# SAFETY DATA SHEET
According to EC No 1907/2006 as amended as at the date of this SDS

# AeroShell Compound 07

| Version | Revision Date: | SDS Number: | Date of last issue: 07.04.2023 |
|---|---|---|---|
| 8.2 | 29.07.2024 | 800001000357 | Print Date 30.07.2024 |

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

### 1.1 Product identifier

| | | |
|---|---|---|
| Trade name | : | AeroShell Compound 07 |
| Product code | : | 001A0037 |
| Unique Formula Identifier (UFI) | : | 6642-J0UK-000D-2SW9 |

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

| | | |
|---|---|---|
| Use of the Substance/Mixture | : | Glycol for aircraft de-icing., For further details consult the AeroShell Book on www.shell.com/aviation. |
| Uses advised against | : | This product must be used, handled, and applied in accordance with the requirements of the equipment manufacturer's manuals, bulletins and other documentation.<br>This product must not be used in applications other than those listed in Section 1 without first seeking the advice of the supplier. |

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

| | | |
|---|---|---|
| Manufacturer/Supplier | : | **Belgian Shell NV/SA**<br>Kantersteen – Cantersteen 47<br>B-1000 Brussel - Bruxelles |
| Telephone | : | (+32) 02508 9298 |
| Telefax | : | |
| Contact for Safety Data Sheet | : | If you have any enquiries about the content of this SDS please email lubricantSDS@shell.com |

### 1.4 Emergency telephone number

: +32 2 2167469
Antipoison Centre: 070 245 245

## SECTION 2: Hazards identification

### 2.1 Classification of the substance or mixture

**Classification (REGULATION (EC) No 1272/2008)**

| | |
|---|---|
| Flammable liquids, Category 3 | H226: Flammable liquid and vapour. |
| Acute toxicity, Category 4, Oral | H302: Harmful if swallowed. |

| | |
|---|---|
| Specific target organ toxicity - repeated exposure, Category 2, Kidney | H373: May cause damage to organs through prolonged or repeated exposure if swallowed. |

### 2.2 Label elements

**Labelling (REGULATION (EC) No 1272/2008)**

Hazard pictograms :

Signal word : Warning

Hazard statements :

PHYSICAL HAZARDS:
H226 Flammable liquid and vapour.
HEALTH HAZARDS:
H302 Harmful if swallowed.
H373 May cause damage to organs through prolonged or repeated exposure if swallowed.
ENVIRONMENTAL HAZARDS:
Not classified as environmental hazard according to CLP criteria.

Precautionary statements :

**Prevention:**

P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P270 Do not eat, drink or smoke when using this product.

**Response:**

P301 + P312 IF SWALLOWED: Call a POISON CENTER/doctor if you feel unwell.
P370 + P378 In case of fire: Use appropriate media to extinguish.

**Storage:**

P403 + P235 Store in a well-ventilated place. Keep cool.

**Disposal:**

P501 Dispose of contents/ container to an approved waste disposal plant.

Hazardous components which must be listed on the label:
Contains ethanediol.

### 2.3 Other hazards

This mixture does not contain any REACH registered substances that are assessed to be a PBT or a vPvB.

Ecological information: The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

Toxicological information: The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

Intentional abuse, misuse or other massive exposure may cause multiple organ damage and or death.

## SECTION 3: Composition/information on ingredients

### 3.2 Mixtures

Chemical nature : Mixture of ethylene glycol, water and additives.

**Components**

| Chemical name | CAS-No.<br>EC-No.<br>Index-No.<br>Registration number | Classification | Concentration (% w/w) |
|---|---|---|---|
| Ethanediol | 107-21-1<br>203-473-3<br>603-027-00-1<br>01-2119456816-28 | Acute Tox. 4; H302<br>STOT RE 2; H373 (Kidney) | 85 - 95 |
| Ethanol | 64-17-5<br>200-578-6<br>603-002-00-5<br>01-2119457610-43 | Flam. Liq. 2; H225<br>Eye Irrit. 2; H319<br><br>specific concentration limit<br>Eye Irrit. 2<br>50 % | 1 - 5 |

For explanation of abbreviations see section 16.

## SECTION 4: First aid measures

### 4.1 Description of first aid measures

General advice : Not expected to be a health hazard when used under normal conditions.

Protection of first-aiders : When administering first aid, ensure that you are wearing the appropriate personal protective equipment according to the incident, injury and surroundings.

If inhaled : Remove to fresh air. If rapid recovery does not occur, transport to nearest medical facility for additional treatment.

In case of skin contact : Remove contaminated clothing. Flush exposed area with water and follow by washing with soap if available.
If persistent irritation occurs, obtain medical attention.

| | | |
|---|---|---|
| In case of eye contact | : | Flush eye with copious quantities of water.<br>Remove contact lenses, if present and easy to do. Continue rinsing.<br>If persistent irritation occurs, obtain medical attention. |
| If swallowed | : | If swallowed, do not induce vomiting: transport to nearest medical facility for additional treatment. If vomiting occurs spontaneously, keep head below hips to prevent aspiration.<br>Rinse mouth. |

**4.2 Most important symptoms and effects, both acute and delayed**

| | | |
|---|---|---|
| Symptoms | : | Kidney toxicity may be recognized by blood in the urine or increased or decreased urine flow. Other signs and symptoms can include nausea, vomiting, abdominal cramps, diarrhoea, lumbar pain shortly after ingestion, and possibly narcosis and death.<br>Not considered to be an inhalation hazard under normal conditions of use.<br>Respiratory irritation signs and symptoms may include a temporary burning sensation of the nose and throat, coughing, and/or difficulty breathing.<br>No specific hazards under normal use conditions.<br>Eye irritation signs and symptoms may include a burning sensation, redness, swelling, and/or blurred vision.<br>Skin irritation signs and symptoms may include a burning sensation, redness, swelling, and/or blisters.<br>Ingestion may result in nausea, vomiting and/or diarrhoea.<br>High concentrations may cause central nervous system depression resulting in headaches, dizziness and nausea; continued inhalation may result in unconsciousness and/or death. |

**4.3 Indication of any immediate medical attention and special treatment needed**

| | | |
|---|---|---|
| Treatment | : | IMMEDIATE TREATMENT IS EXTREMELY IMPORTANT!<br>Call a doctor or poison control center for guidance.<br>Treat symptomatically.<br>May cause significant renal, respiratory, and CNS toxicity.<br>May cause significant acidosis.<br>The preferred treatment is immediate transportation to a medical facility and use of appropriate treatment including possible administration of activated charcoal, gastric lavage and or gastric aspiration. If none of the above are immediately available and a delay of more than one hour is anticipated before such medical attention can be obtained, induction of vomiting may be appropriate using IPECAC syrup (Contraindicated if there are any signs of CNS depression). This should be considered on a case by case basis following specialist advice.<br>Specific other treatments may include ethanol therapy, fomepizole, treatment of acidosis and haemodialysis. Seek specialist advice without delay. |

## SECTION 5: Firefighting measures

### 5.1 Extinguishing media

Suitable extinguishing media : Foam, water spray or fog. Dry chemical powder, carbon dioxide, sand or earth may be used for small fires only.

Unsuitable extinguishing media : Do not use water in a jet.

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

Specific hazards during firefighting : Will float and can be reignited on surface water.
Hazardous combustion products may include:
A complex mixture of airborne solid and liquid particulates and gases (smoke).
Carbon monoxide may be evolved if incomplete combustion occurs.
Unidentified organic and inorganic compounds.

### 5.3 Advice for firefighters

Special protective equipment for firefighters : Proper protective equipment including chemical resistant gloves are to be worn; chemical resistant suit is indicated if large contact with spilled product is expected. Self-Contained Breathing Apparatus must be worn when approaching a fire in a confined space. Select fire fighter's clothing approved to relevant Standards (e.g. Europe: EN469).

Further information : Keep adjacent containers cool by spraying with water.

## SECTION 6: Accidental release measures

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

Personal precautions : 6.1.1 For non emergency personnel:
Avoid contact with skin and eyes.
6.1.2 For emergency responders:
Avoid contact with skin and eyes.

### 6.2 Environmental precautions

Environmental precautions : Shut off leaks, if possible without personal risks. Remove all possible sources of ignition in the surrounding area. Use appropriate containment to avoid environmental contamination. Prevent from spreading or entering drains, ditches or rivers by using sand, earth, or other appropriate barriers. Attempt to disperse the vapour or to direct its flow to a safe location for example by using fog sprays. Take precautionary measures against static discharge. Ensure electrical continuity by bonding and grounding (earthing) all equipment.

Local authorities should be advised if significant spillages cannot be contained.

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

Methods for cleaning up : Slippery when spilt. Avoid accidents, clean up immediately.
Prevent from spreading by making a barrier with sand, earth or other containment material.
Reclaim liquid directly or in an absorbent.
Soak up residue with an absorbent such as clay, sand or other suitable material and dispose of properly.

### 6.4 Reference to other sections

For guidance on selection of personal protective equipment see Section 8 of this Safety Data Sheet.,
For guidance on disposal of spilled material see Section 13 of this Safety Data Sheet.
Local authorities should be advised if significant spillages cannot be contained.

## SECTION 7: Handling and storage

### 7.1 Precautions for safe handling

Technical measures : Use local exhaust ventilation if there is risk of inhalation of vapours, mists or aerosols.
Use the information in this data sheet as input to a risk assessment of local circumstances to help determine appropriate controls for safe handling, storage and disposal of this material.

Advice on safe handling : Extinguish any naked flames. Do not smoke. Remove ignition sources. Avoid sparks.
Avoid prolonged or repeated contact with skin.
Avoid inhaling vapour and/or mists.
Use only in well-ventilated areas.
When handling product in drums, safety footwear should be worn and proper handling equipment should be used.
Properly dispose of any contaminated rags or cleaning materials in order to prevent fires.

Product Transfer : Wait 2 minutes after tank filling (for tanks such as those on road tanker vehicles) before opening hatches or manholes. Wait 30 minutes after tank filling ( for large storage tanks) before opening hatches or manholes. Even with proper grounding and bonding, this material can still accumulate an electrostatic charge. If sufficient charge is allowed to accumulate, electrostatic discharge and ignition of flammable air-vapour mixtures can occur. Be aware of handling operations that may give rise to additional hazards that result from the accumulation of static charges. These include but are not limited to pumping (especially turbulent flow), mixing, filtering, splash filling, cleaning and filling of tanks and containers, sampling, switch loading, gauging, vacuum truck operations, and mechanical movements. These activities may lead to

static discharge e.g. spark formation. Restrict line velocity during pumping in order to avoid generation of electrostatic discharge (≤ 1 m/s until fill pipe submerged to twice its diameter, then ≤ 7 m/s). Avoid splash filling. Do NOT use compressed air for filling, discharging, or handling operations.

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

Further information on storage stability : Must be stored in a diked (bunded) well- ventilated area, away from sunlight, ignition sources and other sources of heat.
Use properly labeled and closable containers.
Keep container tightly closed and in a cool, well-ventilated place.
Store at ambient temperature.
Refer to section 15 for any additional specific legislation covering the packaging and storage of this product.

Packaging material : Suitable material: For containers or container linings, use mild steel or high density polyethylene.

Suitable material: For container linings, use amine-adduct cured epoxy paint.
Unsuitable material: Aluminium, PVC.

Container Advice : Polyethylene containers should not be exposed to high temperatures because of possible risk of distortion.

### 7.3 Specific end use(s)

Specific use(s) : Not applicable

See additional references that provide safe handling practices: American Petroleum Institute 2003 (Protection Against Ignitions Arising out of Static, Lightning and Stray Currents) or National Fire Protection Agency 77 (Recommended Practices on Static Electricity).

## SECTION 8: Exposure controls/personal protection

### 8.1 Control parameters

**Occupational Exposure Limits**

| Components | CAS-No. | Value type (Form of exposure) | Control parameters | Basis |
|---|---|---|---|---|
| Ethanediol | 107-21-1 | TLV 8 hr (aerosol) | 20 ppm<br>52 mg/m3 | BE OEL |
| | Further information: Absorption of the agent through the skin, the mucous membranes or the eyes makes up an important part of total exposure. This absorption can be the result of direct contact as well as the presence in air. | | | |
| Ethanediol | | TLV 15 min (aerosol) | 40 ppm<br>104 mg/m3 | BE OEL |
| | Further information: Absorption of the agent through the skin, the mucous | | | |

| | | | | |
|---|---|---|---|---|
| | membranes or the eyes makes up an important part of total exposure. This absorption can be the result of direct contact as well as the presence in air. | | | |
| Ethanediol | | STEL | 40 ppm<br>104 mg/m3 | 2000/39/EC |
| | Further information: Identifies the possibility of significant uptake through the skin, Indicative | | | |
| Ethanediol | | TWA | 20 ppm<br>52 mg/m3 | 2000/39/EC |
| | Further information: Identifies the possibility of significant uptake through the skin, Indicative | | | |
| Ethanol | 64-17-5 | TLV 8 hr | 1.000 ppm<br>1.907 mg/m3 | BE OEL |

**Biological occupational exposure limits**

No biological limit allocated.

**8.2 Exposure controls**

**Engineering measures**

The level of protection and types of controls necessary will vary depending upon potential exposure conditions. Select controls based on a risk assessment of local circumstances. Appropriate measures include:
Adequate ventilation to control airborne concentrations.

Where material is heated, sprayed or mist formed, there is greater potential for airborne concentrations to be generated.

General Information:
Define procedures for safe handling and maintenance of controls.
Educate and train workers in the hazards and control measures relevant to normal activities associated with this product.
Ensure appropriate selection, testing and maintenance of equipment used to control exposure, e.g. personal protective equipment, local exhaust ventilation.
Drain down system prior to equipment break-in or maintenance.
Retain drain downs in sealed storage pending disposal or subsequent recycle.
Always observe good personal hygiene measures, such as washing hands after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Discard contaminated clothing and footwear that cannot be cleaned. Practice good housekeeping.
Do not ingest. If swallowed, then seek immediate medical assistance

**Personal protective equipment**

The provided information is made in consideration of the PPE directive (Council Directive 89/686/EEC) and the CEN European Committee for Standardisation (CEN) standards.

Personal protective equipment (PPE) should meet recommended national standards. Check with PPE suppliers.

Eye protection : If material is handled such that it could be splashed into eyes, protective eyewear is recommended.
Approved to EU Standard EN166.

Hand protection

| | | |
|---|---|---|
| Remarks | : | Where hand contact with the product may occur the use of gloves approved to relevant standards (e.g. Europe: EN374, US: F739) made from the following materials may provide suitable chemical protection. PVC, neoprene or nitrile rubber gloves Suitability and durability of a glove is dependent on usage, e.g. frequency and duration of contact, chemical resistance of glove material, dexterity. Always seek advice from glove suppliers. Contaminated gloves should be replaced. Personal hygiene is a key element of effective hand care. Gloves must only be worn on clean hands. After using gloves, hands should be washed and dried thoroughly. Application of a non-perfumed moisturizer is recommended. For continuous contact we recommend gloves with breakthrough time of more than 240 minutes with preference for > 480 minutes where suitable gloves can be identified. For short-term/splash protection we recommend the same but recognize that suitable gloves offering this level of protection may not be available and in this case a lower breakthrough time maybe acceptable so long as appropriate maintenance and replacement regimes are followed. Glove thickness is not a good predictor of glove resistance to a chemical as it is dependent on the exact composition of the glove material. Glove thickness should be typically greater than 0.35 mm depending on the glove make and model. |
| Skin and body protection | : | Skin protection is not ordinarily required beyond standard work clothes.<br>It is good practice to wear chemical resistant gloves. |
| Respiratory protection | : | No respiratory protection is ordinarily required under normal conditions of use.<br>In accordance with good industrial hygiene practices, precautions should be taken to avoid breathing of material.<br>If engineering controls do not maintain airborne concentrations to a level which is adequate to protect worker health, select respiratory protection equipment suitable for the specific conditions of use and meeting relevant legislation.<br>Check with respiratory protective equipment suppliers.<br>Where air-filtering respirators are suitable, select an appropriate combination of mask and filter.<br>Select a filter suitable for combined particulate/organic gases and vapours [Type A/Type P boiling point > 65°C (149°F)] meeting EN14387 and EN143. |
| Thermal hazards | : | Not applicable |

## SECTION 9: Physical and chemical properties

### 9.1 Information on basic physical and chemical properties

| | | |
|---|---|---|
| Physical state | : | Liquid at room temperature. |
| Colour | : | colourless |
| Odour | : | characteristic |
| Odour Threshold | : | Data not available |
| pour point | : | Method: Unspecified<br>Not applicable |
| Melting / freezing point | | Data not available |
| Initial boiling point and boiling range | : | > 100 °Cestimated value(s) |
| Flammability | | |
| Flammability (solid, gas) | : | Data not available |
| Lower explosion limit and upper explosion limit / flammability limit | | |
| Upper explosion limit / upper flammability limit | : | Typical 15 %(V) |
| Lower explosion limit / Lower flammability limit | : | Typical 3 %(V) |
| Flash point | : | 54,4 °C<br>Method: Unspecified |
| Auto-ignition temperature | : | > 200 °C |
| Decomposition temperature | | |
| Decomposition temperature | : | Data not available |
| pH | : | Typical 6,9<br>Concentration: 100 % |
| Viscosity | | |
| Viscosity, dynamic | : | Data not available |
| Viscosity, kinematic | : | 12,8 mm2/s (20 °C)<br>Method: Unspecified |
| Solubility(ies) | | |
| Water solubility | : | completely soluble |

| | | |
|---|---|---|
| Solubility in other solvents | : | Data not available |
| Partition coefficient: n-octanol/water | : | Data not available |
| Vapour pressure | : | Data not available (50 °C) |
| Relative density | : | 1,096 (15 °C) |
| Density | : | 1,096 kg/dm3 (15,5 °C)<br>Method: Unspecified |
| Relative vapour density | : | > 1 |
| Particle characteristics | | |
| Particle size | : | Data not available |

**9.2 Other information**

| | | |
|---|---|---|
| Explosive properties | : | Classification Code: Not classified |
| Oxidizing properties | : | Data not available |
| Evaporation rate | : | Data not available |
| Conductivity | : | This material is not expected to be a static accumulator. |
| Decomposition temperature | : | Data not available |
| Molecular weight | : | Not applicable |

## SECTION 10: Stability and reactivity

**10.1 Reactivity**

The product does not pose any further reactivity hazards in addition to those listed in the following sub-paragraph.

**10.2 Chemical stability**

Stable.
No hazardous reaction is expected when handled and stored according to provisions

**10.3 Possibility of hazardous reactions**

| | | |
|---|---|---|
| Hazardous reactions | : | Reacts with strong oxidising agents. |

**10.4 Conditions to avoid**

| | | |
|---|---|---|
| Conditions to avoid | : | Avoid heat, sparks, open flames and other ignition sources. |

**10.5 Incompatible materials**

Materials to avoid : Strong oxidising agents.

**10.6 Hazardous decomposition products**

No decomposition if stored and applied as directed.

## SECTION 11: Toxicological information

**11.1 Information on hazard classes as defined in Regulation (EC) No 1272/2008**

Information on likely routes of exposure : Skin and eye contact are the primary routes of exposure although exposure may occur following accidental ingestion.

**Acute toxicity**

**Product:**

Acute oral toxicity : LD50 (rat): > 500 - 2.000 mg/kg
Remarks: Harmful if swallowed.

Acute inhalation toxicity : LC 50 (Rat): > 5 mg/l
Exposure time: 4 h
Remarks: Low toxicity

Acute dermal toxicity : LD50 (Rabbit): > 5.000 mg/kg
Remarks: Low toxicity

**Components:**

**Ethanediol:**

Acute oral toxicity : LD 50 (Rat, male and female): > 2.000 mg/kg
Method: Acceptable non-standard method.
Remarks: Harmful if swallowed.
There is a marked difference in acute oral toxicity between rodents and man, man being more susceptible than rodents. The estimated fatal dose for man is 100 milliliters (1/2 cup). This material has also been shown to be toxic and potentially lethal by ingestion to cats and dogs.

Acute inhalation toxicity : LC 50 (Rat, male and female): > 2,5 mg/l
Exposure time: 6 h
Test atmosphere: Aerosol
Method: Literature data
Remarks: LC50 > 1.0 - <= 5.0 mg/l
LC50 greater than near-saturated vapour concentration.
Based on available data, the classification criteria are not met.

Acute dermal toxicity : LD 50 (Mouse, male and female): > 2.000 mg/kg
Method: Literature data
Remarks: Based on available data, the classification criteria are not met.

**Ethanol:**

| | | |
|---|---|---|
| Acute oral toxicity | : | LD50 Oral (Rat, male and female): > 5.000 mg/kg<br>Method: Test(s) equivalent or similar to OECD Test Guideline 401<br>Remarks: Based on available data, the classification criteria are not met. |
| Acute inhalation toxicity | : | LC 50 (Rat, male and female): > 124,7 mg/l<br>Exposure time: 4 h<br>Test atmosphere: vapour<br>Method: Test(s) equivalent or similar to OECD Test Guideline 403<br>Remarks: Based on available data, the classification criteria are not met. |
| Acute dermal toxicity | : | Remarks: Based on available data, the classification criteria are not met. |

**Skin corrosion/irritation**

**Product:**

| | | |
|---|---|---|
| Remarks | : | Slightly irritating to skin.<br>Based on available data, the classification criteria are not met. |

**Components:**

**Ethanediol:**

| | | |
|---|---|---|
| Species | : | Rabbit |
| Method | : | Acceptable non-standard method. |
| Remarks | : | Slightly irritating to skin.<br>Insufficient to classify. |

**Ethanol:**

| | | |
|---|---|---|
| Species | : | Rabbit |
| Method | : | Test(s) equivalent or similar to OECD Test Guideline 404 |
| Remarks | : | Based on data from similar materials<br>Based on available data, the classification criteria are not met. |

**Serious eye damage/eye irritation**

**Product:**

| | | |
|---|---|---|
| Remarks | : | Slightly irritating to the eye.<br>Based on available data, the classification criteria are not met. |

**Components:**

**Ethanediol:**

| | | |
|---|---|---|
| Species | : | Rabbit |
| Method | : | Acceptable non-standard method. |

Remarks : Slightly irritating to the eye.
Insufficient to classify.

**Ethanol:**

Species : Rabbit
Method : Test(s) equivalent or similar to OECD Test Guideline 405
Result : Irritating to eyes.
Remarks : Based on data from similar materials

**Respiratory or skin sensitisation**

**Product:**

Remarks : For respiratory and skin sensitisation:
Not a sensitiser.
Based on available data, the classification criteria are not met.

**Components:**

**Ethanediol:**

Species : Guinea pig
Method : Literature data
Remarks : Based on available data, the classification criteria are not met.

**Ethanol:**

Species : Mouse
Method : Test(s) equivalent or similar to OECD Test Guideline 406
Remarks : Based on data from similar materials
Based on available data, the classification criteria are not met.

**Germ cell mutagenicity**

**Product:**

Genotoxicity in vivo : Remarks: Non mutagenic
Based on available data, the classification criteria are not met.

Germ cell mutagenicity- Assessment : This product does not meet the criteria for classification in categories 1A/1B.

**Components:**

**Ethanediol:**

Genotoxicity in vitro : Method: OECD Test Guideline 471
Remarks: Based on data from similar materials

Method: Acceptable non-standard method.
Remarks: Based on data from similar materials

Method: Literature data
Remarks: Based on data from similar materials

| | | |
|---|---|---|
| Genotoxicity in vivo | : | Species: Rat<br>Method: Literature data<br>Remarks: Based on available data, the classification criteria are not met. |
| Germ cell mutagenicity- Assessment | : | This product does not meet the criteria for classification in categories 1A/1B. |

**Ethanol:**

| | | |
|---|---|---|
| Genotoxicity in vivo | : | Species: Mouse<br>Method: OECD Test Guideline 478<br>Remarks: Based on data from similar materials<br>Based on available data, the classification criteria are not met. |
| Germ cell mutagenicity- Assessment | : | This product does not meet the criteria for classification in categories 1A/1B. |

**Carcinogenicity**

**Product:**

| | | |
|---|---|---|
| Remarks | : | Not a carcinogen.<br>Based on available data, the classification criteria are not met. |
| Carcinogenicity - Assessment | : | This product does not meet the criteria for classification in categories 1A/1B. |

**Components:**

**Ethanediol:**

| | | |
|---|---|---|
| Species | : | Mouse, male and female |
| Application Route | : | Oral |
| Method | : | Literature data |
| Remarks | : | Based on available data, the classification criteria are not met. |
| Carcinogenicity - Assessment | : | This product does not meet the criteria for classification in categories 1A/1B. |

**Ethanol:**

| | | |
|---|---|---|
| Species | : | Rat, male and female |
| Application Route | : | Oral |
| Method | : | Test(s) equivalent or similar to OECD Test Guideline 453 |
| Remarks | : | Based on available data, the classification criteria are not met. |
| Carcinogenicity - Assessment | : | This product does not meet the criteria for classification in categories 1A/1B. |

| Material | GHS/CLP Carcinogenicity Classification |
|---|---|

| | |
|---|---|
| Ethanediol | No carcinogenicity classification. |
| Ethanol | No carcinogenicity classification. |

| Material | Other Carcinogenicity Classification |
|---|---|
| Ethanol | IARC: Group 1: Carcinogenic to humans |

**Reproductive toxicity**

**Product:**

Effects on fertility : Remarks: Not a developmental toxicant., Based on available data, the classification criteria are not met., Does not impair fertility.

Reproductive toxicity - Assessment : This product does not meet the criteria for classification in categories 1A/1B.

**Components:**

**Ethanediol:**

Effects on fertility : Species: Rat
Sex: male and female
Application Route: Oral

Method: Literature data
Remarks: Based on available data, the classification criteria are not met.

Reproductive toxicity - Assessment : This product does not meet the criteria for classification in categories 1A/1B.

**Ethanol:**

Effects on fertility : Species: Mouse
Sex: male and female
Application Route: Oral

Method: Equivalent or similar to OECD Test Guideline 416
Remarks: Based on available data, the classification criteria are not met.

Reproductive toxicity - Assessment : This product does not meet the criteria for classification in categories 1A/1B.

**STOT - single exposure**

**Product:**

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

**Components:**

**Ethanediol:**

Remarks : Inhalation of vapours or mists may cause irritation to the respiratory system.
Based on available data, the classification criteria are not met.
Ingestion may cause drowsiness and dizziness.

**Ethanol:**

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

**STOT - repeated exposure**

**Product:**

Remarks : Kidney: can cause kidney damage.

**Components:**

**Ethanediol:**

Exposure routes : Oral
Target Organs : Kidney
Remarks : May cause damage to organs or organ systems through prolonged or repeated exposure.

**Ethanol:**

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

**Repeated dose toxicity**

**Components:**

**Ethanediol:**

Species : Rat, male
Application Route : Oral
Method : Test(s) equivalent or similar to OECD Test Guideline 408
Target Organs : Kidney

**Ethanol:**

Species : Rat, male and female
Method : OECD Test Guideline 408
Remarks : No significant adverse effects were reported

**Aspiration toxicity**

**Product:**

Not an aspiration hazard., Based on available data, the classification criteria are not met.

**Components:**

**Ethanediol:**

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

### 11.2 Information on other hazards

**Endocrine disrupting properties**

**Product:**

Assessment : The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

**Further information**

**Product:**

Remarks : Slightly irritating to respiratory system.

Remarks : Classifications by other authorities under varying regulatory frameworks may exist.

Remarks : Unless indicated otherwise, the data presented is representative of the product as a whole, rather than for individual component(s).

**Components:**

**Ethanediol:**

Remarks : Classifications by other authorities under varying regulatory frameworks may exist.

## SECTION 12: Ecological information

### 12.1 Toxicity

**Product:**

| | | |
|---|---|---|
| Toxicity to fish | : | Remarks: LC/EC/IC50 > 100 mg/l<br>Practically non toxic:<br>Based on available data, the classification criteria are not met. |
| Toxicity to daphnia and other aquatic invertebrates | : | Remarks: LC/EC/IC50 > 100 mg/l<br>Practically non toxic:<br>Based on available data, the classification criteria are not met. |
| Toxicity to algae/aquatic plants | : | Remarks: LC/EC/IC50 > 100 mg/l<br>Practically non toxic:<br>Based on available data, the classification criteria are not met. |

| | | |
|---|---|---|
| Toxicity to fish (Chronic toxicity) | : | Remarks: Data not available |
| Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) | : | Remarks: Data not available |
| Toxicity to microorganisms | : | Remarks: Data not available |

**Components:**

**Ethanediol:**

| | | |
|---|---|---|
| Toxicity to fish | : | LC50 (Pimephales promelas (fathead minnow)): 72.860 mg/l<br>Exposure time: 96 h<br>Method: Other guideline method.<br>Remarks: Practically non toxic:<br>LC/EC/IC50 > 100 mg/l |
| Toxicity to daphnia and other aquatic invertebrates | : | EC50 (Daphnia magna (Water flea)): > 100 mg/l<br>Exposure time: 48 h<br>Method: OECD Test Guideline 202<br>Remarks: Practically non toxic:<br>LC/EC/IC50 > 100 mg/l |
| Toxicity to algae/aquatic plants | : | EC50 (Pseudokirchneriella subcapitata (algae)): 6.500 - 13.000 mg/l<br>Exposure time: 96 h<br>Method: Other guideline method.<br>Remarks: Practically non toxic:<br>LC/EC/IC50 > 100 mg/l |
| Toxicity to microorganisms | : | EC20 (Activated sludge, domestic waste): > 1.995 mg/l<br>Exposure time: 0,5 h<br>Method: Other guideline method.<br>Remarks: Practically non toxic:<br>LC/EC/IC50 > 100 mg/l |
| Toxicity to fish (Chronic toxicity) | : | NOEC: 15.380 mg/l<br>Exposure time: 7 d<br>Species: Pimephales promelas (fathead minnow)<br>Method: Other guideline method.<br>Remarks: NOEC/NOEL > 100 mg/l |
| Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) | : | NOEC: 8.590 mg/l<br>Exposure time: 7 d<br>Species: Chironomus sp. (midge)<br>Method: Other guideline method.<br>Remarks: NOEC/NOEL > 100 mg/l |

**Ethanol:**

| | | |
|---|---|---|
| Toxicity to fish | : | LC50 (Pimephales promelas (fathead minnow)): 14.200 mg/l<br>Exposure time: 96 h<br>Method: Test(s) equivalent or similar to OECD Guideline 203<br>Remarks: Based on available data, the classification criteria are not met. |
| Toxicity to daphnia and other aquatic invertebrates | : | LC50 (Ceriodaphnia dubia (water flea)): 5.012 mg/l<br>Exposure time: 48 h<br>Method: Test(s) equivalent or similar to OECD Guideline 202<br>Remarks: Based on available data, the classification criteria are not met. |
| Toxicity to algae/aquatic plants | : | EC50 (Chlorella vulgaris (Fresh water algae)): 675 mg/l<br>Exposure time: 72 h<br>Method: Test(s) equivalent or similar to OECD Test Guideline 201<br>Remarks: Based on available data, the classification criteria are not met. |
| Toxicity to microorganisms | : | Toxic threshold (Pseudomonas putida): 6.500 mg/l<br>Exposure time: 16 h |
| Toxicity to fish (Chronic toxicity) | : | NOEC: 245 mg/l<br>Exposure time: 30 d<br>Method: Based on quantitative structure-activity relationship (QSAR) modelling<br>Remarks: NOEC/NOEL > 100 mg/l |
| Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) | : | NOEC: 2 mg/l<br>Exposure time: 10 d<br>Species: Ceriodaphnia dubia (Water flea)<br>Method: Test(s) equivalent or similar to OECD Guideline 211<br>Remarks: NOEC/NOEL > 1.0 - <=10 mg/l (based on test data) |

### 12.2 Persistence and degradability

**Product:**

| | | |
|---|---|---|
| Biodegradability | : | Remarks: Readily biodegradable. |

**Components:**

**Ethanediol:**

| | | |
|---|---|---|
| Biodegradability | : | Biodegradation: 90 - 100 %<br>Exposure time: 10 d<br>Method: OECD Test Guideline 301A<br>Remarks: Readily biodegradable. |

**Ethanol:**

| | | |
|---|---|---|
| Biodegradability | : | Biodegradation: 84 %<br>Exposure time: 20 d<br>Method: Test(s) equivalent or similar to OECD Guideline 301 |

B
Remarks: Readily biodegradable.
Oxidises rapidly by photo-chemical reactions in air.

### 12.3 Bioaccumulative potential

**Product:**

Bioaccumulation : Remarks: Does not bioaccumulate significantly.

**Components:**

**Ethanediol:**

Bioaccumulation : Remarks: Does not have the potential to bioaccumulate significantly.

**Ethanol:**

Bioaccumulation : Remarks: Does not bioaccumulate significantly.

Partition coefficient: n-octanol/water : log Pow: < 1

### 12.4 Mobility in soil

**Product:**

Mobility : Remarks: Liquid under most environmental conditions., If product enters soil, it will be highly mobile and may contaminate groundwater., Dissolves in water.

**Components:**

**Ethanediol:**

Mobility : Remarks: Disperses in water., If product enters soil, one or more constituents will be highly mobile and may contaminate groundwater.

**Ethanol:**

Mobility : Remarks: Dissolves in water., If product enters soil, it will be highly mobile and may contaminate groundwater.

### 12.5 Results of PBT and vPvB assessment

**Product:**

Assessment : This mixture does not contain any REACH registered substances that are assessed to be a PBT or a vPvB..

**Components:**

**Ethanediol:**

Assessment : The substance does not fulfill all screening criteria for persistence, bioaccumulation and toxicity and hence is not considered to be PBT or vPvB..

**Ethanol:**

Assessment : The substance does not fulfill all screening criteria for persistence, bioaccumulation and toxicity and hence is not considered to be PBT or vPvB..

### 12.6 Endocrine disrupting properties

**Product:**

Assessment : The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

### 12.7 Other adverse effects

**Product:**

Additional ecological information : Does not have ozone depletion potential, photochemical ozone creation potential or global warming potential.

Unless indicated otherwise, the data presented is representative of the product as a whole, rather than for individual component(s).

**Components:**

**Ethanediol:**

Additional ecological information : Does not have ozone depletion potential.

## SECTION 13: Disposal considerations

### 13.1 Waste treatment methods

Product : Recover or recycle if possible.
It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste classification and disposal methods in compliance with applicable regulations.
Do not dispose into the environment, in drains or in water courses.

Waste product should not be allowed to contaminate soil or ground water, or be disposed of into the environment.
Waste, spills or used product is dangerous waste.
Waste arising from a spillage or tank cleaning should be disposed of in accordance with prevailing regulations, preferably

to a recognised collector or contractor. The competence of the collector or contractor should be established beforehand.
Do not dispose of tank water bottoms by allowing them to drain into the ground. This will result in soil and groundwater contamination.

MARPOL - see International Convention for the Prevention of Pollution from Ships (MARPOL 73/78) which provides technical aspects at controlling pollutions from ships.

Contaminated packaging : Drain container thoroughly.
After draining, vent in a safe place away from sparks and fire.
Do not puncture, cut, or weld uncleaned drums.
Dispose in accordance with prevailing regulations, preferably to a recognized collector or contractor. The competence of the collector or contractor should be established beforehand.

Local legislation

Waste catalogue :

EU Waste Disposal Code (EWC):

Waste Code :

16 01 14*

Remarks : Disposal should be in accordance with applicable regional, national, and local laws and regulations.

Classification of waste is always the responsibility of the end user.

## SECTION 14: Transport information

**14.1 UN number or ID number**

**ADN** : 1170

**ADR** : 1170

**RID** : 1170

**IMDG** : 1170

**IATA** : 1170

**14.2 UN proper shipping name**

**ADN** : ETHANOL SOLUTION

**ADR** : ETHANOL SOLUTION

**RID** : ETHANOL SOLUTION

**IMDG** : ETHANOL SOLUTION

**IATA** : ETHANOL SOLUTION

**14.3 Transport hazard class(es)**

**ADN** : 3

**ADR** : 3

**RID** : 3

**IMDG** : 3

**IATA** : 3

**14.4 Packing group**

**ADN**

Packing group : III
Classification Code : F1
Labels : 3
CDNI Inland Water Waste Agreement : NST 8963 Glycols unspecified

**ADR**

Packing group : III
Classification Code : F1
Hazard Identification Number : 30
Labels : 3

**RID**

Packing group : III
Classification Code : F1
Hazard Identification Number : 30
Labels : 3

**IMDG**

Packing group : III
Labels : 3

**IATA**

Packing group : III
Labels : 3

**14.5 Environmental hazards**

**ADN**

Environmentally hazardous : no

**ADR**

Environmentally hazardous : no

**RID**

Environmentally hazardous : no

**IMDG**

Marine pollutant : no

**14.6 Special precautions for user**

Remarks : Special Precautions: Refer to Section 7, Handling & Storage, for special precautions which a user needs to be aware of or needs to comply with in connection with transport.

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

MARPOL Annex 1 rules apply for bulk shipments by sea.

**Additional Information** **:** MARPOL Annex 1 rules apply for bulk shipments by sea.

## SECTION 15: Regulatory information

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

REACH - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles (Annex XVII) : Not applicable

REACH - List of substances subject to authorisation (Annex XIV) : Product is not subject to Authorisation under REACH.

Seveso III: Directive 2012/18/EU of the European Parliament and of the Council on the control of major-accident hazards involving dangerous substances. P5c FLAMMABLE LIQUIDS

Volatile organic compounds : Volatile organic compounds (VOC) content: 90 %

**Other regulations:**

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), annex XIV.
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), annex XVII.
Directive 2004/37/EC on the protection of workers from the risks related to exposure to carcinogens or mutagens at work and its amendments.
Directive 1994/33/EC on the protection of young people at work and its amendments.
Council Directive 92/85/EEC on the introduction of measures to encourage improvements in the safety and health at work of pregnant workers and workers who have recently given birth or are breastfeeding and its amendments.

The regulatory information is not intended to be comprehensive. Other regulations may apply to this material.

Product is subject to the cooperation agreement (SWA3) on the control of major-accident hazards involving dangerous substances, based on Seveso III directive (2012/18/EU).

Product is subject to the cooperation agreement (SWA3) on the control of major-accident hazards involving dangerous substances, based on Seveso III directive (2012/18/EU).

**The components of this product are reported in the following inventories:**

| | | |
|---|---|---|
| REACH | : | All components listed or polymer exempt. |
| TSCA | : | All components listed. |

**15.2 Chemical safety assessment**

No Chemical Safety Assessment has been carried out for this substance/mixture by the supplier.

## SECTION 16: Other information

**Full text of H-Statements**

| | | |
|---|---|---|
| H225 | : | Highly flammable liquid and vapour. |
| H302 | : | Harmful if swallowed. |
| H319 | : | Causes serious eye irritation. |
| H373 | : | May cause damage to organs through prolonged or repeated exposure. |

**Full text of other abbreviations**

| | | |
|---|---|---|
| Acute Tox. | : | Acute toxicity |
| Eye Irrit. | : | Eye irritation |
| Flam. Liq. | : | Flammable liquids |
| STOT RE | : | Specific target organ toxicity - repeated exposure |
| 2000/39/EC | : | Europe. Commission Directive 2000/39/EC establishing a first list of indicative occupational exposure limit values |
| BE OEL | : | Belgium. Occupational exposure limit values |
| 2000/39/EC / TWA | : | Limit Value - eight hours |
| 2000/39/EC / STEL | : | Short term exposure limit |
| BE OEL / TLV 8 hr | : | Long term exposure limit |
| BE OEL / TLV 15 min | : | Short term exposure limit |

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

**Further information**

Other information : A vertical bar (|) in the left margin indicates an amendment from the previous version.

| **Classification of the mixture:** | | **Classification procedure:** |
|---|---|---|
| Flam. Liq. 3 | H226 | Expert judgement and weight of evidence determination. |
| Acute Tox. 4 | H302 | Expert judgement and weight of evidence determination. |
| STOT RE 2 | H373 | Expert judgement and weight of evidence determination. |

**Identified Uses according to the Use Descriptor System**
**Uses - Worker**
Title : Use in de-icing and anti-icing fluids
- Professional

**Uses - Worker**
Title : Use in functional fluids
- Professional

**Identified Uses according to the Use Descriptor System**
**Uses - Consumer**
Title : Use in de-icing and anti-icing fluids
- Consumer

**Uses - Consumer**
Title : Use in functional fluids
- Consumer

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not

to be considered a warranty or quality specification. The 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, unless specified in the text.

BE / EN

**Exposure Scenario - Worker**

| **300000000696** | |
|---|---|
| **SECTION 1** | **EXPOSURE SCENARIO TITLE** |
| **Title** | Use in de-icing and anti-icing fluids- Professional |
| **Use Descriptor** | **Sector of Use**: SU22<br>**Process Categories**: PROC1, PROC2, PROC8a, PROC8b, PROC11<br>**Environmental Release Categories**: ERC8d |
| **Scope of process** | Ice prevention and de-icing of vehicles, aircraft and other equipment by spraying. |

| **SECTION 2** | **OPERATIONAL CONDITIONS AND RISK MANAGEMENT MEASURES** |
|---|---|
| **Additional Information** | No exposure assessment presented for the environment. |
| **Section 2.1** | **Control of Worker Exposure** |
| **Product Characteristics** | |
| Physical form of product | Liquid, vapour pressure < 0.5 kPa at STP |
| Concentration of the Substance in Mixture/Article | Covers percentage substance in the product up to 100%., Unless stated otherwise., |
| **Frequency and Duration of Use** | |
| Covers daily exposures up to 8 hours (unless stated differently). | |
| **Other Operational Conditions affecting Exposure** | |
| Assumes a good basic standard of occupational hygiene is implemented.<br>Assumes use at not more than 20°C above ambient temperature (unless stated differently). | |
| **Contributing Scenarios** | **Risk Management Measures** |
| Bulk open unloading. | Use dedicated equipment.<br>, or:<br>Ensure material transfers are under containment or extract ventilation. |
| Filling/ preparation of equipment from drums or containers. | Use drum pumps or carefully pour from container.<br>Wear chemically resistant gloves (tested to EN374) in combination with ‘basic’ employee training. |
| General exposures.(closed systems) | No specific measures identified. |
| Material transferselevated temperature | Use dedicated equipment.<br>, or:<br>Ensure material transfers are under containment or extract ventilation. |
| Spraying/ fogging by machine applicationelevated temperature | Apply within a vented cab supplied with filtered air under positive pressure and with a protection factor of >20. |

| | |
|---|---|
| Spraying/ fogging by manual application | Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.<br>Wear suitable coveralls to prevent exposure to the skin.<br>Carry out in a vented booth or extracted enclosure.<br>, or:<br>Wear a respirator conforming to EN140 with Type A/P2 filter or better. |
| Equipment maintenance | Drain down system prior to equipment opening or maintenance.<br>Wear suitable gloves tested to EN374. |
| Storage. | Store substance within a closed system. |
| **Section 2.2** | **Control of Environmental Exposure** |
| No exposure assessment presented for the environment. | |

| **SECTION 3** | **EXPOSURE ESTIMATION** |
|---|---|
| **Section 3.1 - Health** | |
| The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.<br>For some of the Contributing Scenarios workplace exposures have been estimated from measured data. | |

| **Section 3.2 -Environment** |
|---|
| No exposure assessment presented for the environment. |

| **SECTION 4** | **GUIDANCE TO CHECK COMPLIANCE WITH THE EXPOSURE SCENARIO** |
|---|---|
| **Section 4.1 - Health** | |
| Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.<br>Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. | |

| **Section 4.2 -Environment** |
|---|
| No exposure assessment presented for the environment. |

**Exposure Scenario - Worker**

| **300000000695** | |
|---|---|
| **SECTION 1** | **EXPOSURE SCENARIO TITLE** |
| **Title** | Use in functional fluids- Professional |
| **Use Descriptor** | **Sector of Use**: SU22<br>**Process Categories**: PROC1, PROC2, PROC3, PROC8a, PROC9, PROC20<br>**Environmental Release Categories**: ERC9a, ERC9b |
| **Scope of process** | Use as functional fluids e.g. cable oils, transfer oils, coolants, insulators, refrigerants, hydraulic fluids in professional equipment including maintenance and related material transfers. |

| **SECTION 2** | **OPERATIONAL CONDITIONS AND RISK MANAGEMENT MEASURES** |
|---|---|
| **Additional Information** | No exposure assessment presented for the environment. |
| **Section 2.1** | **Control of Worker Exposure** |
| **Product Characteristics** | |
| Physical form of product | Liquid, vapour pressure < 0.5 kPa at STP |
| Concentration of the Substance in Mixture/Article | Covers percentage substance in the product up to 100%., Unless stated otherwise., |
| **Frequency and Duration of Use** | |
| Covers daily exposures up to 8 hours (unless stated differently). | |
| **Other Operational Conditions affecting Exposure** | |
| Assumes a good basic standard of occupational hygiene is implemented.<br>Assumes use at not more than 20°C above ambient temperature (unless stated differently). | |
| **Contributing Scenarios** | **Risk Management Measures** |
| Drum/batch transfers | Use drum pumps or carefully pour from container.<br>Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. |
| Transfer from/pouring from containers | Use drum pumps or carefully pour from container.<br>Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. |
| Filling/ preparation of equipment from drums or containers. | Use drum pumps or carefully pour from container.<br>Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. |
| General exposures.(closed systems) | No specific measures identified. |
| Remanufacture of reject articles | Drain down system prior to equipment opening or maintenance.<br>Wear suitable gloves tested to EN374. |

| | |
|---|---|
| Equipment maintenance | Drain down system prior to equipment opening or maintenance.<br>Wear suitable gloves tested to EN374. |
| Storage. | Store substance within a closed system. |
| **Section 2.2** | **Control of Environmental Exposure** |
| No exposure assessment presented for the environment. | |

| | |
|---|---|
| **SECTION 3** | **EXPOSURE ESTIMATION** |
| **Section 3.1 - Health** | |
| The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. | |

| |
|---|
| **Section 3.2 -Environment** |
| No exposure assessment presented for the environment. |

| | |
|---|---|
| **SECTION 4** | **GUIDANCE TO CHECK COMPLIANCE WITH THE EXPOSURE SCENARIO** |
| **Section 4.1 - Health** | |
| Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.<br>Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. | |

| |
|---|
| **Section 4.2 -Environment** |
| No exposure assessment presented for the environment. |

**Exposure Scenario - Consumer**

| **300000001096** | |
|---|---|
| **SECTION 1** | **EXPOSURE SCENARIO TITLE** |
| **Title** | Use in de-icing and anti-icing fluids - Consumer |
| **Use Descriptor** | **Sector of Use**: SU21<br>**Product Categories**: PC4<br>**Environmental Release Categories**: ERC8d |
| **Scope of process** | De-icing of vehicles and similar equipment by spraying. |

| **SECTION 2** | **OPERATIONAL CONDITIONS AND RISK MANAGEMENT MEASURES** |
|---|---|
| **Additional Information** | No exposure assessment presented for the environment. |
| **Section 2.1** | **Control of Consumer Exposure** |
| **Product Characteristics** | |
| Physical form of product | Liquid, vapour pressure > 10 Pa at STP |
| Concentration of the Substance in Mixture/Article | Covers concentration up to (%): 100 % |
| **Amounts Used** | |
| for each use event, covers amount up to (g): | 5.000 |
| **Frequency and Duration of Use** | |
| Covers use up to (days/year): | 365 |
| Covers exposure up to (hours/event): | 4 |
| **Product Categories** | **OPERATIONAL CONDITIONS AND RISK MANAGEMENT MEASURES** |
| Anti-Freeze and de-icing products Washing car window. | Covers concentrations up to 100 % |
| | For each use event, covers amount up to 33 g |
| | covers use up to 365 day/year |
| | Covers use up to 1 times/day of use |
| | Covers exposure up to 4 hours/event |
| | covers skin contact area up to (cm2): 215 cm2 |
| | Covers use in room size of 58 m3 |
| | Covers use under typical household ventilation. |
| | Covers use at ambient temperatures. |
| Anti-Freeze and de-icing products Pouring into radiator. | Covers concentrations up to 30 % |
| | For each use event, covers amount up to 5.000 g |
| | covers use up to 1 day/year |
| | Covers use up to 1 times/day of use |
| | Covers exposure up to 0,25 hours/event |
| | covers skin contact area up to (cm2): 960 cm2 |
| | Covers use in a one car garage (34 m3) under typical ventila- |

| | |
|---|---|
| | tion. |
| | Covers use at ambient temperatures. |

| **Section 2.2** | **Control of Environmental Exposure** |
|---|---|
| No exposure assessment presented for the environment. | |

| **SECTION 3** | **EXPOSURE ESTIMATION** |
|---|---|
| **Section 3.1 - Health** | |
| The Consexpo model has been used to estimate consumer exposures unless otherwise indicated. | |

| **Section 3.2 -Environment** |
|---|
| No exposure assessment presented for the environment. |

| **SECTION 4** | **GUIDANCE TO CHECK COMPLIANCE WITH THE EXPOSURE SCENARIO** |
|---|---|
| **Section 4.1 - Health** | |
| Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.<br>Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. | |

| **Section 4.2 -Environment** |
|---|
| No exposure assessment presented for the environment. |

**Exposure Scenario - Consumer**

| **300000010840** | |
|---|---|
| **SECTION 1** | **EXPOSURE SCENARIO TITLE** |
| **Title** | Use in functional fluids - Consumer |
| **Use Descriptor** | **Sector of Use**: SU21<br>**Product Categories**: PC16<br>**Environmental Release Categories**: ERC9a, ERC9b |
| **Scope of process** | Use of sealed items containing functional fluids e.g. transfer oils, hydraulic fluids, refrigerants. |

| **SECTION 2** | **OPERATIONAL CONDITIONS AND RISK MANAGEMENT MEASURES** |
|---|---|
| **Additional Information** | No exposure assessment presented for the environment. |
| **Section 2.1** | **Control of Consumer Exposure** |
| **Product Characteristics** | |
| Physical form of product | Liquid, vapour pressure > 10 Pa at STP |
| **Product Categories** | **OPERATIONAL CONDITIONS AND RISK MANAGEMENT MEASURES** |
| Heat transfer fluids | Covers concentrations up to 30 % |
| | For each use event, covers amount up to 1.000 g |
| | covers use up to 200 day/year |
| | Covers use up to 1 times/day of use |
| | Covers exposure up to 0,25 hours/event |
| | covers skin contact area up to (cm2): 960 cm2 |
| | Covers use in a one car garage (34 m3) under typical ventilation. |
| | Covers use at ambient temperatures. |

| **Section 2.2** | **Control of Environmental Exposure** |
|---|---|
| No exposure assessment presented for the environment. | |

| **SECTION 3** | **EXPOSURE ESTIMATION** |
|---|---|
| **Section 3.1 - Health** | |
| The Consexpo model has been used to estimate consumer exposures unless otherwise indicated. | |

| **Section 3.2 -Environment** |
|---|
| No exposure assessment presented for the environment. |

| **SECTION 4** | **GUIDANCE TO CHECK COMPLIANCE WITH THE EXPOSURE SCENARIO** |
|---|---|
| **Section 4.1 - Health** | |

| |
|---|
| Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.<br>Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. |

| **Section 4.2 -Environment** |
|---|
| No exposure assessment presented for the environment. |