signed where indicated by the approver and the report is designated "FINAL".

This report has been prepared by Environmental Compliance Limited (ECL) in their professional capacity as Environmental Consultants. The contents of the report reflect the conditions that prevailed and the information available or supplied at the time of its preparation. The report, and the information contained therein, is provided by ECL solely for use and reliance by the Client in performance of ECLs duties and liabilities under its contract with the Client. Until ECL has received payment in full as detailed in the quotation or contract the contents of this report remain the legal property of ECL. The contents of the report do not, in any way, purport to include any manner of legal advice or opinion.

Any operating information and CEMS data used in this report has been supplied by the client.

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- Environmental Compliance Ltd gives written agreement prior to such release and ECL has received payment in full for all works/services undertaken;

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- Environmental Compliance Ltd accepts no responsibility for any loss or damage incurred by the Client or for any conflict of Environmental Compliance Ltd interests arising out of the Clients' release of this report to the Third Party.

In the event that a report is revised and re-issued, the client shall ensure that any earlier versions of the report, and any copies thereof, are void and such copies should be marked with the words "superseded and revised".

Opinions and Interpretation expressed within this report are outside the scope of the UKAS accreditation.

**MCERTS requirements mean that comparison of results with emissions limit values is not permitted within this report.**

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# PART 1 - EXECUTIVE SUMMARY

## 1 Monitoring Objectives

Environmental Compliance Ltd (ECL) was commissioned by **Adler Pelzer Group** to undertake an emission monitoring survey at their **Tipton site**. This report presents the findings of the study.

The monitoring at this installation was carried out in accordance with our quotation reference **AM/P5617/Q001,** for compliance check monitoring of emissions to air. The substances requested for monitoring at each emissions point are listed below:

| Substances to be monitored | Emission Point Identification | |
|---|---|---|
| | **EX 1** | **EX 2** |
| | **Spraybooth (Mini) No.2** | **Spraybooth (Mini) No.1** |
| Velocity / Flowrate | ● U | ● U |
| Particulates | ● U | ● U |

| Substances to be monitored | Emission Point Identification | |
|---|---|---|
| | **EX 3** | **EX 4** |
| | **Spraybooth No.3** | **Spraybooth (McLaren) No.8** |
| Velocity / Flowrate | ● U | ● U |
| Particulates | ● U | ● U |
| Total Organic Carbon (TVOC) | ● U | |
| Speciated VOCs (Dichloromethane) | ● U | |

| Substances to be monitored | Emission Point Identification | |
|---|---|---|
| | **EX 5** | **SB5** |
| | **Spraybooth (McLaren) No.9** | **Bentley Spraybooth** |
| Velocity / Flowrate | ● U | ● U |
| Particulates | ● U | ● U |

| Substances to be monitored | Emission Point Identification | |
|---|---|---|
| | **SB7** | **X 152** |
| | **Bentley Spraybooth** | **Jaguar Spraybooth** |
| Velocity / Flowrate | ● U | ● U |
| Particulates | ● U | ● U |

● Denotes the substances to be monitored.

U **Denotes UKAS accreditation is held for monitoring that substance, but does not mean that it has been claimed which will depend on whether the testing could be completed in accordance with the Standard Reference Method.**

Special Requirements: *"During Normal Operation."*

## 1.1 Monitoring Results

| Emission Point Reference | Substance to be Monitored | Emission Limit Value | Periodic Monitoring Result | Units | Mass Emission (g/hr) | Uncertainty % | Reference Conditions 273 K, 101.3 kPa | Date of Sampling | Start and End Times | Monitoring Method Reference | Accreditation Claimed For Test Result | Tick if non-conforming test (see Section 2 | Operating Status |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| EX 1 Spraybooth No.2 (Mini) | Volumetric Flowrate | ... | 3.00050 | $m^3/sec$ | ... | 4 | Stack Conditions | 09/11/2023 | 10:24 – 10:44 | BS EN 16911-1:2013 & MID | UKAS / MCERTS | ✓ | Normal |
| | Volumetric Flowrate | ... | 2.75767 | $m^3/sec$ | ... | 5 | & Wet Gas | | | BS EN 16911-1:2013 & MID | UKAS / MCERTS | ✓ | Normal |
| | Particulates $ | 50 | 1.63 | $mg/m^3$ | 16.16 | >100 | & Wet Gas | | 11:55 – 12:25 | BS EN 13284-1:2017 & MID | UKAS / MCERTS | ✓ | Normal |

| Emission Point Reference | Substance to be Monitored | Emission Limit Value | Periodic Monitoring Result | Units | Mass Emission (g/hr) | Uncertainty % | Reference Conditions 273 K, 101.3 kPa | Date of Sampling | Start and End Times | Monitoring Method Reference | Accreditation Claimed For Test Result | Tick if non-conforming test (see Section 2 | Operating Status |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| EX 2 Spraybooth (Mini) No.1 | Volumetric Flowrate | ... | 3.02626 | $m^3/sec$ | ... | 5 | Stack Conditions | 09/11/2023 | 10:00 – 10:20 | BS EN 16911-1:2013 & MID | UKAS / MCERTS | ✓ | Normal |
| | Volumetric Flowrate | ... | 2.76710 | $m^3/sec$ | ... | 6 | & Wet Gas | | | BS EN 16911-1:2013 & MID | UKAS / MCERTS | ✓ | Normal |
| | Particulates $ | 50 | 1.94 | $mg/m^3$ | 19.08 | >100 | & Wet Gas | | 11:55 – 12:25 | BS EN 13284-1:2017 & MID | UKAS / MCERTS | ✓ | Normal |

| Emission Point Reference | Substance to be Monitored | Emission Limit Value | Periodic Monitoring Result | Units | Mass Emission (g/hr) | Uncertainty % | Reference Conditions 273 K, 101.3 kPa | Date of Sampling | Start and End Times | Monitoring Method Reference | Accreditation Claimed For Test Result | Tick if non-conforming test (see Section 2 | Operating Status |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| EX 4 Spraybooth (Mclaren) No.8 | Volumetric Flowrate | ... | 3.39808 | $m^3/sec$ | ... | 7 | Stack Conditions | 09/11/2023 | 13:00 – 13:20 | BS EN 16911-1:2013 & MID | UKAS / MCERTS | ✓ | Normal |
| | Volumetric Flowrate | ... | 3.11554 | $m^3/sec$ | ... | 8 | & Wet Gas | | | BS EN 16911-1:2013 & MID | UKAS / MCERTS | ✓ | Normal |
| | Particulates $ | 50 | 1.64 | $mg/m^3$ | 17.97 | >100 | & Wet Gas | | 13:50 – 14:20 | BS EN 13284-1:2017 & MID | UKAS / MCERTS | ✓ | Normal |

**Adler Pelzer Group**
**Permit No : PPC 92935**
**Variation No : V1**
**Report Ref : P5617 : R001**

**Installation Name : Spraybooths**
**Visit Details : Compliance - November 2023**
**Survey Dates : 9th – 10th November 2023, 18th December 2023 & 22nd January 2024**
**Report Issue Date : 8th February 2024**

| Emission Point Reference | Substance to be Monitored | Emission Limit Value | Periodic Monitoring Result | Units | Mass Emission (g/hr) | Uncertainty % | Reference Conditions 273 K, 101.3 kPa | Date of Sampling | Start and End Times | Monitoring Method Reference | Accreditation Claimed For Test Result | Tick if non-conforming test (see Section 2 | Operating Status |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| EX 5 Spraybooth (Mclaren) No.9 | Volumetric Flowrate | ... | 1.90033 | $m^3$/sec | ... | 7 | Stack Conditions | 09/11/2023 | 13:24 – 13:44 | BS EN 16911-1:2013 & MID | UKAS / MCERTS | ✓ | Normal |
| | Volumetric Flowrate | ... | 1.73246 | $m^3$/sec | ... | 8 | & Wet Gas | | | BS EN 16911-1:2013 & MID | UKAS / MCERTS | ✓ | Normal |
| | Particulates $ | 50 | 1.89 | mg/$m^3$ | 11.90 | 46 | & Wet Gas | | 13:50 – 14:20 | BS EN 13284-1:2017 & MID | UKAS / MCERTS | ✓ | Normal |

| Emission Point Reference | Substance to be Monitored | Emission Limit Value | Periodic Monitoring Result | Units | Mass Emission (g/hr) | Uncertainty % | Reference Conditions 273 K, 101.3 kPa | Date of Sampling | Start and End Times | Monitoring Method Reference | Accreditation Claimed For Test Result | Tick if non-conforming test (see Section 2 | Operating Status |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SB5 Bentley Spraybooth | Volumetric Flowrate | ... | 0.32126 | $m^3$/sec | ... | 41 | Stack Conditions | 22/01/2024 | 10:00 – 10:20 | BS EN 16911-1:2013 & MID | NU | ✓ | Normal |
| | Volumetric Flowrate | ... | 0.29874 | $m^3$/sec | ... | 42 | & Wet Gas | | | BS EN 16911-1:2013 & MID | NU | ✓ | Normal |
| | Particulates $ | 50 | 1.53 | mg/$m^3$ | 1.58 | >100 | & Wet Gas | | 10:27 – 10:57 | BS EN 13284-1:2017 & MID | NU | ✓ | Normal |

| Emission Point Reference | Substance to be Monitored | Emission Limit Value | Periodic Monitoring Result | Units | Mass Emission (g/hr) | Uncertainty % | Reference Conditions 273 K, 101.3 kPa | Date of Sampling | Start and End Times | Monitoring Method Reference | Accreditation Claimed For Test Result | Tick if non-conforming test (see Section 2 | Operating Status |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SB7 Bentley Spraybooth | Volumetric Flowrate | ... | 3.72957 | $m^3$/sec | ... | 6 | Stack Conditions | 22/01/2024 | 11:24 – 11:50 | BS EN 16911-1:2013 & MID | UKAS / MCERTS | ✓ | Normal |
| | Volumetric Flowrate | ... | 3.47069 | $m^3$/sec | ... | 7 | & Wet Gas | | | BS EN 16911-1:2013 & MID | UKAS / MCERTS | ✓ | Normal |
| | Particulates $ | 50 | 0.82 | mg/$m^3$ | 10.20 | 93 | & Wet Gas | | 12:28 – 12:58 | BS EN 13284-1:2017 & MID | UKAS / MCERTS | ✓ | Normal |

**Adler Pelzer Group**
**Permit No** : PPC 92935
**Variation No** : V1
**Report Ref** : P5617 : R001

**Installation Name** : Spraybooths
**Visit Details** : Compliance - November 2023
**Survey Dates** : 9th – 10th November 2023, 18th December 2023 & 22nd January 2024
**Report Issue Date** : 8th February 2024

| Emission Point Reference | Substance to be Monitored | Emission Limit Value | Periodic Monitoring Result | Units | Mass Emission (g/hr) | Uncertainty % | Reference Conditions 273 K, 101.3 kPa | Date of Sampling | Start and End Times | Monitoring Method Reference | Accreditation Claimed For Test Result | Tick if non-conforming test (see Section 2 | Operating Status |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| X 152 Jaguar Spraybooth | Volumetric Flowrate | ... | 1.38806 | $m^3$/sec | ... | 5 | Stack Conditions & Wet Gas | 18/12/2023 | 10:15 – 10:35 | BS EN 16911-1:2013 & MID | UKAS / MCERTS | ✓ | Normal |
| | Volumetric Flowrate | ... | 1.32324 | $m^3$/sec | ... | 6 | | | | BS EN 16911-1:2013 & MID | UKAS / MCERTS | ✓ | Normal |
| | Particulates $ | 50 | 1.23 | mg/$m^3$ | 5.80 | 77 | | | 10:43 – 11:13 | BS EN 13284-1:2017 & MID | UKAS / MCERTS | ✓ | Normal |

**Adler Pelzer Group**
**Permit No : PPC 92935**
**Variation No : V1**
**Report Ref : P5617 : R001**

**Installation Name : Spraybooths**
**Visit Details : Compliance - November 2023**
**Survey Dates : 9th – 10th November 2023, 18th December 2023 & 22nd January 2024**
**Report Issue Date : 8th February 2024**

| Emission Point Reference | Substance to be Monitored | Emission Limit Value | Periodic Monitoring Result | Units | Mass Emission (g/hr) | Uncertainty % | Reference Conditions 273 K, 101.3 kPa | Date of Sampling | Start and End Times | Monitoring Method Reference | Accreditation Claimed For Test Result | Tick if non-conforming test (see Section 2 | Operating Status |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **EX 3 Spraybooth No.3** | Volumetric Flowrate | … | 1.95125 | $m^3$/sec | … | 5 | Stack Conditions | 18/12/2023 | 12:00 – 12:20 | BS EN 16911-1:2013 & MID | UKAS / MCERTS | ✓ | Normal |
| | Volumetric Flowrate | … | 1.85323 | $m^3$/sec | … | 6 | & Wet Gas | | | BS EN 16911-1:2013 & MID | UKAS / MCERTS | ✓ | |
| | Particulates $ | 50 | 1.12 | mg/$m^3$ | 7.44 | >100 | & Wet Gas | | 13:00 – 13:30 | BS EN 13284-1:2017 & MID | UKAS / MCERTS | ✓ | |
| | TVOC as Carbon – Test 1 | 20* | 1.59 | mgC/$m^3$ | 10.61 | 2 | & Wet Gas | | 13:00 – 13:30 | BS EN 12619:2013 | UKAS / MCERTS | | |
| | TVOC as Carbon – Test 2 | 20* | 1.08 | mgC/$m^3$ | 7.21 | 2 | & Wet Gas | | 13:45 – 14:15 | BS EN 12619:2013 | UKAS / MCERTS | | |
| | TVOC as Carbon – Test 3 | 20* | 0.82 | mgC/$m^3$ | 5.47 | 2 | & Wet Gas | | 14:30 – 15:00 | BS EN 12619:2013 | UKAS / MCERTS | | |
| | **TVOC as Carbon – Average** | **20*** | **1.16** | mgC/$m^3$ | 7.76 | 2 | & Wet Gas | | …. | BS EN 12619:2013 | UKAS / MCERTS | | |
| | Dichloromethane – Test 1 $ | …* | 0.90 | g/hr | 6.00 | >100 | & Wet Gas | | 13:00 – 13:30 | CEN/TS 13649:2014 | UKAS / MCERTS | | |
| | Dichloromethane – Test 2 $ | …* | 0.90 | g/hr | 6.00 | >100 | & Wet Gas | | 13:45 – 14:15 | CEN/TS 13649:2014 | UKAS / MCERTS | | |
| | Dichloromethane – Test 3 $ | …* | 0.90 | g/hr | 6.00 | >100 | & Wet Gas | | 14:30 – 15:00 | CEN/TS 13649:2014 | UKAS / MCERTS | | |
| | **Dichloromethane – Average** $ | …* | **0.90** | g/hr | 6.00 | >100 | & Wet Gas | | …. | CEN/TS 13649:2014 | UKAS / MCERTS | | |

*** The permit states that the 20mg/$m^3$ limit for TVOC as carbon applies, only if the mass emission of R40 risk phrase materials exceeds 100 g/hr.**

## Notes

**The volumetric flowrate shown above is that from the initial pitot traverse.**
**Any other flow measurements made during isokinetic sampling and/ or repeat traverses are shown later in the tables section.**

The uncertainty figures presented in Table 1.1 for TVOC are "measurement uncertainty" figures, which do not take into account the variability of the measured sample values.
The "uncertainty of measurement results" figures, which do include this contribution, are presented in the appendices of the report for these determinands.

| | |
|---|---|
| Emission Limit Value | The emission limit value is that stated in the permit and will be expressed as a concentration or a mass emission. |
| Periodic Monitoring Result | The result given is expressed in the same terms and units as the emission limit value. |
| Uncertainty | The uncertainty associated with the quoted result is at the 95% confidence interval. The Uncertainty results **DO NOT** take into account the effect of the sample location limitations. |
| Reference Conditions | All results are expressed at 273 K and 101.3kPa. The oxygen and moisture corrections are stated. |
| Monitoring Method Reference | The method stated is in accordance with the Environment Agency Technical Guidance Note M2, or other method approved by the Environment Agency. |
| **Accreditation for use of Method** | **The details indicate the accreditation for the use of the complete monitoring method, e.g. MCERTs, UKAS. If use of the method is not accredited " NA" is stated.** |
| Operating Status | The details indicate the feedstock and the loading rate of the plant during monitoring. |
| $ | Chemical Analysis on sample reagents was performed by an External Laboratory as detailed in Section 4 |
| NU | UKAS Accreditation Held but UKAS Accreditation cannot be claimed for the test as sampling did not comply with the Standard Reference Method (SRM), see section 2 & 5 |
| **NA** | **Method is NOT UKAS Accredited.** |

## 1.2 Operating Information

**Any operating information and CEMS data below has been supplied by the client.**

| Emission Point Reference | Process Type | Process Duration | Fuel | Feedstock | Abatement | Load | Comparison of Operator CEMS and Periodic Monitoring Results | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Parameter | Date | Time | CEMS Results | Periodic Monitoring Results | Units |
| All | Batch | As Required | N/A | N/A | Dry Filter | Normal | ... | ... | ... | NP | ... | ... |

**Notes:**

| | |
|---|---|
| Process Type | State whether the process is a continuous or batch process. |
| Process Duration | If a batch process, state the duration, frequency and details of the portion of the batch sampled. If continuous state "NA" |
| Fuel | If applicable, state the fuel type If not applicable state "NA" |
| Feedstock | State the feedstock type |
| Abatement | State the type and whether operational during monitoring. If not applicable state "NA" |
| Load | State the normal load, throughput or rating of the plant |
| CEMS Data | Enter this data for each CEM installed if it is has been provided by operator otherwise state “NP” (NOT PROVIDED) |

# 2 Monitoring Deviations

The objective of the survey was to measure the concentrations of pollutants from the processes / locations as detailed in Section 1. This survey meets the requirements of the site's **PPC Permit Number: PPC 92935** where UKAS and MCERTS accreditation has and could be claimed for the testing in the monitoring results table.

**There were modifications** to the sampling procedures (TPDs) listed in section 4, these are as follows.

**EX1, EX 2, EX4, X152 & SB7** - Due to high duct gas velocity, in order to maintain isokinetic sampling, it was necessary to use a nozzle with diameter smaller than the recommended minimum of 8mm minimum stated in BS EN 13284-1:2017. Note that there is no absolute minimum nozzle size stated in the standard, as long as the uncertainty of the nozzle area is <5%. **So this does not need to be described as a non-conforming test.**

**There were substance deviations** from the original and agreed emissions monitoring schedule, as follows. In between issue of the quote and the sampling date, the client has re-numbered some of the extraction points and so the references in the SSP do not match the references in the report.

**Non-conforming tests** are as follows.

**The Uncertainty of the reported concentrations for these pollutant results DOES NOT take into account the effect of non-conformities or sample location limitations.**

**For all stacks,** Flowrate and particulate tests are non-conforming, as there is only one sampling port available in each case, rather than two as required by the sampling standards. In order to maintain the UKAS/MCERTS accreditation status of the tests, extra sample points were used on the one available sample line.

**For SB5 Bentley Spraybooth, Volumetric Flowrate** tests are non-conforming, (and cannot hold accreditation) as the velocity pressure was below the 5 Pascal (0.5mmH2O) limit of detection for the method. Consequently, the **particulate** sample is also therefore not accredited.

**Homogeneity tests** have not been completed for pollutants at any of the sampling locations. Such tests are not applicable to these locations (as the duct area is <1m$^2$) and were not requested by the client.

# PART 2 – SUPPORTING INFORMATION

## 3 SAMPLING STAFF DETAILS

### Site Sampling Team

| Names of Site Team | Dates on Site | MCERTS No. | LEVEL | Technical Endorsements |
|---|---|---|---|---|
| Lee Harper | 9th – 10th November 2023 | MM 17 1423 | 2 | TE1, TE2, TE4 |
| Thomas Ralph | | MM 22 1706 | 1 | … |

| Names of Site Team | Dates on Site | MCERTS No. | LEVEL | Technical Endorsements |
|---|---|---|---|---|
| Lee Harper | 18th December 2023 | MM 17 1423 | 2 | TE1, TE2, TE4 |
| Thomas Ralph | | MM 22 1706 | 1 | … |

| Names of Site Team | Dates on Site | MCERTS No. | LEVEL | Technical Endorsements |
|---|---|---|---|---|
| Lee Harper | 22nd January 2024 | MM 17 1423 | 2 | TE1, TE2, TE4 |
| Thomas Ralph | | MM 22 1706 | 1 | … |

### Report Reviewer

| Name | MCERTS No. | LEVEL | Technical Endorsements |
|---|---|---|---|
| Andy Barnes | MM 03 235 | 2 | TE1, TE2, TE3, TE4 |

### Technical Endorsement Key:-

**TE1** – **Isokinetic** Particulates, Temperature & Velocity Profiles, Oxygen.
**TE2** – **Isokinetic** Extractive Pollutants:- Metals, Dioxin & Furans, PAHs, PCBs, HCl, HF.
**TE3** – **Non-Isokinetic** Extractive Pollutants:- Speciated VOCs, HF, HCl, Cyanide.
**TE4** – **Continuous Analysers** (Combustion Gases):- TVOC, CO, NOx, SO2.

# 4 SAMPLING PROTOCOLS / METHODOLOGIES

**Details of the substances monitored, the standard methods used and the Environmental Compliance Limited Technical Procedures used during this survey are shown in the table below. Detailed sampling protocols are included in a separate document which will be sent with the report.**

In all cases, where analysis of collected samples was required, the analysis was by a subcontract laboratory. Details of the sub-contract laboratory are shown on the analysis certificates in this report. The UKAS/MCERTs accreditation status of the analysis is also indicated on the certificates.

**Any required modifications to the Technical Procedure Documents (TPDs) specified below will be detailed in section 2 of this report.**

| Determinand | External Reference Method | ECL Technical Procedure Number |
|---|---|---|
| Velocity and Flowrate | BS EN 16911-1:2013 & MID | ECL/ TPD/ 022A |
| Particulates (Stackmite) | BS EN 13284-1:2017 & MID | ECL / TPD / 027A |
| TVOC (Sick F3006) | BS EN 12619: 2013 | ECL / TPD / 032B |
| Speciated VOC (Dichloromethane) | CEN/TS 13649:2014 | ECL / TPD / 084 |

# 5 SAMPLE POINT DESCRIPTIONS

The homogeneity test is applicable to combustion processes, but may also be requested by the regulator for non-combustion processes.

Homogeneity testing has not been completed at these locations.

The test is not usually required for stacks with sampling plane areas of <1m$^2$ (below 1.13m in diameter for circular ducts).

**The Uncertainty of the reported concentrations for these pollutant results DOES NOT take into account the effect of non-conformities or sample location limitations.**

**The sample locations that were monitored are detailed below:**

**EX 1**

The stack diameter is 0.62m and the sample platform width back MEWP handrail is 1.0m.

A single sample port is located at the sample location in a horizontal section of ducting.

Access to the sample location / sample port was via MEWP.

**EX 2**

The stack diameter is 0.62m and the sample platform width back MEWP handrail is 1.0m.

A single sample port is located at the sample location in a horizontal section of ducting.

Access to the sample location / sample port was via MEWP.

## EX 3

The stack diameter is 0.62m and the sample platform width back MEWP handrail is 1.0m.

A single sample port is located at the sample location in a diagonal section of ducting.

Access to the sample location / sample port was via MEWP.

## EX 4

The stack diameter is 0.72m and the sample platform width back MEWP handrail is 1.0m.

A single sample port is located at the sample location in a horizontal section of ducting.

Access to the sample location / sample port was via MEWP.

## EX 5

The stack diameter is 0.62m and the sample platform width back MEWP handrail is 1.0m.

A single sample port is located at the sample location in a horizontal section of ducting.

Access to the sample location / sample port was via MEWP.

## SB5 Bentley

The stack diameter is 0.50m and the sample platform width back MEWP handrail is 1.0m.

A single sample port is located at the sample location in a horizontal section of ducting.

Access to the sample location / sample port was via MEWP.

## SB7 Bentley

The stack diameter is 0.70m and the sample platform width back MEWP handrail is 1.0m.

A single sample port is located at the sample location in a horizontal section of ducting.

Access to the sample location / sample port was via MEWP

## X152

The stack diameter is 0.48m and the sample platform width back MEWP handrail is 1.0m.

A single sample port is located at the sample location in a horizontal section of ducting.

Access to the sample location / sample port was via MEWP

# EQUIPMENT IDs
# (Pre site checklist from SSP)

Adler Pelzer Group
Permit No : PPC 92935
Variation No : V1
Report Ref : P5617 : R001

Installation Name : Spraybooths
Visit Details : Compliance - November 2023
Survey Dates : 9th – 10th November 2023, 18th December 2023 & 22nd January 2024
Report Issue Date : 8th February 2024

# PRE SITE EQUIPMENT CHECKLIST/ EQUIPMENT USED

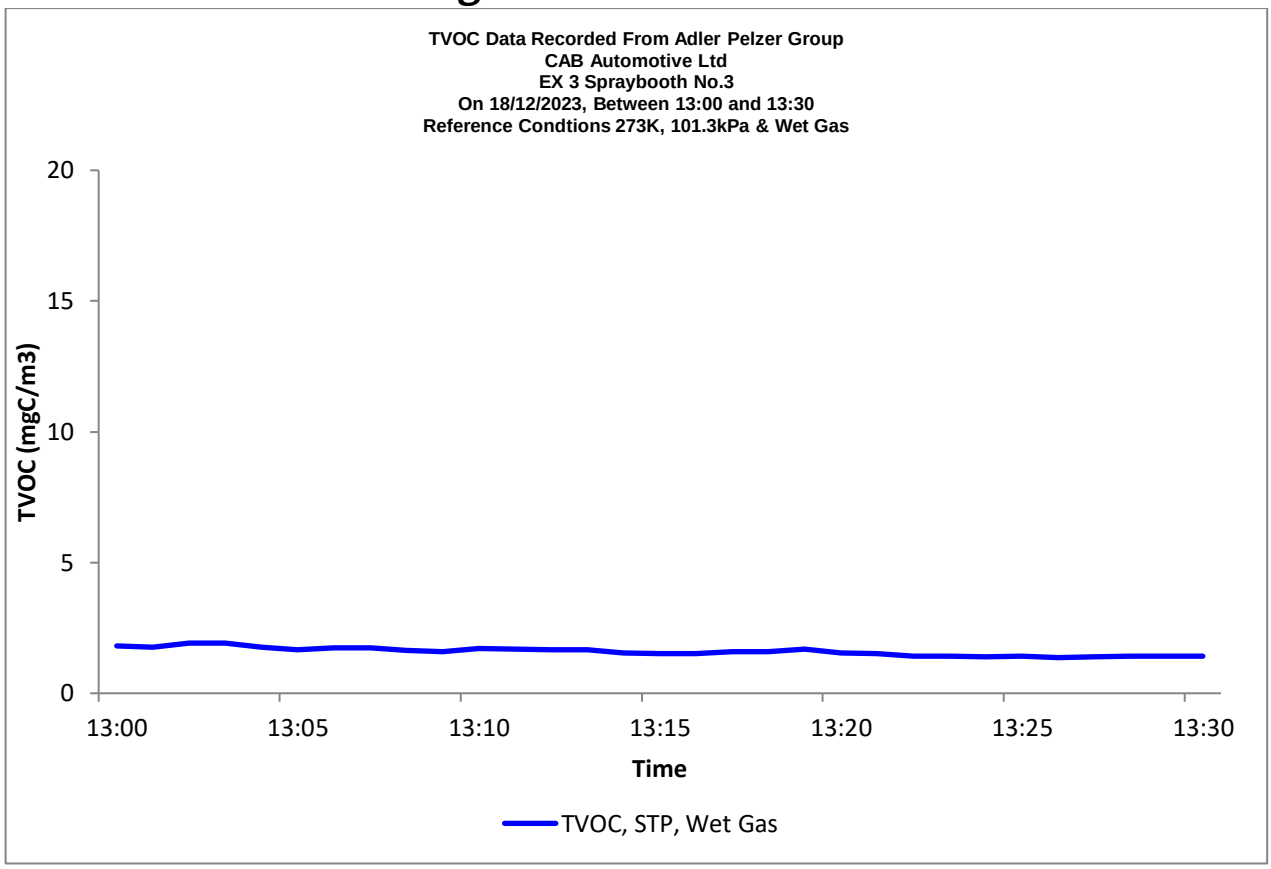
**(Completed before departure to site and when on site in full)**

| Equipment | Equip. Type | ID No: | ID No: | ID No: | ID No: | ID No: | ID No: | ID No: | ID No: |
|---|---|---|---|---|---|---|---|---|---|
| MST console/pump | E001 | | | | | | | | |
| MST Nozzle set | | | | | | | | | |
| MST "S" Type Pitot | | | | | | | | | |
| MST Probe | | | | | | | | | |
| MST Probe Thermocouple | | | | | | | | | |
| MST Hot Box | | | | | | | | | |
| MST Impinger Arm | | | | | | | | | |
| Barometer | | 351 | 1321 | | | | | | |
| Site Balance | | | | | | | | | |
| Site Check weights | | | | | | | | | |
| | | | | | | | | | |
| Horiba | E002 | | | | | | | | |
| Heated Probe / Filter | | | | | | | | | |
| Chiller | | | | | | | | | |
| MFC | | | | | | | | | |
| Heated Line | | | | | | | | | |
| | | | | | | | | | |
| FID | E003 | | | | | | | | |
| Heated Line | | | | | | | | | |
| Heated Probe / Filter | | | | | | | | | |
| | | | | | | | | | |
| Testo | E004 | | | | | | | | |
| | | | | | | | | | |
| FTIR | E005 | | | | | | | | |
| Heated Probe / Filter | | | | | | | | | |
| Heated Line | | | | | | | | | |
| | | | | | | | | | |
| Stackmite | E006 | 1283 | 366 | 1308 | | | | | |
| "L" Type Pitot | | 488 | 1096 | 487 | 603 | | | | |
| Digital Manometer | | 1007 | 1250 | 1249 | 1203 | | | | |
| Stack Thermocouple | | 1248 | 1245 | 1247 | 246 | | | | |
| Thermocouple Reader | | 1100 | 1252 | 1251 | 1111 | | | | |
| Nozzle Set | | 1216 | 801 | 1217 | | | | | |
| | | | | | | | | | |
| Workhorse / Vapex Pumps | E007 | 162 | | | | | | | |
| Stack Thermocouple | | 1248 | | | | | | | |
| Tube Thermocouple | | 1037 | | | | | | | |
| Meter Thermocouple | | 1032 | | | | | | | |
| | | | | | | | | | |
| High Vac Gauge | | | | | | | | | |
| Dioxin Thermocouple | | | | | | | | | |
| | | | | | | | | | |

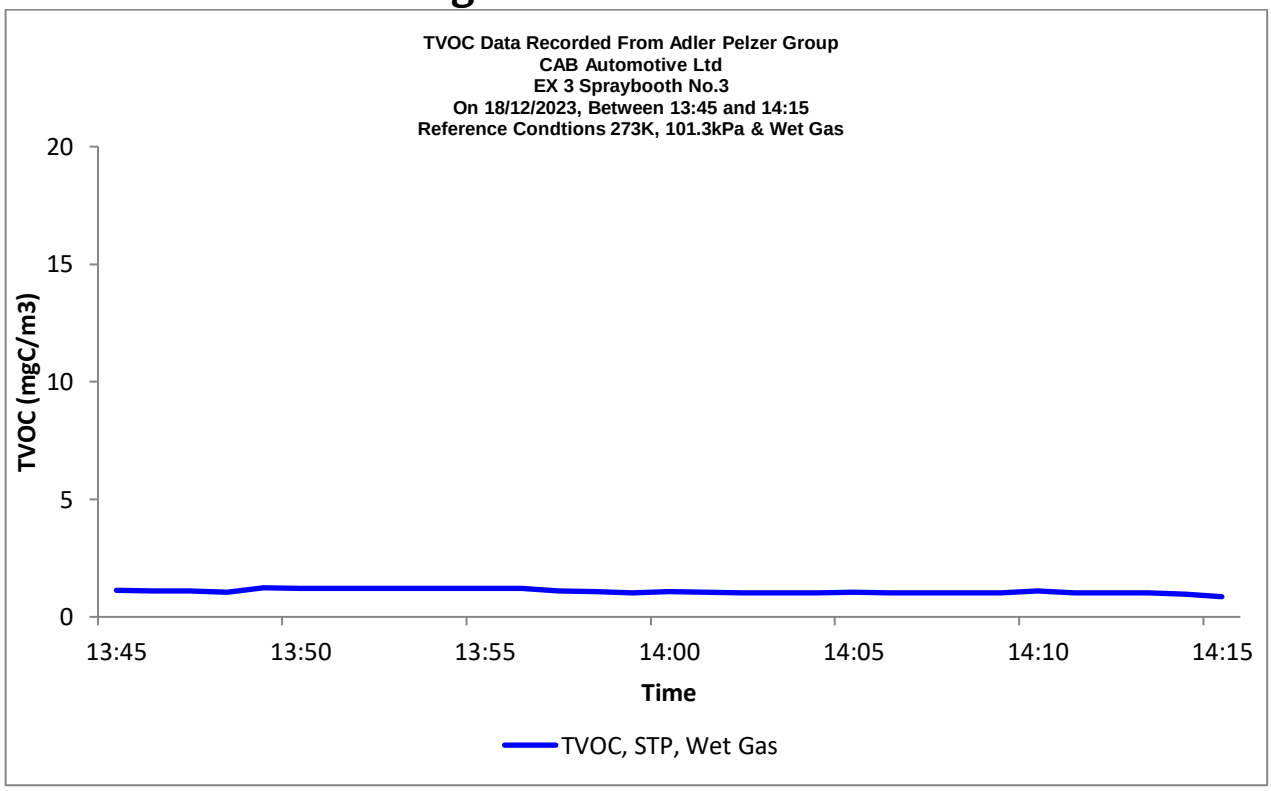
| Quantity of Ice Required / Used for Survey | Zero | Bags (2kg bags) |
|---|---|---|

# FIGURES

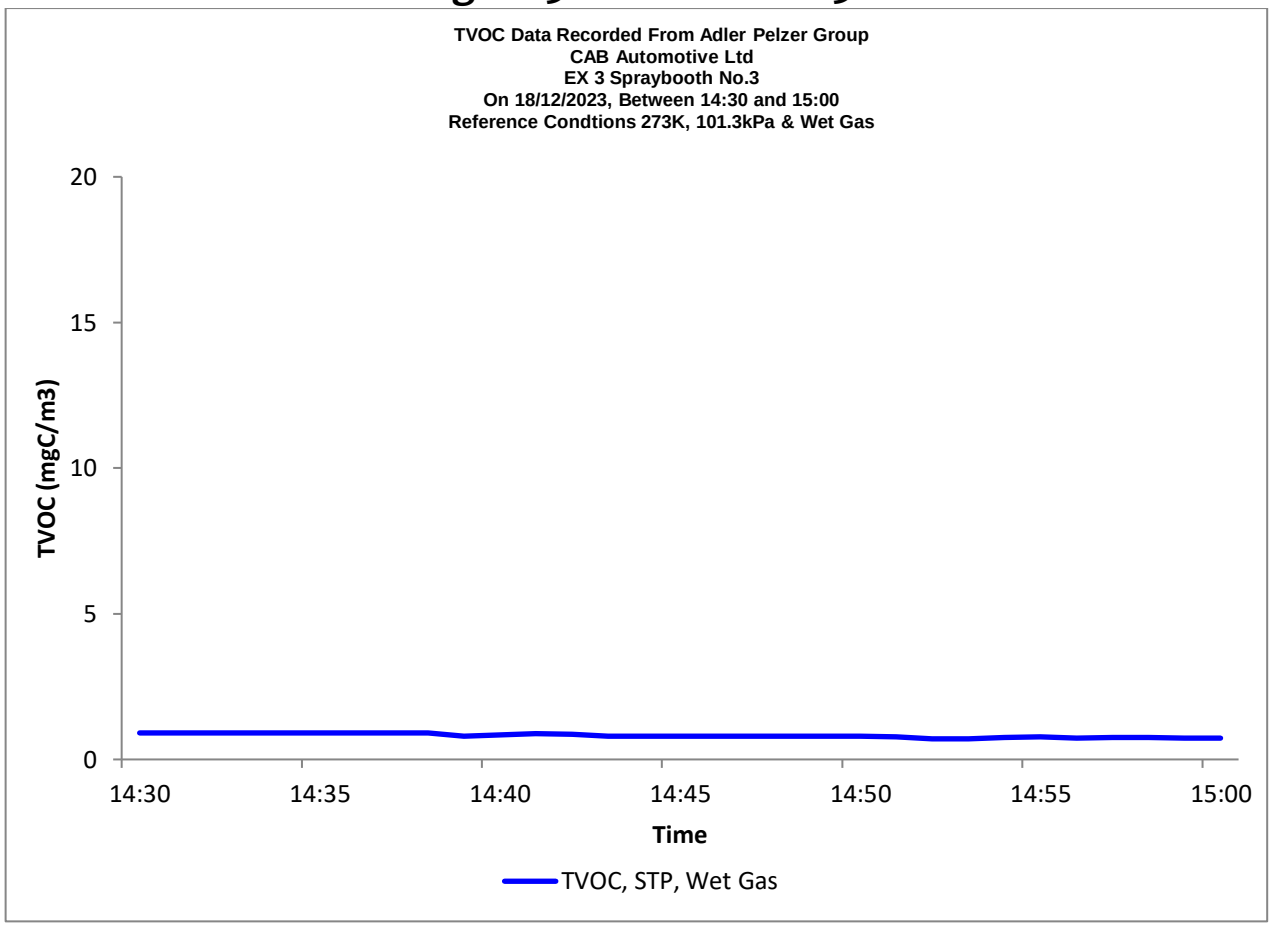
# Figure 1 – TVOC – Test 1




# Figure 2 – TVOC – Test 2



# Figure 3 – TVOC – Test 3



# TABLES

| | | | | |
|---|---|---|---|---|
| Adler Pelzer Group | | | Installation Name | : Spraybooths |
| Permit No | : PPC 92935 | | Visit Details | : Compliance - November 2023 |
| Variation No | : V1 | | Survey Dates | : 9th – 10th November 2023, 18th December 2023 & 22nd January 2024 |
| Report Ref | : P5617 | : R001 | Report Issue Date | : 8th February 2024 |

# Table 1 – Particulates

## Data Recorded from Tipton - EX 1 - Spraybooth (Mini) No.2

| Emission Parameter | Units | TPM | Blank |
|---|---|---|---|
| Stack Diameter | metres | 0.62 | … |
| | | | … |
| Area of Sample Plane | $m^2$ | 0.302 | … |
| Moisture Content | % | 0.10 | … |
| Oxygen Content | % | 20.90 | … |
| Stack Temperature | °C | 21 | … |
| Gas Velocity (at Stack Conditions) | m/sec | 10.0111 | … |
| Gas Velocity (Reference Conditions) | m/sec* | 9.1343 | … |
| Volumetric Flowrate (Stack Conditions) | $m^3$/sec | 3.0224 | … |
| Volumetric Flowrate (Reference Conditions) | $m^3$/sec* | 2.7577 | … |
| Sample Date | … | 09/11/2023 | … |
| Sample Period | … | 11:55 - 12:25 | … |
| Sample Volume (at Stack) | $m^3$ | 0.75 | … |
| Sample Volume (reference Conditions) | $m^3$* | 0.69 | 0.69 |
| Isokinetic Sampling Rate | % | 106.3 | ... |
| Sample Reference (ECL ID) | ECL/23/ | 6476 & 6477 | 6478 & 6479 |
| Mass of Particulate Matter Collected | mg | 0.54 | 1.12 |
| Concentration of Particulate Matter | mg/$m^3$* | **1.63** | 1.63 |
| Emission Rate of Particulate Matter | g/hr | 16.16 | … |
| Expanded Uncertainty (% Relative) | % | > 100% | … |
| Emission Limit Value (ELV) | mg/$m^3$* | 50 | … |
| Blank Concentration as Percentage of ELV | % | … | 3.26 |

*** Reference Conditions ( 273K, 101.3kPa, Wet Gas )**

**Final concentration for sample ref: 6476 & 6477<Blank! Blank Concentration reported @ >100% Uncertainty!**

| | | | | |
|---|---|---|---|---|
| Adler Pelzer Group | | | Installation Name | : Spraybooths |
| Permit No | : PPC 92935 | | Visit Details | : Compliance - November 2023 |
| Variation No | : V1 | | Survey Dates | : 9th – 10th November 2023, 18th December 2023 & 22nd January 2024 |
| Report Ref | : P5617 | : R001 | Report Issue Date | : 8th February 2024 |

# Table 2 – Particulates

## Data Recorded from Tipton - EX 2 - Spraybooth (Mini) No.1

| Emission Parameter | Units | TPM | Blank |
|---|---|---|---|
| Stack Diameter | metres | 0.62 | … |
| | | | … |
| Area of Sample Plane | $m^2$ | 0.302 | … |
| Moisture Content | % | 0.10 | … |
| Oxygen Content | % | 20.90 | … |
| Stack Temperature | $^oC$ | 21 | … |
| Gas Velocity (at Stack Conditions) | m/sec | 9.9101 | … |
| Gas Velocity (Reference Conditions) | m/sec* | 9.0383 | … |
| Volumetric Flowrate (Stack Conditions) | $m^3$/sec | 2.9919 | … |
| Volumetric Flowrate (Reference Conditions) | $m^3$/sec* | 2.7287 | … |
| Sample Date | … | 09/11/2023 | … |
| Sample Period | … | 11:55 - 12:25 | … |
| Sample Volume (at Stack) | $m^3$ | 0.55 | … |
| Sample Volume (reference Conditions) | $m^3$* | 0.50 | 0.50 |
| Isokinetic Sampling Rate | % | 105.1 | ... |
| Sample Reference (ECL ID) | ECL/23/ | 6480 & 6481 | 6482 & 6483 |
| Mass of Particulate Matter Collected | mg | 0.84 | 0.97 |
| Concentration of Particulate Matter | $mg/m^3$* | **1.94** | 1.94 |
| Emission Rate of Particulate Matter | g/hr | 19.08 | … |
| Expanded Uncertainty (% Relative) | % | >100% | … |
| Emission Limit Value (ELV) | $mg/m^3$* | 50 | … |
| Blank Concentration as Percentage of ELV | % | … | 3.89 |

***Reference Conditions ( 273K, 101.3kPa, Wet Gas )**

**Final concentration for sample ref: 6480 & 6481<Blank! Blank Concentration reported @ >100% Uncertainty!**

| | | | | |
|---|---|---|---|---|
| Adler Pelzer Group | | | Installation Name | : Spraybooths |
| Permit No | : PPC 92935 | | Visit Details | : Compliance - November 2023 |
| Variation No | : V1 | | Survey Dates | : 9th – 10th November 2023, 18th December 2023 & 22nd January 2024 |
| Report Ref | : P5617 | : R001 | Report Issue Date | : 8th February 2024 |

# Table 3 – Particulates

## Data Recorded from Tipton - EX 4 - Spraybooth (McLaren) No.8

| Emission Parameter | Units | TPM | Blank |
|---|---|---|---|
| Stack Diameter | metres | 0.72 | … |
| | | | … |
| Area of Sample Plane | $m^2$ | 0.407 | … |
| Moisture Content | % | 0.10 | … |
| Oxygen Content | % | 20.90 | … |
| Stack Temperature | °C | 21 | … |
| Gas Velocity (at Stack Conditions) | m/sec | 8.2061 | … |
| Gas Velocity (Reference Conditions) | m/sec* | 7.4833 | … |
| Volumetric Flowrate (Stack Conditions) | $m^3$/sec | 3.3411 | … |
| Volumetric Flowrate (Reference Conditions) | $m^3$/sec* | 3.0468 | … |
| Sample Date | … | 09/11/2023 | … |
| Sample Period | … | 13:50 - 14:20 | … |
| Sample Volume (at Stack) | $m^3$ | 0.66 | … |
| Sample Volume (reference Conditions) | $m^3$* | 0.60 | 0.60 |
| Isokinetic Sampling Rate | % | 112.2 | ... |
| Sample Reference (ECL ID) | ECL/23/ | 6488 & 6489 | 6490 & 6491 |
| Mass of Particulate Matter Collected | mg | 0.80 | 0.99 |
| Concentration of Particulate Matter | $mg/m^3$* | **1.64** | 1.64 |
| Emission Rate of Particulate Matter | g/hr | 17.97 | … |
| Expanded Uncertainty (% Relative) | % | > 100% | … |
| Emission Limit Value (ELV) | $mg/m^3$* | 50 | … |
| Blank Concentration as Percentage of ELV | % | … | 3.28 |

*** Reference Conditions ( 273K, 101.3kPa, Wet Gas )**

**Final concentration for sample ref: 6488 & 6489<Blank! Blank Concentration reported @ >100% Uncertainty!**

# Table 4 – Particulates

## Data Recorded from Tipton - EX 5 Spraybooth (McLaren) No.9

| Emission Parameter | Units | TPM | Blank |
|---|---|---|---|
| Stack Diameter | metres | 0.62 | … |
| | | | … |
| Area of Sample Plane | $m^2$ | 0.302 | … |
| Moisture Content | % | 0.10 | … |
| Oxygen Content | % | 20.90 | … |
| Stack Temperature | °C | 21 | … |
| Gas Velocity (at Stack Conditions) | m/sec | 6.3424 | … |
| Gas Velocity (Reference Conditions) | m/sec* | 5.7822 | … |
| Volumetric Flowrate (Stack Conditions) | $m^3$/sec | 1.9148 | … |
| Volumetric Flowrate (Reference Conditions) | $m^3$/sec* | 1.7457 | … |
| Sample Date | … | 09/11/2023 | … |
| Sample Period | … | 13:50 - 14:20 | … |
| Sample Volume (at Stack) | $m^3$ | 0.65 | … |
| Sample Volume (reference Conditions) | $m^3$* | 0.59 | 0.59 |
| Isokinetic Sampling Rate | % | 110.6 | ... |
| Sample Reference (ECL ID) | ECL/23/ | 6492 & 6493 | 6494 & 6495 |
| Mass of Particulate Matter Collected | mg | 1.12 | 1.00 |
| Concentration of Particulate Matter | mg/$m^3$* | **1.89** | 1.69 |
| Emission Rate of Particulate Matter | g/hr | 11.90 | … |
| Expanded Uncertainty (% Relative) | % | 46 | … |
| Emission Limit Value (ELV) | mg/$m^3$* | 50 | … |
| Blank Concentration as Percentage of ELV | % | … | 3.38 |

*** Reference Conditions ( 273K, 101.3kPa, Wet Gas )**

# Table 5 – Particulates

## Data Recorded from Tipton - SB5 Bentley

| Emission Parameter | Units | TPM | Blank |
|---|---|---|---|
| **Stack Diameter** | **metres** | 0.50 | … |
| | | | … |
| **Area of Sample Plane** | **$m^2$** | 0.196 | … |
| **Moisture Content** | **%** | 0.10 | … |
| **Oxygen Content** | **%** | 20.90 | … |
| **Stack Temperature** | **$^oC$** | 18 | … |
| **Gas Velocity** (at Stack Conditions) | **m/sec** | 1.5701 | … |
| **Gas Velocity** (Reference Conditions) | **m/sec*** | 1.4601 | … |
| **Volumetric Flowrate** (Stack Conditions) | **$m^3$/sec** | 0.3083 | … |
| **Volumetric Flowrate** (Reference Conditions) | **$m^3$/sec*** | 0.2867 | … |
| **Sample Date** | **…** | 22/01/2024 | … |
| **Sample Period** | **…** | 10:27 - 10:57 | … |
| **Sample Volume** (at Stack) | **$m^3$** | 0.38 | … |
| **Sample Volume** (reference Conditions) | **$m^3$*** | 0.35 | 0.35 |
| **Isokinetic Sampling Rate** | **%** | 114.2 | ... |
| **Sample Reference (ECL ID)** | **ECL/23/** | 0210 & 0211 | 0212 & 0213 |
| **Mass of Particulate Matter Collected** | **mg** | 0.54 | 0.54 |
| **Concentration of Particulate Matter** | **mg/$m^3$*** | **1.53** | 1.53 |
| **Emission Rate of Particulate Matter** | **g/hr** | 1.58 | … |
| **Expanded Uncertainty (% Relative)** | **%** | >100% | … |
| **Emission Limit Value (ELV)** | **mg/$m^3$*** | 50 | … |
| **Blank Concentration as Percentage of ELV** | **%** | … | 3.06 |

***Reference Conditions ( 273K, 101.3kPa, Wet Gas )**

# Table 6 – Particulates

## Data Recorded from Tipton - SB7 Bentley

| Emission Parameter | Units | TPM | Blank |
|---|---|---|---|
| **Stack Diameter** | **metres** | 0.70 | … |
| | | | … |
| **Area of Sample Plane** | **$m^2$** | 0.385 | … |
| **Moisture Content** | **%** | 0.10 | … |
| **Oxygen Content** | **%** | 20.90 | … |
| **Stack Temperature** | **$^oC$** | 18 | … |
| **Gas Velocity** (at Stack Conditions) | **m/sec** | 9.6244 | … |
| **Gas Velocity** (Reference Conditions) | **m/sec*** | 8.9563 | … |
| **Volumetric Flowrate** (Stack Conditions) | **$m^3$/sec** | 3.7039 | … |
| **Volumetric Flowrate** (Reference Conditions) | **$m^3$/sec*** | 3.4468 | … |
| **Sample Date** | **…** | 22/01/2024 | … |
| **Sample Period** | **…** | 12:28 - 12:58 | … |
| **Sample Volume** (at Stack) | **$m^3$** | 0.72 | … |
| **Sample Volume** (reference Conditions) | **$m^3$*** | 0.67 | 0.67 |
| **Isokinetic Sampling Rate** | **%** | 105.5 | ... |
| **Sample Reference (ECL ID)** | **ECL/23/** | 0214 & 0215 | 0216 & 0217 |
| **Mass of Particulate Matter Collected** | **mg** | 0.55 | 0.54 |
| **Concentration of Particulate Matter** | **mg/$m^3$*** | **0.82** | 0.81 |
| **Emission Rate of Particulate Matter** | **g/hr** | 10.20 | … |
| **Expanded Uncertainty (% Relative)** | **%** | 93 | … |
| **Emission Limit Value (ELV)** | **mg/$m^3$*** | 50 | … |
| **Blank Concentration as Percentage of ELV** | **%** | … | 1.61 |

***Reference Conditions ( 273K, 101.3kPa, Wet Gas )**

# Table 7 – Particulates

## Data Recorded from Tipton - X152 Jaguar Spraybooth

| Emission Parameter | Units | TPM | Blank |
|---|---|---|---|
| Stack Diameter | metres | 0.48 | … |
| | | | … |
| Area of Sample Plane | $m^2$ | 0.181 | … |
| Moisture Content | % | 0.10 | … |
| Oxygen Content | % | 20.90 | … |
| Stack Temperature | °C | 16 | … |
| Gas Velocity (at Stack Conditions) | m/sec | 7.6030 | … |
| Gas Velocity (Reference Conditions) | m/sec* | 7.2636 | … |
| Volumetric Flowrate (Stack Conditions) | $m^3$/sec | 1.3758 | … |
| Volumetric Flowrate (Reference Conditions) | $m^3$/sec* | 1.3144 | … |
| Sample Date | … | 18/12/2023 | … |
| Sample Period | … | 10:43 - 11:13 | … |
| Sample Volume (at Stack) | $m^3$ | 0.56 | … |
| Sample Volume (reference Conditions) | $m^3$* | 0.54 | 0.54 |
| Isokinetic Sampling Rate | % | 104.6 | ... |
| Sample Reference (ECL ID) | ECL/23/ | 6500 & 6501 | 6502 & 6503 |
| Mass of Particulate Matter Collected | mg | 0.66 | 0.60 |
| Concentration of Particulate Matter | $mg/m^3$* | **1.23** | 1.12 |
| Emission Rate of Particulate Matter | g/hr | 5.80 | … |
| Expanded Uncertainty (% Relative) | % | 77 | … |
| Emission Limit Value (ELV) | $mg/m^3$* | 50 | … |
| Blank Concentration as Percentage of ELV | % | … | 2.23 |

*** Reference Conditions ( 273K, 101.3kPa, Wet Gas )**

| | | | | |
|---|---|---|---|---|
| Adler Pelzer Group | | | Installation Name | : Spraybooths |
| Permit No | : PPC 92935 | | Visit Details | : Compliance - November 2023 |
| Variation No | : V1 | | Survey Dates | : 9th – 10th November 2023, 18th December 2023 & 22nd January 2024 |
| Report Ref | : P5617 | : R001 | Report Issue Date | : 8th February 2024 |

# Table 8 – Particulates

## Data Recorded from Tipton - EX 3 Spraybooth No.3

| Emission Parameter | Units | TPM | Blank |
|---|---|---|---|
| Stack Diameter | metres | 0.62 | … |
| | | | … |
| Area of Sample Plane | $m^2$ | 0.302 | … |
| Moisture Content | % | 0.10 | … |
| Oxygen Content | % | 20.90 | … |
| Stack Temperature | °C | 18 | … |
| Gas Velocity (at Stack Conditions) | m/sec | 6.4563 | … |
| Gas Velocity (Reference Conditions) | m/sec* | 6.1320 | … |
| Volumetric Flowrate (Stack Conditions) | $m^3$/sec | 1.9492 | … |
| Volumetric Flowrate (Reference Conditions) | $m^3$/sec* | 1.8513 | … |
| Sample Date | … | 18/12/2023 | … |
| Sample Period | … | 13:00 - 13:30 | … |
| Sample Volume (at Stack) | $m^3$ | 0.57 | … |
| Sample Volume (reference Conditions) | $m^3$* | 0.54 | 0.54 |
| Isokinetic Sampling Rate | % | 95.2 | ... |
| Sample Reference (ECL ID) | ECL/23/ | 6484 & 6485 | 6486 & 6487 |
| Mass of Particulate Matter Collected | mg | 0.54 | 0.60 |
| Concentration of Particulate Matter | mg/$m^3$* | **1.12** | 1.12 |
| Emission Rate of Particulate Matter | g/hr | 7.44 | … |
| Expanded Uncertainty (% Relative) | % | > 100% | … |
| Emission Limit Value (ELV) | mg/$m^3$* | 50 | … |
| Blank Concentration as Percentage of ELV | % | … | 2.23 |

*** Reference Conditions ( 273K, 101.3kPa, Wet Gas )**

**Final concentration for sample ref: 6484 & 6485<Blank! Blank Concentration reported @ >100% Uncertainty!**

# Table 9 – Dichloromethane (Test 1)

## Adler Pelzer Group

### Cab Automotive Ltd Tipton EX 3 Spraybooth No.3

| Emission Parameter | Units | Value |
|---|---|---|
| Stack Diameter | mm | 620 |
| Area of Sample Plane | $m^2$ | 0.302 |
| Measured Oxygen (Dry) | %Vol | 20.90 |
| Meter Temperature | °C | 17.50 |
| StackTemperature | °C | 18.00 |
| Sample Date | … | 18/12/2023 |
| Sample Period | … | 13:00 - 13:30 |
| Sample Volume (as Measured) | $m^3$ | 0.0047 |
| Sample Volume (reference Conditions) | $m^3$* | 0.0044 |

| Sample Tube Results | | Dichloromethane Test 1 | | Blank |
|---|---|---|---|---|
| Sample Reference ECL/23/6979 | Units | Concentration* | Uncertainty | Concentration |
| Concentration of Dichloromethane | $mg/m^3$ | 0.90 | 100.06% | 0.90 |

***Reference Conditions: 273 K, 101.3 kPa, Wet Gas**

# Table 10 – Dichloromethane (Test 2)

## Adler Pelzer Group

### Cab Automotive Ltd Tipton EX 3 Spraybooth No.3

| Emission Parameter | Units | Value |
|---|---|---|
| Stack Diameter | mm | 620 |
| Area of Sample Plane | $m^2$ | 0.302 |
| Measured Oxygen (Dry) | %Vol | 20.90 |
| Meter Temperature | °C | 17.50 |
| StackTemperature | °C | 18.00 |
| Sample Date | … | 18/12/2023 |
| Sample Period | … | 13:45 - 14:15 |
| Sample Volume (as Measured) | $m^3$ | 0.0047 |
| Sample Volume (reference Conditions) | $m^3$* | 0.0045 |

| Sample Tube Results | | Dichloromethane Test 2 | | Blank |
|---|---|---|---|---|
| Sample Reference ECL/23/6980 | Units | Concentration* | Uncertainty | Concentration |
| Concentration of Dichloromethane | $mg/m^3$ | 0.90 | 100.06% | 0.90 |

***Reference Conditions: 273 K, 101.3 kPa, Wet Gas**

# Table 11 – Dichloromethane (Test 3)

## Adler Pelzer Group

### Cab Automotive Ltd Tipton EX 3 Spraybooth No.3

| Emission Parameter | Units | Value |
|---|---|---|
| Stack Diameter | mm | 620 |
| Area of Sample Plane | $m^2$ | 0.302 |
| Measured Oxygen (Dry) | %Vol | 20.90 |
| Meter Temperature | °C | 17.50 |
| StackTemperature | °C | 18.00 |
| Sample Date | … | 18/12/2023 |
| Sample Period | … | 14:30 - 15:00 |
| Sample Volume (as Measured) | $m^3$ | 0.0047 |
| Sample Volume (reference Conditions) | $m^{3*}$ | 0.0044 |

| Sample Tube Results | | Dichloromethane Test 3 | | Blank |
|---|---|---|---|---|
| Sample Reference ECL/23/6981 | Units | Concentration* | Uncertainty | Concentration |
| Concentration of Dichloromethane | $mg/m^3$ | 0.90 | 100.06% | 0.90 |

***Reference Conditions: 273 K, 101.3 kPa, Wet Gas**

# VELOCITY TRAVERSE PROFILES

**Environmental Compliance Limited**

| | | | |
|---|---|---|---|
| Adler Pelzer Group | | Installation Name | : Spraybooths |
| Permit No | : PPC 92935 | Visit Details | : Compliance - November 2023 |
| Variation No | : V1 | Survey Dates | : 9th – 10th November 2023, 18th December 2023 & 22nd January 2024 |
| Report Ref | : P5617 : R001 | Report Issue Date | : 8th February 2024 |

| Environmental Compliance Limited | Traverse Data Profoma | Date of Measurement | 09/11/2023 |
|---|---|---|---|

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Company | Adler Pelzer Group | Stack Diameter Port A (mm) | 620 | Average Stack Diameter (mm) | 620 | Pitot tube coefficient | 1.00 |
| Site | Cab Automotive Ltd | Stack Diameter Port B (mm) | | Port Length (mm) | 0 | Pitot Id | 487 |
| Location | Tipton | Duct Length Port A (mm) | | Average Duct Length (mm) L | | Stack Thermocouple ID | 1247 |
| Stack | EX 1 - Spraybooth (Mini) No.2 | Duct Length Port B (mm) | | Duct width (mm) B | | Stack Temp Reader ID | 1251 |
| Job No | P5617 | Duct Length Port C (mm) | | Barometric Pressure. (mb) | 994 | Manometer ID | 1249 |
| Operators | LH & TR | Duct Length Port D (mm) | | Ave Static Press. (mm $H_20$) | 1.11 | Barometer ID | 1321 |

| Pre - Traverse Checks Carried Out | Time | Pass/ Fail |
|---|---|---|
| Pre - Traverse PITOT Visual Inspection | 10:24:00 | Pass |
| Pre - Traverse PITOT Leak Check | 10:26:00 | Pass |

Smooth Walls

| Static Pressure Readings (Pascals) | | | |
|---|---|---|---|
| Port A | Port B | Port C | Port D |
| 10.90 | | | |

Diagram/ Description of Cross Section of Stack/Duct

| Port/ Point | Distance to Point ( mm ) | Time | Temperature Readings (°C) | | | ( ΔP ) Pitot Readings (Pa) | | | Average Temp. ( °C ) | Average ( ΔP ) ( Pa ) | Swirl Test ° From Reference |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 1 | 2 | 3 | 1 | 2 | 3 | | | |
| A1 | 42 | 10:28:00 | 20.0 | 20.0 | 2.0 | 30.5 | 30.5 | 29.8 | 14.0 | 30.3 | 10 |
| A2 | 155 | 10:30:00 | 20.0 | 20.0 | 20.0 | 50.2 | 49.6 | 49.7 | 20.0 | 49.8 | 10 |
| A3 | 465 | 10:32:00 | 20.0 | 20.0 | 20.0 | 75.9 | 76.0 | 75.1 | 20.0 | 75.7 | 9 |
| A4 | 578 | 10:34:00 | 20.0 | 20.0 | 20.0 | 89.9 | 88.7 | 89.0 | 20.0 | 89.2 | 10 |
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| | | | | | | | | | | | |
| Blockage Check @ A1 ( L-Type Pitot Only) | | 10:40:00 | 20.0 | 20.0 | 20.0 | 30.9 | 30.9 | 28.7 | 74.0 | 245.0 | Total |
| | | | Mean | | 20.0 | Mean | | 30.2 | 20.0 | 89.2 | Max |
| | | | Difference < 5% from Initial ? | | 2.09 | Difference < 5% from Initial ? | | -0.33 | 14.0 | 30.3 | Min |
| | | | | | | | | | 18.5 | 61.2 | Average |

Notes
Including expected or actual deviations from procedures / non-conformities

SINGLE HOLE - 2INCH
Extra points used on single line

| Stagnation Check (S-type Pitot Only) | Time | Reading |
|---|---|---|
| Static Pressure Via Positive Leg (Pa) | | |
| Static Pressure Via Negative Leg (Pa) | | |
| Difference (Pa) < 10Pa ? | | |

| Average temp ( K ) | 291.500 |
|---|---|

| Suitability of Sampling Position | Actual Stack Conditions |
|---|---|
| Highest:lowest flow pressure ratio < 9:1? | 2.97:1 |
| Maximum deviation of flow from axis < 15° ? | 10 |
| X-sectional area for stacks= πr2 | 0.30 $m^2$ |
| X-sectional area for ducts = L x B | $m^2$ |
| Suitability of Position for Sampling | OK |

| Post - Traverse Checks Carried Out | Time | Pass/ Fail |
|---|---|---|
| Post - Traverse Visual Inspection | 10:42:00 | Pass |
| Post - Traverse PITOT Leak Check | 10:44:00 | Pass |

Compliance With Positional Requirements?

| | |
|---|---|
| Height of sample ports from Platform | 1.25m |
| Number of sample ports | 1 |
| Width of platform (port back to handrail) | < 1m |

| | | |
|---|---|---|
| Nearest downstream disturbance | Bend | ~ 1m |
| Nearest upstream disturbance | Bend | ~ 1m |
| Disturbances are classed as bends, fans or diameter variations | | |

| | | | | | |
|---|---|---|---|---|---|
| Stack Moisture | 0.1 | % | Gas Velocity (as Measured) Adjusted for Smooth Walls | 9.93850 | m/sec |
| Measured Oxygen | 20.9 | % | Gas Velocity (Reference Conditions) Adjusted for Smooth Walls | 9.13418 | m/sec* |
| Measured Carbon Dioxide | 0 | % | Volumetric Flowrate (as Measured) Adjusted for Smooth Walls | 3.00050 | $m^3$/sec |
| Dry Gas Molecular Weight | 28.83600 | g/g mole | Volumetric Flowrate (Ref Cond) Adjusted for Smooth Walls | 2.75767 | $m^3$/sec* |

*Reference Conditions: 273K, 101.3kPa, Wet Gas

NOTE: Velocity / volume flowrate calculations exclude contributions from the measurement point(s) where swirl > 15°

**Environmental Compliance Limited**

| | | | |
|---|---|---|---|
| Adler Pelzer Group | | Installation Name | : Spraybooths |
| Permit No | : PPC 92935 | Visit Details | : Compliance - November 2023 |
| Variation No | : V1 | Survey Dates | : 9th – 10th November 2023, 18th December 2023 & 22nd January 2024 |
| Report Ref | : P5617 : R001 | Report Issue Date | : 8th February 2024 |

| Environmental Compliance Limited | Traverse Data Profoma | Date of Measurement | 09/11/2023 |
|---|---|---|---|

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Company | Adler Pelzer Group | Stack Diameter Port A (mm) | 620 | Average Stack Diameter (mm) | 620 | Pitot tube coefficient | 1.00 |
| Site | Cab Automotive Ltd | Stack Diameter Port B (mm) | | Port Length (mm) | 0 | Pitot Id | 487 |
| Location | Tipton | Duct Length Port A (mm) | | Average Duct Length (mm) L | | Stack Thermocouple ID | 1247 |
| Stack | EX 1 - Spraybooth (Mini) No.2 | Duct Length Port B (mm) | | Duct width (mm) B | | Stack Temp Reader ID | 1251 |
| Job No | P5617 | Duct Length Port C (mm) | | Barometric Pressure. (mb) | 994 | Manometer ID | 1249 |
| Operators | LH & TR | Duct Length Port D (mm) | | Ave Static Press. (mm $H_20$) | 1.11 | Barometer ID | 1321 |

| Pre - Traverse Checks Carried Out | Time | Pass/ Fail |
|---|---|---|
| Pre - Traverse PITOT Visual Inspection | 10:24:00 | Pass |
| Pre - Traverse PITOT Leak Check | 10:26:00 | Pass |

Smooth Walls

| Static Pressure Readings (Pascals) | | | |
|---|---|---|---|
| Port A | Port B | Port C | Port D |
| 10.90 | | | |

Diagram/ Description of Cross Section of Stack/Duct

| Port/ Point | Distance to Point ( mm ) | Time | Temperature Readings (°C) | | | ( ΔP ) Pitot Readings (Pa) | | | Average Temp. ( °C ) | Average ( ΔP ) ( Pa ) | Swirl Test ° From Reference |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 1 | 2 | 3 | 1 | 2 | 3 | | | |
| | | | | | | | | | | | |
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| A1X | 50 | 10:36:00 | 20.0 | 20.0 | 20.0 | 29.6 | 30.3 | 31.1 | 20.0 | 30.3 | 10 |
| A4X | 570 | 10:38:00 | 20.0 | 20.0 | 20.0 | 90.6 | 89.4 | 91.0 | 20.0 | 90.3 | 10 |
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| Blockage Check @ A1 ( L-Type Pitot Only) | | 10:40:00 | 20.0 | 20.0 | 20.0 | 30.9 | 30.9 | 28.7 | 40.0 | 120.7 | Total |
| | | | Mean | | 20.0 | Mean | | 30.2 | 20.0 | 90.3 | Max |
| | | | Difference < 5% from Initial ? | | #VALUE! | Difference < 5% from Initial ? | | #VALUE! | 20.0 | 30.3 | Min |
| | | | | | | | | | 20.0 | 60.3 | Average |

| Stagnation Check (S-type Pitot Only) | Time | Reading |
|---|---|---|
| Static Pressure Via Positive Leg (Pa) | | |
| Static Pressure Via Negative Leg (Pa) | | |
| Difference (Pa) < 10Pa ? | | |

| Post - Traverse Checks Carried Out | Time | Pass/ Fail |
|---|---|---|
| Post - Traverse Visual Inspection | 10:42:00 | Pass |
| Post - Traverse PITOT Leak Check | 10:44:00 | Pass |

| Average temp ( K ) | 293.000 |
|---|---|

| Suitability of Sampling Position | Actual Stack Conditions |
|---|---|
| Highest:lowest flow pressure ratio < 9:1? | 3.06:1 |
| Maximum deviation of flow from axis < 15° ? | 10 |
| X-sectional area for stacks= πr2 | 0.30 $m^2$ |
| X-sectional area for ducts = L x B | $m^2$ |
| Suitability of Position for Sampling | OK |

| | | | | | |
|---|---|---|---|---|---|
| Stack Moisture | 0.1 | % | Gas Velocity (as Measured) Adjusted for Smooth Walls | 9.73631 | m/sec |
| Measured Oxygen | 20.9 | % | Gas Velocity (Reference Conditions) Adjusted for Smooth Walls | 8.90254 | m/sec* |
| Measured Carbon Dioxide | 0 | % | Volumetric Flowrate (as Measured) Adjusted for Smooth Walls | 2.93946 | $m^3$/sec |
| Dry Gas Molecular Weight | 28.83600 | g/g mole | Volumetric Flowrate (Ref Cond) Adjusted for Smooth Walls | 2.68774 | $m^3$/sec* |

Notes
Including expected or actual deviations from procedures / non-conformities

SINGLE HOLE - 2INCH
Extra points used on single line

Compliance With Positional Requirements?

| | |
|---|---|
| Height of sample ports from Platform | 1.25m |
| Number of sample ports | 1 |
| Width of platform (port back to handrail) | < 1m |

| | | |
|---|---|---|
| Nearest downstream disturbance | Bend | ~ 1m |
| Nearest upstream disturbance | Bend | ~ 1m |
| Disturbances are classed as bends, fans or diameter variations | | |

* Reference Conditions: 273K, 101.3kPa, Wet Gas

NOTE: Velocity / volume flowrate calculations exclude contributions from the measurement point(s) where swirl > 15°

**Environmental Compliance Limited**

| | | | |
|---|---|---|---|
| Adler Pelzer Group | | Installation Name | : Spraybooths |
| Permit No | : PPC 92935 | Visit Details | : Compliance - November 2023 |
| Variation No | : V1 | Survey Dates | : 9th – 10th November 2023, 18th December 2023 & 22nd January 2024 |
| Report Ref | : P5617 : R001 | Report Issue Date | : 8th February 2024 |

| Environmental Compliance Limited | Traverse Data Profoma | Date of Measurement | 09/11/2023 |
|---|---|---|---|

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Company | Adler Pelzer Group | Stack Diameter Port A (mm) | 620 | Average Stack Diameter (mm) | 620 | Pitot tube coefficient | 0.99 |
| Site | Cab Automotive Ltd | Stack Diameter Port B (mm) | | Port Length (mm) | 0 | Pitot Id | 1096 |
| Location | Tipton | Duct Length Port A (mm) | | Average Duct Length (mm) L | | Stack Thermocouple ID | 1245 |
| Stack | EX 2 - Spraybooth (Mini) No.1 | Duct Length Port B (mm) | | Duct width (mm) B | | Stack Temp Reader ID | 1252 |
| Job No | P5617 | Duct Length Port C (mm) | | Barometric Pressure. (mb) | 994 | Manometer ID | 1250 |
| Operators | LH & TR | Duct Length Port D (mm) | | Ave Static Press. (mm $H_20$) | 1.07 | Barometer ID | 1321 |

| Pre - Traverse Checks Carried Out | Time | Pass/ Fail |
|---|---|---|
| Pre - Traverse PITOT Visual Inspection | 10:00:00 | Pass |
| Pre - Traverse PITOT Leak Check | 10:02:00 | Pass |

Smooth Walls

| Static Pressure Readings (Pascals) | | | |
|---|---|---|---|
| Port A | Port B | Port C | Port D |
| 10.50 | | | |

Diagram/ Description of Cross Section of Stack/Duct

| Port/ Point | Distance to Point ( mm ) | Time | Temperature Readings (°C) | | | ( ΔP ) Pitot Readings (Pa) | | | Average Temp. ( °C ) | Average ( ΔP ) ( Pa ) | Swirl Test ° From Reference |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 1 | 2 | 3 | 1 | 2 | 3 | | | |
| A1 | 42 | 10:04:00 | 20.0 | 20.0 | 20.0 | 30.2 | 31.5 | 33.1 | 20.0 | 31.6 | 10 |
| A2 | 155 | 10:06:00 | 20.0 | 20.0 | 20.0 | 50.4 | 49.8 | 50.1 | 20.0 | 50.1 | 10 |
| A3 | 465 | 10:08:00 | 20.0 | 20.0 | 20.0 | 77.0 | 79.6 | 76.1 | 20.0 | 77.6 | 10 |
| A4 | 578 | 10:10:00 | 20.0 | 20.0 | 20.0 | 95.2 | 94.0 | 94.0 | 20.0 | 94.4 | 10 |
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| Blockage Check @ A1 ( L-Type Pitot Only) | | 10:16:00 | 20.0 | 20.0 | 20.0 | 29.8 | 31.2 | 30.1 | 80.0 | 253.7 | Total |
| | | | Mean | | 20.0 | Mean | | 30.4 | 20.0 | 94.4 | Max |
| | | | Difference < 5% from Initial ? | | 0.00 | Difference < 5% from Initial ? | | -3.90 | 20.0 | 31.6 | Min |
| | | | | | | | | | 20.0 | 63.4 | Average |

Notes
Including expected or actual deviations from procedures / non-conformities

SINGLE HOLE - 2INCH
Extra points used on single line

| Stagnation Check (S-type Pitot Only) | Time | Reading |
|---|---|---|
| Static Pressure Via Positive Leg (Pa) | | |
| Static Pressure Via Negative Leg (Pa) | | |
| Difference (Pa) < 10Pa ? | | |

| Average temp ( K ) | 293.000 |
|---|---|

| Suitability of Sampling Position | Actual Stack Conditions |
|---|---|
| Highest:lowest flow pressure ratio < 9:1? | 3.15:1 |
| Maximum deviation of flow from axis < 15° ? | 10 |
| X-sectional area for stacks= πr2 | 0.30 $m^2$ |
| X-sectional area for ducts = L x B | $m^2$ |
| Suitability of Position for Sampling | OK |

| Post - Traverse Checks Carried Out | Time | Pass/ Fail |
|---|---|---|
| Post - Traverse Visual Inspection | 10:18:00 | Pass |
| Post - Traverse PITOT Leak Check | 10:20:00 | Pass |

Compliance With Positional Requirements?

| | |
|---|---|
| Height of sample ports from Platform | 1.25m |
| Number of sample ports | 1 |
| Width of platform (port back to handrail) | < 1m |

| | | |
|---|---|---|
| Nearest downstream disturbance | Bend | ~ 1m |
| Nearest upstream disturbance | Bend | ~ 1m |
| Disturbances are classed as bends, fans or diameter variations | | |

| | | | | | |
|---|---|---|---|---|---|
| Stack Moisture | 0.1 | % | Gas Velocity (as Measured) Adjusted for Smooth Walls | 10.02383 | m/sec |
| Measured Oxygen | 20.9 | % | Gas Velocity (Reference Conditions) Adjusted for Smooth Walls | 9.16540 | m/sec* |
| Measured Carbon Dioxide | 0 | % | Volumetric Flowrate (as Measured) Adjusted for Smooth Walls | 3.02626 | $m^3$/sec |
| Dry Gas Molecular Weight | 28.83600 | g/g mole | Volumetric Flowrate (Ref Cond) Adjusted for Smooth Walls | 2.76710 | $m^3$/sec* |

*Reference Conditions: 273K, 101.3kPa, Wet Gas

NOTE: Velocity / volume flowrate calculations exclude contributions from the measurement point(s) where swirl > 15°

**Environmental Compliance Limited**

| | | | |
|---|---|---|---|
| Adler Pelzer Group | | Installation Name | : Spraybooths |
| Permit No | : PPC 92935 | Visit Details | : Compliance - November 2023 |
| Variation No | : V1 | Survey Dates | : 9th – 10th November 2023, 18th December 2023 & 22nd January 2024 |
| Report Ref | : P5617 : R001 | Report Issue Date | : 8th February 2024 |

| Environmental Compliance Limited | Traverse Data Profoma | Date of Measurement | 09/11/2023 |
|---|---|---|---|

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Company | Adler Pelzer Group | Stack Diameter Port A (mm) | 620 | Average Stack Diameter (mm) | 620 | Pitot tube coefficient | 0.99 |
| Site | Cab Automotive Ltd | Stack Diameter Port B (mm) | | Port Length (mm) | 0 | Pitot Id | 1096 |
| Location | Tipton | Duct Length Port A (mm) | | Average Duct Length (mm) L | | Stack Thermocouple ID | 1245 |
| Stack | EX 2 - Spraybooth (Mini) No.1 | Duct Length Port B (mm) | | Duct width (mm) B | | Stack Temp Reader ID | 1252 |
| Job No | P5617 | Duct Length Port C (mm) | | Barometric Pressure. (mb) | 994 | Manometer ID | 1250 |
| Operators | LH & TR | Duct Length Port D (mm) | | Ave Static Press. (mm $H_20$) | 1.07 | Barometer ID | 1321 |

| Pre - Traverse Checks Carried Out | Time | Pass/ Fail |
|---|---|---|
| Pre - Traverse PITOT Visual Inspection | 10:00:00 | Pass |
| Pre - Traverse PITOT Leak Check | 10:02:00 | Pass |

Smooth Walls

| Static Pressure Readings (Pascals) | | | |
|---|---|---|---|
| Port A | Port B | Port C | Port D |
| 10.50 | | | |

Diagram/ Description of Cross Section of Stack/Duct

| Port/ Point | Distance to Point ( mm ) | Time | Temperature Readings (°C) 1 | 2 | 3 | ( ΔP ) Pitot Readings (Pa) 1 | 2 | 3 | Average Temp. ( °C ) | Average ( ΔP ) ( Pa ) | Swirl Test ° From Reference |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | |
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| A1X | 50 | 10:12:00 | 20.0 | 20.0 | 20.0 | 29.8 | 31.2 | 31.4 | 20.0 | 30.8 | 10 |
| A4X | 570 | 10:14:00 | 20.0 | 20.0 | 20.0 | 90.8 | 89.7 | 90.0 | 20.0 | 90.2 | 10 |
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| | | | | | | | | | | | |
| Blockage Check @ A1 ( L-Type Pitot Only) | | 10:16:00 | 20.0 | 20.0 | 20.0 | 29.8 | 31.2 | 30.1 | 40.0 | 121.0 | Total |
| | | | Mean | | 20.0 | Mean | | 30.4 | 20.0 | 90.2 | Max |
| | | | Difference < 5% from Initial ? | | #VALUE! | Difference < 5% from Initial ? | | #VALUE! | 20.0 | 30.8 | Min |
| | | | | | | | | | 20.0 | 60.5 | Average |

Notes
Including expected or actual deviations from procedures / non-conformities

SINGLE HOLE - 2INCH
Extra points used on single line

| Stagnation Check (S-type Pitot Only) | Time | Reading |
|---|---|---|
| Static Pressure Via Positive Leg (Pa) | | |
| Static Pressure Via Negative Leg (Pa) | | |
| Difference (Pa) < 10Pa ? | | |

| Average temp ( K ) | 293.000 |
|---|---|

| Suitability of Sampling Position | Actual Stack Conditions |
|---|---|
| Highest:lowest flow pressure ratio < 9:1? | 3.05:1 |
| Maximum deviation of flow from axis < 15° ? | 10 |
| X-sectional area for stacks= πr2 | 0.30 $m^2$ |
| X-sectional area for ducts = L x B | $m^2$ |
| Suitability of Position for Sampling | OK |

| Post - Traverse Checks Carried Out | Time | Pass/ Fail |
|---|---|---|
| Post - Traverse Visual Inspection | 10:18:00 | Pass |
| Post - Traverse PITOT Leak Check | 10:20:00 | Pass |

Compliance With Positional Requirements?

| | |
|---|---|
| Height of sample ports from Platform | 1.25m |
| Number of sample ports | 1 |
| Width of platform (port back to handrail) | < 1m |

| | | |
|---|---|---|
| Nearest downstream disturbance | Bend | ~ 1m |
| Nearest upstream disturbance | Bend | ~ 1m |
| Disturbances are classed as bends, fans or diameter variations | | |

| | | | | | |
|---|---|---|---|---|---|
| Stack Moisture | 0.1 | % | Gas Velocity (as Measured) Adjusted for Smooth Walls | 9.66044 | m/sec |
| Measured Oxygen | 20.9 | % | Gas Velocity (Reference Conditions) Adjusted for Smooth Walls | 8.83313 | m/sec* |
| Measured Carbon Dioxide | 0 | % | Volumetric Flowrate (as Measured) Adjusted for Smooth Walls | 2.91655 | $m^3$/sec |
| Dry Gas Molecular Weight | 28.83600 | g/g mole | Volumetric Flowrate (Ref Cond) Adjusted for Smooth Walls | 2.66678 | $m^3$/sec* |

* Reference Conditions: 273K, 101.3kPa, Wet Gas

NOTE: Velocity / volume flowrate calculations exclude contributions from the measurement point(s) where swirl > 15°

**Environmental Compliance Limited**

| | | | |
|---|---|---|---|
| Adler Pelzer Group | | Installation Name | : Spraybooths |
| Permit No | : PPC 92935 | Visit Details | : Compliance - November 2023 |
| Variation No | : V1 | Survey Dates | : 9th – 10th November 2023, 18th December 2023 & 22nd January 2024 |
| Report Ref | : P5617 : R001 | Report Issue Date | : 8th February 2024 |

| Environmental Compliance Limited | Traverse Data Profoma | Date of Measurement | 09/11/2023 |
|---|---|---|---|

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Company | Adler Pelzer Group | Stack Diameter Port A (mm) | 720 | Average Stack Diameter (mm) | 720 | Pitot tube coefficient | 0.99 |
| Site | Cab Automotive Ltd | Stack Diameter Port B (mm) | | Port Length (mm) | 0 | Pitot Id | 1096 |
| Location | Tipton | Duct Length Port A (mm) | | Average Duct Length (mm) L | | Stack Thermocouple ID | 1245 |
| Stack | EX 4 - Spraybooth (McLaren) No.8 | Duct Length Port B (mm) | | Duct width (mm) B | | Stack Temp Reader ID | 1252 |
| Job No | P5617 | Duct Length Port C (mm) | | Barometric Pressure. (mb) | 994 | Manometer ID | 1250 |
| Operators | LH & TR | Duct Length Port D (mm) | | Ave Static Press. (mm $H_20$) | 8.48 | Barometer ID | 1321 |

| Pre - Traverse Checks Carried Out | Time | Pass/ Fail |
|---|---|---|
| Pre - Traverse PITOT Visual Inspection | 13:00:00 | Pass |
| Pre - Traverse PITOT Leak Check | 13:02:00 | Pass |

Smooth Walls

| Static Pressure Readings (Pascals) | | | |
|---|---|---|---|
| Port A | Port B | Port C | Port D |
| 83.20 | | | |

Diagram/ Description of Cross Section of Stack/Duct

| Port/ Point | Distance to Point ( mm ) | Time | Temperature Readings (°C) | | | ( ΔP ) Pitot Readings (Pa) | | | Average Temp. ( °C ) | Average ( ΔP ) ( Pa ) | Swirl Test ° From Reference |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 1 | 2 | 3 | 1 | 2 | 3 | | | |
| A1 | 48 | 13:04:00 | 21.0 | 21.0 | 2.0 | 46.8 | 45.2 | 49.8 | 14.7 | 47.3 | 12 |
| A2 | 180 | 13:06:00 | 21.0 | 21.0 | 21.0 | 44.2 | 43.3 | 45.7 | 21.0 | 44.4 | 12 |
| A3 | 540 | 13:08:00 | 21.0 | 21.0 | 21.0 | 39.5 | 38.7 | 40.3 | 21.0 | 39.5 | 10 |
| A4 | 672 | 13:10:00 | 21.0 | 21.0 | 21.0 | 39.5 | 37.4 | 38.9 | 21.0 | 38.6 | 10 |
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| | | | | | | | | | | | |
| Blockage Check @ A1 ( L-Type Pitot Only) | | 13:16:00 | 21.0 | 21.0 | 21.0 | 45.6 | 44.8 | 47.6 | 77.7 | 169.8 | Total |
| | | | Mean | | 21.0 | Mean | | 46.0 | 21.0 | 47.3 | Max |
| | | | Difference < 5% from Initial ? | | 2.20 | Difference < 5% from Initial ? | | -2.68 | 14.7 | 38.6 | Min |
| | | | | | | | | | 19.4 | 42.4 | Average |

Notes
Including expected or actual deviations from procedures / non-conformities

SINGLE HOLE - 2INCH
Extra points used on single line

| Stagnation Check (Stype Pitot Only) | Time | Reading |
|---|---|---|
| Static Pressure Via Positive Leg (Pa) | | |
| Static Pressure Via Negative Leg (Pa) | | |
| Difference (Pa) < 10Pa ? | | |

| Average temp ( K ) | 292.417 |
|---|---|

| Suitability of Sampling Position | Actual Stack Conditions |
|---|---|
| Highest:lowest flow pressure ratio < 9:1? | 1.22:1 |
| Maximum deviation of flow from axis < 15° ? | 12 |
| X-sectional area for stacks= πr2 | 0.41 $m^2$ |
| X-sectional area for ducts = L x B | $m^2$ |
| Suitability of Position for Sampling | OK |

| Post - Traverse Checks Carried Out | Time | Pass/ Fail |
|---|---|---|
| Post - Traverse Visual Inspection | 13:18:00 | Pass |
| Post - Traverse PITOT Leak Check | 13:20:00 | Pass |

Compliance With Positional Requirements?

| | |
|---|---|
| Height of sample ports from Platform | ... |
| Number of sample ports | 1 |
| Width of platform (port back to handrail) | ... |

| | | |
|---|---|---|
| Nearest downstream disturbance | Bend | ~ 1m |
| Nearest upstream disturbance | Bend | ~ 1m |
| Disturbances are classed as bends, fans or diameter variations | | |

| | | | | | |
|---|---|---|---|---|---|
| Stack Moisture | 0.1 | % | Gas Velocity (as Measured) Adjusted for Smooth Walls | 8.34600 | m/sec |
| Measured Oxygen | 20.9 | % | Gas Velocity (Reference Conditions) Adjusted for Smooth Walls | 7.65207 | m/sec* |
| Measured Carbon Dioxide | 0 | % | Volumetric Flowrate (as Measured) Adjusted for Smooth Walls | 3.39808 | $m^3$/sec |
| Dry Gas Molecular Weight | 28.83600 | g/g mole | Volumetric Flowrate (Ref Cond) Adjusted for Smooth Walls | 3.11554 | $m^3$/sec* |

* Reference Conditions: 273K, 101.3kPa, Wet Gas

NOTE: Velocity / volume flowrate calculations exclude contributions from the measurement point(s) where swirl > 15°

**Environmental Compliance Limited**

| | | | |
|---|---|---|---|
| Adler Pelzer Group | | Installation Name | : Spraybooths |
| Permit No | : PPC 92935 | Visit Details | : Compliance - November 2023 |
| Variation No | : V1 | Survey Dates | : 9th – 10th November 2023, 18th December 2023 & 22nd January 2024 |
| Report Ref | : P5617 : R001 | Report Issue Date | : 8th February 2024 |

| Environmental Compliance Limited | Traverse Data Profoma | Date of Measurement | 09/11/2023 |
|---|---|---|---|

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Company | Adler Pelzer Group | Stack Diameter Port A (mm) | 720 | Average Stack Diameter (mm) | 720 | Pitot tube coefficient | 0.99 |
| Site | Cab Automotive Ltd | Stack Diameter Port B (mm) | | Port Length (mm) | 0 | Pitot Id | 1096 |
| Location | Tipton | Duct Length Port A (mm) | | Average Duct Length (mm) L | | Stack Thermocouple ID | 1245 |
| Stack | EX 4 - Spraybooth (McLaren) No.8 | Duct Length Port B (mm) | | Duct width (mm) B | | Stack Temp Reader ID | 1252 |
| Job No | P5617 | Duct Length Port C (mm) | | Barometric Pressure. (mb) | 994 | Manometer ID | 1250 |
| Operators | LH & TR | Duct Length Port D (mm) | | Ave Static Press. (mm $H_20$) | 8.48 | Barometer ID | 1321 |

| Pre - Traverse Checks Carried Out | Time | Pass/ Fail |
|---|---|---|
| Pre - Traverse PITOT Visual Inspection | 13:00:00 | Pass |
| Pre - Traverse PITOT Leak Check | 13:02:00 | Pass |

Smooth Walls

| Static Pressure Readings (Pascals) | | | |
|---|---|---|---|
| Port A | Port B | Port C | Port D |
| 83.20 | | | |

Diagram/ Description of Cross Section of Stack/Duct

| Port/ Point | Distance to Point ( mm ) | Time | Temperature Readings (°C) | | | ( ΔP ) Pitot Readings (Pa) | | | Average Temp. ( °C ) | Average ( ΔP ) ( Pa ) | Swirl Test ° From Reference |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 1 | 2 | 3 | 1 | 2 | 3 | | | |
| | | | | | | | | | | | |
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| | | | | | | | | | | | |
| A1X | 50 | 13:12:00 | 21.0 | 21.0 | 21.0 | 45.0 | 44.3 | 45.0 | 21.0 | 44.8 | 12 |
| A1X | 670 | 13:14:00 | 21.0 | 21.0 | 21.0 | 36.7 | 38.4 | 35.4 | 21.0 | 36.8 | 10 |
| | | | | | | | | | | | |
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| Blockage Check @ A1 ( L-Type Pitot Only) | | 13:16:00 | 21.0 | 21.0 | 21.0 | 45.6 | 44.8 | 47.6 | 42.0 | 81.6 | Total |
| | | | Mean | | 21.0 | Mean | | 46.0 | 21.0 | 44.8 | Max |
| | | | Difference < 5% from Initial ? | | #VALUE! | Difference < 5% from Initial ? | | #VALUE! | 21.0 | 36.8 | Min |
| | | | | | | | | | 21.0 | 40.8 | Average |

Notes
Including expected or actual deviations from procedures / non-conformities

SINGLE HOLE - 2INCH
Extra points used on single line

| Stagnation Check (Stype Pitot Only) | Time | Reading |
|---|---|---|
| Static Pressure Via Positive Leg (Pa) | | |
| Static Pressure Via Negative Leg (Pa) | | |
| Difference (Pa) < 10Pa ? | | |

| Average temp ( K ) | 294.000 |
|---|---|

| Suitability of Sampling Position | Actual Stack Conditions |
|---|---|
| Highest:lowest flow pressure ratio < 9:1? | 1.23:1 |
| Maximum deviation of flow from axis < 15° ? | 12 |
| X-sectional area for stacks= πr2 | 0.41 $m^2$ |
| X-sectional area for ducts = L x B | $m^2$ |
| Suitability of Position for Sampling | OK |

| Post - Traverse Checks Carried Out | Time | Pass/ Fail |
|---|---|---|
| Post - Traverse Visual Inspection | 13:18:00 | Pass |
| Post - Traverse PITOT Leak Check | 13:20:00 | Pass |

Compliance With Positional Requirements?

| | |
|---|---|
| Height of sample ports from Platform | ... |
| Number of sample ports | 1 |
| Width of platform (port back to handrail) | ... |

| | | |
|---|---|---|
| Nearest downstream disturbance | Bend | ~ 1m |
| Nearest upstream disturbance | Bend | ~ 1m |
| Disturbances are classed as bends, fans or diameter variations | | |

| | | | | | |
|---|---|---|---|---|---|
| Stack Moisture | 0.1 | % | Gas Velocity (as Measured) Adjusted for Smooth Walls | 8.20389 | m/sec |
| Measured Oxygen | 20.9 | % | Gas Velocity (Reference Conditions) Adjusted for Smooth Walls | 7.48126 | m/sec* |
| Measured Carbon Dioxide | 0 | % | Volumetric Flowrate (as Measured) Adjusted for Smooth Walls | 3.34022 | $m^3$/sec |
| Dry Gas Molecular Weight | 28.83600 | g/g mole | Volumetric Flowrate (Ref Cond) Adjusted for Smooth Walls | 3.04600 | $m^3$/sec* |

* Reference Conditions: 273K, 101.3kPa, Wet Gas

NOTE: Velocity / volume flowrate calculations exclude contributions from the measurement point(s) where swirl > 15°

**Environmental Compliance Limited**

| | | | |
|---|---|---|---|
| Adler Pelzer Group | | Installation Name | : Spraybooths |
| Permit No | : PPC 92935 | Visit Details | : Compliance - November 2023 |
| Variation No | : V1 | Survey Dates | : 9th – 10th November 2023, 18th December 2023 & 22nd January 2024 |
| Report Ref | : P5617 : R001 | Report Issue Date | : 8th February 2024 |

| Environmental Compliance Limited | Traverse Data Profoma | Date of Measurement | 09/11/2023 |
|---|---|---|---|

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Company | Adler Pelzer Group | Stack Diameter Port A (mm) | 620 | Average Stack Diameter (mm) | 620 | Pitot tube coefficient | 0.99 |
| Site | Cab Automotive Ltd | Stack Diameter Port B (mm) | | Port Length (mm) | 0 | Pitot Id | 487 |
| Location | Tipton | Duct Length Port A (mm) | | Average Duct Length (mm) L | | Stack Thermocouple ID | 1247 |
| Stack | EX 5 - Spraybooth (McLaren) No.9 | Duct Length Port B (mm) | | Duct width (mm) B | | Stack Temp Reader ID | 1251 |
| Job No | P5617 | Duct Length Port C (mm) | | Barometric Pressure. (mb) | 994 | Manometer ID | 1249 |
| Operators | LH & TR | Duct Length Port D (mm) | | Ave Static Press. (mm $H_20$) | 5.66 | Barometer ID | 1321 |

| Pre - Traverse Checks Carried Out | Time | Pass/ Fail |
|---|---|---|
| Pre - Traverse PITOT Visual Inspection | 13:24:00 | Pass |
| Pre - Traverse PITOT Leak Check | 13:26:00 | Pass |

**Smooth Walls**

| Static Pressure Readings (Pascals) | | | |
|---|---|---|---|
| Port A | Port B | Port C | Port D |
| 55.50 | | | |

| Port/ Point | Distance to Point ( mm ) | Time | Temperature Readings (°C) | | | ( ΔP ) Pitot Readings (Pa) | | | Average Temp. ( °C ) | Average ( ΔP ) ( Pa ) | Swirl Test ° From Reference |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 1 | 2 | 3 | 1 | 2 | 3 | | | |
| A1 | 42 | 13:28:00 | 21.0 | 21.0 | 21.0 | 33.5 | 32.6 | 31.4 | 21.0 | 32.5 | 5 |
| A2 | 155 | 13:30:00 | 21.0 | 21.0 | 21.0 | 28.4 | 27.6 | 26.5 | 21.0 | 27.5 | 5 |
| A3 | 465 | 13:32:00 | 21.0 | 21.0 | 21.0 | 21.5 | 22.5 | 21.9 | 21.0 | 22.0 | 5 |
| A4 | 578 | 13:34:00 | 21.0 | 21.0 | 21.0 | 15.3 | 16.5 | 14.9 | 21.0 | 15.6 | 5 |
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| Blockage Check @ A1 ( L-Type Pitot Only) | | 13:40:00 | 21.0 | 21.0 | 21.0 | 31.2 | 32.3 | 31.0 | 84.0 | 97.5 | Total |
| | | | Mean | | 21.0 | Mean | | 31.5 | 21.0 | 32.5 | Max |
| | | | Difference <5% from Initial ? | | 0.00 | Difference <5% from Initial ? | | -3.08 | 21.0 | 15.6 | Min |
| | | | | | | | | | 21.0 | 24.4 | Average |

| Stagnation Check (S-type Pitot Only) | Time | Reading |
|---|---|---|
| Static Pressure Via Positive Leg (Pa) | | |
| Static Pressure Via Negative Leg (Pa) | | |
| Difference (Pa) < 10Pa ? | | |

| Post - Traverse Checks Carried Out | Time | Pass/ Fail |
|---|---|---|
| Post - Traverse Visual Inspection | 13:42:00 | Pass |
| Post - Traverse PITOT Leak Check | 13:44:00 | Pass |

| Average temp ( K ) | 294.000 |
|---|---|

| Suitability of Sampling Position | Actual Stack Conditions |
|---|---|
| Highest:lowest flow pressure ratio < 9:1? | 2.19:1 |
| Maximum deviation of flow from axis <15° ? | 5 |
| X-sectional area for stacks= πr2 | 0.30 $m^2$ |
| X-sectional area for ducts = L x B | $m^2$ |
| Suitability of Position for Sampling | OK |

| | | | | | |
|---|---|---|---|---|---|
| Stack Moisture | 0.1 | % | Gas Velocity (as Measured) Adjusted for Smooth Walls | 6.29443 | m/sec |
| Measured Oxygen | 20.9 | % | Gas Velocity (Reference Conditions) Adjusted for Smooth Walls | 5.73840 | m/sec* |
| Measured Carbon Dioxide | 0 | % | Volumetric Flowrate (as Measured) Adjusted for Smooth Walls | 1.90033 | $m^3$/sec |
| Dry Gas Molecular Weight | 28.83600 | g/g mole | Volumetric Flowrate (Ref Cond) Adjusted for Smooth Walls | 1.73246 | $m^3$/sec* |

*Reference Conditions: 273K, 101.3kPa, Wet Gas

NOTE: Velocity / volume flowrate calculations exclude contributions from the measurement point(s) where swirl >15°

**Diagram/ Description of Cross Section of Stack/Duct**



Notes
Including expected or actual deviations from procedures / non-conformities

SINGLE 2" HOLE - HORIZONTAL
Extra points used on single line

**Compliance With Positional Requirements?**

| | |
|---|---|
| Height of sample ports from Platform | ... |
| Number of sample ports | 1 |
| Width of platform (port back to handrail) | ... |

| | | |
|---|---|---|
| Nearest downstream disturbance | Bend | ~ 2.5m |
| Nearest upstream disturbance | Bend | ~ 2.5m |
| Disturbances are classed as bends, fans or diameter variations | | |

**Environmental Compliance Limited**

| | | | |
|---|---|---|---|
| Adler Pelzer Group | | Installation Name | : Spraybooths |
| Permit No | : PPC 92935 | Visit Details | : Compliance - November 2023 |
| Variation No | : V1 | Survey Dates | : 9th – 10th November 2023, 18th December 2023 & 22nd January 2024 |
| Report Ref | : P5617 : R001 | Report Issue Date | : 8th February 2024 |

| Environmental Compliance Limited | Traverse Data Profoma | Date of Measurement | 09/11/2023 |
|---|---|---|---|

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Company | Adler Pelzer Group | Stack Diameter Port A (mm) | 620 | Average Stack Diameter (mm) | 620 | Pitot tube coefficient | 0.99 |
| Site | Cab Automotive Ltd | Stack Diameter Port B (mm) | | Port Length (mm) | 0 | Pitot Id | 487 |
| Location | Tipton | Duct Length Port A (mm) | | Average Duct Length (mm) L | | Stack Thermocouple ID | 1247 |
| Stack | EX 5 - Spraybooth (McLaren) No.9 | Duct Length Port B (mm) | | Duct width (mm) B | | Stack Temp Reader ID | 1251 |
| Job No | P5617 | Duct Length Port C (mm) | | Barometric Pressure. (mb) | 994 | Manometer ID | 1249 |
| Operators | LH & TR | Duct Length Port D (mm) | | Ave Static Press. (mm $H_20$) | 5.66 | Barometer ID | 1321 |

| Pre - Traverse Checks Carried Out | Time | Pass/ Fail |
|---|---|---|
| Pre - Traverse PITOT Visual Inspection | 13:24:00 | Pass |
| Pre - Traverse PITOT Leak Check | 13:26:00 | Pass |

Smooth Walls

| Static Pressure Readings (Pascals) | | | |
|---|---|---|---|
| Port A | Port B | Port C | Port D |
| 55.50 | | | |

| Port/ Point | Distance to Point ( mm ) | Time | Temperature Readings (°C) 1 | 2 | 3 | ( ΔP ) Pitot Readings (Pa) 1 | 2 | 3 | Average Temp. ( °C ) | Average ( ΔP ) ( Pa ) | Swirl Test ° From Reference |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | |
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| | | | | | | | | | | | |
| X1 | 50 | 13:36:00 | 21.0 | 21.0 | 21.0 | 30.2 | 31.4 | 30.5 | 21.0 | 30.7 | 5 |
| X4 | 570 | 13:38:00 | 21.0 | 21.0 | 21.0 | 17.5 | 16.9 | 17.1 | 21.0 | 17.2 | 5 |
| | | | | | | | | | | | |
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| | | | | | | | | | | | |
| Blockage Check @ A1 ( L-Type Pitot Only) | 13:40:00 | | 21.0 | 21.0 | 21.0 | 31.2 | 32.3 | 31.0 | 42.0 | 47.9 | Total |
| | | | Mean | | 21.0 | Mean | | 31.5 | 21.0 | 30.7 | Max |
| | | | Difference <5% from Initial ? | | #VALUE! | Difference <5% from Initial ? | | #VALUE! | 21.0 | 17.2 | Min |
| | | | | | | | | | 21.0 | 23.9 | Average |

| Stagnation Check (S-type Pitot Only) | Time | Reading |
|---|---|---|
| Static Pressure Via Positive Leg (Pa) | | |
| Static Pressure Via Negative Leg (Pa) | | |
| Difference (Pa) < 10Pa ? | | |

| Post - Traverse Checks Carried Out | Time | Pass/ Fail |
|---|---|---|
| Post - Traverse Visual Inspection | 13:42:00 | Pass |
| Post - Traverse PITOT Leak Check | 13:44:00 | Pass |

| Average temp ( K ) | 294.000 |
|---|---|

| Suitability of Sampling Position | Actual Stack Conditions |
|---|---|
| Highest:lowest flow pressure ratio < 9:1? | 1.79:1 |
| Maximum deviation of flow from axis <15°? | 5 |
| X-sectional area for stacks= πr2 | 0.30 $m^2$ |
| X-sectional area for ducts = L x B | $m^2$ |
| Suitability of Position for Sampling | OK |

| | | | | | |
|---|---|---|---|---|---|
| Stack Moisture | 0.1 | % | Gas Velocity (as Measured) Adjusted for Smooth Walls | 6.22545 | m/sec |
| Measured Oxygen | 20.9 | % | Gas Velocity (Reference Conditions) Adjusted for Smooth Walls | 5.67551 | m/sec* |
| Measured Carbon Dioxide | 0.1 | % | Volumetric Flowrate (as Measured) Adjusted for Smooth Walls | 1.87951 | $m^3$/sec |
| Dry Gas Molecular Weight | 28.85200 | g/g mole | Volumetric Flowrate (Ref Cond) Adjusted for Smooth Walls | 1.71348 | $m^3$/sec* |

*Reference Conditions: 273K, 101.3kPa, Wet Gas

NOTE: Velocity / volume flowrate calculations exclude contributions from the measurement point(s) where swirl >15°

Diagram/ Description of Cross Section of Stack/Duct



Notes
Including expected or actual deviations from procedures / non-conformities

SINGLE 2" HOLE - HORIZONTAL
Extra points used on single line

Compliance With Positional Requirements?

| | |
|---|---|
| Height of sample ports from Platform | ... |
| Number of sample ports | 1 |
| Width of platform (port back to handrail) | ... |

| | | |
|---|---|---|
| Nearest downstream disturbance | Bend | ~ 2.5m |
| Nearest upstream disturbance | Bend | ~ 2.5m |

Disturbances are classed as bends, fans or diameter variations

**Environmental Compliance Limited**

| | | | |
|---|---|---|---|
| Adler Pelzer Group | | Installation Name | : Spraybooths |
| Permit No | : PPC 92935 | Visit Details | : Compliance - November 2023 |
| Variation No | : V1 | Survey Dates | : 9th – 10th November 2023, 18th December 2023 & 22nd January 2024 |
| Report Ref | : P5617 : R001 | Report Issue Date | : 8th February 2024 |

| Environmental Compliance Limited | Traverse Data Profoma | Date of Measurement | 22/01/2024 |
|---|---|---|---|

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Company | Adler Pelzer Group | Stack Diameter Port A (mm) | 500 | Average Stack Diameter (mm) | 500 | Pitot tube coefficient | 0.97 |
| Site | Cab Automotive Ltd | Stack Diameter Port B (mm) | | Port Length (mm) | 0 | Pitot Id | 603 |
| Location | Tipton | Duct Length Port A (mm) | | Average Duct Length (mm) L | | Stack Thermocouple ID | 246 |
| Stack | SB5 Bentley | Duct Length Port B (mm) | | Duct width (mm) B | | Stack Temp Reader ID | 1111 |
| Job No | P5617 | Duct Length Port C (mm) | | Barometric Pressure. (mb) | 1004 | Manometer ID | 1203 |
| Operators | LH & TR | Duct Length Port D (mm) | | Ave Static Press. (mm $H_20$) | 1.30 | Barometer ID | 1321 |

| Pre - Traverse Checks Carried Out | Time | Pass/ Fail |
|---|---|---|
| Pre - Traverse PITOT Visual Inspection | 10:00:00 | Pass |
| Pre - Traverse PITOT Leak Check | 10:02:00 | Pass |

Smooth Walls

| Static Pressure Readings (Pascals) | | | |
|---|---|---|---|
| Port A | Port B | Port C | Port D |
| 12.80 | | | |

Diagram/ Description of Cross Section of Stack/Duct

| Port/ Point | Distance to Point ( mm ) | Time | Temperature Readings (°C) 1 | 2 | 3 | ( ΔP ) Pitot Readings (Pa) 1 | 2 | 3 | Average Temp. ( °C ) | Average ( ΔP ) ( Pa ) | Swirl Test ° From Reference |
|---|---|---|---|---|---|---|---|---|---|---|---|
| A1 | 33 | 10:04:00 | 18.0 | 18.0 | 18.0 | 1.2 | 2.7 | 1.3 | 18.0 | 1.7 | 5 |
| A2 | 125 | 10:06:00 | 18.0 | 18.0 | 18.0 | 0.9 | 1.2 | 1.9 | 18.0 | 1.3 | 5 |
| A3 | 375 | 10:08:00 | 18.0 | 18.0 | 18.0 | 2.2 | 2.1 | 2.3 | 18.0 | 2.2 | 5 |
| A4 | 467 | 10:10:00 | 18.0 | 18.0 | 18.0 | 0.8 | 1.1 | 3.1 | 18.0 | 1.7 | 5 |
| | | | | | | | | | | | |
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| | | | | | | | | | | | |
| Blockage Check @ A1 ( L-Type Pitot Only) | | 10:16:00 | 18.0 | 18.0 | 18.0 | 2.6 | 1.2 | 1.2 | 72.0 | 6.9 | Total |
| | | | Mean | | 18.0 | Mean | | 1.7 | 18.0 | 2.2 | Max |
| | | | Difference <5% from Initial ? | | 0.00 | Difference <5% from Initial ? | | -3.85 | 18.0 | 1.3 | Min |
| | | | | | | | | | 18.0 | 1.7 | Average |

Notes
Including expected or actual deviations from procedures / non-conformities

Flow below 5Pa so testing is NU
Single hole available, extra points used on single line

| Stagnation Check (S-type Pitot Only) | Time | Reading |
|---|---|---|
| Static Pressure Via Positive Leg (Pa) | | |
| Static Pressure Via Negative Leg (Pa) | | |
| Difference (Pa) < 10Pa ? | | |

| Average temp ( K ) | 291.000 |
|---|---|

| Suitability of Sampling Position | Actual Stack Conditions |
|---|---|
| Highest:lowest flow pressure ratio < 9:1? | 2.75:1 |
| Maximum deviation of flow from axis <15°? | 5 |
| X-sectional area for stacks= πr2 | 0.20 $m^2$ |
| X-sectional area for ducts = L x B | $m^2$ |
| Suitability of Position for Sampling | OK |

| Post - Traverse Checks Carried Out | Time | Pass/ Fail |
|---|---|---|
| Post - Traverse Visual Inspection | 10:18:00 | Pass |
| Post - Traverse PITOT Leak Check | 10:20:00 | Pass |

**Compliance With Positional Requirements?**

| | |
|---|---|
| Height of sample ports from Platform | Mewp |
| Number of sample ports | 1 |
| Width of platform (port back to handrail) | 2m |

| | | | | | | |
|---|---|---|---|---|---|---|
| Stack Moisture | 0.1 | % | Gas Velocity (as Measured) Adjusted for Smooth Walls | 1.63614 | m/sec | |
| Measured Oxygen | 20.9 | % | Gas Velocity (Reference Conditions) Adjusted for Smooth Walls | 1.52149 | m/sec* | |
| Measured Carbon Dioxide | 0 | % | Volumetric Flowrate (as Measured) Adjusted for Smooth Walls | 0.32126 | $m^3$/sec | |
| Dry Gas Molecular Weight | 28.83600 | g/g mole | Volumetric Flowrate (Ref Cond) Adjusted for Smooth Walls | 0.29874 | $m^3$/sec* | |

| | | |
|---|---|---|
| Nearest downstream disturbance | Bend | 2m |
| Nearest upstream disturbance | Bend | 2m |
| Disturbances are classed as bends, fans or diameter variations | | |

*Reference Conditions: 273K, 101.3kPa, Wet Gas

NOTE: Velocity / volume flowrate calculations exclude contributions from the measurement point(s) where swirl >15°

## Environmental Compliance Limited

| | | | |
|---|---|---|---|
| Adler Pelzer Group | | Installation Name | : Spraybooths |
| Permit No | : PPC 92935 | Visit Details | : Compliance - November 2023 |
| Variation No | : V1 | Survey Dates | : 9th – 10th November 2023, 18th December 2023 & 22nd January 2024 |
| Report Ref | : P5617 : R001 | Report Issue Date | : 8th February 2024 |

| Environmental Compliance Limited | Traverse Data Profoma | Date of Measurement | 22/01/2024 |
|---|---|---|---|

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Company | Adler Pelzer Group | Stack Diameter Port A (mm) | 500 | Average Stack Diameter (mm) | 500 | Pitot tube coefficient | 0.97 |
| Site | Cab Automotive Ltd | Stack Diameter Port B (mm) | | Port Length (mm) | 0 | Pitot Id | 603 |
| Location | Tipton | Duct Length Port A (mm) | | Average Duct Length (mm) L | | Stack Thermocouple ID | 246 |
| Stack | SB5 Bentley | Duct Length Port B (mm) | | Duct width (mm) B | | Stack Temp Reader ID | 1111 |
| Job No | P5617 | Duct Length Port C (mm) | | Barometric Pressure. (mb) | 1004 | Manometer ID | 1203 |
| Operators | LH & TR | Duct Length Port D (mm) | | Ave Static Press. (mm $H_20$) | 1.30 | Barometer ID | 1321 |

| Pre - Traverse Checks Carried Out | Time | Pass/ Fail |
|---|---|---|
| Pre - Traverse PITOT Visual Inspection | 09:59:00 | Pass |
| Pre - Traverse PITOT Leak Check | 10:01:00 | Pass |

Smooth Walls

| Static Pressure Readings (Pascals) | | | |
|---|---|---|---|
| Port A | Port B | Port C | Port D |
| 12.80 | | | |

Diagram/ Description of Cross Section of Stack/Duct

| Port/ Point | Distance to Point ( mm ) | Time | Temperature Readings (°C) 1 | 2 | 3 | ( ΔP ) Pitot Readings (Pa) 1 | 2 | 3 | Average Temp. ( °C ) | Average ( ΔP ) ( Pa ) | Swirl Test ° From Reference |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | |
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| | | | | | | | | | | | |
| A1X | 50 | 10:12:00 | 18.0 | 18.0 | 18.0 | 2.1 | 2.3 | 2.8 | 18.0 | 2.4 | 5 |
| A4X | 450 | 10:14:00 | 18.0 | 18.0 | 18.0 | 1.9 | 1.2 | 1.1 | 18.0 | 1.4 | 5 |
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| Blockage Check @ A1 ( L-Type Pitot Only) | | 10:16:00 | 18.0 | 18.0 | 18.0 | | | | 36.0 | 3.8 | Total |
| | | | Mean | | 18.0 | Mean | | | 18.0 | 2.4 | Max |
| | | | Difference <5% from Initial ? | | #VALUE! | Difference <5% from Initial ? | | | 18.0 | 1.4 | Min |
| | | | | | | | | | 18.0 | 1.9 | Average |

| Stagnation Check (S-type Pitot Only) | Time | Reading |
|---|---|---|
| Static Pressure Via Positive Leg (Pa) | | |
| Static Pressure Via Negative Leg (Pa) | | |
| Difference (Pa) < 10Pa ? | | |

| Post - Traverse Checks Carried Out | Time | Pass/ Fail |
|---|---|---|
| Post - Traverse Visual Inspection | 10:18:00 | Pass |
| Post - Traverse PITOT Leak Check | 10:20:00 | Pass |

| Average temp ( K ) | 291.000 |
|---|---|

| Suitability of Sampling Position | Actual Stack Conditions |
|---|---|
| Highest:lowest flow pressure ratio < 9:1? | 1.71:1 |
| Maximum deviation of flow from axis <15°? | 5 |
| X-sectional area for stacks= πr2 | 0.20 $m^2$ |
| X-sectional area for ducts = L x B | $m^2$ |
| Suitability of Position for Sampling | OK |

Notes
Including expected or actual deviations from procedures / non-conformities

Flow below 5Pa so testing is NU
Single hole available, extra points used on single line

**Compliance With Positional Requirements?**

| | |
|---|---|
| Height of sample ports from Platform | Mewp |
| Number of sample ports | 1 |
| Width of platform (port back to handrail) | 2m |

| | | |
|---|---|---|
| Nearest downstream disturbance | Bend | 2m |
| Nearest upstream disturbance | Bend | 2m |
| Disturbances are classed as bends, fans or diameter variations | | |

| | | | | | |
|---|---|---|---|---|---|
| Stack Moisture | 0.1 | % | Gas Velocity (as Measured) Adjusted for Smooth Walls | 1.70455 | m/sec |
| Measured Oxygen | 20.9 | % | Gas Velocity (Reference Conditions) Adjusted for Smooth Walls | 1.58511 | m/sec* |
| Measured Carbon Dioxide | 0 | % | Volumetric Flowrate (as Measured) Adjusted for Smooth Walls | 0.33469 | $m^3$/sec |
| Dry Gas Molecular Weight | 28.83600 | g/g mole | Volumetric Flowrate (Ref Cond) Adjusted for Smooth Walls | 0.31124 | $m^3$/sec* |

*Reference Conditions: 273K, 101.3kPa, Wet Gas

NOTE: Velocity / volume flowrate calculations exclude contributions from the measurement point(s) where swirl >15°

**Environmental Compliance Limited**

| | | | |
|---|---|---|---|
| Adler Pelzer Group | | Installation Name | : Spraybooths |
| Permit No | : PPC 92935 | Visit Details | : Compliance - November 2023 |
| Variation No | : V1 | Survey Dates | : 9th – 10th November 2023, 18th December 2023 & 22nd January 2024 |
| Report Ref | : P5617 : R001 | Report Issue Date | : 8th February 2024 |

| Environmental Compliance Limited | Traverse Data Profoma | Date of Measurement | 22/01/2024 |
|---|---|---|---|

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Company | Adler Pelzer Group | Stack Diameter Port A (mm) | 700 | Average Stack Diameter (mm) | 700 | Pitot tube coefficient | 0.99 |
| Site | Cab Automotive Ltd | Stack Diameter Port B (mm) | | Port Length (mm) | 0 | Pitot Id | 603 |
| Location | Tipton | Duct Length Port A (mm) | | Average Duct Length (mm) L | | Stack Thermocouple ID | 246 |
| Stack | SB7 Bentley | Duct Length Port B (mm) | | Duct width (mm) B | | Stack Temp Reader ID | 1111 |
| Job No | P5617 | Duct Length Port C (mm) | | Barometric Pressure. (mb) | 1004 | Manometer ID | 1203 |
| Operators | LH & TR | Duct Length Port D (mm) | | Ave Static Press. (mm $H_20$) | 8.56 | Barometer ID | 1321 |

| Pre - Traverse Checks Carried Out | Time | Pass/ Fail |
|---|---|---|
| Pre - Traverse PITOT Visual Inspection | 11:24:00 | Pass |
| Pre - Traverse PITOT Leak Check | 11:26:00 | Pass |

Smooth Walls

| Static Pressure Readings (Pascals) | | | |
|---|---|---|---|
| Port A | Port B | Port C | Port D |
| 84.00 | | | |

Diagram/ Description of Cross Section of Stack/Duct

| Port/ Point | Distance to Point ( mm ) | Time | Temperature Readings (°C) | | | ( ΔP ) Pitot Readings (Pa) | | | Average Temp. ( °C ) | Average ( ΔP ) ( Pa ) | Swirl Test ° From Reference |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 1 | 2 | 3 | 1 | 2 | 3 | | | |
| A1 | 47 | 11:28:00 | 18.0 | 18.0 | 18.0 | 50.1 | 53.2 | 51.6 | 18.0 | 51.6 | 5 |
| A2 | 175 | 11:30:00 | 18.0 | 18.0 | 18.0 | 54.0 | 56.7 | 55.4 | 18.0 | 55.4 | 5 |
| A3 | 525 | 11:32:00 | 18.0 | 18.0 | 18.0 | 65.3 | 67.9 | 69.8 | 18.0 | 67.7 | 5 |
| A4 | 653 | 11:34:00 | 18.0 | 18.0 | 18.0 | 58.5 | 59.1 | 55.7 | 18.0 | 57.8 | 5 |
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| Blockage Check @ A1 ( L-Type Pitot Only) | | 11:44:00 | 18.0 | 18.0 | 18.0 | 50.6 | 50.6 | 50.6 | 72.0 | 232.4 | Total |
| | | | Mean | | 18.0 | Mean | | 50.6 | 18.0 | 67.7 | Max |
| | | | Difference < 5% from Initial ? | | 0.00 | Difference < 5% from Initial ? | | -2.00 | 18.0 | 51.6 | Min |
| | | | | | | | | | 18.0 | 58.1 | Average |

Notes

Including expected or actual deviations from procedures / non-conformities

Single hole available, extra points used on single line

| Stagnation Check (S-type Pitot Only) | Time | Reading |
|---|---|---|
| Static Pressure Via Positive Leg (Pa) | | |
| Static Pressure Via Negative Leg (Pa) | | |
| Difference (Pa) < 10Pa ? | | |

| Average temp ( K ) | 291.000 |
|---|---|

| Suitability of Sampling Position | Actual Stack Conditions |
|---|---|
| Highest:lowest flow pressure ratio < 9:1? | 1.35:1 |
| Maximum deviation of flow from axis < 15° ? | 5 |
| X-sectional area for stacks= πr2 | 0.38 $m^2$ |
| X-sectional area for ducts = L x B | $m^2$ |
| Suitability of Position for Sampling | OK |

| Post - Traverse Checks Carried Out | Time | Pass/ Fail |
|---|---|---|
| Post - Traverse Visual Inspection | 11:48:00 | Pass |
| Post - Traverse PITOT Leak Check | 11:50:00 | Pass |

Compliance With Positional Requirements?

| | |
|---|---|
| Height of sample ports from Platform | Mewp |
| Number of sample ports | 1 |
| Width of platform (port back to handrail) | 2m |

| | | |
|---|---|---|
| Nearest downstream disturbance | Bend | 2m |
| Nearest upstream disturbance | Bend | 2m |
| Disturbances are classed as bends, fans or diameter variations | | |

| | | | | | |
|---|---|---|---|---|---|
| Stack Moisture | 0.1 | % | Gas Velocity (as Measured) Adjusted for Smooth Walls | 9.69109 | m/sec |
| Measured Oxygen | 20.9 | % | Gas Velocity (Reference Conditions) Adjusted for Smooth Walls | 9.01840 | m/sec* |
| Measured Carbon Dioxide | 0 | % | Volumetric Flowrate (as Measured) Adjusted for Smooth Walls | 3.72957 | $m^3$/sec |
| Dry Gas Molecular Weight | 28.83600 | g/g mole | Volumetric Flowrate (Ref Cond) Adjusted for Smooth Walls | 3.47069 | $m^3$/sec* |

* Reference Conditions: 273K, 101.3kPa, Wet Gas

NOTE: Velocity / volume flowrate calculations exclude contributions from the measurement point(s) where swirl > 15°

**Environmental Compliance Limited**

| | | | |
|---|---|---|---|
| Adler Pelzer Group | | Installation Name | : Spraybooths |
| Permit No | : PPC 92935 | Visit Details | : Compliance - November 2023 |
| Variation No | : V1 | Survey Dates | : 9th – 10th November 2023, 18th December 2023 & 22nd January 2024 |
| Report Ref | : P5617 : R001 | Report Issue Date | : 8th February 2024 |

| Environmental Compliance Limited | Traverse Data Profoma | Date of Measurement | 22/01/2024 |
|---|---|---|---|

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Company | Adler Pelzer Group | Stack Diameter Port A (mm) | 700 | Average Stack Diameter (mm) | 700 | Pitot tube coefficient | 0.99 |
| Site | Cab Automotive Ltd | Stack Diameter Port B (mm) | | Port Length (mm) | 0 | Pitot Id | 603 |
| Location | Tipton | Duct Length Port A (mm) | | Average Duct Length (mm) L | | Stack Thermocouple ID | 246 |
| Stack | SB7 Bentley | Duct Length Port B (mm) | | Duct width (mm) B | | Stack Temp Reader ID | 1111 |
| Job No | P5617 | Duct Length Port C (mm) | | Barometric Pressure. (mb) | 1004 | Manometer ID | 1203 |
| Operators | LH & TR | Duct Length Port D (mm) | | Ave Static Press. (mm $H_20$) | 8.56 | Barometer ID | 1321 |

| Pre - Traverse Checks Carried Out | Time | Pass/ Fail |
|---|---|---|
| Pre - Traverse PITOT Visual Inspection | 11:24:00 | Pass |
| Pre - Traverse PITOT Leak Check | 11:26:00 | Pass |

**Smooth Walls**

| Static Pressure Readings (Pascals) | | | |
|---|---|---|---|
| Port A | Port B | Port C | Port D |
| 84.00 | | | |

Diagram/ Description of Cross Section of Stack/Duct

| Port/ Point | Distance to Point ( mm ) | Time | Temperature Readings ($^oC$) 1 | 2 | 3 | ( ΔP ) Pitot Readings (Pa) 1 | 2 | 3 | Average Temp. ( $^oC$ ) | Average ( ΔP ) ( Pa ) | Swirl Test $^o$ From Reference |
|---|---|---|---|---|---|---|---|---|---|---|---|
| A1X | 50 | 11:38:00 | 18.0 | 18.0 | 18.0 | 51.2 | 50.3 | 48.9 | 18.0 | 50.1 | 5 |
| A4X | 650 | 11:40:00 | 18.0 | 18.0 | 18.0 | 59.3 | 58.7 | 57.8 | 18.0 | 58.6 | 5 |
| Blockage Check @ A1 ( L-Type Pitot Only) | | 11:44:00 | 18.0 | 18.0 | 18.0 | 50.6 | 50.6 | 50.6 | 36.0 | 108.7 | Total |
| | | | Mean | | 18.0 | Mean | | 50.6 | 18.0 | 58.6 | Max |
| | | | Difference <5% from Initial ? | | #VALUE! | Difference <5% from Initial ? | | #VALUE! | 18.0 | 50.1 | Min |
| | | | | | | | | | 18.0 | 54.4 | Average |

| Stagnation Check (S-type Pitot Only) | Time | Reading |
|---|---|---|
| Static Pressure Via Positive Leg (Pa) | | |
| Static Pressure Via Negative Leg (Pa) | | |
| Difference (Pa) < 10Pa ? | | |

| Post - Traverse Checks Carried Out | Time | Pass/ Fail |
|---|---|---|
| Post - Traverse Visual Inspection | 11:48:00 | Pass |
| Post - Traverse PITOT Leak Check | 11:50:00 | Pass |

| | |
|---|---|
| Average temp ( K ) | 291.000 |

| Suitability of Sampling Position | Actual Stack Conditions |
|---|---|
| Highest:lowest flow pressure ratio < 9:1? | 1.18:1 |
| Maximum deviation of flow from axis <15$^o$ ? | 5 |
| X-sectional area for stacks= πr2 | 0.38 $m^2$ |
| X-sectional area for ducts = L x B | $m^2$ |
| Suitability of Position for Sampling | OK |

Notes

Including expected or actual deviations from procedures / non-conformities

Single hole available, extra points used on single line

| | | | | | | |
|---|---|---|---|---|---|---|
| Stack Moisture | 0.1 | % | Gas Velocity (as Measured) Adjusted for Smooth Walls | 9.37865 | m/sec |
| Measured Oxygen | 20.9 | % | Gas Velocity (Reference Conditions) Adjusted for Smooth Walls | 8.72764 | m/sec* |
| Measured Carbon Dioxide | 0 | % | Volumetric Flowrate (as Measured) Adjusted for Smooth Walls | 3.60933 | $m^3$/sec |
| Dry Gas Molecular Weight | 28.83600 | g/g mole | Volumetric Flowrate (Ref Cond) Adjusted for Smooth Walls | 3.35879 | $m^3$/sec* |

**Compliance With Positional Requirements?**

| | |
|---|---|
| Height of sample ports from Platform | Mewp |
| Number of sample ports | 1 |
| Width of platform (port back to handrail) | 2m |

| | | |
|---|---|---|
| Nearest downstream disturbance | Bend | 2m |
| Nearest upstream disturbance | Bend | 2m |
| Disturbances are classed as bends, fans or diameter variations | | |

*Reference Conditions: 273K, 101.3kPa, Wet Gas

NOTE: Velocity / volume flowrate calculations exclude contributions from the measurement point(s) where swirl >15°

**Environmental Compliance Limited**

| | | | |
|---|---|---|---|
| Adler Pelzer Group | | Installation Name | : Spraybooths |
| Permit No | : PPC 92935 | Visit Details | : Compliance - November 2023 |
| Variation No | : V1 | Survey Dates | : 9th – 10th November 2023, 18th December 2023 & 22nd January 2024 |
| Report Ref | : P5617 : R001 | Report Issue Date | : 8th February 2024 |

| Environmental Compliance Limited | Traverse Data Profoma | Date of Measurement | 18/12/2023 |
|---|---|---|---|

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Company | Adler Pelzer Group | Stack Diameter Port A (mm) | 480 | Average Stack Diameter (mm) | 480 | Pitot tube coefficient | 0.98 |
| Site | Cab Automotive Ltd | Stack Diameter Port B (mm) | | Port Length (mm) | 0 | Pitot Id | 488 |
| Location | Tipton | Duct Length Port A (mm) | | Average Duct Length (mm) L | | Stack Thermocouple ID | 1248 |
| Stack | X152 Jaguar Spraybooth | Duct Length Port B (mm) | | Duct width (mm) B | | Stack Temp Reader ID | 1100 |
| Job No | P5617 | Duct Length Port C (mm) | | Barometric Pressure. (mb) | 1025 | Manometer ID | 1007 |
| Operators | LH & TR | Duct Length Port D (mm) | | Ave Static Press. (mm $H_20$) | 8.46 | Barometer ID | 351 |

| Pre - Traverse Checks Carried Out | Time | Pass/ Fail |
|---|---|---|
| Pre - Traverse PITOT Visual Inspection | 10:15:00 | Pass |
| Pre - Traverse PITOT Leak Check | 10:17:00 | Pass |

Smooth Walls

| Static Pressure Readings (Pascals) | | | |
|---|---|---|---|
| Port A | Port B | Port C | Port D |
| 83.00 | | | |

| Port/ Point | Distance to Point ( mm ) | Time | Temperature Readings (°C) | | | ( ΔP ) Pitot Readings (Pa) | | | Average Temp. ( °C ) | Average ( ΔP ) ( Pa ) | Swirl Test ° From Reference |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 1 | 2 | 3 | 1 | 2 | 3 | | | |
| A1 | 32 | 10:19:00 | 17.0 | 17.0 | 17.0 | 40.5 | 40.6 | 39.8 | 17.0 | 40.3 | 12 |
| A2 | 120 | 10:21:00 | 17.0 | 17.0 | 17.0 | 38.9 | 37.5 | 39.0 | 17.0 | 38.5 | 12 |
| A3 | 360 | 10:23:00 | 17.0 | 17.0 | 17.0 | 38.6 | 37.4 | 37.5 | 17.0 | 37.8 | 10 |
| A4 | 448 | 10:25:00 | 17.0 | 17.0 | 17.0 | 36.5 | 34.5 | 35.0 | 17.0 | 35.3 | 10 |
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| | | | | | | | | | | | |
| Blockage Check @ A1 ( L-Type Pitot Only) | | 10:31:00 | 17.0 | 17.0 | 17.0 | 39.5 | 40.1 | 38.7 | 68.0 | 151.9 | Total |
| | | | Mean | | 17.0 | Mean | | 39.4 | 17.0 | 40.3 | Max |
| | | | Difference < 5% from Initial ? | | 0.00 | Difference < 5% from Initial ? | | -2.15 | 17.0 | 35.3 | Min |
| | | | | | | | | | 17.0 | 38.0 | Average |

| Stagnation Check (S-type Pitot Only) | Time | Reading |
|---|---|---|
| Static Pressure Via Positive Leg (Pa) | | |
| Static Pressure Via Negative Leg (Pa) | | |
| Difference (Pa) < 10Pa ? | | |

| Post - Traverse Checks Carried Out | Time | Pass/ Fail |
|---|---|---|
| Post - Traverse Visual Inspection | 10:33:00 | Pass |
| Post - Traverse PITOT Leak Check | 10:35:00 | Pass |

| Average temp ( K ) | 290.000 |
|---|---|

| Suitability of Sampling Position | Actual Stack Conditions |
|---|---|
| Highest:lowest flow pressure ratio < 9:1? | 1.15:1 |
| Maximum deviation of flow from axis < 15° ? | 12 |
| X-sectional area for stacks= πr2 | 0.18 $m^2$ |
| X-sectional area for ducts = L x B | $m^2$ |
| Suitability of Position for Sampling | OK |

| | | | | | |
|---|---|---|---|---|---|
| Stack Moisture | 0.1 | % | Gas Velocity (as Measured) Adjusted for Smooth Walls | 7.67069 | m/sec |
| Measured Oxygen | 20.9 | % | Gas Velocity (Reference Conditions) Adjusted for Smooth Walls | 7.31248 | m/sec* |
| Measured Carbon Dioxide | 0 | % | Volumetric Flowrate (as Measured) Adjusted for Smooth Walls | 1.38806 | $m^3$/sec |
| Dry Gas Molecular Weight | 28.83600 | g/g mole | Volumetric Flowrate (Ref Cond) Adjusted for Smooth Walls | 1.32324 | $m^3$/sec* |

*Reference Conditions: 273K, 101.3kPa, Wet Gas

NOTE: Velocity / volume flowrate calculations exclude contributions from the measurement point(s) where swirl > 15°

Diagram/ Description of Cross Section of Stack/Duct



Notes
Including expected or actual deviations from procedures / non-conformities

Compliance With Positional Requirements?

| | |
|---|---|
| Height of sample ports from Platform | Mewp |
| Number of sample ports | 1 |
| Width of platform (port back to handrail) | 2m |

| | | |
|---|---|---|
| Nearest downstream disturbance | Bend | 3m |
| Nearest upstream disturbance | Bend | ~ 1m |
| Disturbances are classed as bends, fans or diameter variations | | |

**Environmental Compliance Limited**

| | | | |
|---|---|---|---|
| Adler Pelzer Group | | Installation Name | : Spraybooths |
| Permit No | : PPC 92935 | Visit Details | : Compliance - November 2023 |
| Variation No | : V1 | Survey Dates | : 9th – 10th November 2023, 18th December 2023 & 22nd January 2024 |
| Report Ref | : P5617 : R001 | Report Issue Date | : 8th February 2024 |

| Environmental Compliance Limited | Traverse Data Profoma | Date of Measurement | 18/12/2023 |
|---|---|---|---|

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Company | Adler Pelzer Group | Stack Diameter Port A (mm) | 480 | Average Stack Diameter (mm) | 480 | Pitot tube coefficient | 0.98 |
| Site | Cab Automotive Ltd | Stack Diameter Port B (mm) | | Port Length (mm) | 0 | Pitot Id | 488 |
| Location | Tipton | Duct Length Port A (mm) | | Average Duct Length (mm) L | | Stack Thermocouple ID | 1248 |
| Stack | X152 Jaguar Spraybooth | Duct Length Port B (mm) | | Duct width (mm) B | | Stack Temp Reader ID | 1100 |
| Job No | P5617 | Duct Length Port C (mm) | | Barometric Pressure. (mb) | 1025 | Manometer ID | 1007 |
| Operators | LH & TR | Duct Length Port D (mm) | | Ave Static Press. (mm $H_20$) | 8.46 | Barometer ID | 351 |

| Static Pressure Readings (Pascals) | | | |
|---|---|---|---|
| Port A | Port B | Port C | Port D |
| 83.00 | | | |

| Pre - Traverse Checks Carried Out | Time | Pass/ Fail |
|---|---|---|
| Pre - Traverse PITOT Visual Inspection | 10:15:00 | Pass |
| Pre - Traverse PITOT Leak Check | 10:17:00 | Pass |

Smooth Walls

Diagram/ Description of Cross Section of Stack/Duct

| Port/ Point | Distance to Point ( mm ) | Time | Temperature Readings (°C) | | | ( ΔP ) Pitot Readings (Pa) | | | Average Temp. ( °C ) | Average ( ΔP ) ( Pa ) | Swirl Test ° From Reference |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 1 | 2 | 3 | 1 | 2 | 3 | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| X1 | 50 | 10:27:00 | 17.0 | 17.0 | 17.0 | 41.5 | 39.8 | 39.6 | 17.0 | 40.3 | 12 |
| X4 | 430 | 10:29:00 | 17.0 | 17.0 | 17.0 | 36.0 | 36.0 | 35.4 | 17.0 | 35.8 | 10 |
| | | | | | | | | | | | |
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| | | | | | | | | | | | |
| Blockage Check @ A1 ( L-Type Pitot Only) | | 10:31:00 | 17.0 | 17.0 | 17.0 | 39.5 | 40.1 | 38.7 | 34.0 | 76.1 | Total |
| | | | Mean | | 17.0 | Mean | | 39.4 | 17.0 | 40.3 | Max |
| | | | Difference < 5% from Initial ? | | #VALUE! | Difference < 5% from Initial ? | | #VALUE! | 17.0 | 35.8 | Min |
| | | | | | | | | | 17.0 | 38.1 | Average |

Notes
Including expected or actual deviations from procedures / non-conformities

| Stagnation Check (S-type Pitot Only) | Time | Reading |
|---|---|---|
| Static Pressure Via Positive Leg (Pa) | | |
| Static Pressure Via Negative Leg (Pa) | | |
| Difference (Pa) < 10Pa ? | | |

| Average temp ( K ) | 290.000 |
|---|---|

| Suitability of Sampling Position | Actual Stack Conditions |
|---|---|
| Highest:lowest flow pressure ratio < 9:1? | 1.16:1 |
| Maximum deviation of flow from axis < 15° ? | 12 |
| X-sectional area for stacks= πr2 | 0.18 $m^2$ |
| X-sectional area for ducts = L x B | $m^2$ |
| Suitability of Position for Sampling | OK |

| Post - Traverse Checks Carried Out | Time | Pass/ Fail |
|---|---|---|
| Post - Traverse Visual Inspection | 10:33:00 | Pass |
| Post - Traverse PITOT Leak Check | 10:35:00 | Pass |

Compliance With Positional Requirements?

| | |
|---|---|
| Height of sample ports from Platform | Mewp |
| Number of sample ports | 1 |
| Width of platform (port back to handrail) | 2m |

| | | |
|---|---|---|
| Nearest downstream disturbance | Bend | 3m |
| Nearest upstream disturbance | Bend | ~ 1m |
| Disturbances are classed as bends, fans or diameter variations | | |

| | | | | | |
|---|---|---|---|---|---|
| Stack Moisture | 0.1 | % | Gas Velocity (as Measured) Adjusted for Smooth Walls | 7.67618 | m/sec |
| Measured Oxygen | 20.9 | % | Gas Velocity (Reference Conditions) Adjusted for Smooth Walls | 7.31771 | m/sec* |
| Measured Carbon Dioxide | 0 | % | Volumetric Flowrate (as Measured) Adjusted for Smooth Walls | 1.38905 | $m^3$/sec |
| Dry Gas Molecular Weight | 28.83600 | g/g mole | Volumetric Flowrate (Ref Cond) Adjusted for Smooth Walls | 1.32418 | $m^3$/sec* |

*Reference Conditions: 273K, 101.3kPa, Wet Gas

NOTE: Velocity / volume flowrate calculations exclude contributions from the measurement point(s) where swirl > 15°

**Environmental Compliance Limited**

| | | | |
|---|---|---|---|
| Adler Pelzer Group | | Installation Name | : Spraybooths |
| Permit No | : PPC 92935 | Visit Details | : Compliance - November 2023 |
| Variation No | : V1 | Survey Dates | : 9th – 10th November 2023, 18th December 2023 & 22nd January 2024 |
| Report Ref | : P5617 : R001 | Report Issue Date | : 8th February 2024 |

| Environmental Compliance Limited | Traverse Data Profoma | Date of Measurement | 18/12/2023 |
|---|---|---|---|

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Company | Adler Pelzer Group | Stack Diameter Port A (mm) | 620 | Average Stack Diameter (mm) | 620 | Pitot tube coefficient | 0.98 |
| Site | Cab Automotive Ltd | Stack Diameter Port B (mm) | | Port Length (mm) | 0 | Pitot Id | 488 |
| Location | Tipton | Duct Length Port A (mm) | | Average Duct Length (mm) L | | Stack Thermocouple ID | 1248 |
| Stack | EX 3 Spraybooth No.3 | Duct Length Port B (mm) | | Duct width (mm) B | | Stack Temp Reader ID | 1100 |
| Job No | P5617 | Duct Length Port C (mm) | | Barometric Pressure. (mb) | 1025 | Manometer ID | 1007 |
| Operators | LH & TR | Duct Length Port D (mm) | | Ave Static Press. (mm $H_20$) | 5.58 | Barometer ID | 351 |

| Static Pressure Readings (Pascals) | | | |
|---|---|---|---|
| Port A | Port B | Port C | Port D |
| 54.70 | | | |

| Pre - Traverse Checks Carried Out | Time | Pass/ Fail |
|---|---|---|
| Pre - Traverse PITOT Visual Inspection | 12:00:00 | Pass |
| Pre - Traverse PITOT Leak Check | 12:02:00 | Pass |

**Smooth Walls**

| Port/ Point | Distance to Point ( mm ) | Time | Temperature Readings (°C) | | | ( ΔP ) Pitot Readings (Pa) | | | Average Temp. ( °C ) | Average ( ΔP ) ( Pa ) | Swirl Test ° From Reference |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 1 | 2 | 3 | 1 | 2 | 3 | | | |
| A1 | 42 | 12:04:00 | 18.0 | 18.0 | 18.0 | 22.4 | 20.5 | 21.6 | 18.0 | 21.5 | 10 |
| A2 | 155 | 12:06:00 | 18.0 | 18.0 | 18.0 | 23.5 | 22.9 | 24.7 | 18.0 | 23.7 | 10 |
| A3 | 465 | 12:08:00 | 18.0 | 18.0 | 18.0 | 31.5 | 32.2 | 31.7 | 18.0 | 31.8 | 10 |
| A4 | 578 | 12:10:00 | 18.0 | 18.0 | 18.0 | 30.9 | 31.5 | 31.1 | 18.0 | 31.2 | 10 |
| | | | | | | | | | | | |
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| | | | | | | | | | | | |
| Blockage Check @ A1 ( L-Type Pitot Only) | | 12:16:00 | 18.0 | 18.0 | 18.0 | 21.7 | 21.4 | 22.6 | 72.0 | 108.2 | Total |
| | | | Mean | | 18.0 | Mean | | 21.9 | 18.0 | 31.8 | Max |
| | | | Difference < 5% from Initial ? | | 0.00 | Difference < 5% from Initial ? | | 1.86 | 18.0 | 21.5 | Min |
| | | | | | | | | | 18.0 | 27.0 | Average |

| Stagnation Check (S-type Pitot Only) | Time | Reading |
|---|---|---|
| Static Pressure Via Positive Leg (Pa) | | |
| Static Pressure Via Negative Leg (Pa) | | |
| Difference (Pa) < 10Pa ? | | |

| Post - Traverse Checks Carried Out | Time | Pass/ Fail |
|---|---|---|
| Post - Traverse Visual Inspection | 12:18:00 | Pass |
| Post - Traverse PITOT Leak Check | 12:20:00 | Pass |

| Average temp ( K ) | 291.000 |
|---|---|

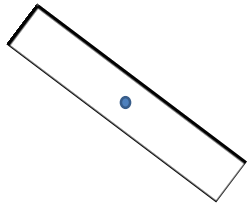
| Suitability of Sampling Position | Actual Stack Conditions |
|---|---|
| Highest:lowest flow pressure ratio < 9:1? | 1.48:1 |
| Maximum deviation of flow from axis < 15° ? | 10 |
| X-sectional area for stacks= πr2 | 0.30 $m^2$ |
| X-sectional area for ducts = L x B | $m^2$ |
| Suitability of Position for Sampling | OK |

| | | | | | |
|---|---|---|---|---|---|
| Stack Moisture | 0.1 | % | Gas Velocity (as Measured) Adjusted for Smooth Walls | 6.46309 | m/sec |
| Measured Oxygen | 20.9 | % | Gas Velocity (Reference Conditions) Adjusted for Smooth Walls | 6.13841 | m/sec* |
| Measured Carbon Dioxide | 0 | % | Volumetric Flowrate (as Measured) Adjusted for Smooth Walls | 1.95125 | $m^3$/sec |
| Dry Gas Molecular Weight | 28.83600 | g/g mole | Volumetric Flowrate (Ref Cond) Adjusted for Smooth Walls | 1.85323 | $m^3$/sec* |

* Reference Conditions: 273K, 101.3kPa, Wet Gas

NOTE: Velocity / volume flowrate calculations exclude contributions from the measurement point(s) where swirl > 15°

Diagram/ Description of Cross Section of Stack/Duct



Notes

Including expected or actual deviations from procedures / non-conformities

Single hole available, extra points used on single line

Compliance With Positional Requirements?

| | |
|---|---|
| Height of sample ports from Platform | Mewp |
| Number of sample ports | 1 |
| Width of platform (port back to handrail) | 2m |

| | | |
|---|---|---|
| Nearest downstream disturbance | Bend | 2m |
| Nearest upstream disturbance | Bend | 2m |
| Disturbances are classed as bends, fans or diameter variations | | |

**Environmental Compliance Limited**

| | | | |
|---|---|---|---|
| Adler Pelzer Group | | Installation Name | : Spraybooths |
| Permit No | : PPC 92935 | Visit Details | : Compliance - November 2023 |
| Variation No | : V1 | Survey Dates | : 9th – 10th November 2023, 18th December 2023 & 22nd January 2024 |
| Report Ref | : P5617 : R001 | Report Issue Date | : 8th February 2024 |

| Environmental Compliance Limited | Traverse Data Profoma | Date of Measurement | 18/12/2023 |
|---|---|---|---|

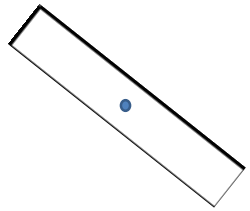
| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Company | Adler Pelzer Proup | Stack Diameter Port A (mm) | 620 | Average Stack Diameter (mm) | 620 | Pitot tube coefficient | 0.98 |
| Site | Cab Automotive Ltd | Stack Diameter Port B (mm) | | Port Length (mm) | 0 | Pitot Id | 488 |
| Location | Tipton | Duct Length Port A (mm) | | Average Duct Length (mm) L | | Stack Thermocouple ID | 1248 |
| Stack | EX 3 Spraybooth No.3 | Duct Length Port B (mm) | | Duct width (mm) B | | Stack Temp Reader ID | 1100 |
| Job No | P5617 | Duct Length Port C (mm) | | Barometric Pressure. (mb) | 1025 | Manometer ID | 1007 |
| Operators | LH & TR | Duct Length Port D (mm) | | Ave Static Press. (mm $H_20$) | 5.58 | Barometer ID | 351 |

| Pre - Traverse Checks Carried Out | Time | Pass/ Fail |
|---|---|---|
| Pre - Traverse PITOT Visual Inspection | 12:00:00 | Pass |
| Pre - Traverse PITOT Leak Check | 12:02:00 | Pass |

Smooth Walls

| Static Pressure Readings (Pascals) | | | |
|---|---|---|---|
| Port A | Port B | Port C | Port D |
| 54.70 | | | |

Diagram/ Description of Cross Section of Stack/Duct



| Port/ Point | Distance to Point ( mm ) | Time | Temperature Readings (°C) 1 | 2 | 3 | ( ΔP ) Pitot Readings (Pa) 1 | 2 | 3 | Average Temp. ( °C ) | Average ( ΔP ) ( Pa ) | Swirl Test ° From Reference |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| A1X | 50 | 12:12:00 | 18.0 | 18.0 | 18.0 | 23.5 | 24.1 | 23.7 | 18.0 | 23.8 | 10 |
| A4X | 570 | 12:14:00 | 18.0 | 18.0 | 18.0 | 31.5 | 30.9 | 31.2 | 18.0 | 31.2 | 10 |
| | | | | | | | | | | | |
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| | | | | | | | | | | | |
| Blockage Check @ A1 ( L-Type Pitot Only) | | 12:16:00 | 18.0 | 18.0 | 18.0 | 21.7 | 21.4 | 22.6 | 36.0 | 55.0 | Total |
| | | | Mean | | 18.0 | Mean | | 21.9 | 18.0 | 31.2 | Max |
| | | | Difference < 5% from Initial ? | | #VALUE! | Difference < 5% from Initial ? | | #VALUE! | 18.0 | 23.8 | Min |
| | | | | | | | | | 18.0 | 27.5 | Average |

| Stagnation Check (S-type Pitot Only) | Time | Reading |
|---|---|---|
| Static Pressure Via Positive Leg (Pa) | | |
| Static Pressure Via Negative Leg (Pa) | | |
| Difference (Pa) < 10Pa ? | | |

| Post - Traverse Checks Carried Out | Time | Pass/ Fail |
|---|---|---|
| Post - Traverse Visual Inspection | 12:18:00 | Pass |
| Post - Traverse PITOT Leak Check | 12:20:00 | Pass |

| Average temp ( K ) | 291.000 |
|---|---|

| Suitability of Sampling Position | Actual Stack Conditions |
|---|---|
| Highest:lowest flow pressure ratio < 9:1? | 1.34:1 |
| Maximum deviation of flow from axis < 15° ? | 10 |
| X-sectional area for stacks= πr2 | 0.30 $m^2$ |
| X-sectional area for ducts = L x B | $m^2$ |
| Suitability of Position for Sampling | OK |

| | | | | | |
|---|---|---|---|---|---|
| Stack Moisture | 0.1 | % | Gas Velocity (as Measured) Adjusted for Smooth Walls | 6.52380 | m/sec |
| Measured Oxygen | 20.9 | % | Gas Velocity (Reference Conditions) Adjusted for Smooth Walls | 6.19606 | m/sec* |
| Measured Carbon Dioxide | 0 | % | Volumetric Flowrate (as Measured) Adjusted for Smooth Walls | 1.96958 | $m^3$/sec |
| Dry Gas Molecular Weight | 28.83600 | g/g mole | Volumetric Flowrate (Ref Cond) Adjusted for Smooth Walls | 1.87064 | $m^3$/sec* |

Notes
Including expected or actual deviations from procedures / non-conformities

Single hole available, extra points used on single line

Compliance With Positional Requirements?

| | |
|---|---|
| Height of sample ports from Platform | Mewp |
| Number of sample ports | 1 |
| Width of platform (port back to handrail) | 2m |

| | | |
|---|---|---|
| Nearest downstream disturbance | Bend | 2m |
| Nearest upstream disturbance | Bend | 2m |
| Disturbances are classed as bends, fans or diameter variations | | |

* Reference Conditions: 273K, 101.3kPa, Wet Gas

NOTE: Velocity / volume flowrate calculations exclude contributions from the measurement point(s) where swirl > 15°

# FIELD CALIBRATION AND SAMPLING DATA

Adler Pelzer Group
Permit No : PPC 92935
Variation No : V1
Report Ref : P5617 : R001

Installation Name : Spraybooths
Visit Details : Compliance - November 2023
Survey Dates : 9th – 10th November 2023, 18th December 2023 & 22nd January 2024
Report Issue Date : 8th February 2024

# TVOC Calibration Site Log

## TVOC - FIELD DATA SHEET

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Client | Adler Pelzer Group | | | Barometric Pressure mb | 1025 | | |
| Site | Cab Automotive Ltd - Tipon | | | Barometer ID | ECL/ID/ 351 | | |
| Date | 18/12/2023 | | | Analyser ID | ECL/ID/ 997 | | |
| Location | Spraybooths | | | Sonimix/ MFC ID | ECL/ID/ n/a | | |
| Stack ID | EX 3 - Spraybooth No.3 | | | Heated Line/ Controller ID | ECL/ID/ 1009 & 1010 | | |
| Stack Temp °C | 18 | | | Heated Line Set Temp °C | 180 | YES | |
| Ambient Temp (sampling) | 1= 17 | 2= 17 | 3= 17 | Heated Line Length | 10 | m | |
| Ambient Temp (sampling) | 4= 17 | 5= 17 | 6= 17 | Heated Probe Filter ID | ECL/ID/ 919 | | |
| Job No | P5617 | | | Heated Filter Set Temp °C | 180 | YES | |
| Operators | LH & TR | | | Logger ID | 928 | | |

### Calibration Gas Details

| Calibration Gas | Gas Bottle ID | Gas Value | Uncertainty of Gas (k=2) |
|---|---|---|---|
| Zero Gas (Synthetic Air) | Gas/ 2879 | … | … |
| Hydrogen Fuel | Gas/ 2989 | … | … |
| Propane (In Air) | Gas/ 2902 | 91.38 ppm | 1% |

| | Analyser Range | Span Gas value used |
|---|---|---|
| Propane | 100 ppm | 91.38 ppm |

**Analyser Range** should be not less than the expected peak emissions.

**Span Gas Values** should be **either** *approximately the half-hourly ELV* **OR** ***50%*** *to* ***90%*** *of the Selected Analyser Range.*

| | Direct Calibration (Rear of Analyser) | | | | | |
|---|---|---|---|---|---|---|
| | Zero Cal | | Span Gas Cal | | Zero Check | |
| | Start Time | End Time | Start Time | End Time | Start Time | End Time |
| ZERO /SPAN/ ZERO | 12:07 | 12:12 | 12:17 | 12:22 | 12:23 | 12:28 |

**NOTE: RESPONSE TIME**

**Response Time to be carried out at the same time as "Span Check" on system verification (via the sample probe)**
**Start Time = when gas turned on. 90% Time = when analyser displays 90% of span gas value used. Response must be within 200 seconds.**

| Pre-Cal Ambient Temp °C | | PRE System Verification Check (Down Line) | | | |
|---|---|---|---|---|---|
| Max | Min | Zero Check | | Span Check | |
| 17 | 17 | Start Time | End Time | Start Time | End Time |
| ZERO / SPAN | | 12:30 | 12:35 | 12:36 | 12:45 |

| Response Time SYSTEM Span Gas Cal | | |
|---|---|---|
| Start Time | 90% Time | less than 200s (Y/N) |
| 12:35:30 | 12:36:00 | Y |

| | Start Time | End Time | Location | Production Details |
|---|---|---|---|---|
| Sample Period | 13:00 | 13:30 | EX 3 Spraybooth No.3 | Normal |
| Sample Period | 13:45 | 14:15 | EX 3 Spraybooth No.3 | Normal |
| Sample Period | 14:30 | 15:00 | EX 3 Spraybooth No.3 | Normal |
| Sample Period | | | | |
| Sample Period | | | | |
| Sample Period | | | | |

| Post-Cal Ambient Temp °C | | POST System Verification Check (Down Line) | | | |
|---|---|---|---|---|---|
| Max | Min | Zero Check | | Span Check | |
| 17 | 17 | Start Time | End Time | Start Time | End Time |
| ZERO / SPAN | | 15:02 | 15:05 | 15:07 | 15:10 |

Process Details / Comments

Adler Pelzer Group
Permit No : PPC 92935
Variation No : V1
Report Ref : P5617 : R001

Installation Name : Spraybooths
Visit Details : Compliance - November 2023
Survey Dates : 9th – 10th November 2023, 18th December 2023 & 22nd January 2024
Report Issue Date : 8th February 2024

# TVOC Calibration Summary

| | | TVOC ppm |
|---|---|---|
| Analyser Range | | 100 |
| Repeatability at Zero | | 2 |
| Span Gas Concentration Applied | | 91.38 |
| Zero Gas Concentration Applied | | 0 |
| Direct Cal | Zero | 0.00 |
| | Span | 91.4 |
| | Zero | -0.04 |
| Difference (Zero) | | 0.0393 |
| < 2× Repeatability @ Zero? | | YES |
| | | |
| Pre Test (System) | Zero | 0.29 |
| | Span | 90.8 |
| Difference (Zero) | | 0.2946 |
| < 2% Relative to Direct Span | | YES |
| Difference (Span) | | 0.5892 |
| < 2% Relative to Direct Span | | YES |
| | | |
| Post Test (System) | Zero | 0.12 |
| | Span | 90.6 |
| Difference (Zero) | | 0.1794 |
| Zero Drift < 2% of Applied Span? | | YES |
| Difference (Span) | | 0.2278 |
| Span Drift < 2% of Applied Span? | | YES |
| Zero and Span Drift < 5% of Applied Span? | | YES |

| | | | | |
|---|---|---|---|---|
| Adler Pelzer Group | | | Installation Name | : Spraybooths |
| Permit No | : PPC 92935 | | Visit Details | : Compliance - November 2023 |
| Variation No | : V1 | | Survey Dates | : 9th – 10th November 2023, 18th December 2023 & 22nd January 2024 |
| Report Ref | : P5617 | : R001 | Report Issue Date | : 8th February 2024 |

# Particulates – EX 1

| Environmental Compliance Limited | | PARTICULATE DATA SAMPLING PROFORMA | | Date of Measurement | 09/11/2023 |
|---|---|---|---|---|---|

| ECL/TPD/ | 27a | Time taken to change Ports? | 0 | Start Time | 11:55 | End Time | 12:25 | Duration (mins) | 30 |
|---|---|---|---|---|---|---|---|---|---|

| Client | Adler Pelzer Group | Stack Profile | Circular | Pitot ID | 487 | Stack Thermocouple ID | 1247 | Impingers | None Used |
|---|---|---|---|---|---|---|---|---|---|
| Site | Cab Automotive Ltd | Stack Area ($m^2$) | 0.30 | Manometer ID | 1249 | Stack Temp Reader ID | 1251 | SOL/ | |
| Location | Tipton | Barometric Pressure (mb) | 994 | Barometer ID | 1321 | Meter Thermocouple ID | 1311 | Start Weight (g) | 0.00 |
| Stack ID | EX 1 - Spraybooth (Mini) No.2 | Stat Pres. (mm $H^2$0) (Pa/9.807) | 1.111 | DGM Yd | 0.9672 | Meter Temp Reader ID | 1311 | End Weight (g) | 0.55 |
| Test No. | TPM | Pitot coefficient | 1.00 | Nozzle ID | 1217 | Dry Gas Meter ID | 1309 | Total weight (g) | 0.55 |
| Job No | P5617 | Balance ID | n/a | Nozzle Size (mm) | 7.06 | Timer ID | 1313 | | |
| ECL Site Staff | LH & TR | Console ID | 1308 | Filter ID | 256402-4368 | Rotameter ID | 1310 | | |

If moisture was not measured and gas was dried before entering the gas meter, impinger weights must be included to produce the moisture concentration used in the isokinetic calculations. If the gas was not dried before it entered the gas meter then impinger weights MUST be included to produce a nominal 0.1% moisture value.

| | Sample Volume |
|---|---|
| Start Volume | 696011.0 |
| Final Volume | 696789.0 |
| Total Volume | 778.0 |

Note that once the sample has started, no further SAMPLE TRAIN leak checks are allowed, neither when changing ports (even if disconnections are required) nor at the end of the test.

| Total | Volume (litres) @ STP Dry | |
|---|---|---|
| | Expected Sample Volume | 646.55 |
| | Actual Sample Volume | 687.22 |
| 778.0 | Isokinetic Percentage | 106.29 |

| Leak Check | Pre Sample |
|---|---|
| Measured Leak Rate* l/min | 0 |
| Set Sampling Rate* (l/min) | 28 |
| Time Of Leak Check | 11:45 |
| Leak % of set rate | 0.0 |

* During sample train leak check, set the sample flowrate above the maximum EXPECTED sampling flowrate.

| Maximum allowed leak rate is 2% of the set rate | Measured $O_2$ | 20.90 | Moisture | 0.10 |
|---|---|---|---|---|
| | Measured $CO_2$ % | 0.10 | Ref $O_2$ | n/a |
| | Measured CO ppm | 0 | Dry Gas Molecular Weight | 28.85 |

Smooth Walls

TPD/27A is carried out with an unheated sampling system only.

| DI Water SOL/ | 4992 |
|---|---|
| Acetone SOL/ | 4963 |

| Traverse Point | A1X | A1X | A2 | A2 | A3 | A3 | A4X | A4X | Total |
|---|---|---|---|---|---|---|---|---|---|
| Time Interval (mins) | 3.75 | 3.75 | 3.75 | 3.75 | 3.75 | 3.75 | 3.75 | 3.75 | |
| Time/Point ( mins) | 0 - 3.75 | 3.75 - 7.5 | 7.5 - 11.25 | 11.25 - 15 | 15 - 18.75 | 18.75 - 22.5 | 22.5 - 26.25 | 26.25 - 30 | |
| ΔP (Pa) | 31.20 | 29.80 | 51.20 | 50.60 | 75.30 | 74.60 | 90.10 | 91.50 | 61.8 |
| Velocity at Stack (m/s) | 7.28 | 7.11 | 9.33 | 9.29 | 11.33 | 11.28 | 12.39 | 12.49 | |
| Sample Rate (l/min) 101.3 mbar, Tm, Dry Gas | 16.7 | 16.3 | 21.5 | 21.3 | 26.1 | 26.0 | 28.6 | 28.9 | 23.2 |
| Meter (Tm) | 19 | 19 | 20 | 20 | 21 | 21 | 22 | 22 | 20.5 |
| Stack Temp (Ts) | 20 | 20 | 20 | 21 | 21 | 21 | 21 | 21 | 20.6 |

| Original Flowrate Settings | |
|---|---|
| Tm | 30 |
| Ts | 20 |
| % moisture | 0.1 |

Pitot Quality Control Checks

| PRE-Sample PITOT Visual Inspection | |
|---|---|
| Time | 10:42 |
| Pass ? (Y/N) | Y |

| Traverse Point | | | | | | | | | Total |
|---|---|---|---|---|---|---|---|---|---|
| Time Interval (mins) | | | | | | | | | |
| Time/Point ( mins) | | | | | | | | | |
| ΔP (Pa) | | | | | | | | | |
| Velocity at Stack (m/s) | | | | | | | | | |
| Sample Rate (l/min) 101.3 mbar, Tm, Dry Gas | | | | | | | | | |
| Meter (Tm) | | | | | | | | | |
| Stack Temp (Ts) | | | | | | | | | |

| PRE-Sample PITOT Leak Check | |
|---|---|
| Time | 10:44 |
| Pass ? (Y/N) | Y |

| Post-Sample Blockage Check (L-type) | |
|---|---|
| Time | 12:33 |
| Reading (Pa) | 32.1 |
| Pass (< 5%) ? | 2.9 |

| Traverse Point | | | | | | | | | Total |
|---|---|---|---|---|---|---|---|---|---|
| Time Interval (mins) | | | | | | | | | |
| Time/Point ( mins) | | | | | | | | | |
| ΔP (Pa) | | | | | | | | | |
| Velocity at Stack (m/s) | | | | | | | | | |
| Sample Rate (l/min) 101.3 mbar, Tm, Dry Gas | | | | | | | | | |
| Meter (Tm) | | | | | | | | | |
| Stack Temp (Ts) | | | | | | | | | |

| POST-Sample PITOT Visual Inspection | |
|---|---|
| Time | 12:35 |
| Pass ? (Y/N) | Y |

| POST-Sample PITOT Leak Check | |
|---|---|
| Time | 12:37 |
| Pass ? (Y/N) | Y |

# Particulates – EX 2

| Environmental Compliance Limited | | PARTICULATE DATA SAMPLING PROFORMA | | Date of Measurement | 09/11/2023 |
|---|---|---|---|---|---|

| ECL/TPD/ | 27a | Time taken to change Ports? | 0 | Start Time | 11:55 | End Time | 12:25 | Duration (mins) | 30 |
|---|---|---|---|---|---|---|---|---|---|

| Client | Adler Pelzer Group | Stack Profile | Circular | Pitot ID | 1096 | Stack Thermocouple ID | 1245 | Impingers | None Used |
|---|---|---|---|---|---|---|---|---|---|
| Site | Cab Automotive Ltd | Stack Area ($m^2$) | 0.30 | Manometer ID | 1250 | Stack Temp Reader ID | 1252 | SOL/ | |
| Location | Tipton | Barometric Pressure (mb) | 994 | Barometer ID | 1321 | Meter Thermocouple ID | 366 | Start Weight (g) | 0.00 |
| Stack ID | EX 2 - Spraybooth (Mini) No.1 | Stat Pres. (mm $H^2$0) (Pa/9.807) | 1.071 | DGM Yd | 0.9766 | Meter Temp Reader ID | 366 | End Weight (g) | 0.42 |
| Test No. | TPM | Pitot coefficient | 0.99 | Nozzle ID | 801 | Dry Gas Meter ID | 366 | Total weight (g) | 0.42 |
| Job No | P5617 | Balance ID | n/a | Nozzle Size (mm) | 6.08 | Timer ID | 366 | | |
| ECL Site Staff | LH & TR | Console ID | 366 | Filter ID | 256401-4368 | Rotameter ID | 366 | | |

If moisture was not measured and gas was dried before entering the gas meter, impinger weights must be included to produce the moisture concentration used in the isokinetic calculations. If the gas was not dried before it entered the gas meter then impinger weights MUST be included to produce a nominal 0.1% moisture value.

| | Sample Volume |
|---|---|
| Start Volume | 153423.0 |
| Final Volume | 153987.0 |
| Total Volume | 564.0 |

Note that once the sample has started, no further SAMPLE TRAIN leak checks are allowed, neither when changing ports (even if disconnections are required) nor at the end of the test.

| Total | Volume (litres) @ STP Dry | |
|---|---|---|
| | Expected Sample Volume | 474.56 |
| | Actual Sample Volume | 498.79 |
| 564.0 | Isokinetic Percentage | 105.10 |

| Leak Check | Pre Sample |
|---|---|
| Measured Leak Rate* l/min | 0 |
| Set Sampling Rate* (l/min) | 28 |
| Time Of Leak Check | 11:40 |
| Leak % of set rate | 0.0 |

* During sample train leak check, set the sample flowrate above the maximum EXPECTED sampling flowrate.

| Maximum allowed leak rate is 2% of the set rate | Measured $O_2$ | 20.90 | Moisture | 0.10 |
|---|---|---|---|---|
| | Measured $CO_2$ % | 0.10 | Ref $O_2$ | n/a |
| | Measured CO ppm | 0 | Dry Gas Molecular Weight | 28.85 |

Smooth Walls

TPD/27A is carried out with an unheated sampling system only.

| DI Water SOL/ | 4992 |
|---|---|
| Acetone SOL/ | 4963 |

| Traverse Point | A1X | A1X | A2 | A2 | A3 | A3 | A4X | A4X | Total |
|---|---|---|---|---|---|---|---|---|---|
| Time Interval (mins) | 3.75 | 3.75 | 3.75 | 3.75 | 3.75 | 3.75 | 3.75 | 3.75 | |
| Time/Point ( mins) | 0 - 3.75 | 3.75 - 7.5 | 7.5 - 11.25 | 11.25 - 15 | 15 - 18.75 | 18.75 - 22.5 | 22.5 - 26.25 | 26.25 - 30 | |
| ΔP (Pa) | 30.20 | 29.00 | 50.60 | 51.20 | 77.30 | 76.50 | 90.50 | 89.60 | 61.9 |
| Velocity at Stack (m/s) | 7.09 | 6.95 | 9.19 | 9.25 | 11.36 | 11.30 | 12.30 | 12.23 | |
| Sample Rate (l/min) 101.3 mbar, Tm, Dry Gas | 12.2 | 11.9 | 15.8 | 15.9 | 19.5 | 19.5 | 21.3 | 21.2 | 17.2 |
| Meter (Tm) | 21 | 21 | 22 | 23 | 23 | 24 | 25 | 25 | 23.0 |
| Stack Temp (Ts) | 20 | 20 | 21 | 21 | 21 | 21 | 21 | 21 | 20.8 |

| Original Flowrate Settings | |
|---|---|
| Tm | 30 |
| Ts | 20 |
| % moisture | 0.1 |

Pitot Quality Control Checks

| PRE-Sample PITOT Visual Inspection | |
|---|---|
| Time | 10:18 |
| Pass ? (Y/N) | Y |

| Traverse Point | | | | | | | | | Total |
|---|---|---|---|---|---|---|---|---|---|
| Time Interval (mins) | | | | | | | | | |
| Time/Point ( mins) | | | | | | | | | |
| ΔP (Pa) | | | | | | | | | |
| Velocity at Stack (m/s) | | | | | | | | | |
| Sample Rate (l/min) 101.3 mbar, Tm, Dry Gas | | | | | | | | | |
| Meter (Tm) | | | | | | | | | |
| Stack Temp (Ts) | | | | | | | | | |

| PRE-Sample PITOT Leak Check | |
|---|---|
| Time | 10:20 |
| Pass ? (Y/N) | Y |

| Post-Sample Blockage Check (L-type) | |
|---|---|
| Time | 12:27 |
| Reading (Pa) | 29.8 |
| Pass (<5%) ? | -1.3 |

| Traverse Point | | | | | | | | | Total |
|---|---|---|---|---|---|---|---|---|---|
| Time Interval (mins) | | | | | | | | | |
| Time/Point ( mins) | | | | | | | | | |
| ΔP (Pa) | | | | | | | | | |
| Velocity at Stack (m/s) | | | | | | | | | |
| Sample Rate (l/min) 101.3 mbar, Tm, Dry Gas | | | | | | | | | |
| Meter (Tm) | | | | | | | | | |
| Stack Temp (Ts) | | | | | | | | | |

| POST-Sample PITOT Visual Inspection | |
|---|---|
| Time | 12:29 |
| Pass ? (Y/N) | Y |

| POST-Sample PITOT Leak Check | |
|---|---|
| Time | 12:31 |
| Pass ? (Y/N) | Y |

| | | | | |
|---|---|---|---|---|
| Adler Pelzer Group | | | Installation Name | : Spraybooths |
| Permit No | : PPC 92935 | | Visit Details | : Compliance - November 2023 |
| Variation No | : V1 | | Survey Dates | : 9th – 10th November 2023, 18th December 2023 & 22nd January 2024 |
| Report Ref | : P5617 | : R001 | Report Issue Date | : 8th February 2024 |

# Particulates – EX 4

| Environmental Compliance Limited | | PARTICULATE DATA SAMPLING PROFORMA | | Date of Measurement | 09/11/2023 | | | |
|---|---|---|---|---|---|---|---|---|
| ECL/TPD/ | 27a | Time taken to change Ports? | 0 | Start Time | 13:50 | End Time | 14:20 | Duration (mins) 30 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Client | Adler Pelzer Group | Stack Profile | Circular | Pitot ID | 1096 | Stack Thermocouple ID | 1245 | Impingers | None Used |
| Site | Cab Automotive Ltd | Stack Area ($m^2$) | 0.41 | Manometer ID | 1250 | Stack Temp Reader ID | 1252 | SOL/ | |
| Location | Tipton | Barometric Pressure (mb) | 994 | Barometer ID | 1321 | Meter Thermocouple ID | 366 | Start Weight (g) | 0.00 |
| Stack ID | EX 4 - Spraybooth (McLaren) No.8 | Stat Pres. (mm $H^2$0) (Pa/9.807) | 8.484 | DGM Yd | 0.9766 | Meter Temp Reader ID | 366 | End Weight (g) | 0.50 |
| Test No. | TPM | Pitot coefficient | 0.99 | Nozzle ID | 801 | Dry Gas Meter ID | 366 | Total weight (g) | 0.50 |
| Job No | P5617 | Balance ID | n/a | Nozzle Size (mm) | 7.12 | Timer ID | 366 | | |
| ECL Site Staff | LH & TR | Console ID | 366 | Filter ID | 256430-4368 | Rotameter ID | 366 | | |

If moisture was not measured and gas was dried before entering the gas meter, impinger weights must be included to produce the moisture concentration used in the isokinetic calculations. If the gas was not dried before it entered the gas meter then impinger weights MUST be included to produce a nominal 0.1% moisture value.

| | Sample Volume |
|---|---|
| Start Volume | 155057.0 |
| Final Volume | 155741.0 |
| Total Volume | 684.0 |

Note that once the sample has started, no further SAMPLE TRAIN leak checks are allowed, neither when changing ports (even if disconnections are required) nor at the end of the test.

| Total | Volume (litres) @ STP Dry | |
|---|---|---|
| | Expected Sample Volume | 538.35 |
| | Actual Sample Volume | 603.76 |
| 684.0 | Isokinetic Percentage | 112.15 |

| Leak Check | Pre Sample |
|---|---|
| Measured Leak Rate* l/min | 0 |
| Set Sampling Rate* (l/min) | 28 |
| Time Of Leak Check | 13:46 |
| Leak % of set rate | 0.0 |

* During sample train leak check, set the sample flowrate above the maximum EXPECTED sampling flowrate.

| Maximum allowed leak rate is 2% of the set rate | | | | |
|---|---|---|---|---|
| | Measured $O_2$ | 20.90 | Moisture | 0.10 |
| | Measured $CO_2$ % | 0.10 | Ref $O_2$ | n/a |
| | Measured CO ppm | 0 | Dry Gas Molecular Weight | 28.85 |

Smooth Walls

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| DI Water SOL/ | 4992 | | | | | | | |
| Acetone SOL/ | 4963 | | | | | | | |

TPD/27A is carried out with an unheated sampling system only.

| Traverse Point | A1X | A1X | A2 | A2 | A3 | A3 | A4X | A4X | Total |
|---|---|---|---|---|---|---|---|---|---|
| Time Interval (mins) | 3.75 | 3.75 | 3.75 | 3.75 | 3.75 | 3.75 | 3.75 | 3.75 | |
| Time/Point ( mins) | 0 - 3.75 | 3.75 - 7.5 | 7.5 - 11.25 | 11.25 - 15 | 15 - 18.75 | 18.75 - 22.5 | 22.5 - 26.25 | 26.25 - 30 | |
| ΔP (Pa) | 46.50 | 45.20 | 44.00 | 43.80 | 37.80 | 39.50 | 35.20 | 34.90 | 40.9 |
| Velocity at Stack (m/s) | 8.81 | 8.69 | 8.57 | 8.55 | 7.94 | 8.12 | 7.67 | 7.63 | |
| Sample Rate (l/min) 101.3 mbar, Tm, Dry Gas | 20.7 | 20.4 | 20.2 | 20.2 | 18.8 | 19.2 | 18.2 | 18.1 | 19.5 |
| Meter (Tm) | 22 | 22 | 23 | 23 | 24 | 24 | 25 | 25 | 23.5 |
| Stack Temp (Ts) | 21 | 21 | 21 | 21 | 21 | 21 | 21 | 21 | 21.0 |

| Original Flowrate Settings | |
|---|---|
| Tm | 30 |
| Ts | 21 |
| % moisture | 0.1 |

Pitot Quality Control Checks

| PRE-Sample PITOT Visual Inspection | |
|---|---|
| Time | 13:18 |
| Pass ? (Y/N) | Y |

| Traverse Point | | | | | | | | | Total |
|---|---|---|---|---|---|---|---|---|---|
| Time Interval (mins) | | | | | | | | | |
| Time/Point ( mins) | | | | | | | | | |
| ΔP (Pa) | | | | | | | | | |
| Velocity at Stack (m/s) | | | | | | | | | |
| Sample Rate (l/min) 101.3 mbar, Tm, Dry Gas | | | | | | | | | |
| Meter (Tm) | | | | | | | | | |
| Stack Temp (Ts) | | | | | | | | | |

| PRE-Sample PITOT Leak Check | |
|---|---|
| Time | 13:20 |
| Pass ? (Y/N) | Y |

| Post-Sample Blockage Check (L-type) | |
|---|---|
| Time | 14:30 |
| Reading (Pa) | 45.5 |
| Pass (< 5%) ? | -2.2 |

| Traverse Point | | | | | | | | | Total |
|---|---|---|---|---|---|---|---|---|---|
| Time Interval (mins) | | | | | | | | | |
| Time/Point ( mins) | | | | | | | | | |
| ΔP (Pa) | | | | | | | | | |
| Velocity at Stack (m/s) | | | | | | | | | |
| Sample Rate (l/min) 101.3 mbar, Tm, Dry Gas | | | | | | | | | |
| Meter (Tm) | | | | | | | | | |
| Stack Temp (Ts) | | | | | | | | | |

| POST-Sample PITOT Visual Inspection | |
|---|---|
| Time | 14:32 |
| Pass ? (Y/N) | Y |

| POST-Sample PITOT Leak Check | |
|---|---|
| Time | 14:34 |
| Pass ? (Y/N) | Y |

# Particulates – EX 5

| Environmental Compliance Limited | | PARTICULATE DATA SAMPLING PROFORMA | | Date of Measurement | 09/11/2023 | | | |
|---|---|---|---|---|---|---|---|---|
| ECL/TPD/ | 27a | Time taken to change Ports? | 0 | Start Time | 13:50 | End Time | 14:20 | Duration (mins) 30 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Client | Adler Pelzer Group | Stack Profile | Circular | Pitot ID | 487 | Stack Thermocouple ID | 1247 | Impingers | None Used |
| Site | Cab Automotive Ltd | Stack Area ($m^2$) | 0.30 | Manometer ID | 1249 | Stack Temp Reader ID | 1251 | SOL/ | |
| Location | Tipton | Barometric Pressure (mb) | 994 | Barometer ID | 1321 | Meter Thermocouple ID | 1311 | Start Weight (g) | 0.00 |
| Stack ID | EX 5 Spraybooth (McLaren) No.9 | Stat Pres. (mm $H^2$0) (Pa/9.807) | 5.659 | DGM Yd | 0.9672 | Meter Temp Reader ID | 1311 | End Weight (g) | 0.50 |
| Test No. | TPM | Pitot coefficient | 0.99 | Nozzle ID | 1217 | Dry Gas Meter ID | 1309 | Total weight (g) | 0.50 |
| Job No | P5617 | Balance ID | n/a | Nozzle Size (mm) | 8.07 | Timer ID | 1313 | | |
| ECL Site Staff | LH & TR | Console ID | 1308 | Filter ID | 257834-4426 | Rotameter ID | 1310 | | |

If moisture was not measured and gas was dried before entering the gas meter, impinger weights must be included to produce the moisture concentration used in the isokinetic calculations. If the gas was not dried before it entered the gas meter then impinger weights MUST be included to produce a nominal 0.1% moisture value.

| | Sample Volume |
|---|---|
| Start Volume | 697609.0 |
| Final Volume | 698282.0 |
| Total Volume | 673.0 |

Note that once the sample has started, no further SAMPLE TRAIN leak checks are allowed, neither when changing ports (even if disconnections are required) nor at the end of the test.

| Total | Volume (litres) @ STP Dry | |
|---|---|---|
| | Expected Sample Volume | 534.33 |
| | Actual Sample Volume | 590.98 |
| 673.0 | Isokinetic Percentage | 110.60 |

| Leak Check | Pre Sample |
|---|---|
| Measured Leak Rate* l/min | 0 |
| Set Sampling Rate* (l/min) | 28 |
| Time Of Leak Check | 13:48 |
| Leak % of set rate | 0.0 |

* During sample train leak check, set the sample flowrate above the maximum EXPECTED sampling flowrate.

| Maximum allowed leak rate is 2% of the set rate | | | | |
|---|---|---|---|---|
| | Measured $O_2$ | 20.90 | Moisture | 0.10 |
| | Measured $CO_2$ % | 0.10 | Ref $O_2$ | n/a |
| | Measured CO ppm | 0 | Dry Gas Molecular Weight | 28.85 |

Smooth Walls

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| DI Water SOL/ | 4992 | | | | | | | |
| Acetone SOL/ | 4963 | | | | | | | |

TPD/27A is carried out with an unheated sampling system only.

| Traverse Point | A1X | A1X | A2 | A2 | A3 | A3 | A4X | A4X | Total |
|---|---|---|---|---|---|---|---|---|---|
| Time Interval (mins) | 3.75 | 3.75 | 3.75 | 3.75 | 3.75 | 3.75 | 3.75 | 3.75 | |
| Time/Point ( mins) | 0 - 3.75 | 3.75 - 7.5 | 7.5 - 11.25 | 11.25 - 15 | 15 - 18.75 | 18.75 - 22.5 | 22.5 - 26.25 | 26.25 - 30 | |
| ΔP (Pa) | 30.20 | 31.30 | 28.60 | 27.80 | 22.50 | 21.90 | 17.80 | 16.90 | 24.6 |
| Velocity at Stack (m/s) | 7.10 | 7.23 | 6.91 | 6.81 | 6.13 | 6.05 | 5.45 | 5.31 | |
| Sample Rate (l/min) 101.3 mbar, Tm, Dry Gas | 21.4 | 21.8 | 20.9 | 20.6 | 18.5 | 18.3 | 16.5 | 16.1 | 19.3 |
| Meter (Tm) | 21 | 21 | 22 | 22 | 22 | 23 | 23 | 23 | 22.1 |
| Stack Temp (Ts) | 21 | 21 | 21 | 21 | 21 | 21 | 21 | 21 | 21.0 |

| Original Flowrate Settings | |
|---|---|
| Tm | 30 |
| Ts | 20 |
| % moisture | 0.1 |

Pitot Quality Control Checks

| PRE-Sample PITOT Visual Inspection | |
|---|---|
| Time | 13:42 |
| Pass ? (Y/N) | Y |

| Traverse Point | | | | | | | | | Total |
|---|---|---|---|---|---|---|---|---|---|
| Time Interval (mins) | | | | | | | | | |
| Time/Point ( mins) | | | | | | | | | |
| ΔP (Pa) | | | | | | | | | |
| Velocity at Stack (m/s) | | | | | | | | | |
| Sample Rate (l/min) 101.3 mbar, Tm, Dry Gas | | | | | | | | | |
| Meter (Tm) | | | | | | | | | |
| Stack Temp (Ts) | | | | | | | | | |

| PRE-Sample PITOT Leak Check | |
|---|---|
| Time | 13:44 |
| Pass ? (Y/N) | Y |

| Post-Sample Blockage Check (L-type) | |
|---|---|
| Time | 14:22 |
| Reading (Pa) | 31.1 |
| Pass (<5%) ? | 3.0 |

| Traverse Point | | | | | | | | | Total |
|---|---|---|---|---|---|---|---|---|---|
| Time Interval (mins) | | | | | | | | | |
| Time/Point ( mins) | | | | | | | | | |
| ΔP (Pa) | | | | | | | | | |
| Velocity at Stack (m/s) | | | | | | | | | |
| Sample Rate (l/min) 101.3 mbar, Tm, Dry Gas | | | | | | | | | |
| Meter (Tm) | | | | | | | | | |
| Stack Temp (Ts) | | | | | | | | | |

| POST-Sample PITOT Visual Inspection | |
|---|---|
| Time | 14:24 |
| Pass ? (Y/N) | Y |

| POST-Sample PITOT Leak Check | |
|---|---|
| Time | 14:26 |
| Pass ? (Y/N) | Y |

| | | | | |
|---|---|---|---|---|
| Adler Pelzer Group | | | Installation Name | : Spraybooths |
| Permit No | : PPC 92935 | | Visit Details | : Compliance - November 2023 |
| Variation No | : V1 | | Survey Dates | : 9th – 10th November 2023, 18th December 2023 & 22nd January 2024 |
| Report Ref | : P5617 | : R001 | Report Issue Date | : 8th February 2024 |

# Particulates – SB5

| Environmental Compliance Limited | | PARTICULATE DATA SAMPLING PROFORMA | | Date of Measurement | 22/01/2024 |
|---|---|---|---|---|---|

| ECL/TPD/ | 27a | Time taken to change Ports? | 0 | Start Time | 10:27 | End Time | 10:57 | Duration (mins) | 30 |
|---|---|---|---|---|---|---|---|---|---|

| Client | Adler Pelzer Group | Stack Profile | Circular | Pitot ID | 603 | Stack Thermocouple ID | 246 | Impingers | None Used |
|---|---|---|---|---|---|---|---|---|---|
| Site | Cab Automotive Ltd | Stack Area ($m^2$) | 0.20 | Manometer ID | 1203 | Stack Temp Reader ID | 1111 | SOL/ | |
| Location | Tipton | Barometric Pressure (mb) | 1004 | Barometer ID | 1321 | Meter Thermocouple ID | 1286 | Start Weight (g) | 0.00 |
| Stack ID | SB5 Bentley | Stat Pres. (mm $H^2$0) (Pa/9.807) | 1.305 | DGM Yd | 0.9528 | Meter Temp Reader ID | 1287 | End Weight (g) | 0.28 |
| Test No. | TPM | Pitot coefficient | 0.97 | Nozzle ID | 1217 | Dry Gas Meter ID | 1284 | Total weight (g) | 0.28 |
| Job No | P5617 | Balance ID | N/A | Nozzle Size (mm) | 12.21 | Timer ID | 1288 | | |
| ECL Site Staff | LH & TR | Console ID | 1283 | Filter ID | 4274 254281 | Rotameter ID | 1285 | | |

If moisture was not measured and gas was dried before entering the gas meter, impinger weights must be included to produce the moisture concentration used in the isokinetic calculations. If the gas was not dried before it entered the gas meter then impinger weights MUST be included to produce a nominal 0.1% moisture value.

| | Sample Volume |
|---|---|
| Start Volume | 743603.0 |
| Final Volume | 744002.0 |
| Total Volume | 399.0 |

Note that once the sample has started, no further SAMPLE TRAIN leak checks are allowed, neither when changing ports (even if disconnections are required) nor at the end of the test.

| Total | Volume (litres) @ STP Dry | |
|---|---|---|
| | Expected Sample Volume | 308.96 |
| | Actual Sample Volume | 352.88 |
| 399.0 | Isokinetic Percentage | 114.21 |

| Leak Check | Pre Sample |
|---|---|
| Measured Leak Rate* l/min | 0 |
| Set Sampling Rate* (l/min) | 25 |
| Time Of Leak Check | 10:25 |
| Leak % of set rate | 0.0 |

* During sample train leak check, set the sample flowrate above the maximum EXPECTED sampling flowrate.

| Maximum allowed leak rate is 2% of the set rate | Measured $O_2$ | 20.90 | Moisture | 0.10 |
|---|---|---|---|---|
| | Measured $CO_2$ % | 0.01 | Ref $O_2$ | n/a |
| | Measured CO ppm | 0 | Dry Gas Molecular Weight | 28.84 |

Smooth Walls

| DI Water SOL/ | 5038 |
|---|---|
| Acetone SOL/ | 5067 |

TPD/27A is carried out with an unheated sampling system only.

| Traverse Point | A1X | A1X | A2 | A2 | A3 | A3 | A4X | A4X | Total |
|---|---|---|---|---|---|---|---|---|---|
| Time Interval (mins) | 3.75 | 3.75 | 3.75 | 3.75 | 3.75 | 3.75 | 3.75 | 3.75 | |
| Time/Point ( mins ) | 0 - 3.75 | 3.75 - 7.5 | 7.5 - 11.25 | 11.25 - 15 | 15 - 18.75 | 18.75 - 22.5 | 22.5 - 26.25 | 26.25 - 30 | |
| ΔP (Pa) | 2.10 | 1.90 | 1.10 | 1.40 | 1.00 | 1.40 | 1.80 | 2.20 | 1.6 |
| Velocity at Stack (m/s) | 1.82 | 1.73 | 1.32 | 1.48 | 1.25 | 1.48 | 1.68 | 1.86 | |
| Sample Rate (l/min) 101.3 mbar, Tm, Dry Gas | 12.6 | 12.0 | 9.1 | 10.3 | 8.8 | 10.4 | 11.7 | 13.0 | 11.0 |
| Meter (Tm) | 18 | 18 | 18 | 18 | 19 | 19 | 19 | 19 | 18.5 |
| Stack Temp (Ts) | 18 | 18 | 18 | 18 | 18 | 18 | 18 | 18 | 18.0 |

| Original Flowrate Settings | |
|---|---|
| Tm | 22 |
| Ts | 18 |
| % moisture | 0.1 |

Pitot Quality Control Checks

| PRE-Sample PITOT Visual Inspection | |
|---|---|
| Time | 10:18 |
| Pass ? (Y/N) | Y |

| Traverse Point | | | | | | | | | Total |
|---|---|---|---|---|---|---|---|---|---|
| Time Interval (mins) | | | | | | | | | |
| Time/Point ( mins ) | | | | | | | | | |
| ΔP (Pa) | | | | | | | | | |
| Velocity at Stack (m/s) | | | | | | | | | |
| Sample Rate (l/min) 101.3 mbar, Tm, Dry Gas | | | | | | | | | |
| Meter (Tm) | | | | | | | | | |
| Stack Temp (Ts) | | | | | | | | | |

| PRE-Sample PITOT Leak Check | |
|---|---|
| Time | 10:20 |
| Pass ? (Y/N) | Y |

| Post-Sample Blockage Check (L-type) | |
|---|---|
| Time | 10:59 |
| Reading (Pa) | 2.1 |
| Pass (<5%) ? | 0.0 |

| Traverse Point | | | | | | | | | Total |
|---|---|---|---|---|---|---|---|---|---|
| Time Interval (mins) | | | | | | | | | |
| Time/Point ( mins ) | | | | | | | | | |
| ΔP (Pa) | | | | | | | | | |
| Velocity at Stack (m/s) | | | | | | | | | |
| Sample Rate (l/min) 101.3 mbar, Tm, Dry Gas | | | | | | | | | |
| Meter (Tm) | | | | | | | | | |
| Stack Temp (Ts) | | | | | | | | | |

| POST-Sample PITOT Visual Inspection | |
|---|---|
| Time | 11:01 |
| Pass ? (Y/N) | Y |

| POST-Sample PITOT Leak Check | |
|---|---|
| Time | 11:03 |
| Pass ? (Y/N) | Y |

# Particulates – SB7

| Environmental Compliance Limited | | PARTICULATE DATA SAMPLING PROFORMA | | Date of Measurement | 22/01/2024 |
|---|---|---|---|---|---|

| ECL/TPD/ | 27a | Time taken to change Ports? | 0 | Start Time | 12:28 | End Time | 12:58 | Duration (mins) | 30 |
|---|---|---|---|---|---|---|---|---|---|

| Client | Adler Pelzer Group | Stack Profile | Circular | Pitot ID | 603 | Stack Thermocouple ID | 246 | Impingers | None Used |
|---|---|---|---|---|---|---|---|---|---|
| Site | Cab Automotive Ltd | Stack Area ($m^2$) | 0.38 | Manometer ID | 1203 | Stack Temp Reader ID | 1111 | SOL/ | |
| Location | Tipton | Barometric Pressure (mb) | 1004 | Barometer ID | 1321 | Meter Thermocouple ID | 1286 | Start Weight (g) | 0.00 |
| Stack ID | SB7 Bentley | Stat Pres. (mm $H^2$0) (Pa/9.807) | 8.565 | DGM Yd | 0.9528 | Meter Temp Reader ID | 1287 | End Weight (g) | 0.55 |
| Test No. | TPM | Pitot coefficient | 0.99 | Nozzle ID | 1217 | Dry Gas Meter ID | 1284 | Total weight (g) | 0.55 |
| Job No | P5617 | Balance ID | N/A | Nozzle Size (mm) | 7.06 | Timer ID | 1288 | | |
| ECL Site Staff | LH & TR | Console ID | 1283 | Filter ID | 4274 254273 | Rotameter ID | 1285 | | |

If moisture was not measured and gas was dried before entering the gas meter, impinger weights must be included to produce the moisture concentration used in the isokinetic calculations. If the gas was not dried before it entered the gas meter then impinger weights MUST be included to produce a nominal 0.1% moisture value.

| | Sample Volume |
|---|---|
| Start Volume | 746054.0 |
| Final Volume | 746815.0 |
| Total Volume | 761.0 |

Note that once the sample has started, no further SAMPLE TRAIN leak checks are allowed, neither when changing ports (even if disconnections are required) nor at the end of the test.

| Total | Volume (litres) @ STP Dry | |
|---|---|---|
| | Expected Sample Volume | 633.67 |
| | Actual Sample Volume | 668.26 |
| 761.0 | Isokinetic Percentage | 105.46 |

| Leak Check | Pre Sample |
|---|---|
| Measured Leak Rate* l/min | 0 |
| Set Sampling Rate* (l/min) | 25 |
| Time Of Leak Check | 12:25 |
| Leak % of set rate | 0.0 |

* During sample train leak check, set the sample flowrate above the maximum EXPECTED sampling flowrate.

| Maximum allowed leak rate is 2% of the set rate | Measured $O_2$ | 20.90 | Moisture | 0.10 |
|---|---|---|---|---|
| | Measured $CO_2$ % | 0.01 | Ref $O_2$ | n/a |
| | Measured CO ppm | 0 | Dry Gas Molecular Weight | 28.84 |

Smooth Walls

| DI Water SOL/ | 5038 |
|---|---|
| Acetone SOL/ | 5067 |

TPD/27A is carried out with an unheated sampling system only.

| Traverse Point | A1X | A1X | A2 | A2 | A3 | A3 | A4X | A4X | Total |
|---|---|---|---|---|---|---|---|---|---|
| Time Interval (mins) | 3.75 | 3.75 | 3.75 | 3.75 | 3.75 | 3.75 | 3.75 | 3.75 | |
| Time/Point ( mins ) | 0 - 3.75 | 3.75 - 7.5 | 7.5 - 11.25 | 11.25 - 15 | 15 - 18.75 | 18.75 - 22.5 | 22.5 - 26.25 | 26.25 - 30 | |
| ΔP (Pa) | 50.60 | 50.40 | 56.20 | 58.30 | 66.90 | 62.30 | 54.90 | 58.70 | 57.3 |
| Velocity at Stack (m/s) | 9.10 | 9.08 | 9.59 | 9.77 | 10.46 | 10.10 | 9.48 | 9.80 | |
| Sample Rate (l/min) 101.3 mbar, Tm, Dry Gas | 21.3 | 21.3 | 22.5 | 23.0 | 24.6 | 23.7 | 22.3 | 23.1 | 22.7 |
| Meter (Tm) | 20 | 20 | 20 | 21 | 21 | 21 | 21 | 22 | 20.8 |
| Stack Temp (Ts) | 18 | 18 | 18 | 18 | 18 | 18 | 18 | 18 | 18.0 |

| Original Flowrate Settings | |
|---|---|
| Tm | 22 |
| Ts | 18 |
| % moisture | 0.1 |

Pitot Quality Control Checks

| PRE-Sample PITOT Visual Inspection | |
|---|---|
| Time | 11:48 |
| Pass ? (Y/N) | Y |

| Traverse Point | | | | | | | | | Total |
|---|---|---|---|---|---|---|---|---|---|
| Time Interval (mins) | | | | | | | | | |
| Time/Point ( mins ) | | | | | | | | | |
| ΔP (Pa) | | | | | | | | | |
| Velocity at Stack (m/s) | | | | | | | | | |
| Sample Rate (l/min) 101.3 mbar, Tm, Dry Gas | | | | | | | | | |
| Meter (Tm) | | | | | | | | | |
| Stack Temp (Ts) | | | | | | | | | |

| PRE-Sample PITOT Leak Check | |
|---|---|
| Time | 11:50 |
| Pass ? (Y/N) | Y |

| Post-Sample Blockage Check (L-type) | |
|---|---|
| Time | 13:00 |
| Reading (Pa) | 51.2 |
| Pass (< 5%) ? | 1.2 |

| Traverse Point | | | | | | | | | Total |
|---|---|---|---|---|---|---|---|---|---|
| Time Interval (mins) | | | | | | | | | |
| Time/Point ( mins ) | | | | | | | | | |
| ΔP (Pa) | | | | | | | | | |
| Velocity at Stack (m/s) | | | | | | | | | |
| Sample Rate (l/min) 101.3 mbar, Tm, Dry Gas | | | | | | | | | |
| Meter (Tm) | | | | | | | | | |
| Stack Temp (Ts) | | | | | | | | | |

| POST-Sample PITOT Visual Inspection | |
|---|---|
| Time | 13:02 |
| Pass ? (Y/N) | Y |

| POST-Sample PITOT Leak Check | |
|---|---|
| Time | 13:04 |
| Pass ? (Y/N) | Y |

| | | | |
|---|---|---|---|
| Adler Pelzer Group | | Installation Name | : Spraybooths |
| Permit No | : PPC 92935 | Visit Details | : Compliance - November 2023 |
| Variation No | : V1 | Survey Dates | : 9th – 10th November 2023, 18th December 2023 & 22nd January 2024 |
| Report Ref | : P5617 : R001 | Report Issue Date | : 8th February 2024 |

## X152

| Environmental Compliance Limited | | PARTICULATE DATA SAMPLING PROFORMA | | Date of Measurement | 18/12/2023 | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ECL/TPD/ | 27a | Time taken to change Ports? | 0 | Start Time | 10:43 | End Time | 11:13 | Duration (mins) | 30 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Client | Adler Pelzer Group | Stack Profile | Circular | Pitot ID | 488 | Stack Thermocouple ID | 1248 | Impingers | None Used |
| Site | Cab Automotive Ltd | Stack Area ($m^2$) | 0.18 | Manometer ID | 1007 | Stack Temp Reader ID | 1100 | SOL/ | |
| Location | Tipton | Barometric Pressure (mb) | 1025 | Barometer ID | 351 | Meter Thermocouple ID | 1311 | Start Weight (g) | 0.00 |
| Stack ID | X152 Jaguar Spraybooth | Stat Pres. (mm $H^2$0) (Pa/9.807) | 8.463 | DGM Yd | 0.9672 | Meter Temp Reader ID | 1311 | End Weight (g) | 0.45 |
| Test No. | TPM | Pitot coefficient | 0.98 | Nozzle ID | 1216 | Dry Gas Meter ID | 1309 | Total weight (g) | 0.45 |
| Job No | P5617 | Balance ID | n/a | Nozzle Size (mm) | 7.06 | Timer ID | 1313 | | |
| ECL Site Staff | LH & TR | Console ID | 1308 | Filter ID | 256900-4387 | Rotameter ID | 1310 | | |

If moisture was not measured and gas was dried before entering the gas meter, impinger weights must be included to produce the moisture concentration used in the isokinetic calculations. If the gas was not dried before it entered the gas meter then impinger weights MUST be included to produce a nominal 0.1% moisture value.

| | Sample Volume |
|---|---|
| Start Volume | 711414.0 |
| Final Volume | 712002.0 |
| Total Volume | 588.0 |

Note that once the sample has started, no further SAMPLE TRAIN leak checks are allowed, neither when changing ports (even if disconnections are required) nor at the end of the test.

| Total | Volume (litres) @ STP Dry | |
|---|---|---|
| | Expected Sample Volume | 513.87 |
| | Actual Sample Volume | 537.51 |
| 588.0 | Isokinetic Percentage | 104.60 |

| Leak Check | Pre Sample |
|---|---|
| Measured Leak Rate* l/min | 0 |
| Set Sampling Rate* (l/min) | 28 |
| Time Of Leak Check | 10:41 |
| Leak % of set rate | 0.0 |

* During sample train leak check, set the sample flowrate above the maximum EXPECTED sampling flowrate.

| Maximum allowed leak rate is 2% of the set rate | | | | |
|---|---|---|---|---|
| | Measured $O_2$ | 20.90 | Moisture | 0.10 |
| | Measured $CO_2$ % | 0.10 | Ref $O_2$ | n/a |
| | Measured CO ppm | 0 | Dry Gas Molecular Weight | 28.85 |

Smooth Walls

| | |
|---|---|
| DI Water SOL/ | 5067 |
| Acetone SOL/ | 4963 |

TPD/27A is carried out with an unheated sampling system only.

| Traverse Point | A1X | A1X | A2 | A2 | A3 | A3 | A4X | A4X | Total |
|---|---|---|---|---|---|---|---|---|---|
| Time Interval (mins) | 3.75 | 3.75 | 3.75 | 3.75 | 3.75 | 3.75 | 3.75 | 3.75 | |
| Time/Point ( mins ) | 0 - 3.75 | 3.75 - 7.5 | 7.5 - 11.25 | 11.25 - 15 | 15 - 18.75 | 18.75 - 22.5 | 22.5 - 26.25 | 26.25 - 30 | |
| ΔP (Pa) | 40.60 | 39.80 | 37.90 | 36.50 | 37.80 | 37.00 | 35.60 | 34.20 | 37.4 |
| Velocity at Stack (m/s) | 7.97 | 7.89 | 7.70 | 7.57 | 7.57 | 7.62 | 7.48 | 7.33 | |
| Sample Rate (l/min) 101.3 mbar, Tm, Dry Gas | 18.9 | 18.8 | 18.4 | 18.0 | 18.8 | 18.2 | 17.9 | 17.6 | 18.3 |
| Meter (Tm) | 17 | 18 | 19 | 19 | 20 | 20 | 21 | 21 | 19.4 |
| Stack Temp (Ts) | 17 | 17 | 17 | 18 | 8 | 18 | 18 | 18 | 16.4 |

| Original Flowrate Settings | |
|---|---|
| Tm | 30 |
| Ts | 17 |
| % moisture | 0.1 |

Pitot Quality Control Checks

| PRE-Sample PITOT Visual Inspection | |
|---|---|
| Time | 10:33 |
| Pass ? (Y/N) | Y |

| Traverse Point | | | | | | | | | Total |
|---|---|---|---|---|---|---|---|---|---|
| Time Interval (mins) | | | | | | | | | |
| Time/Point ( mins ) | | | | | | | | | |
| ΔP (Pa) | | | | | | | | | |
| Velocity at Stack (m/s) | | | | | | | | | |
| Sample Rate (l/min) 101.3 mbar, Tm, Dry Gas | | | | | | | | | |
| Meter (Tm) | | | | | | | | | |
| Stack Temp (Ts) | | | | | | | | | |

| PRE-Sample PITOT Leak Check | |
|---|---|
| Time | 10:35 |
| Pass ? (Y/N) | Y |

| Post-Sample Blockage Check (L-type) | |
|---|---|
| Time | 11:15 |
| Reading (Pa) | 41 |
| Pass (<5%) ? | 1.0 |

| Traverse Point | | | | | | | | | Total |
|---|---|---|---|---|---|---|---|---|---|
| Time Interval (mins) | | | | | | | | | |
| Time/Point ( mins ) | | | | | | | | | |
| ΔP (Pa) | | | | | | | | | |
| Velocity at Stack (m/s) | | | | | | | | | |
| Sample Rate (l/min) 101.3 mbar, Tm, Dry Gas | | | | | | | | | |
| Meter (Tm) | | | | | | | | | |
| Stack Temp (Ts) | | | | | | | | | |

| POST-Sample PITOT Visual Inspection | |
|---|---|
| Time | 11:17 |
| Pass ? (Y/N) | Y |

| POST-Sample PITOT Leak Check | |
|---|---|
| Time | 11:19 |
| Pass ? (Y/N) | Y |

## Particulates – EX 3

| Environmental Compliance Limited | | PARTICULATE DATA SAMPLING PROFORMA | | Date of Measurement | 18/12/2023 | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ECL/TPD/ | 27a | Time taken to change Ports? | 0 | Start Time | 13:00 | End Time | 13:30 | Duration (mins) | 30 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Client | Adler Pelzer Group | Stack Profile | Circular | Pitot ID | 488 | Stack Thermocouple ID | 1248 | Impingers | None Used |
| Site | Cab Automotive Ltd | Stack Area ($m^2$) | 0.30 | Manometer ID | 1007 | Stack Temp Reader ID | 1100 | SOL/ | |
| Location | Tipton | Barometric Pressure (mb) | 1025 | Barometer ID | 351 | Meter Thermocouple ID | 1286 | Start Weight (g) | 0.00 |
| Stack ID | EX 3 Spraybooth No.3 | Stat Pres. (mm $H^2$0) (Pa/9.807) | 5.578 | DGM Yd | 0.9528 | Meter Temp Reader ID | 1287 | End Weight (g) | 0.45 |
| Test No. | TPM | Pitot coefficient | 0.98 | Nozzle ID | 1216 | Dry Gas Meter ID | 1284 | Total weight (g) | 0.45 |
| Job No | P5617 | Balance ID | n/a | Nozzle Size (mm) | 8.05 | Timer ID | 1288 | | |
| ECL Site Staff | LH & TR | Console ID | 1283 | Filter ID | 256918-4387 | Rotameter ID | 1285 | | |

If moisture was not measured and gas was dried before entering the gas meter, impinger weights must be included to produce the moisture concentration used in the isokinetic calculations. If the gas was not dried before it entered the gas meter then impinger weights MUST be included to produce a nominal 0.1% moisture value.

| | Sample Volume |
|---|---|
| Start Volume | 737085.0 |
| Final Volume | 737689.0 |
| Total Volume | 604.0 |

Note that once the sample has started, no further SAMPLE TRAIN leak checks are allowed, neither when changing ports (even if disconnections are required) nor at the end of the test.

| Total | Volume (litres) @ STP Dry | |
|---|---|---|
| | Expected Sample Volume | 564.18 |
| | Actual Sample Volume | 537.20 |
| 604.0 | Isokinetic Percentage | 95.22 |

| Leak Check | Pre Sample |
|---|---|
| Measured Leak Rate* l/min | 0 |
| Set Sampling Rate* (l/min) | 28 |
| Time Of Leak Check | 12:58 |
| Leak % of set rate | 0.0 |

* During sample train leak check, set the sample flowrate above the maximum EXPECTED sampling flowrate.

| Maximum allowed leak rate is 2% of the set rate | | | | |
|---|---|---|---|---|
| | Measured $O_2$ | 20.90 | Moisture | 0.10 |
| | Measured $CO_2$ % | 0.10 | Ref $O_2$ | n/a |
| | Measured CO ppm | 0 | Dry Gas Molecular Weight | 28.85 |

Smooth Walls

| | |
|---|---|
| DI Water SOL/ | 5067 |
| Acetone SOL/ | 4963 |

TPD/27A is carried out with an unheated sampling system only.

| Traverse Point | A1X | A1X | A2 | A2 | A3 | A3 | A4X | A4X | Total |
|---|---|---|---|---|---|---|---|---|---|
| Time Interval (mins) | 3.75 | 3.75 | 3.75 | 3.75 | 3.75 | 3.75 | 3.75 | 3.75 | |
| Time/Point ( mins ) | 0 - 3.75 | 3.75 - 7.5 | 7.5 - 11.25 | 11.25 - 15 | 15 - 18.75 | 18.75 - 22.5 | 22.5 - 26.25 | 26.25 - 30 | |
| ΔP (Pa) | 21.00 | 20.90 | 24.50 | 23.70 | 31.20 | 30.90 | 32.00 | 31.90 | 27.0 |
| Velocity at Stack (m/s) | 5.74 | 5.73 | 6.20 | 6.10 | 7.00 | 6.97 | 7.09 | 7.08 | |
| Sample Rate (l/min) 101.3 mbar, Tm, Dry Gas | 17.9 | 17.9 | 19.4 | 19.2 | 22.0 | 22.0 | 22.3 | 22.4 | 20.4 |
| Meter (Tm) | 21 | 22 | 22 | 23 | 23 | 24 | 24 | 25 | 23.0 |
| Stack Temp (Ts) | 18 | 18 | 18 | 18 | 18 | 18 | 18 | 18 | 18.0 |

| Original Flowrate Settings | |
|---|---|
| Tm | 25 |
| Ts | 18 |
| % moisture | 0.1 |

Pitot Quality Control Checks

| PRE-Sample PITOT Visual Inspection | |
|---|---|
| Time | 12:18 |
| Pass ? (Y/N) | Y |

| Traverse Point | | | | | | | | | Total |
|---|---|---|---|---|---|---|---|---|---|
| Time Interval (mins) | | | | | | | | | |
| Time/Point ( mins ) | | | | | | | | | |
| ΔP (Pa) | | | | | | | | | |
| Velocity at Stack (m/s) | | | | | | | | | |
| Sample Rate (l/min) 101.3 mbar, Tm, Dry Gas | | | | | | | | | |
| Meter (Tm) | | | | | | | | | |
| Stack Temp (Ts) | | | | | | | | | |

| PRE-Sample PITOT Leak Check | |
|---|---|
| Time | 12:20 |
| Pass ? (Y/N) | Y |

| Post-Sample Blockage Check (L-type) | |
|---|---|
| Time | 13:32 |
| Reading (Pa) | 20.1 |
| Pass (<5%) ? | -4.3 |

| Traverse Point | | | | | | | | | Total |
|---|---|---|---|---|---|---|---|---|---|
| Time Interval (mins) | | | | | | | | | |
| Time/Point ( mins ) | | | | | | | | | |
| ΔP (Pa) | | | | | | | | | |
| Velocity at Stack (m/s) | | | | | | | | | |
| Sample Rate (l/min) 101.3 mbar, Tm, Dry Gas | | | | | | | | | |
| Meter (Tm) | | | | | | | | | |
| Stack Temp (Ts) | | | | | | | | | |

| POST-Sample PITOT Visual Inspection | |
|---|---|
| Time | 13:36 |
| Pass ? (Y/N) | Y |

| POST-Sample PITOT Leak Check | |
|---|---|
| Time | 13:38 |
| Pass ? (Y/N) | Y |

Adler Pelzer Group
Permit No : PPC 92935
Variation No : V1
Report Ref : P5617 : R001

Installation Name : Spraybooths
Visit Details : Compliance - November 2023
Survey Dates : 9th – 10th November 2023, 18th December 2023 & 22nd January 2024
Report Issue Date : 8th February 2024

## Dichloromethane – EX 3 (Test 1)

Environmental Compliance Limited — SAMPLE TUBE DATA SAMPLING PROFORMA (Workhorse or MST)

| | | | | | |
|---|---|---|---|---|---|
| Client | Adler Pelzer Group | ◉ Circular ○ Rectangular ○ Elipse | | Pump ID | 162 |
| Site | Cab Automotive Ltd | Stack Diameter (mm) | 620 | Meter ID | ... |
| Location | Tipton | | | MST Probe ID | ... |
| Stack ID | EX 3 Spraybooth No.3 | Stack Area ($m^2$) | 0.302 | MST Probe Heating Temp (C ) | ... |
| Test No | Dichloromethane Test 1 | Barometric Pressure (mb) | 1025 | DGM Yd or ml/count | 0.5 |
| Job No | P5235 | Stack Thermocouple ID | 1248 | MST Hot Box ID | ... |
| ECL Site Staff | LH & TR | Tube Thermocouple ID | 1037 | MST Hot Box Heating Temp (C ) | ... |
| Barometer ID | 351 | Meter Thermocouple ID | 1032 | Workhorse Set Sample Rate (%) | 40 |
| | | In-Stack Sinter Used (Y/N) | Y | MST Delta H Sampling Rate | ... |

| | |
|---|---|
| Date of Test | 18/12/2023 |
| Sample Start Time | 13:00 |
| Sample End Time | 13:30 |
| Duration | 30 |
| Measured O2 | 20.90 |
| O2 Uncertainty %Vol | 1.25 |

Meter Units ◉ ml ○ litres

| Sample | Leak 1 | Time (start/ end) (minimum 1 minute) | Leak 2 | Time (start/ end) (minimum 1 minute) | Total |
|---|---|---|---|---|---|
| Start Volume | 981812.0 | 981801.0 | 12:46:00 | 991195.0 | 13:32:00 |
| Final Volume | 991166.0 | 981801.0 | 12:47:00 | 991195.0 | 13:33:00 |
| Total Volume | 9342.8 | 0.0 | | 0.0 | 9342.8 |
| Sample Train Internal Volume | 11.2364 | ml / Litres | Pre and post test leak checks are mandatory - in order to pass, the meter must stop fully for 1 minute. (Total volume in leak check is therefore zero) | | |

| | |
|---|---|
| Impinger 1 | None Used |
| | |
| Start Weight (g) | |
| End Weight (g) | |
| Total weight (g) | 0 |

| Sample Point | A2 | A2 | A2 | |
|---|---|---|---|---|
| Time/ point (mins) | 0-10 | 10-20 | 20-30 | |
| Tube Temp °C | 17 | 18 | 18 | |
| Stack Temp °C | 18 | 18 | 18 | |
| Meter Temp In °C | 18 | 18 | 18 | |
| Meter Temp Out °C | 17 | 17 | 17 | |

| | |
|---|---|
| Impinger 2 | |
| | |
| Start Weight (g) | |
| | |
| End Weight (g) | |
| Total weight (g) | 0 |

| Sample Point | | | | |
|---|---|---|---|---|
| Time/ point (mins) | | | | |
| Tube Temp °C | | | | |
| Stack Temp °C | | | | |
| Meter Temp In °C | | | | |
| Meter Temp Out °C | | | | |

| | |
|---|---|
| Impinger3 | |
| | |
| Start Weight (g) | |
| | |
| End Weight (g) | |
| Total weight (g) | 0 |

| Sample Point | | | | |
|---|---|---|---|---|
| Time/ point (mins) | | | | |
| Tube Temp °C | | | | |
| Stack Temp °C | | | | |
| Meter Temp In °C | | | | |
| Meter Temp Out °C | | | | |

| | |
|---|---|
| Silica | (IF USED) |
| < 50% Spent at end Y/N? | Yes |
| Sample train upstream of sorbent tube condensation free for entire sample (Y/N) | Yes |
| | |

## Dichloromethane – EX 3 (Test 2)

Environmental Compliance Limited — SAMPLE TUBE DATA SAMPLING PROFORMA (Workhorse or MST)

| | | | | | |
|---|---|---|---|---|---|
| Client | Adler Pelzer Group | ◉ Circular ○ Rectangular ○ Elipse | | Pump ID | 162 |
| Site | Cab Automotive Ltd | Stack Diameter (mm) | 620 | Meter ID | ... |
| Location | Tipton | | | MST Probe ID | ... |
| Stack ID | EX 3 Spraybooth No.3 | Stack Area ($m^2$) | 0.302 | MST Probe Heating Temp (C ) | ... |
| Test No | Dichloromethane Test 2 | Barometric Pressure (mb) | 1025 | DGM Yd or ml/count | 0.5 |
| Job No | P5235 | Stack Thermocouple ID | 1248 | MST Hot Box ID | ... |
| ECL Site Staff | LH & TR | Tube Thermocouple ID | 1037 | MST Hot Box Heating Temp (C ) | ... |
| Barometer ID | 351 | Meter Thermocouple ID | 1032 | Workhorse Set Sample Rate (%) | 40 |
| | | In-Stack Sinter Used (Y/N) | Y | MST Delta H Sampling Rate | ... |

| | |
|---|---|
| Date of Test | 18/12/2023 |
| Sample Start Time | 13:45 |
| Sample End Time | 14:15 |
| Duration | 30 |
| Measured O2 | 20.90 |
| O2 Uncertainty %Vol | 1.25 |

Meter Units ◉ ml ○ litres

| Sample | Leak 1 | Time (start/ end) (minimum 1 minute) | Leak 2 | Time (start/ end) (minimum 1 minute) | Total |
|---|---|---|---|---|---|
| Start Volume | 991240.0 | 991234.0 | 13:42:00 | 1671.0 | 14:17:00 |
| Final Volume | 1000625.0 | 991234.0 | 13:43:00 | 1671.0 | 14:18:00 |
| Total Volume | 9373.8 | 0.0 | | 0.0 | 9373.8 |
| Sample Train Internal Volume | 11.2364 | ml / Litres | Pre and post test leak checks are mandatory - in order to pass, the meter must stop fully for 1 minute. (Total volume in leak check is therefore zero) | | |

| | |
|---|---|
| Impinger 1 | None Used |
| | |
| Start Weight (g) | |
| End Weight (g) | |
| Total weight (g) | 0 |

| Sample Point | A2 | A2 | A2 | |
|---|---|---|---|---|
| Time/ point (mins) | 0-10 | 10-20 | 20-30 | |
| Tube Temp °C | 17 | 18 | 18 | |
| Stack Temp °C | 18 | 18 | 18 | |
| Meter Temp In °C | 18 | 18 | 18 | |
| Meter Temp Out °C | 17 | 17 | 17 | |

| | |
|---|---|
| Impinger 2 | |
| | |
| Start Weight (g) | |
| | |
| End Weight (g) | |
| Total weight (g) | 0 |

| Sample Point | | | | |
|---|---|---|---|---|
| Time/ point (mins) | | | | |
| Tube Temp °C | | | | |
| Stack Temp °C | | | | |
| Meter Temp In °C | | | | |
| Meter Temp Out °C | | | | |

| | |
|---|---|
| Impinger3 | |
| | |
| Start Weight (g) | |
| | |
| End Weight (g) | |
| Total weight (g) | 0 |

| Sample Point | | | | |
|---|---|---|---|---|
| Time/ point (mins) | | | | |
| Tube Temp °C | | | | |
| Stack Temp °C | | | | |
| Meter Temp In °C | | | | |
| Meter Temp Out °C | | | | |

| | |
|---|---|
| Silica | (IF USED) |
| < 50% Spent at end Y/N? | Yes |
| Sample train upstream of sorbent tube condensation free for entire sample (Y/N) | Yes |
| | |

| | | | |
|---|---|---|---|
| Adler Pelzer Group | | Installation Name | : Spraybooths |
| Permit No | : PPC 92935 | Visit Details | : Compliance - November 2023 |
| Variation No | : V1 | Survey Dates | : 9th – 10th November 2023, 18th December 2023 & 22nd January 2024 |
| Report Ref | : P5617 : R001 | Report Issue Date | : 8th February 2024 |

# Dichloromethane – EX 3 (Test 3)

| Environmental Compliance Limited | SAMPLE TUBE DATA SAMPLING PROFORMA (Workhorse or MST) |
|---|---|

| | | | | | |
|---|---|---|---|---|---|
| Client | Adler Pelzer Group | ◉ Circular ○ Rectangular ○ Elipse | | Pump ID | 162 |
| Site | Cab Automotive Ltd | Stack Diameter (mm) | 620 | Meter ID | ... |
| Location | Tipton | | | MST Probe ID | ... |
| Stack ID | EX 3 Spraybooth No.3 | Stack Area ($m^2$) | 0.302 | MST Probe Heating Temp (C ) | ... |
| Test No | Dichloromethane Test 3 | Barometric Pressure (mb) | 1025 | DGM Yd or ml/count | 0.5 |
| Job No | P5235 | Stack Thermocouple ID | 1248 | MST Hot Box ID | ... |
| ECL Site Staff | LH & TR | Tube Thermocouple ID | 1037 | MST Hot Box Heating Temp (C ) | ... |
| Barometer ID | 351 | Meter Thermocouple ID | 1032 | Workhorse Set Sample Rate (%) | 40 |
| | | In-Stack Sinter Used (Y/N) | Y | MST Delta H Sampling Rate | ... |

| | |
|---|---|
| Date of Test | 18/12/2023 |
| Sample Start Time | 14:30 |
| Sample End Time | 15:00 |
| Duration | 30 |
| Measured O2 | 20.90 |
| O2 Uncertainty %Vol | 1.25 |

Meter Units ◉ ml ○ litres

| | Sample | Leak 1 | Time (start/ end) (minimum 1 minute) | Leak 2 | Time (start/ end) (minimum 1 minute) | Total |
|---|---|---|---|---|---|---|
| Start Volume | 1713.0 | 1702.0 | 14:26:00 | 11059.0 | 15:02:00 | |
| Final Volume | 11053.0 | 1702.0 | 14:27:00 | 11059.0 | 15:03:00 | |
| Total Volume | 9328.8 | 0.0 | | 0.0 | | 9328.8 |
| Sample Train Internal Volume | 11.2364 | ml / Litres | | | | |

Pre and post test leak checks are mandatory - in order to pass, the meter must stop fully for 1 minute. (Total volume in leak check is therefore zero)

| | | | | |
|---|---|---|---|---|
| Sample Point | A2 | A2 | A2 | |
| Time/ point (mins) | 0-10 | 10-20 | 20-30 | |
| Tube Temp °C | 18 | 18 | 18 | |
| Stack Temp °C | 18 | 18 | 18 | |
| Meter Temp In °C | 18 | 18 | 18 | |
| Meter Temp Out °C | 17 | 17 | 17 | |

| | |
|---|---|
| Impinger 1 | None Used |
| | |
| Start Weight (g) | |
| End Weight (g) | |
| Total weight (g) | 0 |
| Impinger 2 | |
| | |
| Start Weight (g) | |
| | |
| End Weight (g) | |
| Total weight (g) | 0 |

| | | | | |
|---|---|---|---|---|
| Sample Point | | | | |
| Time/ point (mins) | | | | |
| Tube Temp °C | | | | |
| Stack Temp °C | | | | |
| Meter Temp In °C | | | | |
| Meter Temp Out °C | | | | |

| | |
|---|---|
| Impinger3 | |
| | |
| Start Weight (g) | |
| | |
| End Weight (g) | |
| Total weight (g) | 0 |

| | | | | |
|---|---|---|---|---|
| Sample Point | | | | |
| Time/ point (mins) | | | | |
| Tube Temp °C | | | | |
| Stack Temp °C | | | | |
| Meter Temp In °C | | | | |
| Meter Temp Out °C | | | | |

| | |
|---|---|
| Silica | (IF USED) |
| < 50% Spent at end Y/N? | Yes |
| Sample train upstream of sorbent tube condensation free for entire sample (Y/N) | Yes |
| | |

# LABORATORY ANALYSIS RESULTS

**Laboratory analysis for Particulates & Dichloromethane was subcontracted to RPS laboratories, a UKAS Accredited Testing Laboratory, Number 0605.**

**RPS DO hold UKAS & MCERTS accreditation for this analysis.**

**As required by the MCERTS Performance Standard for Organisations, the analysis results are shown below.**

Adler Pelzer Group
Permit No : PPC 92935
Variation No : V1
Report Ref : P5617 : R001

Installation Name : Spraybooths
Visit Details : Compliance - November 2023
Survey Dates : 9th – 10th November 2023, 18th December 2023 & 22nd January 2024
Report Issue Date : 8th February 2024

## Results Summary

## Report No.: 23-12128-1

Customer Reference: 2023 Stack Preferential Rates

Customer Order No: E1073 P5617

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Customer Sample No | | | | | | ECL/23/6476 | ECL/23/6477 | ECL/23/6478 | ECL/23/6479 | ECL/23/6480 | ECL/23/6481 | ECL/23/6482 | ECL/23/6483 | ECL/23/6488 |
| RPS Sample No | | | | | | 214317 | 214318 | 214319 | 214320 | 214321 | 214322 | 214323 | 214324 | 214325 |
| Sample Matrix | | | | | | FILTER | SOLUTION | FILTER | SOLUTION | FILTER | SOLUTION | FILTER | SOLUTION | FILTER |
| Sampling Date | | | | | | 09/11/2023 | 09/11/2023 | 09/11/2023 | 09/11/2023 | 09/11/2023 | 09/11/2023 | 09/11/2023 | 09/11/2023 | 09/11/2023 |
| **Determinand** | **CAS No** | **Codes** | **SOP** | **RL** | **Units** | | | | | | | | | |
| particulates | | UM | D9 | 0.04 | mg | < 0.04 | | 0.62 | | 0.34 | | 0.47 | | 0.30 |
| particulates | | UM | D9 | 0.5 | mg | | < 0.5 | | < 0.5 | | < 0.5 | | < 0.5 | |

## Results Summary

## Report No.: 23-12128-1

Customer Reference: 2023 Stack Preferential Rates

Customer Order No: E1073 P5617

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Customer Sample No | | | | | | ECL/23/6489 | ECL/23/6490 | ECL/23/6491 | ECL/23/6492 | ECL/23/6493 | ECL/23/6494 | ECL/23/6495 | ECL/23/6496 | ECL/23/6497 |
| RPS Sample No | | | | | | 214326 | 214327 | 214328 | 214329 | 214330 | 214331 | 214332 | 214333 | 214334 |
| Sample Matrix | | | | | | SOLUTION | FILTER | SOLUTION | FILTER | SOLUTION | FILTER | SOLUTION | FILTER | SOLUTION |
| Sampling Date | | | | | | 09/11/2023 | 09/11/2023 | 09/11/2023 | 09/11/2023 | 09/11/2023 | 09/11/2023 | 09/11/2023 | 09/11/2023 | 09/11/2023 |
| **Determinand** | **CAS No** | **Codes** | **SOP** | **RL** | **Units** | | | | | | | | | |
| particulates | | UM | D9 | 0.04 | mg | | 0.49 | | 0.62 | | 0.50 | | 0.07 | |
| particulates | | UM | D9 | 0.5 | mg | < 0.5 | | < 0.5 | | < 0.5 | | < 0.5 | | < 0.5 |

Environmental Compliance Limited

Adler Pelzer Group
Permit No : PPC 92935
Variation No : V1
Report Ref : P5617 : R001

Installation Name : Spraybooths
Visit Details : Compliance - November 2023
Survey Dates : 9th – 10th November 2023, 18th December 2023 & 22nd January 2024
Report Issue Date : 8th February 2024

## Results Summary

## Report No.: 24-00014-1

Customer Reference: 2023 Stack Preferential Rates

Customer Order No: E1073 P5617

| Determinand | CAS No | Codes | SOP | RL | Units | Customer Sample No | ECL/23/6979 | ECL/23/6980 | ECL/23/6981 | ECL/23/6982 |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | RPS Sample No | 221813 | 221814 | 221815 | 221816 |
| | | | | | | Sample Matrix | TUBE | TUBE | TUBE | TUBE |
| | | | | | | Sampling Date | 18/12/2023 | 18/12/2023 | 18/12/2023 | 18/12/2023 |
| dichloromethane (DCM) FRONT | 75-09-2 | UM | O8 | 4 | ug | | < 4 | < 4 | < 4 | < 4 |
| dichloromethane (DCM) BACK | 75-09-2 | UM | O8 | 4 | ug | | < 4 | < 4 | < 4 | < 4 |

## Results Summary

## Report No.: 24-00015-1

Customer Reference: 2023 Stack Preferential Rates

Customer Order No: E1073 P5617

| Determinand | CAS No | Codes | SOP | RL | Units | Customer Sample No | ECL/6484 - 4387 256918 | ECL/6485 | ECL/6486 - 4387 265917 | ECL/6487 | ECL/6500 - 4387 256900 | ECL/6501 | ECL/6502 - 4387 256899 | ECL/6503 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | RPS Sample No | 221817 | 221818 | 221819 | 221820 | 221821 | 221822 | 221823 | 221824 |
| | | | | | | Sample Matrix | FILTER | SOLUTION | FILTER | SOLUTION | FILTER | SOLUTION | FILTER | SOLUTION |
| | | | | | | Sampling Date | 18/12/2024 | 18/12/2024 | 18/12/2024 | 18/12/2024 | 18/12/2024 | 18/12/2024 | 18/12/2024 | 18/12/2024 |
| particulates | | UM | D9 | 0.04 | mg | | < 0.04 | | 0.10 | | 0.16 | | 0.10 | |
| particulates | | UM | D9 | 0.5 | mg | | | < 0.5 | | < 0.5 | | < 0.5 | | < 0.5 |

Adler Pelzer Group
Permit No : PPC 92935
Variation No : V1
Report Ref : P5617 : R001

Installation Name : Spraybooths
Visit Details : Compliance - November 2023
Survey Dates : 9th – 10th November 2023, 18th December 2023 & 22nd January 2024
Report Issue Date : 8th February 2024

## Results Summary

**Report No.: 24-00696-1**

**Customer Reference: 2023 Stack Preferential Rates**

**Customer Order No: E1222 P5617**

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Customer Sample No | ECL/24/0210 - 254281 | ECL/24/0211 | ECL/24/0212 - 254272 | ECL/24/0213 | ECL/24/0214 - 254273 | ECL/24/0215 | ECL/24/0216 - 254271 | ECL/24/0217 |
| | | | | | RPS Sample No | 224966 | 224967 | 224968 | 224969 | 224970 | 224971 | 224972 | 224973 |
| | | | | | Sample Matrix | FILTER | SOLUTION | FILTER | SOLUTION | FILTER | SOLUTION | FILTER | SOLUTION |
| | | | | | Sampling Date | 22/01/2024 | 22/01/2024 | 22/01/2024 | 22/01/2024 | 22/01/2024 | 22/01/2024 | 22/01/2024 | 22/01/2024 |
| **Determinand** | **CAS No** | **Codes** | **SOP** | **RL** | **Units** | | | | | | | | |
| particulates | | UM | D9 | 0.04 | mg | < 0.04 | | < 0.04 | | 0.05 | | < 0.04 | |
| particulates | | UM | D9 | 0.5 | mg | | < 0.5 | | < 0.5 | | < 0.5 | | < 0.5 |

# UNCERTAINTY CALCULATIONS

| | | | | |
|---|---|---|---|---|
| Adler Pelzer Group | | | Installation Name | : Spraybooths |
| Permit No | : PPC 92935 | | Visit Details | : Compliance - November 2023 |
| Variation No | : V1 | | Survey Dates | : 9th – 10th November 2023, 18th December 2023 & 22nd January 2024 |
| Report Ref | : P5617 | : R001 | Report Issue Date | : 8th February 2024 |

# TVOC Measurement Uncertainty

**EX 3 - Spraybooth No.3 - TVOC - Measurement Uncertainty - Uncertainty Calculations Table 1**

| Performance Characteristics | Standard Uncertainty (% of Range) | Distribution | Min Certified Ranges TVOC 0 - 15 mgC/m³ |
|---|---|---|---|
| Lack of fit[1] | $u_{lof}$ | Rectangular ( Divisor = √3 ) | 2.00 |
| Span drift[2] | $u_{d,s}$ | Rectangular ( Divisor = √3 ) | 0.54 |
| Repeatability Standard Deviation (span)[3] | $u_r$ | Normal ( Divisor = 1 ) | 3.57 |
| Losses / leakage in the sample system[4] | $u_{loss}$ | Rectangular ( Divisor = √3 ) | 3.93 |
| Temperature dependant span drift[5] | $u_t$ | Rectangular ( Divisor = √3 ) | 2.40 |
| Interferents[1] | $u_i$ | Rectangular ( Divisor = √3 ) | 2.50 |
| Uncertainty of Reference Gas[6] | $u_{ref}$ | Rectangular ( Divisor = √3 ) | 2.54 |
| Effect of Voltage Fluctuation[7] | $u_v$ | Rectangular ( Divisor = √3 ) | 0.50 |
| Effect of Oxygen Synergism[7] | $u_{syn}$ | Rectangular ( Divisor = √3 ) | 4.73 |

Note:

$$when\ \left|(x_{i,\max} - x_{i,adj})\right| = \left|(x_{i,\min} - x_{i,adj})\right|, then\ u(x_i) = \frac{\Delta x_i}{\sqrt{3}}$$

1 Expressed as a percentage of the certified range
2 Expressed as maximum drift per 24hr period as percentage of the certified range
3 Expressed as a percentage of the certified range
4 Expressed as a percentage of the certified range
5 Expressed as a percentage of the certified range per one degree centigrade
6 Expressed as standard uncertainty in units of measurement i.e. mg/m³ / %Vol taking account of an additional uncertainty of 2% for gas blending
7 Expressed as a percentage of the certified range

**EX 3 - Spraybooth No.3 - TVOC - Measurement Uncertainty - Uncertainty Calculations Table 2**

| Performance Characteristics | Uncertainty | Value of Standard Uncertainty | *TVOC 0 - 15 mgC/m³ |
|---|---|---|---|
| Lack of fit | $u_{lof}$ | $u(x_i) = \frac{u_{lof} \times R_i}{\sqrt{3}} =$ | 0.17 |
| Span drift | $u_{d,s}$ | $u(x_i) = \frac{u_{d,s} \times R_i}{\sqrt{3}} =$ | 0.047 |
| Repeatability Standard Deviation (span) | $u_r$ | $\sigma = \sqrt{\frac{\sum_{i=1}^{n}(x_i - \bar{x})^2}{n-1}} =$ | 0.53 |
| Losses / leakage in the sample system | $u_{loss}$ | $u(x_i) = \frac{u_{loss} \times R_i}{\sqrt{3}} =$ | 0.34 |
| Temperature dependant span drift | $u_t$ | $u(x_i) = \frac{u_t}{100} \times R_i \times \sqrt{\frac{(x_{i,max} - x_{adj})^2 + (x_{i,min} - x_{adj})(x_{i,max} - x_{adj}) + (x_{i,min} - x_{adj})^2}{3}}$ | 0.00 |
| Interferents | $u_i$ | $u(x_i) = \frac{u_i \times R_i}{\sqrt{3}} =$ | 0.22 |
| Uncertainty of Reference Gas | $u_{ref}$ | $u(x_i) = \frac{u_{ref}}{\sqrt{3}} =$ | 1.47 |
| Effect of Voltage Fluctuation | $u_v$ | | 0.043 |
| Effect of Oxygen Synergism | $u_{syn}$ | | 0.41 |
| Combined Standard Uncertainty | | $u_c = \sqrt{u_{lof}^2 + u_{d,s}^2 + u_r^2 + u_{loss}^2 + u_t^2 + u_i^2 + u_{ref}^2}$ | 1.68 |
| Expanded measurement uncertainty (at 95% confidence) | | $U_{EXP} = 2 \times u_c$ | 3.35 |
| Applied Span Concentration | | | 146.85 |
| Measured Span Concentration, STP Dry Gas | | | 146.06 |
| Expanded measurement uncertainty as % of Applied Span | | | 2 % |

* Sick F3006 FID

| | | | | |
|---|---|---|---|---|
| Adler Pelzer Group | | | Installation Name | : Spraybooths |
| Permit No | : PPC 92935 | | Visit Details | : Compliance - November 2023 |
| Variation No | : V1 | | Survey Dates | : 9th – 10th November 2023, 18th December 2023 & 22nd January 2024 |
| Report Ref | : P5617 | : R001 | Report Issue Date | : 8th February 2024 |

# TVOC Uncertainty of Measurement Results – Test 1

**EX3 - TVOC - Uncertainty of Measurement Results - Calculations Part 1**

| Performance Characteristics | Standard Uncertainty (% of Range) | Distribution | Divisor | Min Certified Range TVOC 0 - 15 mgC/m³ |
|---|---|---|---|---|
| Lack of fit(1) | $u_{lof}$ | Rectangular | $\sqrt{3}$ | 2.00 |
| Span drift(2) | $u_{d,s}$ | | | 0.54 |
| Losses / leakage in the sample system(4) | $u_{loss}$ | | | 0.64 |
| Temperature dependant span drift(5) | $u_{t}$ | | | 2.40 |
| Interferents(1) | $u_{i}$ | | | 16.67 |
| Effect of Voltage Fluctuation(7) | $u_{v}$ | | | 0.50 |
| Effect of Oxygen Synergism(7) | $u_{syn}$ | | | 4.73 |

**Notes:**

For rectangular distributions, $u(x_i) = \frac{u \times R_i}{\sqrt{3}}$

For $u(x_i) = \Delta x_i \sqrt{\frac{(x_{i,\max} - x_{i,adj})^2 + (x_{i,\min} - x_{i,adj})(x_{i,\max} - x_{i,adj}) + (x_{i,\min} - x_{i,adj})^2}{3}}$, when $\left|(x_{i,\max} - x_{i,adj})\right| = \left|(x_{i,\min} - x_{i,adj})\right|$, then $u(x_i) = \frac{\Delta x_i}{\sqrt{3}}$

Where $u(x_i) = \frac{\sigma}{\sqrt{n}}$ (See note 6 below), $\sigma = \sqrt{\frac{\sum_{i=1}^{n}(x_i - \bar{x})^2}{n-1}}$

| Performance Characteristics | Uncertainty (Units of final measurement) | Distribution | Divisor | TVOC 0 - 15 mgC/m³ |
|---|---|---|---|---|
| Lack of fit | $u_{lof}$ | Rectangular | $\sqrt{3}$ | 0.17 |
| Span drift | $u_{d,s}$ | | | 0.047 |
| Temperature dependant span drift | $u_{t}$ | | | 0.00 |
| Interferents | $u_{i}$ | | | 1.44 |
| Effect of Voltage Fluctuation (See Note) | $u_{v}$ | | | 0.043 |
| Effect of Oxygen Synergism (See Note) | $u_{syn}$ | | | 0.41 |

**EX3 - TVOC - Uncertainty of Measurement Results - Calculations Part 2**

| Performance Characteristics | Uncertainty (Units of final measurement) | Date & Time | TVOC 0 - 15 mgC/m³ |
|---|---|---|---|
| Losses / leakage in the sample system | $u_{loss}$ | 18/12/23 13:00 - 13:30 | 0.010 |
| Standard Error of Measured Value | $u_{SE}$ | 18/12/23 13:00 - 13:30 | 0.029 |

**Effect on Uncertainty Caused by Oxygen**

$$uCorr^{n}_{o_2} = \frac{20.9\% - O_{2,ref}}{(20.9\% - O_{2,measured})(20.9\% - O_{2,measured})} \text{ x Uncertainty of } O_2 \text{ Meas} =$$

1.00

$$f_{o_2} = \frac{20.9\% - O_{2,ref}}{20.9\% - O_{2,measured}} = \quad 1.0000$$

$$uf_{o_2} = \frac{uCorr^{n}_{o_2}}{f_{o_2}} x100 = \quad 0.00 \quad \%$$

**The effect of oxygen on the overall uncertainties (below) is incorporated using the following equation:-**

$$u_{combined} = \sqrt{\sum (uf_{o_2})^2 + (Uncertainty\ of\ Measurement\ of\ Determinand)^2}$$

Where oxygen or moisture correction is required, uncertainty based on the standard error of the measured peripheral value is converted to units of final measurement using a sensitivity coefficient C,

$\therefore u(x_i) = C_i u_i$ where $C_i = \frac{\partial f}{\partial x_i}$

**EX3 - TVOC - Uncertainty of Measurement Results - Calculations Part 3**

| Uncertainty | Date & Time | *TVOC 0 - 15 mgC/m³ |
|---|---|---|
| Measured Concentration | 18/12/23 13:00 - 13:30 | 1.59 |

**Combined Standard Uncertainty**

**Expanded uncertainty (at 95% confidence)** $U_{Exp} = 2 \times u_c$

1 Expressed as a percentage of the certified range
2 Expressed as a percentage of the certified range as maximum drift per 24hr period
3 Expressed as a percentage of the certified range
4 Expressed as a percentage of the applied span concentration
5 Expressed as a percentage of the certified range per one degree centigrade
6 Where the uncertainty of moisture is taken from the manual extract test calculations.
7 Expressed as a percentage of the certified range
8 Where no uncertainty is presented above, the uncertainty is > 100%

# TVOC Uncertainty of Measurement Results – Test 2

**EX3 - TVOC - Uncertainty of Measurement Results - Calculations Part 1**

| Performance Characteristics | Standard Uncertainty (% of Range) | Distribution | Divisor | Min Certified Range TVOC 0 - 15 mgC/m³ |
|---|---|---|---|---|
| Lack of fit(1) | $u_{lof}$ | Rectangular | $\sqrt{3}$ | 2.00 |
| Span drift(2) | $u_{d,s}$ | | | 0.54 |
| Losses / leakage in the sample system(4) | $u_{loss}$ | | | 0.64 |
| Temperature dependant span drift(5) | $u_{t}$ | | | 2.40 |
| Interferents(1) | $u_{i}$ | | | 16.67 |
| Effect of Voltage Fluctuation(7) | $u_{v}$ | | | 0.50 |
| Effect of Oxygen Synergism(7) | $u_{syn}$ | | | 4.73 |

**Notes:**

For rectangular distributions, $u(x_i) = \frac{u \times R_i}{\sqrt{3}}$

For $u(x_i) = \Delta x_i \sqrt{\frac{(x_{i,\max} - x_{i,adj})^2 + (x_{i,\min} - x_{i,adj})(x_{i,\max} - x_{i,adj}) + (x_{i,\min} - x_{i,adj})^2}{3}}$, when $\left|(x_{i,\max} - x_{i,adj})\right| = \left|(x_{i,\min} - x_{i,adj})\right|$, then $u(x_i) = \frac{\Delta x_i}{\sqrt{3}}$

Where $u(x_i) = \frac{\sigma}{\sqrt{n}}$ (See note 6 below), $\sigma = \sqrt{\frac{\sum_{i=1}^{n}(x_i - \bar{x})^2}{n-1}}$

| Performance Characteristics | Uncertainty (Units of final measurement) | Distribution | Divisor | TVOC 0 - 15 mgC/m³ |
|---|---|---|---|---|
| Lack of fit | $u_{lof}$ | Rectangular | $\sqrt{3}$ | 0.17 |
| Span drift | $u_{d,s}$ | | | 0.047 |
| Temperature dependant span drift | $u_{t}$ | | | 0.00 |
| Interferents | $u_{i}$ | | | 1.44 |
| Effect of Voltage Fluctuation (See Note) | $u_{v}$ | | | 0.043 |
| Effect of Oxygen Synergism (See Note) | $u_{syn}$ | | | 0.41 |

**EX3 - TVOC - Uncertainty of Measurement Results - Calculations Part 2**

| Performance Characteristics | Uncertainty (Units of final measurement) | Date & Time | TVOC 0 - 15 mgC/m³ |
|---|---|---|---|
| Losses / leakage in the sample system | $u_{loss}$ | 18/12/23 13:45 - 14:15 | 0.007 |
| Standard Error of Measured Value | $u_{SE}$ | 18/12/23 13:45 - 14:15 | 0.017 |

**Effect on Uncertainty Caused by Oxygen**

$$uCorr^{n}_{o_2} = \frac{20.9\% - O_{2,ref}}{(20.9\% - O_{2,measured})(20.9\% - O_{2,measured})} \text{ x Uncertainty of } O_2 \text{ Meas} =$$

1.00

$$f_{o_2} = \frac{20.9\% - O_{2,ref}}{20.9\% - O_{2,measured}} = \quad 1.0000$$

$$uf_{o_2} = \frac{uCorr^{n}_{o_2}}{f_{o_2}} x100 = \quad 0.00 \quad \%$$

**The effect of oxygen on the overall uncertainties (below) is incorporated using the following equation:-**

$$u_{combined} = \sqrt{\sum (uf_{o_2})^2 + (Uncertainty\ of\ Measurement\ of\ Determinand)^2}$$

Where oxygen or moisture correction is required, uncertainty based on the standard error of the measured peripheral value is converted to units of final measurement using a sensitivity coefficient C,

$\therefore u(x_i) = C_i u_i$ where $C_i = \frac{\partial f}{\partial x_i}$

**EX3 - TVOC - Uncertainty of Measurement Results - Calculations Part 3**

| Uncertainty | Date & Time | *TVOC 0 - 15 mgC/m³ |
|---|---|---|
| Measured Concentration | 18/12/23 13:45 - 14:15 | 1.08 |

**Combined Standard Uncertainty**

**Expanded uncertainty (at 95% confidence)** $U_{Exp} = 2 \times u_c$

1 Expressed as a percentage of the certified range
2 Expressed as a percentage of the certified range as maximum drift per 24hr period
3 Expressed as a percentage of the certified range
4 Expressed as a percentage of the applied span concentration
5 Expressed as a percentage of the certified range per one degree centigrade
6 Where the uncertainty of moisture is taken from the manual extract test calculations.
7 Expressed as a percentage of the certified range
8 Where no uncertainty is presented above, the uncertainty is > 100%

| | | | | |
|---|---|---|---|---|
| Adler Pelzer Group | | | Installation Name | : Spraybooths |
| Permit No | : PPC 92935 | | Visit Details | : Compliance - November 2023 |
| Variation No | : V1 | | Survey Dates | : 9th – 10th November 2023, 18th December 2023 & 22nd January 2024 |
| Report Ref | : P5617 | : R001 | Report Issue Date | : 8th February 2024 |

# TVOC Uncertainty of Measurement Results – Test 3

**EX 3 - Spraybooth No.3 - TVOC - Uncertainty of Measurement Results - Calculations Part 1**

| Performance Characteristics | Standard Uncertainty (% of Range) | Distribution | Divisor | Min Certified Range TVOC 0 - 15 mgC/m³ |
|---|---|---|---|---|
| Lack of fit(1) | $u_{lof}$ | Rectangular | $\sqrt{3}$ | 2.00 |
| Span drift(2) | $u_{d,s}$ | | | 0.54 |
| Losses / leakage in the sample system(4) | $u_{loss}$ | | | 0.64 |
| Temperature dependant span drift(5) | $u_t$ | | | 2.40 |
| Interferents(1) | $u_i$ | | | 16.67 |
| Effect of Voltage Fluctuation(7) | $u_v$ | | | 0.50 |
| Effect of Oxygen Synergism(7) | $u_{syn}$ | | | 4.73 |

**Notes:**

For rectangular distributions, $u(x_i) = \frac{u \times R_i}{\sqrt{3}}$

For $u(x_i) = \Delta x_i \sqrt{\frac{(x_{i,\max} - x_{i,adj})^2 + (x_{i,\min} - x_{i,adj})(x_{i,\max} - x_{i,adj}) + (x_{i,\min} - x_{i,adj})^2}{3}}$, when $\left|(x_{i,\max} - x_{i,adj})\right| = \left|(x_{i,\min} - x_{i,adj})\right|$, then $u(x_i) = \frac{\Delta x_i}{\sqrt{3}}$

Where $u(x_i) = \frac{\sigma}{\sqrt{n}}$ (See note 6 below), $\sigma = \sqrt{\frac{\sum_{i=1}^{n}(x_i - \bar{x})^2}{n-1}}$

| Performance Characteristics | Uncertainty (Units of final measurement) | Distribution | Divisor | TVOC 0 - 15 mgC/m³ |
|---|---|---|---|---|
| Lack of fit | $u_{lof}$ | Rectangular | $\sqrt{3}$ | 0.17 |
| Span drift | $u_{d,s}$ | | | 0.047 |
| Temperature dependant span drift | $u_t$ | | | 0.00 |
| Interferents | $u_i$ | | | 1.44 |
| Effect of Voltage Fluctuation (See Note) | $u_v$ | | | 0.043 |
| Effect of Oxygen Synergism (See Note) | $u_{syn}$ | | | 0.41 |

**EX 3 - Spraybooth No.3 - TVOC - Uncertainty of Measurement Results - Calculations Part 2**

| Performance Characteristics | Uncertainty (Units of final measurement) | Date & Time | TVOC 0 - 15 mgC/m³ |
|---|---|---|---|
| Losses / leakage in the sample system | $u_{loss}$ | 18/12/23 14:30 - 15:00 | 0.005 |
| Standard Error of Measured Value | $u_{SE}$ | 18/12/23 14:30 - 15:00 | 0.012 |

**Effect on Uncertainty Caused by Oxygen**

$$uCorr^{n}_{o_2} = \frac{20.9\% - O_{2,ref}}{(20.9\% - O_{2,measured})(20.9\% - O_{2,measured})} \text{ x Uncertainty of } O_2 \text{ Meas} = 1.00$$

$$f_{o_2} = \frac{20.9\% - O_{2,ref}}{20.9\% - O_{2,measured}} = 1.0000$$

$$uf_{o_2} = \frac{uCorr^{n}_{o_2}}{f_{o_2}} x100 = 0.00 \%$$

**The effect of oxygen on the overall uncertainties (below) is incorporated using the following equation:-**

$$u_{combined} = \sqrt{\sum (uf_{o_2})^2 + (Uncertainty\ of\ Measurement\ of\ Determinand)^2}$$

Where oxygen or moisture correction is required, uncertainty based on the standard error of the measured peripheral value is converted to units of final measurement using a sensitivity coefficient C,

$\therefore u(x_i) = C_i u_i$ where $C_i = \frac{\partial f}{\partial x_i}$

**EX 3 - Spraybooth No.3 - TVOC - Uncertainty of Measurement Results - Calculations Part 3**

| Uncertainty | Date & Time | *TVOC 0 - 15 mgC/m³ |
|---|---|---|
| Measured Concentration | 18/12/23 14:30 - 15:00 | 0.82 |

**Combined Standard Uncertainty**

**Expanded uncertainty (at 95% confidence)** $U_{Exp} = 2 \times u_c$

1 Expressed as a percentage of the certified range
2 Expressed as a percentage of the certified range as maximum drift per 24hr period
3 Expressed as a percentage of the certified range
4 Expressed as a percentage of the applied span concentration
5 Expressed as a percentage of the certified range per one degree centigrade
6 Where the uncertainty of moisture is taken from the manual extract test calculations.
7 Expressed as a percentage of the certified range
8 Where no uncertainty is presented above, the uncertainty is > 100%

| | | | | |
|---|---|---|---|---|
| Adler Pelzer Group | | | Installation Name | : Spraybooths |
| Permit No | : PPC 92935 | | Visit Details | : Compliance - November 2023 |
| Variation No | : V1 | | Survey Dates | : 9th – 10th November 2023, 18th December 2023 & 22nd January 2024 |
| Report Ref | : P5617 | : R001 | Report Issue Date | : 8th February 2024 |

# Particulates Uncertainty – EX 1

**Site: Adler Pelzer Group, Cab Automotive Ltd**
**Location: Tipton , Stack ID: EX 1 - Spraybooth (Mini) No.2**

$$u_{mass} = \sqrt{\sum (u_{filter})^2 + (u_{solution})^2}$$

| Determinand | Filter mg | Solution mg | Recovered Mass mg | LAB Method Uncert ( % ) K= 2 Filter mg | LAB Method Uncert ( % ) K= 2 Solution mg | Standard Uncertainty Filter mg | Standard Uncertainty Solution mg | Combined Uncertainty mg |
|---|---|---|---|---|---|---|---|---|
| | | | TPM | | | | | |
| Particulates | 0.0400 | 0.50 | 0.54 | 0.10 | 0.50 | 0.0500 | 0.25 | 0.25 |

| | TPM | | | Standard Uncertainty @ 95% | |
|---|---|---|---|---|---|
| Sampled Volume ($V_m$) | 0.78 | $m^3$ | $uV_m$ | 0.001 | $m^3$ |
| Meter Correction Factor (Yd) | 0.97 | ... | | ... | ... |
| Meter Temperature ($T_m$) | 293.65 | k | $uT_m$ | 1.5 | k |
| Static Pressure of Stack $P_{static}$ | 1.11 | $mmH_2O$ | $uP_{static}$ | 0.25 | $mmH_2O$ |
| Absolute Stack Pressure $\rho_s$ | 745.56 | mmHg | $up_s$ | 0.8 | mmHg |
| Barometric Pressure $\rho_b$ | 745.75 | mmHg | $up_b$ | 3.8 | mmHg |
| Average Differential Pressure ($\Delta P$) + $\rho S$ | 100.24 | $mmH_2O$ | $u\Delta H$ | 0.25 | $mmH_2O$ |
| Oxygen content ($O_{2,m}$) | 20.90 | % by volume | $uO_{2,m} = \sigma/\sqrt{n}$ | 0.00 | % by volume |
| Moisture Content ($H_2O$) | 0.0991 | % by volume | $uH_2O$ | 0.22 | % by volume |

Note: In the following calculations, the sensitivity coefficient (C) is estimated using: $C_i = \frac{\partial f}{\partial x_i}$

For each factor, uncertainty is then calculated by $C_i u_i$ where $C$ is the sensitivity coefficient, $u$ is the standard uncertainty and $i$ is the index identifying the contributing factor e.g. $i$ = $uV_m$, $uT_m$ etc.

Where results are required at wet conditions, the following correction factor is used to convert the data from the dry gas meter:

$$f_{s,wet} = \frac{100}{(100 - H_2O)} = 1.00$$

Uncertainty in correction factor to STP due to measured barometric pressure uncertainty component ($u\rho b$), measured static pressure uncertainty component (uPstatic) & measured temperature of dry gas uncertainty component ($uT_m$)

$$f_s = \frac{273}{760} \times \frac{P_b + \frac{\Delta H}{13.6}}{T_m} \times Y_d = 0.892$$

| | Maximum | Minimum | Sensitivity | ufstp |
|---|---|---|---|---|
| $u\Delta H$ | 0.46 | 0.46 | 0.0000451 | 0.0000113 |
| $up_b$ | 0.46 | 0.46 | 0.000614 | 0.00230 |
| $uT_m$ | 0.46 | 0.46 | 0.000816 | 0.00122 |
| $H_2O$ | 0.46 | 0.46 | 0.00463 | 0.00102 |

$$\frac{uf_s}{f_s} = \sqrt{\left(\frac{\sqrt{(u\Delta H)^2 + (uP_s)^2}}{(P_m/101.3)}\right)^2 + \left(\frac{uT_m}{(T_m/273.15)}\right)^2 + \left(\frac{uH_2O}{100/(100 - H_2O)}\right)^2} = 0.00248$$

Uncertainty in volume @ STP due to volume correction factor uncertainty component (uVstd) & volume uncertainty component (uVm)

$$V_{std} = V_{measured} \times f_s = 0.6939$$

| | Maximum $m^3$ | Minimum $m^3$ | Sensitivity | Standard Uncertainty ($m^3$) |
|---|---|---|---|---|
| Effect of $uV_{std}$ | 0.70 | 0.69 | 0.78 | 0.00193 |
| Effect of $uV_m$ | 0.69 | 0.69 | 0.89 | 0.000892 |

$$\frac{uV_{std}}{V_{std}} = \sqrt{\left(\frac{uV_{std}}{f_s}\right)^2 + \left(\frac{uV_m}{V_m}\right)^2} = 0.00170$$

Uncertainty of correction factor to reference oxygen due to measured oxygen uncertainty component ($uf_{O2}$) & Uncertainty in final measurement @ reference conditions due to uncertainty component arrising from leak and/or loss (assumed 2% max) in the sample system (uL)

$$f_{o_2} = \frac{20.9\% - O_{2,ref}}{20.9\% - O_{2,measured}} = 1.00$$

$$uCorr^n{}_{o_2} = \frac{20.9\% - O_{2,ref}}{(20.9\% - O_{2,measured}) x (20.9\% - O_{2,measured})} x Uncertainty\ of\ O_2\ Measurement = 1.00$$

$$uf_{o_2} = \frac{uCorr^n{}_{o_2}}{f_{o_2}} x100 = 0.00$$

Uncertainty in final measurement @ reference conditions due to mass uncertainty component (uM), oxygen correction uncertainty component ($uf_{O2}$) and STP volume uncertainty component (uVstp)

$$Conc = \frac{M_{Recovered}}{V_m \times f_s \times f_{O_2}} = 0.78$$

| | Maximum mg/Nm³ | Minimum mg/Nm³ | Sensitivity | u mg/Nm³ |
|---|---|---|---|---|
| $uM$ | 1.15 | 0.41 | 1.44 | 0.37 |
| $uV_{stp}$ | 0.78 | 0.78 | 1.12 | 0.00191 |

Measurement Uncertainty of Determinand (excluding correction for oxygen)

$$u_{combined} = \sqrt{\sum (u_M)^2 + (u_L)^2 + (uV_{stp})^2}$$

| Combined Uncertainty mg/Nm³ | Expanded Uncertainty mg/Nm³ | Measured Concentration mg/Nm³ | Percent of Measured Concentration | Uncertainty as Percent of ELV |
|---|---|---|---|---|
| 0.37 | 0.73 | 0.78 | 94.4% | 1.5% |

Measurement Uncertainty of Determinand (including correction for oxygen)
Particulate concentration < Blank! Uncertainty will be reported @ > 100%!

$$u_{combined} = \sqrt{\sum (uf_{o_2})^2 + (Uncertainty\ of\ Measurement\ of\ Determinand)^2}$$

| Determinand | Measurement Uncertainty of Determinand | Measurement Uncertainty of Oxygen Corr$^n$ Factor | Overall Measurement Uncertainty inc $O_2$ Corr$^n$ factor (*Ucombined*) % |
|---|---|---|---|
| Particulates | 94.4 | 0.0 | 94.4 |

| | | | | |
|---|---|---|---|---|
| Adler Pelzer Group | | | Installation Name | : Spraybooths |
| Permit No | : PPC 92935 | | Visit Details | : Compliance - November 2023 |
| Variation No | : V1 | | Survey Dates | : 9th – 10th November 2023, 18th December 2023 & 22nd January 2024 |
| Report Ref | : P5617 | : R001 | Report Issue Date | : 8th February 2024 |

# Particulates Uncertainty – EX 2

**Site: Adler Plezer Group, Cab Automotive Ltd**
**Location: Tipton , Stack ID: EX 2 - Spraybooth (Mini) No.1**

$$u_{mass} = \sqrt{\sum (u_{filter})^2 + (u_{solution})^2}$$

| Determinand | Filter mg | Solution mg | Recovered Mass mg | LAB Method Uncert ( % ) K= 2 Filter mg | LAB Method Uncert ( % ) K= 2 Solution mg | Standard Uncertainty Filter mg | Standard Uncertainty Solution mg | Combined Uncertainty mg |
|---|---|---|---|---|---|---|---|---|
| | | | TPM | | | | | |
| Particulates | 0.34 | 0.50 | 0.84 | 0.10 | 0.50 | 0.0500 | 0.25 | 0.25 |

| | TPM | | | | |
|---|---|---|---|---|---|
| | | | Standard Uncertainty @ 95% | | |
| Sampled Volume ($V_m$) | 0.56 | $m^3$ | $uV_m$ | 0.001 | $m^3$ |
| Meter Correction Factor (Yd) | 0.98 | ... | | ... | ... |
| Meter Temperature ($T_m$) | 296.15 | k | $uT_m$ | 1.5 | k |
| Static Pressure of Stack $P_{static}$ | 1.07 | $mmH_2O$ | $uP_{static}$ | 0.25 | $mmH_2O$ |
| Absolute Stack Pressure $\rho_s$ | 745.56 | mmHg | $up_s$ | 0.8 | mmHg |
| Barometric Pressure $\rho_b$ | 745.75 | mmHg | $up_b$ | 3.8 | mmHg |
| Average Differential Pressure (ΔP) + ρS | 100.24 | $mmH_2O$ | uΔH | 0.25 | $mmH_2O$ |
| Oxygen content ($O_{2,m}$) | 20.90 | % by volume | $uO_{2,m} = \sigma/\sqrt{n}$ | 0.00 | % by volume |
| Moisture Content ($H_2O$) | 0.10 | % by volume | $uH_2O$ | 0.30 | % by volume |

Note: In the following calculations, the sensitivity coefficient (C) is estimated using: $C_i = \frac{\partial f}{\partial x_i}$

For each factor, uncertainty is then calculated by $C_i u_i$ where $C$ is the sensitivity coefficient, $u$ is the standard uncertainty and $i$ is the index identifying the contributing factor e.g. $i$ = $uV_m$, $uT_m$ etc.

Where results are required at wet conditions, the following correction factor is used to convert the data from the dry gas meter:

$$f_{s,wet} = \frac{100}{(100 - H_2O)} = 1.00$$

Uncertainty in correction factor to STP due to measured barometric pressure uncertainty component (upb), measured static pressure uncertainty component (uPstatic) & measured temperature of dry gas uncertainty component ($uT_m$)

$$f_s = \frac{273}{760} \times \frac{P_b + \frac{\Delta H}{13.6}}{T_m} \times Y_d = 0.893$$

| | Maximum | Minimum | Sensitivity | ufstp |
|---|---|---|---|---|
| uΔH | 0.46 | 0.46 | 0.0000454 | 0.0000113 |
| $up_b$ | 0.47 | 0.46 | 0.000617 | 0.00231 |
| $uT_m$ | 0.47 | 0.46 | 0.000816 | 0.00122 |
| $H_2O$ | 0.47 | 0.46 | 0.00465 | 0.00142 |

$$\frac{uf_s}{f_s} = \sqrt{\left(\frac{\sqrt{(u\Delta H)^2 + (uP_s)^2}}{(P_m/101.3)}\right)^2 + \left(\frac{uT_m}{(T_m/273.15)}\right)^2 + \left(\frac{uH_2O}{100/(100-H_2O)}\right)^2} = 0.00264$$

Uncertainty in volume @ STP due to volume correction factor uncertainty component (uVstd) & volume uncertainty component (uVm)

$$V_{std} = V_{measured} \times f_s = 0.5037$$

| | Maximum $m^3$ | Minimum $m^3$ | Sensitivity | Standard Uncertainty ($m^3$) |
|---|---|---|---|---|
| Effect of $uV_{std}$ | 0.51 | 0.50 | 0.56 | 0.00149 |
| Effect of $uV_m$ | 0.50 | 0.50 | 0.89 | 0.000893 |

$$\frac{uV_{std}}{V_{std}} = \sqrt{\left(\frac{uV_{std}}{f_s}\right)^2 + \left(\frac{uV_m}{V_m}\right)^2} = 0.00116$$

Uncertainty of correction factor to reference oxygen due to measured oxygen uncertainty component ($uf_{O2}$) & Uncertainty in final measurement @ reference conditions due to uncertainty component arrising from leak and/or loss (assumed 2% max) in the sample system (uL)

$$f_{O_2} = \frac{20.9\% - O_{2,ref}}{20.9\% - O_{2,measured}} = 1.00$$

$$uCorr^n_{O_2} = \frac{20.9\% - O_{2,ref}}{(20.9\% - O_{2,measured}) x (20.9\% - O_{2,measured})} x Uncertainty\ of\ O_2\ Measurement = 1.00$$

$$uf_{O_2} = \frac{uCorr^n_{O_2}}{f_{O_2}} x 100 = 0.00$$

Uncertainty in final measurement @ reference conditions due to mass uncertainty component (uM), oxygen correction uncertainty component ($uf_{Oxy}$) and STP volume uncertainty component (uVstp)

$$Conc = \frac{M_{Recovered}}{V_m \times f_s \times f_{O_2}} = 1.67$$

| | Maximum mg/Nm³ | Minimum mg/Nm³ | Sensitivity | u mg/Nm³ |
|---|---|---|---|---|
| uM | 2.17 | 1.16 | 1.99 | 0.51 |
| $uV_{stp}$ | 1.67 | 1.66 | 3.31 | 0.00384 |

Measurement Uncertainty of Determinand (excluding correction for oxygen)

$$u_{combined} = \sqrt{\sum (u_M)^2 + (u_L)^2 + (uV_{stp})^2}$$

| Combined Uncertainty mg/Nm³ | Expanded Uncertainty mg/Nm³ | Measured Concentration mg/Nm³ | Percent of Measured Concentration | Uncertainty as Percent of ELV |
|---|---|---|---|---|
| 0.51 | 1.01 | 1.67 | 60.7% | 2.0% |

Measurement Uncertainty of Determinand (including correction for oxygen)
Particulate concentration < Blank! Uncertainty will be reported @ > 100%!

$$u_{combined} = \sqrt{\sum (uf_{O_2})^2 + (Uncertainty\ of\ Measurement\ of\ Determinand)^2}$$

| Determinand | Measurement Uncertainty of Determinand | Measurement Uncertainty of Oxygen Corrⁿ Factor | Overall Measurement Uncertainty inc $O_2$ Corrⁿ factor (*Ucombined*) % |
|---|---|---|---|
| Particulates | 60.7 | 0.0 | 60.7 |

| | | | | |
|---|---|---|---|---|
| Adler Pelzer Group | | | Installation Name | : Spraybooths |
| Permit No | : PPC 92935 | | Visit Details | : Compliance - November 2023 |
| Variation No | : V1 | | Survey Dates | : 9th – 10th November 2023, 18th December 2023 & 22nd January 2024 |
| Report Ref | : P5617 | : R001 | Report Issue Date | : 8th February 2024 |

# Particulates Uncertainty – EX 4

**Site: Adler Pelzer Group, Cab Automotive Ltd**
**Location: Tipton , Stack ID: EX 4 - Spraybooth (McLaren) No.8**

$$u_{mass} = \sqrt{\sum (u_{filter})^2 + (u_{solution})^2}$$

| Determinand | Filter mg | Solution mg | Recovered Mass mg | LAB Method Uncert ( % ) K= 2 Filter mg | LAB Method Uncert ( % ) K= 2 Solution mg | Standard Uncertainty Filter mg | Standard Uncertainty Solution mg | Combined Uncertainty mg |
|---|---|---|---|---|---|---|---|---|
| | | | TPM | | | | | |
| Particulates | 0.30 | 0.50 | 0.80 | 0.10 | 0.50 | 0.0500 | 0.25 | 0.25 |

| | TPM | | | Standard Uncertainty @ 95% | |
|---|---|---|---|---|---|
| Sampled Volume ($V_m$) | 0.68 | $m^3$ | $uV_m$ | 0.001 | $m^3$ |
| Meter Correction Factor (Yd) | 0.98 | ... | | ... | ... |
| Meter Temperature ($T_m$) | 296.65 | k | $uT_m$ | 1.5 | k |
| Static Pressure of Stack $P_{static}$ | 8.48 | $mmH_2O$ | $uP_{static}$ | 0.25 | $mmH_2O$ |
| Absolute Stack Pressure $\rho_s$ | 745.56 | mmHg | $up_s$ | 0.8 | mmHg |
| Barometric Pressure $\rho_b$ | 745.75 | mmHg | $up_b$ | 3.8 | mmHg |
| Average Differential Pressure ($\Delta P$) + $\rho S$ | 99.96 | $mmH_2O$ | $u\Delta H$ | 0.25 | $mmH_2O$ |
| Oxygen content ($O_{2,m}$) | 20.90 | % by volume | $uO_{2,m} = \sigma/\sqrt{n}$ | 0.00 | % by volume |
| Moisture Content ($H_2O$) | 0.10 | % by volume | $uH_2O$ | 0.25 | % by volume |

Note: In the following calculations, the sensitivity coefficient (C) is estimated using: $C_i = \frac{\partial f}{\partial x_i}$

For each factor, uncertainty is then calculated by $C_i u_i$ where $C$ is the sensitivity coefficient, $u$ is the standard uncertainty and $i$ is the index identifying the contributing factor e.g. $i$ = $uV_m$, $uT_m$ etc.

Where results are required at wet conditions, the following correction factor is used to convert the data from the dry gas meter:

$$f_{s,wet} = \frac{100}{(100 - H_2O)} = 1.00$$

Uncertainty in correction factor to STP due to measured barometric pressure uncertainty component ($up_b$), measured static pressure uncertainty component ($uP_{static}$) & measured temperature of dry gas uncertainty component ($uT_m$)

$$f_s = \frac{273}{760} \times \frac{P_b + \frac{\Delta H}{13.6}}{T_m} \times Y_d = 0.891$$

| | Maximum | Minimum | Sensitivity | ufstp |
|---|---|---|---|---|
| $u\Delta H$ | 0.46 | 0.46 | 0.0000453 | 0.0000113 |
| $up_b$ | 0.47 | 0.46 | 0.000616 | 0.00231 |
| $uT_m$ | 0.47 | 0.46 | 0.000815 | 0.00122 |
| $H_2O$ | 0.47 | 0.46 | 0.00465 | 0.00117 |

$$\frac{uf_s}{f_s} = \sqrt{\left(\frac{\sqrt{(u\Delta H)^2 + (uP_s)^2}}{(P_m/101.3)}\right)^2 + \left(\frac{uT_m}{(T_m/273.15)}\right)^2 + \left(\frac{uH_2O}{100/(100 - H_2O)}\right)^2} = 0.00254$$

Uncertainty in volume @ STP due to volume correction factor uncertainty component (uVstd) & volume uncertainty component (uVm)

$$V_{std} = V_{measured} \times f_s = 0.6098$$

| | Maximum $m^3$ | Minimum $m^3$ | Sensitivity | Standard Uncertainty ($m^3$) |
|---|---|---|---|---|
| Effect of $uV_{std}$ | 0.61 | 0.61 | 0.68 | 0.00174 |
| Effect of $uV_m$ | 0.61 | 0.61 | 0.89 | 0.000891 |

$$\frac{uV_{std}}{V_{std}} = \sqrt{\left(\frac{uV_{std}}{f_s}\right)^2 + \left(\frac{uV_m}{V_m}\right)^2} = 0.00143$$

Uncertainty of correction factor to reference oxygen due to measured oxygen uncertainty component ($uf_{O2}$) & Uncertainty in final measurement @ reference conditions due to uncertainty component arrising from leak and/or loss (assumed 2% max) in the sample system (uL)

$$f_{o_2} = \frac{20.9\% - O_{2,ref}}{20.9\% - O_{2,measured}} = 1.00$$

$$uCorr^n_{o_2} = \frac{20.9\% - O_{2,ref}}{(20.9\% - O_{2,measured}) x (20.9\% - O_{2,measured})} x Uncertainty\ of\ O_2\ Measurement = 1.00$$

$$uf_{o_2} = \frac{uCorr^n_{o_2}}{f_{o_2}} x100 = 0.00$$

Uncertainty in final measurement @ reference conditions due to mass uncertainty component (uM), oxygen correction uncertainty component ($uf_{O2}$) and STP volume uncertainty component (uVstp)

$$Conc = \frac{M_{Recovered}}{V_m \times f_s \times f_{O_2}} = 1.31$$

| | Maximum mg/Nm³ | Minimum mg/Nm³ | Sensitivity | u mg/Nm³ |
|---|---|---|---|---|
| $uM$ | 1.73 | 0.89 | 1.64 | 0.42 |
| $uV_{stp}$ | 1.32 | 1.31 | 2.15 | 0.00308 |

Measurement Uncertainty of Determinand (excluding correction for oxygen)

$$u_{combined} = \sqrt{\sum (u_M)^2 + (u_L)^2 + (uV_{stp})^2}$$

| Combined Uncertainty mg/Nm³ | Expanded Uncertainty mg/Nm³ | Measured Concentration mg/Nm³ | Percent of Measured Concentration | Uncertainty as Percent of ELV |
|---|---|---|---|---|
| 0.42 | 0.84 | 1.31 | 63.7% | 1.7% |

Measurement Uncertainty of Determinand (including correction for oxygen)
Particulate concentration < Blank! Uncertainty will be reported @ > 100%!

$$u_{combined} = \sqrt{\sum (uf_{o_2})^2 + (Uncertainty\ of\ Measurement\ of\ Determinand)^2}$$

| Determinand | Measurement Uncertainty of Determinand | Measurement Uncertainty of Oxygen Corr$^n$ Factor | Overall Measurement Uncertainty inc $O_2$ Corr$^n$ factor (*Ucombined*) % |
|---|---|---|---|
| Particulates | 63.7 | 0.0 | 63.7 |

| | | | |
|---|---|---|---|
| Adler Pelzer Group | | Installation Name | : Spraybooths |
| Permit No | : PPC 92935 | Visit Details | : Compliance - November 2023 |
| Variation No | : V1 | Survey Dates | : 9th – 10th November 2023, 18th December 2023 & 22nd January 2024 |
| Report Ref | : P5617 : R001 | Report Issue Date | : 8th February 2024 |

# Particulates Uncertainty – EX 5

Site: Adler Pelzer Group, Cab Automotive Ltd
Location: Tipton , Stack ID: EX 5 Spraybooth (McLaren) No.9

$$u_{mass} = \sqrt{\sum (u_{filter})^2 + (u_{solution})^2}$$

| Determinand | Filter mg | Solution mg | Recovered Mass mg | LAB Method Uncert ( % ) K= 2 Filter mg | LAB Method Uncert ( % ) K= 2 Solution mg | Standard Uncertainty Filter mg | Standard Uncertainty Solution mg | Combined Uncertainty mg |
|---|---|---|---|---|---|---|---|---|
| | | | TPM | | | | | |
| Particulates | 0.62 | 0.50 | 1.12 | 0.10 | 0.50 | 0.0500 | 0.25 | 0.25 |

| | TPM | | | Standard Uncertainty @ 95% | |
|---|---|---|---|---|---|
| Sampled Volume ($V_m$) | 0.67 | $m^3$ | $uV_m$ | 0.001 | $m^3$ |
| Meter Correction Factor (Yd) | 0.97 | ... | | ... | ... |
| Meter Temperature ($T_m$) | 295.28 | k | $uT_m$ | 1.5 | k |
| Static Pressure of Stack $P_{static}$ | 5.66 | $mmH_2O$ | $uP_{static}$ | 0.25 | $mmH_2O$ |
| Absolute Stack Pressure $\rho_s$ | 745.56 | mmHg | $up_s$ | 0.8 | mmHg |
| Barometric Pressure $\rho_b$ | 745.75 | mmHg | $up_b$ | 3.8 | mmHg |
| Average Differential Pressure (ΔP) + ρS | 99.73 | $mmH_2O$ | uΔH | 0.25 | $mmH_2O$ |
| Oxygen content ($O_{2,m}$) | 20.90 | % by volume | $uO_{2,m} = \sigma/\sqrt{n}$ | 0.00 | % by volume |
| Moisture Content ($H_2O$) | 0.10 | % by volume | $uH_2O$ | 0.26 | % by volume |

Note: In the following calculations, the sensitivity coefficient (C) is estimated using: $C_i = \frac{\partial f}{\partial x_i}$

For each factor, uncertainty is then calculated by $C_i u_i$ where $C$ is the sensitivity coefficient, $u$ is the standard uncertainty and $i$ is the index identifying the contributing factor e.g. $i$ = $uV_m$, $uT_m$ etc.

Where results are required at wet conditions, the following correction factor is used to convert the data from the dry gas meter:

$$f_{s,wet} = \frac{100}{(100 - H_2O)} = 1.00$$

Uncertainty in correction factor to STP due to measured barometric pressure uncertainty component (upb), measured static pressure uncertainty component (uPstatic) & measured temperature of dry gas uncertainty component ($uT_m$)

$$f_s = \frac{273}{760} \times \frac{P_b + \frac{\Delta H}{13.6}}{T_m} \times Y_d = 0.887$$

| | Maximum | Minimum | Sensitivity | ufstp |
|---|---|---|---|---|
| uΔH | 0.46 | 0.46 | 0.0000450 | 0.0000113 |
| $up_b$ | 0.46 | 0.46 | 0.000612 | 0.00230 |
| $uT_m$ | 0.46 | 0.46 | 0.000811 | 0.00122 |
| $H_2O$ | 0.46 | 0.46 | 0.00461 | 0.00118 |

$$\frac{uf_s}{f_s} = \sqrt{\left(\frac{\sqrt{(u\Delta H)^2 + (uP_s)^2}}{(P_m/101.3)}\right)^2 + \left(\frac{uT_m}{(T_m/273.15)}\right)^2 + \left(\frac{uH_2O}{100/(100 - H_2O)}\right)^2} = 0.00252$$

Uncertainty in volume @ STP due to volume correction factor uncertainty component (uVstd) & volume uncertainty component (uVm)

$$V_{std} = V_{measured} \times f_s = 0.5970$$

| | Maximum $m^3$ | Minimum $m^3$ | Sensitivity | Standard Uncertainty ($m^3$) |
|---|---|---|---|---|
| Effect of $uV_{std}$ | 0.60 | 0.60 | 0.67 | 0.00170 |
| Effect of $uV_m$ | 0.60 | 0.60 | 0.89 | 0.000887 |

$$\frac{uV_{std}}{V_{std}} = \sqrt{\left(\frac{uV_{std}}{f_s}\right)^2 + \left(\frac{uV_m}{V_m}\right)^2} = 0.00139$$

Uncertainty of correction factor to reference oxygen due to measured oxygen uncertainty component ($uf_{O2}$) & Uncertainty in final measurement @ reference conditions due to uncertainty component arrising from leak and/or loss (assumed 2% max) in the sample system (uL)

$$f_{o_2} = \frac{20.9\% - O_{2,ref}}{20.9\% - O_{2,measured}} = 1.00$$

$$uCorr^n{}_{o_2} = \frac{20.9\% - O_{2,ref}}{(20.9\% - O_{2,measured}) x (20.9\% - O_{2,measured})} x Uncertainty\ of\ O_2\ Measurement = 1.00$$

$$uf_{o_2} = \frac{uCorr^n{}_{o_2}}{f_{o_2}} x100 = 0.00$$

Uncertainty in final measurement @ reference conditions due to mass uncertainty component (uM), oxygen correction uncertainty component ($uf_{O2}$) and STP volume uncertainty component (uVstp)

$$Conc = \frac{M_{Recovered}}{V_m \times f_s \times f_{O_2}} = 1.88$$

| | Maximum mg/Nm³ | Minimum mg/Nm³ | Sensitivity | u mg/Nm³ |
|---|---|---|---|---|
| uM | 2.30 | 1.45 | 1.68 | 0.43 |
| $uV_{stp}$ | 1.88 | 1.87 | 3.14 | 0.00436 |

Measurement Uncertainty of Determinand (excluding correction for oxygen)

$$u_{combined} = \sqrt{\sum (u_M)^2 + (u_L)^2 + (uV_{stp})^2}$$

| Combined Uncertainty mg/Nm³ | Expanded Uncertainty mg/Nm³ | Measured Concentration mg/Nm³ | Percent of Measured Concentration | Uncertainty as Percent of ELV |
|---|---|---|---|---|
| 0.43 | 0.85 | 1.88 | 45.5% | 1.7% |

Measurement Uncertainty of Determinand (including correction for oxygen)

$$u_{combined} = \sqrt{\sum (uf_{o_2})^2 + (Uncertainty\ of\ Measurement\ of\ Determinand)^2}$$

| Determinand | Measurement Uncertainty of Determinand | Measurement Uncertainty of Oxygen Corr$^n$ Factor | Overall Measurement Uncertainty inc $O_2$ Corr$^n$ factor (*Ucombined*) % |
|---|---|---|---|
| Particulates | 45.5 | 0.0 | 45.5 |

| | | | | |
|---|---|---|---|---|
| Adler Pelzer Group | | | Installation Name | : Spraybooths |
| Permit No | : PPC 92935 | | Visit Details | : Compliance - November 2023 |
| Variation No | : V1 | | Survey Dates | : 9th – 10th November 2023, 18th December 2023 & 22nd January 2024 |
| Report Ref | : P5617 | : R001 | Report Issue Date | : 8th February 2024 |

# Particulates Uncertainty – SB5

**Site: Adler Pelzer Group , Cab Automotive Ltd**
**Location: Tipton , Stack ID: SB5 Bentley**

$$u_{mass} = \sqrt{\sum (u_{filter})^2 + (u_{solution})^2}$$

| Determinand | Filter mg | Solution mg | Recovered Mass mg | LAB Method Uncert ( % ) K=2 Filter mg | LAB Method Uncert ( % ) K=2 Solution mg | Standard Uncertainty Filter mg | Standard Uncertainty Solution mg | Combined Uncertainty mg |
|---|---|---|---|---|---|---|---|---|
| | | | TPM | | | | | |
| Particulates | 0.0400 | 0.50 | 0.54 | 0.10 | 0.50 | 0.0500 | 0.25 | 0.25 |

| | TPM | | Standard Uncertainty @ 95% | | |
|---|---|---|---|---|---|
| Sampled Volume ($V_m$) | 0.40 | $m^3$ | $uV_m$ | 0.001 | $m^3$ |
| Meter Correction Factor (Yd) | 0.95 | ... | | ... | ... |
| Meter Temperature ($T_m$) | 291.65 | k | $uT_m$ | 1.5 | k |
| Static Pressure of Stack $P_{static}$ | 1.31 | $mmH_2O$ | $uP_{static}$ | 0.25 | $mmH_2O$ |
| Absolute Stack Pressure $\rho_s$ | 753.06 | mmHg | $up_s$ | 0.8 | mmHg |
| Barometric Pressure $\rho_b$ | 753.25 | mmHg | $up_b$ | 3.8 | mmHg |
| Average Differential Pressure (ΔP) + ρs | 100.42 | $mmH_2O$ | $u\Delta H$ | 0.25 | $mmH_2O$ |
| Oxygen content ($O_{2,m}$) | 20.90 | % by volume | $uO_{2,m} = \sigma/\sqrt{n}$ | 0.00 | % by volume |
| Moisture Content ($H_2O$) | 0.0983 | % by volume | $uH_2O$ | 0.43 | % by volume |

**Note: In the following calculations, the sensitivity coefficient (C) is estimated using:** $C_i = \frac{\partial f}{\partial x_i}$

**For each factor, uncertainty is then calculated by $C_i u_i$ where $C$ is the sensitivity coefficient, $u$ is the standard uncertainty and $i$ is the index identifying the contributing factor e.g. $i$=$uV_m$, $uT_m$ etc.**

**Where results are required at wet conditions, the following correction factor is used to convert the data from the dry gas meter:**

$$f_{s,wet} = \frac{100}{(100 - H_2O)} = 1.00$$

**Uncertainty in correction factor to STP due to measured barometric pressure uncertainty component (upb), measured static pressure uncertainty component (uPstatic) & measured temperature of dry gas uncertainty component ($uT_m$)**

$$f_s = \frac{273}{760} \times \frac{P_b + \frac{\Delta H}{13.6}}{T_m} \times Y_d = 0.893$$

| | Maximum | Minimum | Sensitivity | ufstp |
|---|---|---|---|---|
| $u\Delta H$ | 0.46 | 0.46 | 0.0000446 | 0.0000112 |
| $up_b$ | 0.46 | 0.46 | 0.000607 | 0.00228 |
| $uT_m$ | 0.46 | 0.46 | 0.000817 | 0.00123 |
| $H_2O$ | 0.46 | 0.46 | 0.00462 | 0.00199 |

$$\frac{uf_s}{f_s} = \sqrt{\left(\frac{\sqrt{(u\Delta H)^2 + (uP_s)^2}}{(P_m/101.3)}\right)^2 + \left(\frac{uT_m}{(T_m/273.15)}\right)^2 + \left(\frac{uH_2O}{100/(100 - H_2O)}\right)^2} = 0.00290$$

**Uncertainty in volume @ STP due to volume correction factor uncertainty component (uVstd) & volume uncertainty component (uVm)**

$$V_{std} = V_{measured} \times f_s = 0.3565$$

| | Maximum $m^3$ | Minimum $m^3$ | Sensitivity | Standard Uncertainty ($m^3$) |
|---|---|---|---|---|
| Effect of $uV_{std}$ | 0.36 | 0.36 | 0.40 | 0.00116 |
| Effect of $uV_m$ | 0.36 | 0.36 | 0.89 | 0.000893 |

$$\frac{uV_{std}}{V_{std}} = \sqrt{\left(\frac{uV_{std}}{f_s}\right)^2 + \left(\frac{uV_m}{V_m}\right)^2} = 0.000922$$

**Uncertainty of correction factor to reference oxygen due to measured oxygen uncertainty component ($uf_{O2}$) & Uncertainty in final measurement @ reference conditions due to uncertainty component arrising from leak and/or loss (assumed 2% max) in the sample system (uL)**

$$f_{O_2} = \frac{20.9\% - O_{2,ref}}{20.9\% - O_{2,measured}} = 1.00$$

$$uCorr^n{}_{O_2} = \frac{20.9\% - O_{2,ref}}{(20.9\% - O_{2,measured}) x (20.9\% - O_{2,measured})} x Uncertainty\ of\ O_2\ Measurement = 1.00$$

$$uf_{O_2} = \frac{uCorr^n{}_{O_2}}{f_{O_2}} x100 = 0.00$$

**Uncertainty in final measurement @ reference conditions due to mass uncertainty component (uM), oxygen correction uncertainty component ($uf_{Oxy}$) and STP volume uncertainty component (uVstp)**

$$Conc = \frac{M_{Recovered}}{V_m \times f_s \times f_{O_2}} = 1.51$$

| | Maximum mg/Nm³ | Minimum mg/Nm³ | Sensitivity | u mg/Nm³ |
|---|---|---|---|---|
| uM | 2.23 | 0.80 | 2.81 | 0.72 |
| $uV_{stp}$ | 1.52 | 1.51 | 4.25 | 0.00392 |

**Measurement Uncertainty of Determinand (excluding correction for oxygen)**

$$u_{combined} = \sqrt{\sum (u_M)^2 + (u_L)^2 + (uV_{stp})^2}$$

| Combined Uncertainty mg/Nm³ | Expanded Uncertainty mg/Nm³ | Measured Concentration mg/Nm³ | Percent of Measured Concentration | Uncertainty as Percent of ELV |
|---|---|---|---|---|
| 0.72 | 1.43 | 1.51 | 94.4% | 2.9% |

**Measurement Uncertainty of Determinand (including correction for oxygen)**

$$u_{combined} = \sqrt{\sum (uf_{O_2})^2 + (Uncertainty\ of\ Measurement\ of\ Determinand)^2}$$

| Determinand | Measurement Uncertainty of Determinand | Measurement Uncertainty of Oxygen Corrⁿ Factor | Overall Measurement Uncertainty inc $O_2$ Corrⁿ factor (*Ucombined*) % |
|---|---|---|---|
| Particulates | 94.4 | 0.0 | 94.4 |

| | | | | |
|---|---|---|---|---|
| Adler Pelzer Group | | | Installation Name | : Spraybooths |
| Permit No | : PPC 92935 | | Visit Details | : Compliance - November 2023 |
| Variation No | : V1 | | Survey Dates | : 9th – 10th November 2023, 18th December 2023 & 22nd January 2024 |
| Report Ref | : P5617 | : R001 | Report Issue Date | : 8th February 2024 |

# Particulates Uncertainty – SB7

**Site: Adler Pelzer Group , Cab Automotive Ltd**
**Location: Tipton , Stack ID: SB7 Bentley**

$$u_{mass} = \sqrt{\sum (u_{filter})^2 + (u_{solution})^2}$$

| Determinand | Filter mg | Solution mg | Recovered Mass mg | LAB Method Uncert ( % ) K=2 Filter mg | LAB Method Uncert ( % ) K=2 Solution mg | Standard Uncertainty Filter mg | Standard Uncertainty Solution mg | Combined Uncertainty mg |
|---|---|---|---|---|---|---|---|---|
| | | | TPM | | | | | |
| Particulates | 0.0500 | 0.50 | 0.55 | 0.10 | 0.50 | 0.0500 | 0.25 | 0.25 |

| | TPM | | | Standard Uncertainty @ 95% | |
|---|---|---|---|---|---|
| Sampled Volume ($V_m$) | 0.76 | $m^3$ | $uV_m$ | 0.001 | $m^3$ |
| Meter Correction Factor (Yd) | 0.95 | ... | | ... | ... |
| Meter Temperature ($T_m$) | 293.90 | k | $uT_m$ | 1.5 | k |
| Static Pressure of Stack $P_{static}$ | 8.57 | $mmH_2O$ | $uP_{static}$ | 0.25 | $mmH_2O$ |
| Absolute Stack Pressure $\rho_s$ | 753.06 | mmHg | $up_s$ | 0.8 | mmHg |
| Barometric Pressure $\rho_b$ | 753.25 | mmHg | $up_b$ | 3.8 | mmHg |
| Average Differential Pressure (ΔP) + ρs | 101.18 | $mmH_2O$ | $u\Delta H$ | 0.25 | $mmH_2O$ |
| Oxygen content ($O_{2,m}$) | 20.90 | % by volume | $uO_{2,m} = \sigma/\sqrt{n}$ | 0.00 | % by volume |
| Moisture Content ($H_2O$) | 0.10 | % by volume | $uH_2O$ | 0.23 | % by volume |

**Note: In the following calculations, the sensitivity coefficient (C) is estimated using:** $C_i = \frac{\partial f}{\partial x_i}$

**For each factor, uncertainty is then calculated by $C_i u_i$ where $C$ is the sensitivity coefficient, $u$ is the standard uncertainty and $i$ is the index identifying the contributing factor e.g. $i$ =$uV_m$, $uT_m$ etc.**

**Where results are required at wet conditions, the following correction factor is used to convert the data from the dry gas meter:**

$$f_{s,wet} = \frac{100}{(100 - H_2O)} = \quad 1.00$$

**Uncertainty in correction factor to STP due to measured barometric pressure uncertainty component (upb), measured static pressure uncertainty component (uPstatic) & measured temperature of dry gas uncertainty component ($uT_m$)**

$$f_s = \frac{273}{760} \times \frac{P_b + \frac{\Delta H}{13.6}}{T_m} \times Y_d = \quad 0.887$$

| | Maximum | Minimum | Sensitivity | ufstp |
|---|---|---|---|---|
| uΔH | 0.46 | 0.46 | 0.0000444 | 0.0000111 |
| $up_b$ | 0.46 | 0.46 | 0.000604 | 0.00227 |
| $uT_m$ | 0.46 | 0.46 | 0.000811 | 0.00122 |
| $H_2O$ | 0.46 | 0.46 | 0.00460 | 0.00105 |

$$\frac{uf_s}{f_s} = \sqrt{\left(\frac{\sqrt{(u\Delta H)^2 + (uP_s)^2}}{(P_m/101.3)}\right)^2 + \left(\frac{uT_m}{(T_m/273.15)}\right)^2 + \left(\frac{uH_2O}{100/(100 - H_2O)}\right)^2} = \quad 0.00243$$

**Uncertainty in volume @ STP due to volume correction factor uncertainty component (uVstd) & volume uncertainty component (uVm)**

$$V_{std} = V_{measured} \times f_s = \quad 0.6748$$

| | Maximum $m^3$ | Minimum $m^3$ | Sensitivity | Standard Uncertainty ($m^3$) |
|---|---|---|---|---|
| Effect of $uV_{std}$ | 0.68 | 0.67 | 0.76 | 0.00185 |
| Effect of $uV_m$ | 0.68 | 0.67 | 0.89 | 0.000887 |

$$\frac{uV_{std}}{V_{std}} = \sqrt{\left(\frac{uV_{std}}{f_s}\right)^2 + \left(\frac{uV_m}{V_m}\right)^2} = \quad 0.00161$$

**Uncertainty of correction factor to reference oxygen due to measured oxygen uncertainty component ($uf_{O2}$) & Uncertainty in final measurement @ reference conditions due to uncertainty component arrising from leak and/or loss (assumed 2% max) in the sample system (uL)**

$$f_{o_2} = \frac{20.9\% - O_{2,ref}}{20.9\% - O_{2,measured}} = \quad 1.00$$

$$uCorr^n{}_{o_2} = \frac{20.9\% - O_{2,ref}}{(20.9\% - O_{2,measured}) x (20.9\% - O_{2,measured})} x Uncertainty\ of\ O_2\ Measurement = \quad 1.00$$

$$uf_{o_2} = \frac{uCorr^n{}_{o_2}}{f_{o_2}} x100 = \quad 0.00$$

**Uncertainty in final measurement @ reference conditions due to mass uncertainty component (uM), oxygen correction uncertainty component ($uf_{Oxy}$) and STP volume uncertainty component (uVstp)**

$$Conc = \frac{M_{Recovered}}{V_m \times f_s \times f_{O_2}} = \quad 0.82$$

| | Maximum mg/Nm³ | Minimum mg/Nm³ | Sensitivity | u mg/Nm³ |
|---|---|---|---|---|
| uM | 1.19 | 0.44 | 1.48 | 0.38 |
| $uV_{stp}$ | 0.82 | 0.81 | 1.21 | 0.00195 |

**Measurement Uncertainty of Determinand (excluding correction for oxygen)**

$$u_{combined} = \sqrt{\sum (u_M)^2 + (u_L)^2 + (uV_{stp})^2}$$

| Combined Uncertainty mg/Nm³ | Expanded Uncertainty mg/Nm³ | Measured Concentration mg/Nm³ | Percent of Measured Concentration | Uncertainty as Percent of ELV |
|---|---|---|---|---|
| 0.38 | 0.76 | 0.82 | 92.7% | 1.5% |

**Measurement Uncertainty of Determinand (including correction for oxygen)**

$$u_{combined} = \sqrt{\sum (uf_{o_2})^2 + (Uncertainty\ of\ Measurement\ of\ Determinand)^2}$$

| Determinand | Measurement Uncertainty of Determinand | Measurement Uncertainty of Oxygen Corrⁿ Factor | Overall Measurement Uncertainty inc $O_2$ Corrⁿ factor (*Ucombined*) % |
|---|---|---|---|
| Particulates | 92.7 | 0.0 | 92.7 |

| | | | |
|---|---|---|---|
| Adler Pelzer Group | | Installation Name | : Spraybooths |
| Permit No | : PPC 92935 | Visit Details | : Compliance - November 2023 |
| Variation No | : V1 | Survey Dates | : 9th – 10th November 2023, 18th December 2023 & 22nd January 2024 |
| Report Ref | : P5617 : R001 | Report Issue Date | : 8th February 2024 |

# Particulates Uncertainty – X152

**Site: Adler Pelzer Group, Cab Automotive Ltd**
**Location: Tipton , Stack ID: X152 Jaguar Spraybooth**

$$u_{mass} = \sqrt{\sum (u_{filter})^2 + (u_{solution})^2}$$

| Determinand | Filter mg | Solution mg | Recovered Mass mg | LAB Method Uncert ( % ) K= 2 Filter mg | LAB Method Uncert ( % ) K= 2 Solution mg | Standard Uncertainty Filter mg | Standard Uncertainty Solution mg | Combined Uncertainty mg |
|---|---|---|---|---|---|---|---|---|
| | | | TPM | | | | | |
| Particulates | 0.16 | 0.50 | 0.66 | 0.10 | 0.50 | 0.0500 | 0.25 | 0.25 |

| | TPM | | | Standard Uncertainty @ 95% | |
|---|---|---|---|---|---|
| Sampled Volume ($V_m$) | 0.59 | $m^3$ | $uV_m$ | 0.001 | $m^3$ |
| Meter Correction Factor (Yd) | 0.97 | ... | | ... | ... |
| Meter Temperature ($T_m$) | 292.53 | k | $uT_m$ | 1.5 | k |
| Static Pressure of Stack $P_{static}$ | 8.46 | $mmH_2O$ | $uP_{static}$ | 0.25 | $mmH_2O$ |
| Absolute Stack Pressure $\rho_s$ | 768.81 | mmHg | $u\rho_s$ | 0.8 | mmHg |
| Barometric Pressure $\rho_b$ | 769.00 | mmHg | $u\rho_b$ | 3.8 | mmHg |
| Average Differential Pressure (ΔP) + ρS | 103.01 | $mmH_2O$ | uΔH | 0.25 | $mmH_2O$ |
| Oxygen content ($O_{2,m}$) | 20.90 | % by volume | $uO_{2,m} = \sigma/\sqrt{n}$ | 0.00 | % by volume |
| Moisture Content ($H_2O$) | 0.10 | % by volume | $uH_2O$ | 0.28 | % by volume |

Note: In the following calculations, the sensitivity coefficient (C) is estimated using: $C_i = \frac{\partial f}{\partial x_i}$

For each factor, uncertainty is then calculated by $C_i u_i$ where $C$ is the sensitivity coefficient, $u$ is the standard uncertainty and $i$ is the index identifying the contributing factor e.g. $i$ = $uV_m$, $uT_m$ etc.

Where results are required at wet conditions, the following correction factor is used to convert the data from the dry gas meter:

$$f_{s,wet} = \frac{100}{(100 - H_2O)} = 1.00$$

Uncertainty in correction factor to STP due to measured barometric pressure uncertainty component ($u\rho b$), measured static pressure uncertainty component (uPstatic) & measured temperature of dry gas uncertainty component ($uT_m$)

$$f_s = \frac{273}{760} \times \frac{P_b + \frac{\Delta H}{13.6}}{T_m} \times Y_d = 0.923$$

| | Maximum | Minimum | Sensitivity | ufstp |
|---|---|---|---|---|
| uΔH | 0.48 | 0.48 | 0.0000452 | 0.0000113 |
| $u\rho_b$ | 0.48 | 0.48 | 0.000615 | 0.00231 |
| $uT_m$ | 0.48 | 0.48 | 0.000845 | 0.00127 |
| $H_2O$ | 0.48 | 0.48 | 0.00478 | 0.00135 |

$$\frac{uf_s}{f_s} = \sqrt{\left(\frac{\sqrt{(u\Delta H)^2 + (uP_s)^2}}{(P_m/101.3)}\right)^2 + \left(\frac{uT_m}{(T_m/273.15)}\right)^2 + \left(\frac{uH_2O}{100/(100 - H_2O)}\right)^2} = 0.00267$$

Uncertainty in volume @ STP due to volume correction factor uncertainty component (uVstd) & volume uncertainty component (uVm)

$$V_{std} = V_{measured} \times f_s = 0.5429$$

| | Maximum $m^3$ | Minimum $m^3$ | Sensitivity | Standard Uncertainty ($m^3$) |
|---|---|---|---|---|
| Effect of $uV_{std}$ | 0.54 | 0.54 | 0.59 | 0.00157 |
| Effect of $uV_m$ | 0.54 | 0.54 | 0.92 | 0.000923 |

$$\frac{uV_{std}}{V_{std}} = \sqrt{\left(\frac{uV_{std}}{f_s}\right)^2 + \left(\frac{uV_m}{V_m}\right)^2} = 0.00126$$

Uncertainty of correction factor to reference oxygen due to measured oxygen uncertainty component ($uf_{O2}$) & Uncertainty in final measurement @ reference conditions due to uncertainty component arrising from leak and/or loss (assumed 2% max) in the sample system (uL)

$$f_{O_2} = \frac{20.9\% - O_{2,ref}}{20.9\% - O_{2,measured}} = 1.00$$

$$uCorr^n{}_{O_2} = \frac{20.9\% - O_{2,ref}}{(20.9\% - O_{2,measured}) x (20.9\% - O_{2,measured})} x Uncertainty\ of\ O_2\ Measurement = 1.00$$

$$uf_{O_2} = \frac{uCorr^n{}_{O_2}}{f_{O_2}} x100 = 0.00$$

Uncertainty in final measurement @ reference conditions due to mass uncertainty component (uM), oxygen correction uncertainty component ($uf_{Ox}$) and STP volume uncertainty component (uVstp)

$$Conc = \frac{M_{Recovered}}{V_m \times f_s \times f_{O_2}} = 1.22$$

| | Maximum mg/Nm³ | Minimum mg/Nm³ | Sensitivity | u mg/Nm³ |
|---|---|---|---|---|
| $uM$ | 1.69 | 0.75 | 1.84 | 0.47 |
| $uV_{stp}$ | 1.22 | 1.21 | 2.24 | 0.00281 |

Measurement Uncertainty of Determinand (excluding correction for oxygen)

$$u_{combined} = \sqrt{\sum (u_M)^2 + (u_L)^2 + (uV_{stp})^2}$$

| Combined Uncertainty mg/Nm³ | Expanded Uncertainty mg/Nm³ | Measured Concentration mg/Nm³ | Percent of Measured Concentration | Uncertainty as Percent of ELV |
|---|---|---|---|---|
| 0.47 | 0.94 | 1.22 | 77.3% | 1.9% |

Measurement Uncertainty of Determinand (including correction for oxygen)

$$u_{combined} = \sqrt{\sum (uf_{O_2})^2 + (Uncertainty\ of\ Measurement\ of\ Determinand)^2}$$

| Determinand | Measurement Uncertainty of Determinand | Measurement Uncertainty of Oxygen Corr$^n$ Factor | Overall Measurement Uncertainty inc $O_2$ Corr$^n$ factor (*Ucombined*) % |
|---|---|---|---|
| Particulates | 77.3 | 0.0 | 77.3 |

| | | | |
|---|---|---|---|
| Adler Pelzer Group | | Installation Name | : Spraybooths |
| Permit No | : PPC 92935 | Visit Details | : Compliance - November 2023 |
| Variation No | : V1 | Survey Dates | : 9th – 10th November 2023, 18th December 2023 & 22nd January 2024 |
| Report Ref | : P5617 : R001 | Report Issue Date | : 8th February 2024 |

# Particulates Uncertainty – EX 3

**Site: Adler Pelzer Group , Cab Automotive Ltd**
**Location: Tipton , Stack ID: EX 3 Spraybooth No.3**

$$u_{mass} = \sqrt{\sum (u_{filter})^2 + (u_{solution})^2}$$

| Determinand | Filter mg | Solution mg | Recovered Mass mg | LAB Method Uncert ( % ) K= 2 Filter mg | LAB Method Uncert ( % ) K= 2 Solution mg | Standard Uncertainty Filter mg | Standard Uncertainty Solution mg | Combined Uncertainty mg |
|---|---|---|---|---|---|---|---|---|
| | | | TPM | | | | | |
| Particulates | 0.0400 | 0.50 | 0.54 | 0.10 | 0.50 | 0.0500 | 0.25 | 0.25 |

| | TPM | | | Standard Uncertainty @ 95% | |
|---|---|---|---|---|---|
| Sampled Volume ($V_m$) | 0.60 | $m^3$ | $uV_m$ | 0.001 | $m^3$ |
| Meter Correction Factor (Yd) | 0.95 | ... | | ... | ... |
| Meter Temperature ($T_m$) | 296.15 | k | $uT_m$ | 1.5 | k |
| Static Pressure of Stack $P_{static}$ | 5.58 | $mmH_2O$ | $uP_{static}$ | 0.25 | $mmH_2O$ |
| Absolute Stack Pressure $\rho_s$ | 768.81 | mmHg | $up_s$ | 0.8 | mmHg |
| Barometric Pressure $\rho_b$ | 769.00 | mmHg | $up_b$ | 3.8 | mmHg |
| Average Differential Pressure (ΔP) + ρS | 102.87 | $mmH_2O$ | uΔH | 0.25 | $mmH_2O$ |
| Oxygen content ($O_{2,m}$) | 20.90 | % by volume | $uO_{2,m} = \sigma/\sqrt{n}$ | 0.00 | % by volume |
| Moisture Content ($H_2O$) | 0.10 | % by volume | $uH_2O$ | 0.28 | % by volume |

Note: In the following calculations, the sensitivity coefficient (C) is estimated using: $C_i = \frac{\partial f}{\partial x_i}$

For each factor, uncertainty is then calculated by $C_i u_i$ where $C$ is the sensitivity coefficient, $u$ is the standard uncertainty and $i$ is the index identifying the contributing factor e.g. $i$ = $uV_m$, $uT_m$ etc.

Where results are required at wet conditions, the following correction factor is used to convert the data from the dry gas meter:

$$f_{s,wet} = \frac{100}{(100 - H_2O)} = 1.00$$

Uncertainty in correction factor to STP due to measured barometric pressure uncertainty component ($u\rho b$), measured static pressure uncertainty component (uPstatic) & measured temperature of dry gas uncertainty component ($uT_m$)

$$f_s = \frac{273}{760} \times \frac{P_b + \frac{\Delta H}{13.6}}{T_m} \times Y_d = 0.898$$

| | Maximum | Minimum | Sensitivity | ufstp |
|---|---|---|---|---|
| uΔH | 0.47 | 0.47 | 0.0000443 | 0.0000111 |
| $up_b$ | 0.47 | 0.47 | 0.000602 | 0.00226 |
| $uT_m$ | 0.47 | 0.47 | 0.000821 | 0.00123 |
| $H_2O$ | 0.47 | 0.47 | 0.00468 | 0.00132 |

$$\frac{uf_s}{f_s} = \sqrt{\left(\frac{\sqrt{(u\Delta H)^2 + (uP_s)^2}}{(P_m/101.3)}\right)^2 + \left(\frac{uT_m}{(T_m/273.15)}\right)^2 + \left(\frac{uH_2O}{100/(100 - H_2O)}\right)^2} = 0.00254$$

Uncertainty in volume @ STP due to volume correction factor uncertainty component (uVstd) & volume uncertainty component (uVm)

$$V_{std} = V_{measured} \times f_s = 0.5426$$

| | Maximum $m^3$ | Minimum $m^3$ | Sensitivity | Standard Uncertainty ($m^3$) |
|---|---|---|---|---|
| Effect of $uV_{std}$ | 0.54 | 0.54 | 0.60 | 0.00153 |
| Effect of $uV_m$ | 0.54 | 0.54 | 0.90 | 0.000898 |

$$\frac{uV_{std}}{V_{std}} = \sqrt{\left(\frac{uV_{std}}{f_s}\right)^2 + \left(\frac{uV_m}{V_m}\right)^2} = 0.00123$$

Uncertainty of correction factor to reference oxygen due to measured oxygen uncertainty component ($uf_{O2}$) & Uncertainty in final measurement @ reference conditions due to uncertainty component arrising from leak and/or loss (assumed 2% max) in the sample system (uL)

$$f_{O_2} = \frac{20.9\% - O_{2,ref}}{20.9\% - O_{2,measured}} = 1.00$$

$$uCorr^n_{O_2} = \frac{20.9\% - O_{2,ref}}{(20.9\% - O_{2,measured}) x (20.9\% - O_{2,measured})} x Uncertainty\ of\ O_2\ Measurement = 1.00$$

$$uf_{O_2} = \frac{uCorr^n_{O_2}}{f_{O_2}} x100 = 0.00$$

Uncertainty in final measurement @ reference conditions due to mass uncertainty component (uM), oxygen correction uncertainty component ($uf_{O2}$) and STP volume uncertainty component (uVstp)

$$Conc = \frac{M_{Recovered}}{V_m \times f_s \times f_{O_2}} = 1.00$$

| | Maximum mg/Nm³ | Minimum mg/Nm³ | Sensitivity | u mg/Nm³ |
|---|---|---|---|---|
| uM | 1.46 | 0.53 | 1.84 | 0.47 |
| $uV_{stp}$ | 1.00 | 0.99 | 1.83 | 0.00225 |

Measurement Uncertainty of Determinand (excluding correction for oxygen)

$$u_{combined} = \sqrt{\sum (u_M)^2 + (u_L)^2 + (uV_{stp})^2}$$

| Combined Uncertainty mg/Nm³ | Expanded Uncertainty mg/Nm³ | Measured Concentration mg/Nm³ | Percent of Measured Concentration | Uncertainty as Percent of ELV |
|---|---|---|---|---|
| 0.47 | 0.94 | 1.00 | 94.4% | 1.9% |

Measurement Uncertainty of Determinand (including correction for oxygen)
Particulate concentration < Blank! Uncertainty will be reported @ > 100%!

$$u_{combined} = \sqrt{\sum (uf_{O_2})^2 + (Uncertainty\ of\ Measurement\ of\ Determinand)^2}$$

| Determinand | Measurement Uncertainty of Determinand | Measurement Uncertainty of Oxygen Corr$^n$ Factor | Overall Measurement Uncertainty inc $O_2$ Corr$^n$ factor (*Ucombined*) % |
|---|---|---|---|
| Particulates | 94.4 | 0.0 | 94.4 |

| | | | |
|---|---|---|---|
| Adler Pelzer Group | | Installation Name | : Spraybooths |
| Permit No | : PPC 92935 | Visit Details | : Compliance - November 2023 |
| Variation No | : V1 | Survey Dates | : 9th – 10th November 2023, 18th December 2023 & 22nd January 2024 |
| Report Ref | : P5617 : R001 | Report Issue Date | : 8th February 2024 |

# Dichloromethane Uncertainty – EX 3 Spraybooth No.3 (Test 1)

Note:
Results based on Charcoal Tubes Only!

Site: Adler Pelzer Group, Cab Automotive Ltd
Location: Tipton, Stack ID: EX 3 Spraybooth No.3

| | | | | | Standard Uncertainty @ 95% | | |
|---|---|---|---|---|---|---|---|
| Sampled Volume | $V_m$ | 0.00934 | $m^3$ | $uV_m$ | 0.000 | $m^3$ |
| Meter Correction Factor or ml/count | Yd | 0.5 | ... | ... | ... | ... |
| Meter Temperature | $T_m$ | 290.50 | k | $uT_m$ | 1.5 | k |
| Barometric Pressure | $\rho_b$ | 1025.00 | mBar | | 10.0 | mBar |
| Oxygen content | $O_{2,m}$ | 20.90 | %Vol | $uO_{2,m}$ | 1.25 | %Vol |
| Moisture | $H_2O$ | 0.00 | %Vol | $uH_2O$ | | %Vol |

| Tubes | | | | |
|---|---|---|---|---|
| Determinand | Recovered Mass | | Standard Uncertainty | |
| Dichloromethane | 4.00 | µg | uM | 2.00 µg |

Note: In the following calculations, the sensitivity coefficient (C) is estimated using: $C_i = \frac{\partial f}{\partial x_i}$

For each factor, uncertainty is then calculated by $C_i u_i$ where $C$ is the sensitivity coefficient, $u$ is the standard uncertainty and $i$ is the index identifying the contributing factor e.g. i= $uV_m$, $uT_m$ etc.

Where results are required at wet conditions, the following correction factor is used to convert the data from the dry gas meter:

$$f_{s,wet} = \frac{100}{(100 - H_2O)} = 1.00$$

Uncertainty in correction factor to STP due to measured barometric pressure uncertainty component ($u\rho b$), measured temperature of dry gas uncertainty component ($uT_m$) & measured moisture ($uH_2O$) where required

$$f_s = \frac{273}{T_m} \times \frac{\rho}{101.3} = 0.95$$

| | Maximum | Minimum | Sensitivity | ufstp |
|---|---|---|---|---|
| $u\rho_b$ | 0.49 | 0.49 | 0.000478 | 0.00478 |
| $uT_m$ | 0.96 | 0.95 | 0.00327 | 0.00491 |
| $uH_2O$ | ... | ... | ... | ... |

$$\frac{uf_s}{f_s} = \sqrt{\left(\frac{uP_b}{(P_b/101.3)}\right)^2 + \left(\frac{uT_m}{(T_m/273.15)}\right)^2 + \left(\frac{uH_2O}{100/(100 - H_2O)}\right)^2} = 0.00628$$

Uncertainty in volume @ STP due to volume correction factor uncertainty component (uVstd) & volume uncertainty component (uVm)

$$V_{std} = V_{measured} \times f_s = 0.00444$$

| | Maximum $m^3$ | Minimum $m^3$ | Sensitivity | Standard Uncertainty $m^3$ |
|---|---|---|---|---|
| Effect of $uf_s$ | 0.00447 | 0.00441 | 0.00467 | 0.0000293 |
| Effect of $uV_m$ | 0.00455 | 0.00433 | 0.48 | 0.000111 |

$$\frac{uV_{std}}{V_{std}} = \sqrt{\left(\frac{uf_s}{f_s}\right)^2 + \left(\frac{uV_m}{V_m}\right)^2} = 0.0000567$$

Uncertainty of correction factor to reference conditions (excluding oxygen contribution) & Uncertainty in final measurement @ reference conditions due to uncertainty component arrising from leak and/or loss (assumed 2% max) in the sample system (uL)

$$uL = \frac{Conc \times \frac{2}{100}}{\sqrt{3}}$$

| | Tubes uL mg/Nm³ | Condensate uL mg/Nm³ |
|---|---|---|
| Dichloromethane | 0.0104 | ... |

$$Conc = \frac{M_{Recovered}}{V_m \times f_s \times f_{O_2}}$$

Uncertainty in final measurement @ Reference Conditions due to $uM_{Recovered}$

| Charcoal Tube Results | | | | |
|---|---|---|---|---|
| | Maximum mg/Nm³ | Minimum mg/Nm³ | Sensitivity | Standard Uncertainty mg/Nm³ |
| Dichloromethane | 1.35 | 0.45 | 225.12 | 0.45 |
| **Condensate Results** | | | | |
| | Maximum mg/Nm³ | Minimum mg/Nm³ | Sensitivity | Standard Uncertainty mg/Nm³ |
| Dichloromethane | | | | |

Uncertainty in final measurement @ Reference Conditions due to $uV_{STD}$

| Charcoal Tube Results | | | | |
|---|---|---|---|---|
| | Maximum mg/Nm³ | Minimum mg/Nm³ | Sensitivity | Standard Uncertainty mg/Nm³ |
| Dichloromethane | 0.91 | 0.89 | 202.76 | 0.0115 |

Combined Uncertainty (excluding Oxygen contribution)

$$u_{combined} = \sqrt{\sum (u_M)^2 + (u_L)^2 + (uV_{stp})^2}$$

| Charcoal Tubes: Determinand | Combined Uncertainty mg/Nm³ | Expanded Uncertainty mg/Nm³ | Measured Concentration mg/Nm³ | Percent of Measured Concentration |
|---|---|---|---|---|
| Dichloromethane | 0.45 | 0.90 | 0.90 | 100.06 |

| | | | | |
|---|---|---|---|---|
| Adler Pelzer Group | | | Installation Name | : Spraybooths |
| Permit No | : PPC 92935 | | Visit Details | : Compliance - November 2023 |
| Variation No | : V1 | | Survey Dates | : 9th – 10th November 2023, 18th December 2023 & 22nd January 2024 |
| Report Ref | : P5617 | : R001 | Report Issue Date | : 8th February 2024 |

# Dichloromethane Uncertainty – EX 3 Spraybooth No.3 (Test 2)

Note:
Results based on Charcoal Tubes Only!

Site: Adler Pelzer Group, Cab Automotive Ltd
Location: Tipton, Stack ID: EX 3 Spraybooth No.3

| | | | | | Standard Uncertainty @ 95% | | |
|---|---|---|---|---|---|---|---|
| Sampled Volume | $V_m$ | 0.00937 | $m^3$ | | $uV_m$ | 0.000 | $m^3$ |
| Meter Correction Factor or ml/count | Yd | 0.5 | ... | | ... | ... | ... |
| Meter Temperature | $T_m$ | 290.50 | k | | $uT_m$ | 1.5 | k |
| Barometric Pressure | $\rho_b$ | 1025.00 | mBar | | | 10.0 | mBar |
| Oxygen content | $O_{2,m}$ | 20.90 | %Vol | | $uO_{2,m}$ | 1.25 | %Vol |
| Moisture | $H_2O$ | 0.00 | %Vol | | $uH_2O$ | | %Vol |

| Tubes | | | | |
|---|---|---|---|---|
| Determinand | Recovered Mass | | Standard Uncertainty | |
| Dichloromethane | 4.00 | µg | uM | 2.00 µg |

Note: In the following calculations, the sensitivity coefficient (C) is estimated using: $C_i = \frac{\partial f}{\partial x_i}$

For each factor, uncertainty is then calculated by $C_i u$ where $C$ is the sensitivity coefficient, $u$ is the standard uncertainty and $i$ is the index identifying the contributing factor e.g. i= $uV_m$, $uT_m$ etc.

Where results are required at wet conditions, the following correction factor is used to convert the data from the dry gas meter:

$$f_{s,wet} = \frac{100}{(100 - H_2O)} = 1.00$$

Uncertainty in correction factor to STP due to measured barometric pressure uncertainty component ($up_b$), measured temperature of dry gas uncertainty component ($uT_m$) & measured moisture ($uH_2O$) where required

$$f_s = \frac{273}{T_m} \times \frac{\rho}{101.3} = 0.95$$

| | Maximum | Minimum | Sensitivity | ufstp |
|---|---|---|---|---|
| $up_b$ | 0.49 | 0.49 | 0.000478 | 0.00478 |
| $uT_m$ | 0.96 | 0.95 | 0.00327 | 0.00491 |
| $uH_2O$ | ... | ... | ... | ... |

$$\frac{uf_s}{f_s} = \sqrt{\left(\frac{uP_b}{(P_b/101.3)}\right)^2 + \left(\frac{uT_m}{(T_m/273.15)}\right)^2 + \left(\frac{uH_2O}{100/(100 - H_2O)}\right)^2} = 0.00628$$

Uncertainty in volume @ STP due to volume correction factor uncertainty component (uVstd) & volume uncertainty component (uVm)

$$V_{std} = V_{measured} \times f_s = 0.00446$$

| | Maximum $m^3$ | Minimum $m^3$ | Sensitivity | Standard Uncertainty $m^3$ |
|---|---|---|---|---|
| Effect of $uf_s$ | 0.00449 | 0.00443 | 0.00469 | 0.0000294 |
| Effect of $uV_m$ | 0.00457 | 0.00435 | 0.48 | 0.000111 |

$$\frac{uV_{std}}{V_{std}} = \sqrt{\left(\frac{uf_s}{f_s}\right)^2 + \left(\frac{uV_m}{V_m}\right)^2} = 0.0000569$$

Uncertainty of correction factor to reference conditions (excluding oxygen contribution) & Uncertainty in final measurement @ reference conditions due to uncertainty component arrising from leak and/or loss (assumed 2% max) in the sample system (uL)

$$uL = \frac{Conc \times \frac{2}{100}}{\sqrt{3}}$$

| | Tubes uL mg/Nm³ | Condensate uL mg/Nm³ |
|---|---|---|
| Dichloromethane | 0.0104 | ... |

$$Conc = \frac{M_{Recovered}}{V_m \times f_s \times f_{O_2}}$$

Uncertainty in final measurement @ Reference Conditions due to $uM_{Recovered}$

| Charcoal Tube Results | | | | |
|---|---|---|---|---|
| | Maximum mg/Nm³ | Minimum mg/Nm³ | Sensitivity | Standard Uncertainty mg/Nm³ |
| Dichloromethane | 1.35 | 0.45 | 224.38 | 0.45 |
| **Condensate Results** | | | | |
| | Maximum mg/Nm³ | Minimum mg/Nm³ | Sensitivity | Standard Uncertainty mg/Nm³ |
| Dichloromethane | | | | |

Uncertainty in final measurement @ Reference Conditions due to $uV_{STD}$

| Charcoal Tube Results | | | | |
|---|---|---|---|---|
| | Maximum mg/Nm³ | Minimum mg/Nm³ | Sensitivity | Standard Uncertainty mg/Nm³ |
| Dichloromethane | 0.91 | 0.89 | 201.42 | 0.0115 |

Combined Uncertainty (excluding Oxygen contribution)

$$u_{combined} = \sqrt{\sum (u_M)^2 + (u_L)^2 + (uV_{stp})^2}$$

| Charcoal Tubes: Determinand | Combined Uncertainty mg/Nm³ | Expanded Uncertainty mg/Nm³ | Measured Concentration mg/Nm³ | Percent of Measured Concentration |
|---|---|---|---|---|
| Dichloromethane | 0.45 | 0.90 | 0.90 | 100.06 |

| | | | | |
|---|---|---|---|---|
| Adler Pelzer Group | | | Installation Name | : Spraybooths |
| Permit No | : PPC 92935 | | Visit Details | : Compliance - November 2023 |
| Variation No | : V1 | | Survey Dates | : 9th – 10th November 2023, 18th December 2023 & 22nd January 2024 |
| Report Ref | : P5617 | : R001 | Report Issue Date | : 8th February 2024 |

# Dichloromethane Uncertainty – EX 3 Spraybooth No.3 (Test 3)

Note:
Results based on Charcoal Tubes Only!

Site: Adler Pelzer Group, Cab Automotive Ltd
Location: Tipton, Stack ID: EX 3 Spraybooth No.3

| | | | | | Standard Uncertainty @ 95% | | |
|---|---|---|---|---|---|---|---|
| Sampled Volume | $V_m$ | 0.00933 | $m^3$ | $uV_m$ | 0.000 | $m^3$ |
| Meter Correction Factor or ml/count | Yd | 0.5 | ... | ... | ... | ... |
| Meter Temperature | $T_m$ | 290.50 | k | $uT_m$ | 1.5 | k |
| Barometric Pressure | $\rho_b$ | 1025.00 | mBar | | 10.0 | mBar |
| Oxygen content | $O_{2,m}$ | 20.90 | %Vol | $uO_{2,m}$ | 1.25 | %Vol |
| Moisture | $H_2O$ | 0.00 | %Vol | $uH_2O$ | | %Vol |

| Tubes | | | | | |
|---|---|---|---|---|---|
| Determinand | Recovered Mass | | | Standard Uncertainty | |
| Dichloromethane | 4.00 | µg | uM | 2.00 | µg |

Note: In the following calculations, the sensitivity coefficient (C) is estimated using: $C_i = \frac{\partial f}{\partial x_i}$

For each factor, uncertainty is then calculated by $C_i u$ where $C$ is the sensitivity coefficient, $u$ is the standard uncertainty and $i$ is the index identifying the contributing factor e.g. i= $uV_m$, $uT_m$ etc.

Where results are required at wet conditions, the following correction factor is used to convert the data from the dry gas meter:

$$f_{s,wet} = \frac{100}{(100 - H_2O)} = 1.00$$

Uncertainty in correction factor to STP due to measured barometric pressure uncertainty component ($u\rho b$), measured temperature of dry gas uncertainty component ($uT_m$) & measured moisture ($uH_2O$) where required

$$f_s = \frac{273}{T_m} \times \frac{\rho}{101.3} = 0.95$$

| | Maximum | Minimum | Sensitivity | ufstp |
|---|---|---|---|---|
| $up_b$ | 0.49 | 0.49 | 0.000478 | 0.00478 |
| $uT_m$ | 0.96 | 0.95 | 0.00327 | 0.00491 |
| $uH_2O$ | ... | ... | ... | ... |

$$\frac{uf_s}{f_s} = \sqrt{\left(\frac{uP_b}{(P_b/101.3)}\right)^2 + \left(\frac{uT_m}{(T_m/273.15)}\right)^2 + \left(\frac{uH_2O}{100/(100 - H_2O)}\right)^2} = 0.00628$$

Uncertainty in volume @ STP due to volume correction factor uncertainty component (uVstd) & volume uncertainty component (uVm)

$$V_{std} = V_{measured} \times f_s = 0.00444$$

| | Maximum $m^3$ | Minimum $m^3$ | Sensitivity | Standard Uncertainty $m^3$ |
|---|---|---|---|---|
| Effect of $uf_s$ | 0.00446 | 0.00441 | 0.00466 | 0.0000293 |
| Effect of $uV_m$ | 0.00455 | 0.00432 | 0.48 | 0.000111 |

$$\frac{uV_{std}}{V_{std}} = \sqrt{\left(\frac{uf_s}{f_s}\right)^2 + \left(\frac{uV_m}{V_m}\right)^2} = 0.0000566$$

Uncertainty of correction factor to reference conditions (excluding oxygen contribution) & Uncertainty in final measurement @ reference conditions due to uncertainty component arrising from leak and/or loss (assumed 2% max) in the sample system (uL)

$$uL = \frac{Conc \times \frac{2}{100}}{\sqrt{3}}$$

| | Tubes uL mg/Nm³ | Condensate uL mg/Nm³ |
|---|---|---|
| Dichloromethane | 0.0104 | ... |

$$Conc = \frac{M_{Recovered}}{V_m \times f_s \times f_{O_2}}$$

Uncertainty in final measurement @ Reference Conditions due to $uM_{Recovered}$

| Charcoal Tube Results | | | | |
|---|---|---|---|---|
| | Maximum mg/Nm³ | Minimum mg/Nm³ | Sensitivity | Standard Uncertainty mg/Nm³ |
| Dichloromethane | 1.35 | 0.45 | 225.46 | 0.45 |

| Condensate Results | | | | |
|---|---|---|---|---|
| | Maximum mg/Nm³ | Minimum mg/Nm³ | Sensitivity | Standard Uncertainty mg/Nm³ |
| Dichloromethane | | | | |

Uncertainty in final measurement @ Reference Conditions due to $uV_{STD}$

| Charcoal Tube Results | | | | |
|---|---|---|---|---|
| | Maximum mg/Nm³ | Minimum mg/Nm³ | Sensitivity | Standard Uncertainty mg/Nm³ |
| Dichloromethane | 0.91 | 0.89 | 203.37 | 0.0115 |

Combined Uncertainty (excluding Oxygen contribution)

$$u_{combined} = \sqrt{\sum (u_M)^2 + (u_L)^2 + (uV_{stp})^2}$$

| Charcoal Tubes: Determinand | Combined Uncertainty mg/Nm³ | Expanded Uncertainty mg/Nm³ | Measured Concentration mg/Nm³ | Percent of Measured Concentration |
|---|---|---|---|---|
| Dichloromethane | 0.45 | 0.90 | 0.90 | 100.06 |

| | | | | |
|---|---|---|---|---|
| Adler Pelzer Group | | | Installation Name | : Spraybooths |
| Permit No | : PPC 92935 | | Visit Details | : Compliance - November 2023 |
| Variation No | : V1 | | Survey Dates | : 9th – 10th November 2023, 18th December 2023 & 22nd January 2024 |
| Report Ref | : P5617 | : R001 | Report Issue Date | : 8th February 2024 |

## Stack Reference EX 1 - Spraybooth (Mini) No.2

### Measurement Uncertainty Calculations - Velocity at Stack Conditions

| Contribution From | Standard u/c (Pa) | |
|---|---|---|
| Pitot Calibration Uncertainty Contribution | 0.31 | A |
| Manometer Calibration Uncertainty Contribution | 0.306208333 | B |
| Variation in Actual Pitot reading at sample points | 0.43 | C |
| | | |
| Combined u/c (Pa) = | **Combined u/c (Pa)** | |
| SQRT $(A/\sqrt{3})^2 + (B/\sqrt{3})^2 + (C/\sqrt{3})^2$ | 0.35 | |
| **Expanded Uncertainty of Flow Measurements Pa** | **0.70** | |
| | | |
| | **Standard u/c (K)** | |
| Temperature Calibration (K) | 1.46 | D |
| Variation in Actual Temp reading at sample points | 2.25 | E |
| | | |
| Combined u/c of Temp (K) | **Combined u/c (K)** | |
| SQRT $((D/\sqrt{3^2}) + (E/\sqrt{3})^2)$ | 1.55 | |
| **Expanded Uncertainty of Temp Measurements (K)** | **3.10** | |
| | | |
| Measured Average Velocity (m/s) at Stack Conds | 9.99 | |
| Maximum Average Velocity (m/s) at Stack Conds | 10.10 | |
| Standard Uncertainty Velocity at Stack Conditions (%) | 1.10 | |
| **Expanded Uncertainty Velocity (at Stack Conditions)** | **2.21 (%)** | |

### Measurement Uncertainty Calculations - Flowrate at Stack Conditions

| Contribution From | Standard u/c ($m^2$) |
|---|---|
| Area (m2) | 0.00302 |
| | |
| Measured Average Flowrate ($m^3/s$) at Stack Conds | 3.02 |
| Maximum Average Flowrate ($m^3/s$) at Stack Conds | 3.08 |
| Standard Uncertainty Flowrate ($m^3/s$) at Stack Conditions (%) | 2.11 |
| **Expanded Uncertainty Flowrate ($m^3/s$) at Stack Conditions** | **4.23 (%)** |

### Measurement Uncertainty Calculations - Flowrate at STP & Wet Gas

| Contribution From | Standard u/c (%) |
|---|---|
| | |
| Temperature Calibration (K) | 0.5 |
| Barometer Calibration | 0.5 |
| | |
| Measured Average Flowrate ($m^3/s$) at STP Wet | 2.77 |
| Maximum Average Flowrate ($m^3/s$) at STP Wet | 2.84 |
| Standard Uncertainty Flowrate ($m^3/s$) at STP Wet | 2.59 |
| **Expanded Uncertainty Flowrate ($m^3/s$) at STP Wet** | **5.18 (%)** |

| | | | | |
|---|---|---|---|---|
| Adler Pelzer Group | | | Installation Name | : Spraybooths |
| Permit No | : PPC 92935 | | Visit Details | : Compliance - November 2023 |
| Variation No | : V1 | | Survey Dates | : 9th – 10th November 2023, 18th December 2023 & 22nd January 2024 |
| Report Ref | : P5617 | : R001 | Report Issue Date | : 8th February 2024 |

## Stack Reference EX 2 - Spraybooth (Mini) No.1

### Measurement Uncertainty Calculations - Velocity at Stack Conditions

| Contribution From | Standard u/c (Pa) | |
|---|---|---|
| Pitot Calibration Uncertainty Contribution | 0.32 | A |
| Manometer Calibration Uncertainty Contribution | 0.317083333 | B |
| Variation in Actual Pitot reading at sample points | 1.03 | C |
| | | |
| Combined u/c (Pa) = | **Combined u/c (Pa)** | |
| SQRT $(A/\sqrt{3})^2 + (B/\sqrt{3})^2 + (C/\sqrt{3})^2$) | 0.65 | |
| **Expanded Uncertainty of Flow Measurements Pa** | **1.29** | |
| | | |
| | **Standard u/c (K)** | |
| Temperature Calibration (K) | 1.47 | D |
| Variation in Actual Temp reading at sample points | 0.00 | E |
| | | |
| Combined u/c of Temp (K) | **Combined u/c (K)** | |
| SQRT $((D/\sqrt{3^2}) + (E/\sqrt{3})^2)$ | 0.85 | |
| **Expanded Uncertainty of Temp Measurements (K)** | **1.69** | |
| | | |
| Measured Average Velocity (m/s) at Stack Conds | 10.07 | |
| Maximum Average Velocity (m/s) at Stack Conds | 10.21 | |
| Standard Uncertainty Velocity at Stack Conditions (%) | 1.30 | |
| **Expanded Uncertainty Velocity (at Stack Conditions)** | **2.61 (%)** | |

### Measurement Uncertainty Calculations - Flowrate at Stack Conditions

| Contribution From | Standard u/c ($m^2$) |
|---|---|
| Area (m2) | 0.00302 |
| | |
| Measured Average Flowrate ($m^3/s$) at Stack Conds | 3.04 |
| Maximum Average Flowrate ($m^3/s$) at Stack Conds | 3.11 |
| Standard Uncertainty Flowrate ($m^3/s$) at Stack Conditions (%) | 2.32 |
| **Expanded Uncertainty Flowrate ($m^3/s$) at Stack Conditions** | **4.64 (%)** |

### Measurement Uncertainty Calculations - Flowrate at STP & Wet Gas

| Contribution From | Standard u/c (%) |
|---|---|
| | |
| Temperature Calibration (K) | 0.5 |
| Barometer Calibration | 0.5 |
| | |
| Measured Average Flowrate ($m^3/s$) at STP Wet | 2.78 |
| Maximum Average Flowrate ($m^3/s$) at STP Wet | 2.86 |
| Standard Uncertainty Flowrate ($m^3/s$) at STP Wet | 2.79 |
| **Expanded Uncertainty Flowrate ($m^3/s$) at STP Wet** | **5.59 (%)** |

## Stack Reference EX 4 - Spraybooth (McLaren) I

### Measurement Uncertainty Calculations - Velocity at Stack Conditions

| Contribution From | Standard u/c (Pa) | |
|---|---|---|
| Pitot Calibration Uncertainty Contribution | 0.21 | A |
| Manometer Calibration Uncertainty Contribution | 0.212208333 | B |
| Variation in Actual Pitot reading at sample points | 1.34 | C |
| | | |
| Combined u/c (Pa) = | **Combined u/c (Pa)** | |
| SQRT $(A/\sqrt{3})^2 + (B/\sqrt{3})^2 + (C/\sqrt{3})^2$) | 0.79 | |
| **Expanded Uncertainty of Flow Measurements Pa** | **1.58** | |
| | | |
| | **Standard u/c (K)** | |
| Temperature Calibration (K) | 1.46 | D |
| Variation in Actual Temp reading at sample points | 2.38 | E |
| | | |
| Combined u/c of Temp (K) | **Combined u/c (K)** | |
| SQRT $((D/\sqrt{3^2}) + (E/\sqrt{3})^2)$ | 1.61 | |
| **Expanded Uncertainty of Temp Measurements (K)** | **3.22** | |
| | | |
| Measured Average Velocity (m/s) at Stack Conds | 8.39 | |
| Maximum Average Velocity (m/s) at Stack Conds | 8.59 | |
| Standard Uncertainty Velocity at Stack Conditions (%) | 2.41 | |
| **Expanded Uncertainty Velocity (at Stack Conditions)** | **4.81 (%)** | |

### Measurement Uncertainty Calculations - Flowrate at Stack Conditions

| Contribution From | Standard u/c ($m^2$) |
|---|---|
| Area (m2) | 0.00407 |
| | |
| Measured Average Flowrate ($m^3/s$) at Stack Conds | 3.42 |
| Maximum Average Flowrate ($m^3/s$) at Stack Conds | 3.53 |
| Standard Uncertainty Flowrate ($m^3/s$) at Stack Conditions (%) | 3.43 |
| **Expanded Uncertainty Flowrate ($m^3/s$) at Stack Conditions** | **6.86 (%)** |

### Measurement Uncertainty Calculations - Flowrate at STP & Wet Gas

| Contribution From | Standard u/c (%) |
|---|---|
| | |
| Temperature Calibration (K) | 0.5 |
| Barometer Calibration | 0.5 |
| | |
| Measured Average Flowrate ($m^3/s$) at STP Wet | 3.13 |
| Maximum Average Flowrate ($m^3/s$) at STP Wet | 3.25 |
| Standard Uncertainty Flowrate ($m^3/s$) at STP Wet | 3.91 |
| **Expanded Uncertainty Flowrate ($m^3/s$) at STP Wet** | **7.83 (%)** |

| | | | | |
|---|---|---|---|---|
| Adler Pelzer Group | | | Installation Name | : Spraybooths |
| Permit No | : PPC 92935 | | Visit Details | : Compliance - November 2023 |
| Variation No | : V1 | | Survey Dates | : 9th – 10th November 2023, 18th December 2023 & 22nd January 2024 |
| Report Ref | : P5617 | : R001 | Report Issue Date | : 8th February 2024 |

## Stack Reference EX 5 - Spraybooth (McLaren) N

### Measurement Uncertainty Calculations - Velocity at Stack Conditions

| Contribution From | Standard u/c (Pa) | |
|---|---|---|
| Pitot Calibration Uncertainty Contribution | 0.12 | A |
| Manometer Calibration Uncertainty Contribution | 0.121916667 | B |
| Variation in Actual Pitot reading at sample points | 0.82 | C |
| | | |
| Combined u/c (Pa) = | **Combined u/c (Pa)** | |
| SQRT $(A/\sqrt{3})^2 + (B/\sqrt{3})^2 + (C/\sqrt{3})^2$) | 0.49 | |
| **Expanded Uncertainty of Flow Measurements Pa** | **0.97** | |
| | | |
| | **Standard u/c (K)** | |
| Temperature Calibration (K) | 1.47 | D |
| Variation in Actual Temp reading at sample points | 0.00 | E |
| | | |
| Combined u/c of Temp (K) | **Combined u/c (K)** | |
| SQRT $((D/\sqrt{3^2}) + (E/\sqrt{3})^2)$ | 0.85 | |
| **Expanded Uncertainty of Temp Measurements (K)** | **1.70** | |
| | | |
| Measured Average Velocity (m/s) at Stack Conds | 6.33 | |
| Maximum Average Velocity (m/s) at Stack Conds | 6.47 | |
| Standard Uncertainty Velocity at Stack Conditions (%) | 2.27 | |
| **Expanded Uncertainty Velocity (at Stack Conditions)** | **4.54 (%)** | |

### Measurement Uncertainty Calculations - Flowrate at Stack Conditions

| Contribution From | Standard u/c ($m^2$) |
|---|---|
| Area (m2) | 0.00302 |
| | |
| Measured Average Flowrate ($m^3/s$) at Stack Conds | 1.91 |
| Maximum Average Flowrate ($m^3/s$) at Stack Conds | 1.97 |
| Standard Uncertainty Flowrate ($m^3/s$) at Stack Conditions (%) | 3.29 |
| **Expanded Uncertainty Flowrate ($m^3/s$) at Stack Conditions** | **6.59 (%)** |

### Measurement Uncertainty Calculations - Flowrate at STP & Wet Gas

| Contribution From | Standard u/c (%) |
|---|---|
| | |
| Temperature Calibration (K) | 0.5 |
| Barometer Calibration | 0.5 |
| | |
| Measured Average Flowrate ($m^3/s$) at STP Wet | 1.74 |
| Maximum Average Flowrate ($m^3/s$) at STP Wet | 1.81 |
| Standard Uncertainty Flowrate ($m^3/s$) at STP Wet | 3.77 |
| **Expanded Uncertainty Flowrate ($m^3/s$) at STP Wet** | **7.54 (%)** |

| | | | | |
|---|---|---|---|---|
| Adler Pelzer Group | | | Installation Name | : Spraybooths |
| Permit No | : PPC 92935 | | Visit Details | : Compliance - November 2023 |
| Variation No | : V1 | | Survey Dates | : 9th – 10th November 2023, 18th December 2023 & 22nd January 2024 |
| Report Ref | : P5617 | : R001 | Report Issue Date | : 8th February 2024 |

# Stack Reference SB5 Bentley

## Measurement Uncertainty Calculations - Velocity at Stack Conditions

| Contribution From | Standard u/c (Pa) | |
|---|---|---|
| Pitot Calibration Uncertainty Contribution | 0.01 | A |
| Manometer Calibration Uncertainty Contribution | 0.008666667 | B |
| Variation in Actual Pitot reading at sample points | 0.63 | C |
| | | |
| Combined u/c (Pa) = | **Combined u/c (Pa)** | |
| SQRT $(A/\sqrt{3})^2 + (B/\sqrt{3})^2 + (C/\sqrt{3})^2$ | 0.36 | |
| **Expanded Uncertainty of Flow Measurements Pa** | **0.72** | |
| | | |
| | **Standard u/c (K)** | |
| Temperature Calibration (K) | 1.46 | D |
| Variation in Actual Temp reading at sample points | 0.00 | E |
| | | |
| Combined u/c of Temp (K) | **Combined u/c (K)** | |
| SQRT $((D/\sqrt{3^2}) + (E/\sqrt{3})^2)$ | 0.84 | |
| **Expanded Uncertainty of Temp Measurements (K)** | **1.68** | |
| | | |
| Measured Average Velocity (m/s) at Stack Conds | 1.64 | |
| Maximum Average Velocity (m/s) at Stack Conds | 1.96 | |
| Standard Uncertainty Velocity at Stack Conditions (%) | 19.36 | |
| **Expanded Uncertainty Velocity (at Stack Conditions)** | **38.71 (%)** | |

## Measurement Uncertainty Calculations - Flowrate at Stack Conditions

| Contribution From | Standard u/c ($m^2$) |
|---|---|
| Area (m2) | 0.00196 |
| | |
| Measured Average Flowrate ($m^3/s$) at Stack Conds | 0.32 |
| Maximum Average Flowrate ($m^3/s$) at Stack Conds | 0.39 |
| Standard Uncertainty Flowrate ($m^3/s$) at Stack Conditions (%) | 20.55 |
| **Expanded Uncertainty Flowrate ($m^3/s$) at Stack Conditions** | **41.10 (%)** |

## Measurement Uncertainty Calculations - Flowrate at STP & Wet Gas

| Contribution From | Standard u/c (%) |
|---|---|
| | |
| Temperature Calibration (K) | 0.5 |
| Barometer Calibration | 0.5 |
| | |
| Measured Average Flowrate ($m^3/s$) at STP Wet | 0.30 |
| Maximum Average Flowrate ($m^3/s$) at STP Wet | 0.36 |
| Standard Uncertainty Flowrate ($m^3/s$) at STP Wet | 21.12 |
| **Expanded Uncertainty Flowrate ($m^3/s$) at STP Wet** | **42.23 (%)** |

| | | | | |
|---|---|---|---|---|
| Adler Pelzer Group | | | Installation Name | : Spraybooths |
| Permit No | : PPC 92935 | | Visit Details | : Compliance - November 2023 |
| Variation No | : V1 | | Survey Dates | : 9th – 10th November 2023, 18th December 2023 & 22nd January 2024 |
| Report Ref | : P5617 | : R001 | Report Issue Date | : 8th February 2024 |

# Stack Reference SB7 Bentley

## Measurement Uncertainty Calculations - Velocity at Stack Conditions

| Contribution From | Standard u/c (Pa) | |
|---|---|---|
| Pitot Calibration Uncertainty Contribution | 0.29 | A |
| Manometer Calibration Uncertainty Contribution | 0.290541667 | B |
| Variation in Actual Pitot reading at sample points | 1.71 | C |
| | | |
| Combined u/c (Pa) = | **Combined u/c (Pa)** | |
| SQRT $(A/\sqrt{3})^2 + (B/\sqrt{3})^2 + (C/\sqrt{3})^2$) | 1.02 | |
| **Expanded Uncertainty of Flow Measurements Pa** | **2.03** | |
| | | |
| | **Standard u/c (K)** | |
| Temperature Calibration (K) | 1.46 | D |
| Variation in Actual Temp reading at sample points | 0.00 | E |
| | | |
| Combined u/c of Temp (K) | **Combined u/c (K)** | |
| SQRT $((D/\sqrt{3^2}) + (E/\sqrt{3})^2)$ | 0.84 | |
| **Expanded Uncertainty of Temp Measurements (K)** | **1.68** | |
| | | |
| Measured Average Velocity (m/s) at Stack Conds | 9.74 | |
| Maximum Average Velocity (m/s) at Stack Conds | 9.94 | |
| Standard Uncertainty Velocity at Stack Conditions (%) | 2.03 | |
| **Expanded Uncertainty Velocity (at Stack Conditions)** | **4.06 (%)** | |

## Measurement Uncertainty Calculations - Flowrate at Stack Conditions

| Contribution From | Standard u/c ($m^2$) |
|---|---|
| Area (m2) | 0.00385 |
| | |
| Measured Average Flowrate ($m^3/s$) at Stack Conds | 3.75 |
| Maximum Average Flowrate ($m^3/s$) at Stack Conds | 3.86 |
| Standard Uncertainty Flowrate ($m^3/s$) at Stack Conditions (%) | 3.05 |
| **Expanded Uncertainty Flowrate ($m^3/s$) at Stack Conditions** | **6.10 (%)** |

## Measurement Uncertainty Calculations - Flowrate at STP & Wet Gas

| Contribution From | Standard u/c (%) |
|---|---|
| | |
| Temperature Calibration (K) | 0.5 |
| Barometer Calibration | 0.5 |
| | |
| Measured Average Flowrate ($m^3/s$) at STP Wet | 3.49 |
| Maximum Average Flowrate ($m^3/s$) at STP Wet | 3.61 |
| Standard Uncertainty Flowrate ($m^3/s$) at STP Wet | 3.53 |
| **Expanded Uncertainty Flowrate ($m^3/s$) at STP Wet** | **7.06 (%)** |

| | | | | |
|---|---|---|---|---|
| Adler Pelzer Group | | | Installation Name | : Spraybooths |
| Permit No | : PPC 92935 | | Visit Details | : Compliance - November 2023 |
| Variation No | : V1 | | Survey Dates | : 9th – 10th November 2023, 18th December 2023 & 22nd January 2024 |
| Report Ref | : P5617 | : R001 | Report Issue Date | : 8th February 2024 |

## Stack Reference X152 Jaguar Spraybooth

### Measurement Uncertainty Calculations - Velocity at Stack Conditions

| Contribution From | Standard u/c (Pa) | |
|---|---|---|
| Pitot Calibration Uncertainty Contribution | 0.19 | A |
| Manometer Calibration Uncertainty Contribution | 0.189916667 | B |
| Variation in Actual Pitot reading at sample points | 0.69 | C |
| | | |
| Combined u/c (Pa) = | **Combined u/c (Pa)** | |
| SQRT $(A/\sqrt{3})^2 + (B/\sqrt{3})^2 + (C/\sqrt{3})^2$) | 0.43 | |
| **Expanded Uncertainty of Flow Measurements Pa** | **0.85** | |
| | | |
| | **Standard u/c (K)** | |
| Temperature Calibration (K) | 1.45 | D |
| Variation in Actual Temp reading at sample points | 0.00 | E |
| | | |
| Combined u/c of Temp (K) | **Combined u/c (K)** | |
| SQRT $((D/\sqrt{3^2}) + (E/\sqrt{3})^2)$ | 0.84 | |
| **Expanded Uncertainty of Temp Measurements (K)** | **1.67** | |
| | | |
| Measured Average Velocity (m/s) at Stack Conds | 7.71 | |
| Maximum Average Velocity (m/s) at Stack Conds | 7.82 | |
| Standard Uncertainty Velocity at Stack Conditions (%) | 1.41 | |
| **Expanded Uncertainty Velocity (at Stack Conditions)** | **2.81 (%)** | |

### Measurement Uncertainty Calculations - Flowrate at Stack Conditions

| Contribution From | Standard u/c ($m^2$) |
|---|---|
| Area (m2) | 0.00181 |
| | |
| Measured Average Flowrate ($m^3/s$) at Stack Conds | 1.40 |
| Maximum Average Flowrate ($m^3/s$) at Stack Conds | 1.43 |
| Standard Uncertainty Flowrate ($m^3/s$) at Stack Conditions (%) | 2.42 |
| **Expanded Uncertainty Flowrate ($m^3/s$) at Stack Conditions** | **4.84 (%)** |

### Measurement Uncertainty Calculations - Flowrate at STP & Wet Gas

| Contribution From | Standard u/c (%) |
|---|---|
| | |
| Temperature Calibration (K) | 0.5 |
| Barometer Calibration | 0.5 |
| | |
| Measured Average Flowrate ($m^3/s$) at STP Wet | 1.33 |
| Maximum Average Flowrate ($m^3/s$) at STP Wet | 1.37 |
| Standard Uncertainty Flowrate ($m^3/s$) at STP Wet | 2.90 |
| **Expanded Uncertainty Flowrate ($m^3/s$) at STP Wet** | **5.81 (%)** |

| | | | | |
|---|---|---|---|---|
| Adler Pelzer Group | | | Installation Name | : Spraybooths |
| Permit No | : PPC 92935 | | Visit Details | : Compliance - November 2023 |
| Variation No | : V1 | | Survey Dates | : 9th – 10th November 2023, 18th December 2023 & 22nd January 2024 |
| Report Ref | : P5617 | : R001 | Report Issue Date | : 8th February 2024 |

## Stack Reference EX 3 Spraybooth No.3

### Measurement Uncertainty Calculations - Velocity at Stack Conditions

| Contribution From | Standard u/c (Pa) | |
|---|---|---|
| Pitot Calibration Uncertainty Contribution | 0.14 | A |
| Manometer Calibration Uncertainty Contribution | 0.135208333 | B |
| Variation in Actual Pitot reading at sample points | 0.62 | C |
| | | |
| Combined u/c (Pa) = | **Combined u/c (Pa)** | |
| SQRT $(A/\sqrt{3})^2 + (B/\sqrt{3})^2 + (C/\sqrt{3})^2$) | 0.38 | |
| **Expanded Uncertainty of Flow Measurements Pa** | **0.75** | |
| | | |
| | **Standard u/c (K)** | |
| Temperature Calibration (K) | 1.46 | D |
| Variation in Actual Temp reading at sample points | 0.00 | E |
| | | |
| Combined u/c of Temp (K) | **Combined u/c (K)** | |
| SQRT $((D/\sqrt{3^2}) + (E/\sqrt{3})^2)$ | 0.84 | |
| **Expanded Uncertainty of Temp Measurements (K)** | **1.68** | |
| | | |
| Measured Average Velocity (m/s) at Stack Conds | 6.49 | |
| Maximum Average Velocity (m/s) at Stack Conds | 6.60 | |
| Standard Uncertainty Velocity at Stack Conditions (%) | 1.68 | |
| **Expanded Uncertainty Velocity (at Stack Conditions)** | **3.36 (%)** | |

### Measurement Uncertainty Calculations - Flowrate at Stack Conditions

| Contribution From | Standard u/c ($m^2$) |
|---|---|
| Area (m2) | 0.00302 |
| | |
| Measured Average Flowrate ($m^3/s$) at Stack Conds | 1.96 |
| Maximum Average Flowrate ($m^3/s$) at Stack Conds | 2.01 |
| Standard Uncertainty Flowrate ($m^3/s$) at Stack Conditions (%) | 2.69 |
| **Expanded Uncertainty Flowrate ($m^3/s$) at Stack Conditions** | **5.39 (%)** |

### Measurement Uncertainty Calculations - Flowrate at STP & Wet Gas

| Contribution From | Standard u/c (%) |
|---|---|
| | |
| Temperature Calibration (K) | 0.5 |
| Barometer Calibration | 0.5 |
| | |
| Measured Average Flowrate ($m^3/s$) at STP Wet | 1.86 |
| Maximum Average Flowrate ($m^3/s$) at STP Wet | 1.92 |
| Standard Uncertainty Flowrate ($m^3/s$) at STP Wet | 3.18 |
| **Expanded Uncertainty Flowrate ($m^3/s$) at STP Wet** | **6.35 (%)** |