



# SAFETY DATA SHEET

## SPECIALTY ELECTRONIC MATERIALS UK LIMITED

Safety Data Sheet according to Regulation (EC) No 1907/2006 - Annex II

**Product name:** FROTH-PAK™ Foam Systems 180 ISO

**Revision Date:** 14.07.2022

**Version:** 3.0

**Date of last issue:** 25.05.2022

**Print Date:** 23.10.2023

SPECIALTY ELECTRONIC MATERIALS UK 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:** FROTH-PAK™ Foam Systems 180 ISO

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

**Identified uses:** Component for polyurethane manufacture.

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

#### COMPANY IDENTIFICATION

SPECIALTY ELECTRONIC MATERIALS UK  
LIMITED  
KINGS COURT, LONDON ROAD  
STEVENAGE  
England  
SG1 2NG  
UNITED KINGDOM

**Customer Information Number:**

00800-3876-6838

SDSQuestion-EU@dupont.com

### 1.4 EMERGENCY TELEPHONE NUMBER

**24-Hour Emergency Contact:** +(44)-870-8200418

**Local Emergency Contact:** +(44)-870-8200418

## SECTION 2: HAZARDS IDENTIFICATION

### 2.1 Classification of the substance or mixture

#### Classification according to Regulation (EC) No 1272/2008:

Gases under pressure - Liquefied gas - H280

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 - Inhalation - 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:

#### Hazard pictograms



#### Signal word: DANGER

#### Hazard statements

H280	Contains gas under pressure; may explode if heated.
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 Tract) through prolonged or repeated exposure if inhaled.

#### 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.
P271	Use only outdoors or in a well-ventilated area.
P304 + P340	IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a
+ P312	POISON CENTER/ doctor if you feel unwell.
P308 + P313	IF exposed or concerned: Get medical advice/ attention.
P501	Dispose of contents/container to hazardous or special waste collection point.

#### Supplemental information

----- As from 24 August 2023 adequate training is required before industrial or professional use.

The following percentage of the mixture consists of ingredient(s) with unknown acute oral toxicity: 12 %

The following percentage of the mixture consists of ingredient(s) with unknown acute dermal toxicity: 12 %

**Contains** Diphenylmethane Diisocyanate, isomers and homologues; 4,4'-methylenediphenyl

diisocyanate

### 2.3 Other hazards

Endocrine disrupting properties (human health):

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.

Endocrine disrupting properties (environment):

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.

PBT and vPvB 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.

## SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

### 3.2 Mixtures

This product is a mixture.

Identification number	Component	Classification according to Regulation (EU) 1272/2008 (CLP)	specific concentration limit/ M-Factors/ Acute toxicity estimate	%
<b>CASRN</b> 9016-87-9 <b>EC-No.</b> 618-498-9 <b>Index-No.</b> - <b>REACH No</b> -	Diphenylmethane Diisocyanate, isomers and homologues	Acute Tox. 4 - H332 Skin Irrit. 2 - H315 Eye Irrit. 2 - H319 Resp. Sens. 1 - H334 Skin Sens. 1 - H317 Carc. 2 - H351 STOT SE 3 - H335 STOT RE 2 - H373	Eye Irrit.2; H319:C >= 5 % STOT SE3; H335:C >= 5 % Skin Irrit.2; H315:C >= 5 % Resp. Sens.1; H334:C >= 0.1 %  Oral ATE: > 10,000 mg/kg  Inhalation ATE: 0.49 mg/l (dust/mist)  Dermal ATE: > 9,400 mg/kg	90.0 - 100.0 %
<b>CASRN</b> 101-68-8 <b>EC-No.</b> 202-966-0 <b>Index-No.</b> 615-005-00-9 <b>REACH No</b> 01-2119457014-47	4,4'-methylenediphenyl diisocyanate	Acute Tox. 4 - H332 Skin Irrit. 2 - H315 Eye Irrit. 2 - H319 Resp. Sens. 1 - H334 Skin Sens. 1 - H317 Carc. 2 - H351 STOT SE 3 - H335 STOT RE 2 - H373	Eye Irrit.2; H319:C >= 5 % STOT SE3; H335:C >= 5 % Skin Irrit.2; H315:C >= 5 % Resp. Sens.1; H334:C >= 0.1 %  Oral ATE: > 2,000 mg/kg  Inhalation ATE: 1.5 mg/l (dust/mist)  Dermal ATE: > 9,400 mg/kg	40.0 - 50.0 %
<b>CASRN</b> 29118-24-9 <b>EC-No.</b> 471-480-0 <b>Index-No.</b>	Trans-1,3,3,3-Tetrafluoropropene (HFO-1234ze)	Press. Gas Liquefied gas - H280	Inhalation ATE: > 207000 ppm (gas)	10.0 - 20.0 %

— REACH No 01-0000019758-54				
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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 9016-87-9.

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## SECTION 4: FIRST AID MEASURES

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### 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. 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 persists. 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:

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:** May cause asthma-like (reactive airways) symptoms. Bronchodilators, expectorants, antitussives and corticosteroids may be of help. 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. Maintain adequate ventilation and

oxygenation of the patient. 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.

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## SECTION 5: FIREFIGHTING MEASURES

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### 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 fluoride. Hydrogen halides. Carbon dioxide.

**Unusual Fire and Explosion Hazards:** Some components of this product will burn in a fire situation. Container may vent and/or rupture due to fire. Vaporizes quickly at room temperature. 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. 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.

**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, refer to the relevant sections.

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## SECTION 6: ACCIDENTAL RELEASE MEASURES

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**6.1 Personal precautions, protective equipment and emergency procedures:** Isolate area. Keep unnecessary and unprotected personnel from entering the area. Refer to section 7, Handling, for additional precautionary measures. Keep personnel out of low areas. Keep upwind of spill. Spilled material may cause a slipping hazard. Ventilate area of leak or spill. If available, use foam to smother or suppress. Confined space entry procedures must be followed before entering the area. 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: Dirt. Vermiculite. 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.

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## SECTION 7: HANDLING AND STORAGE

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**7.1 Precautions for safe handling:** Use with adequate ventilation. Avoid breathing vapor. Avoid contact with eyes, skin, and clothing. Avoid prolonged or repeated contact with skin. Wash thoroughly after handling. Keep container tightly closed. Do not enter confined spaces unless adequately ventilated. 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:** 15 - 30 °C  
**Storage Period:** 15 Month

**7.3 Specific end use(s):** Information on specific end use(s) of this product may be provided in a technical data sheet/annex to the SDS (if available).

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## SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

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### 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
Diphenylmethane Diisocyanate, isomers and homologues	GB EH40	TWA	0.02 mg/m <sup>3</sup> , NCO
	Further information: 53+54: Substances that can cause occupational asthma (also known as asthmagens and respiratory sensitizers) can induce a state of specific airway hyper-responsiveness via an immunological, irritant or other mechanism. Once the		

	<p>airways have become hyper-responsive, further exposure to the substance, sometimes even to tiny quantities, may cause respiratory symptoms. These symptoms can range in severity from a runny nose to asthma. Not all workers who are exposed to a sensitiser will become hyper-responsive and it is impossible to identify in advance those who are likely to become hyper-responsive. 54 Substances that can cause occupational asthma should be distinguished from substances which may trigger the symptoms of asthma in people with pre-existing airway hyper-responsiveness, but which do not include the disease themselves. The latter substances are not classified asthmagens or respiratory sensitisers.; 55: Wherever it is reasonably practicable, exposure to substances that can cause occupational asthma should be prevented. Where this is not possible, the primary aim is to apply adequate standards of control to prevent workers from becoming hyper-responsive. For substances that can cause occupational asthma, COSHH requires that exposure be reduced as low as is reasonably practicable. Activities giving rise to short-term peak concentrations should receive particular attention when risk management is being considered. Health surveillance is appropriate for all employees exposed or liable to be exposed to a substance which may cause occupational asthma and there should be appropriate consultation with an occupational health professional over the degree of risk and level of surveillance.; Sen: Capable of causing occupational asthma.; 56: The 'Sen' notation in the list of WELs has been assigned only to those substances which may cause occupational asthma.</p>		
	GB EH40	STEL	0.07 mg/m3 , NCO
	<p>Further information: 53+54: Substances that can cause occupational asthma (also known as asthmagens and respiratory sensitisers) can induce a state of specific airway hyper-responsiveness via an immunological, irritant or other mechanism. Once the airways have become hyper-responsive, further exposure to the substance, sometimes even to tiny quantities, may cause respiratory symptoms. These symptoms can range in severity from a runny nose to asthma. Not all workers who are exposed to a sensitiser will become hyper-responsive and it is impossible to identify in advance those who are likely to become hyper-responsive. 54 Substances that can cause occupational asthma should be distinguished from substances which may trigger the symptoms of asthma in people with pre-existing airway hyper-responsiveness, but which do not include the disease themselves. The latter substances are not classified asthmagens or respiratory sensitisers.; 55: Wherever it is reasonably practicable, exposure to substances that can cause occupational asthma should be prevented. Where this is not possible, the primary aim is to apply adequate standards of control to prevent workers from becoming hyper-responsive. For substances that can cause occupational asthma, COSHH requires that exposure be reduced as low as is reasonably practicable. Activities giving rise to short-term peak concentrations should receive particular attention when risk management is being considered. Health surveillance is appropriate for all employees exposed or liable to be exposed to a substance which may cause occupational asthma and there should be appropriate consultation with an occupational health professional over the degree of risk and level of surveillance.; Sen: Capable of causing occupational asthma.; 56: The 'Sen' notation in the list of WELs has been assigned only to those substances which may cause occupational asthma.</p>		
4,4'-methylenediphenyl diisocyanate	ACGIH	TWA	0.005 ppm
	Further information: resp sens: Respiratory sensitization		
	GB EH40	TWA	0.02 mg/m3 , NCO
	<p>Further information: 53+54: Substances that can cause occupational asthma (also known as asthmagens and respiratory sensitisers) can induce a state of specific airway hyper-responsiveness via an immunological, irritant or other mechanism. Once the airways have become hyper-responsive, further exposure to the substance, sometimes even to tiny quantities, may cause respiratory symptoms. These symptoms can range in severity from a runny nose to asthma. Not all workers who are exposed to a sensitiser will become hyper-responsive and it is impossible to identify in advance those who are likely to become hyper-responsive. 54 Substances that can cause occupational asthma should be distinguished from substances which may trigger the symptoms of asthma in people with pre-existing airway hyper-responsiveness, but which do not include the disease themselves. The latter substances are not classified asthmagens or respiratory sensitisers.; 55: Wherever it is reasonably practicable, exposure to substances that can cause occupational asthma should be prevented. Where this is not possible, the primary aim is to apply adequate standards of control to prevent workers from becoming hyper-responsive. For substances that can cause</p>		

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GB EH40		STEL	0.07 mg/m3 , NCO
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**Biological occupational exposure limits**

Components	CAS-No.	Control parameters	Biological specimen	Sampling time	Permissible concentration	Basis
Diphenylmethane Diisocyanate, isomers and homologues	9016-87-9	urinary 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	urinary diamine (Isocyanates)	Urine	At the end of the period of exposure	1 µmol/mol creatinine	GB EH40 BAT

**Derived No Effect Level**

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
50 mg/kg bw/day	0.1 mg/m3	28.7 mg/cm2	0.1 mg/m3	n.a.	0.05 mg/m3	n.a.	0.05 mg/m3

**Consumers**

Acute systemic effects	Acute local effects	Long-term systemic effects	Long-term local effects
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Dermal	Inhalation	Oral	Dermal	Inhalation	Dermal	Inhalation	Oral	Dermal	Inhalation
25 mg/kg bw/day	0.05 mg/m <sup>3</sup>	20 mg/kg bw/day	17.2 mg/cm <sup>2</sup>	0.05 mg/m <sup>3</sup>	n.a.	0.025 mg/m <sup>3</sup>	n.a.	n.a.	0.025 mg/m <sup>3</sup>

**Predicted No Effect Concentration**

4,4'-methylenediphenyl diisocyanate

Compartment	PNEC
Fresh water	1 mg/l
Marine water	0.1 mg/l
Intermittent use/release	10 mg/l
Soil	1 mg/kg dry weight (d.w.)
Sewage treatment plant	1 mg/l

**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: Butyl rubber. Polyethylene. Chlorinated polyethylene. Ethyl vinyl alcohol laminate ("EVAL"). Examples of acceptable glove barrier materials include: Viton. Neoprene. Polyvinyl chloride ("PVC" or "vinyl"). Nitrile/butadiene rubber ("nitrile" or "NBR"). 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).

#### Environmental exposure controls

See SECTION 7: Handling and storage and SECTION 13: Disposal considerations for measures to prevent excessive environmental exposure during use and waste disposal.

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## SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

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### 9.1 Information on basic physical and chemical properties

<b>Physical state</b>	liquid
	<b>Form</b> Liquefied gas
<b>Colour</b>	yellow
<b>Odour</b>	characteristic
	<b>Odour Threshold</b> 0.4 ppm Method: Based on Literature for MDI. Odor is inadequate warning of excessive exposure.
<b>Melting point/freezing point</b>	Freezing point: No test data available
	Melting point/range: No test data available
<b>Boiling point or initial boiling point and boiling range</b>	Boiling point/boiling range: No test data available
<b>Flammability</b>	<b>Gases/Solids</b> No data available
	<b>Liquids</b> No data available
	No data available
<b>Lower explosion limit and upper explosion limit / flammability limit</b>	<b>Lower explosion limit / Lower flammability limit</b> No test data available
	<b>Upper explosion limit / Upper flammability limit</b> No test data available

<b>Flash point</b>	Method: (closed cup) No test data available
<b>Auto-ignition temperature</b>	No test data available
<b>Decomposition temperature</b>	<b>Thermal decomposition</b> No test data available
<b>pH</b>	Not applicable
<b>Viscosity</b>	<b>Viscosity, kinematic</b> No test data available
<b>Solubility(ies)</b>	<b>Water solubility</b> insoluble
<b>Partition coefficient: n-octanol/water</b>	No data available
<b>Vapour pressure</b>	No test data available
<b>Density and / or relative density</b>	<b>Relative Density (water = 1)</b> No test data available
<b>Relative vapour density</b>	No test data available
<b>Particle characteristics</b>	Not applicable

## 9.2 Other information

<b>Substances and mixtures, which in contact with water, emit flammable gases</b>	The substance or mixture does not emit flammable gases in contact with water.
<b>Evaporation rate</b>	No test data available

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

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## SECTION 10: STABILITY AND REACTIVITY

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**10.1 Reactivity:** No data available

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

**10.3 Possibility of hazardous reactions:** Can occur. Elevated temperatures can cause hazardous polymerization.

**10.4 Conditions to avoid:** Avoid temperatures above 50°C (122°F) Elevated temperatures can cause container to vent and/or rupture. Exposure to elevated temperatures can cause product to decompose.

**10.5 Incompatible materials:** Avoid contact with: Acids. Alcohols. Amines. Ammonia. Bases. Metal compounds. Strong oxidizers. Products based on diisocyanates like TDI and MDI react with many materials to release heat. The reaction rate increases with temperature as well as with increased contact; these reactions can become violent. Contact is increased by stirring or if the other material acts as a solvent. Products based on diisocyanates such as TDI and MDI are not soluble in water and will 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.

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

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## SECTION 11: TOXICOLOGICAL INFORMATION

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

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

#### Acute toxicity

##### Acute toxicity (Acute oral toxicity)

Not classified

Not classified due to lack of data. / Not classified due to data which are conclusive although insufficient for classification.

Product test data not available. Refer to component data.

##### Acute toxicity (Acute dermal toxicity)

Not classified

Not classified due to lack of data. / Not classified due to data which are conclusive although insufficient for classification.

Product test data not available. Refer to component data.

##### Acute toxicity (Acute inhalation toxicity)

Acute toxicity, Category 4

H332: Harmful if inhaled.

Classification procedure: Calculation method

Acute toxicity estimate, 4 Hour, dust/mist, 1.7 mg/l Calculation method

#### Skin corrosion/irritation

Skin irritation, Category 2

H315: Causes skin irritation.

Classification procedure: Calculation method

Product test data not available. Refer to component data.

**Serious eye damage/eye irritation**

Eye irritation, Category 2

H319: Causes serious eye irritation.

Classification procedure: Calculation method

Product test data not available. Refer to component data.

**Respiratory or skin sensitisation**

Respiratory sensitisation, Category 1

H334: May cause allergy or asthma symptoms or breathing difficulties if inhaled.

Classification procedure: Calculation method

Skin sensitisation, Category 1

H317: May cause an allergic skin reaction.

Classification procedure: Calculation method

Product test data not available. Refer to component data.

**Germ cell mutagenicity**

Not classified

Not classified due to lack of data. / Not classified due to data which are conclusive although insufficient for classification.

Product test data not available. Refer to component data.

**Carcinogenicity**

Carcinogenicity, Category 2

H351: Suspected of causing cancer.

Classification procedure: Calculation method

Product test data not available. Refer to component data.

**Reproductive toxicity**

Not classified

Not classified due to lack of data. / Not classified due to data which are conclusive although insufficient for classification.

Toxicity to reproduction assessment :

Product test data not available. Refer to component data.

Assessment Teratogenicity:

Product test data not available. Refer to component data.

**STOT - single exposure**

Specific target organ toxicity - single exposure, Category 3

H335: May cause respiratory irritation.

Classification procedure: Calculation method

Product test data not available. Refer to component data.

**STOT - repeated exposure**

Specific target organ toxicity - repeated exposure, Category 2

H373: May cause damage to organs through prolonged or repeated exposure if inhaled.

Classification procedure: Calculation method

Product test data not available. Refer to component data.

**Aspiration Hazard**

Not classified

Not classified due to lack of data. / Not classified due to data which are conclusive although insufficient for classification.

Product test data not available. Refer to component data.

**COMPONENTS INFLUENCING TOXICOLOGY:****Diphenylmethane Diisocyanate, isomers and homologues****Acute toxicity (Acute oral toxicity)**

Typical for this family of materials. LD50, Rat, > 10,000 mg/kg

**Acute toxicity (Acute dermal toxicity)**

Typical for this family of materials. LD50, Rabbit, > 9,400 mg/kg

**Acute toxicity (Acute inhalation toxicity)**

LC50, Rat, 4 Hour, dust/mist, 0.49 mg/l

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

For similar material(s): 2,4'-Diphenylmethane diisocyanate (CAS 5873-54-1). LC50, Rat, 4 Hour, Aerosol, 0.387 mg/l

**Skin corrosion/irritation**

Prolonged contact may cause slight skin irritation with local redness.  
May stain skin.

**Serious eye damage/eye irritation**

May cause moderate eye irritation.  
May cause slight temporary corneal injury.

**Respiratory or skin sensitisation**

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.

**Germ cell mutagenicity**

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.

**Carcinogenicity**

Lung tumors have been observed in laboratory animals exposed to respirable aerosol droplets of MDI/Polymeric MDI (6 mg/m<sup>3</sup>) 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.

**Reproductive toxicity**

Toxicity to reproduction assessment :  
No relevant data found.

**Assessment Teratogenicity:**

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.

**STOT - single exposure**

May cause respiratory irritation.  
Route of Exposure: Inhalation  
Target Organs: Respiratory Tract

**STOT - repeated exposure**

Tissue injury in the upper respiratory tract and lungs has been observed in laboratory animals after repeated excessive exposures to MDI/polymeric MDI aerosols.

**Aspiration Hazard**

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

**4,4'-methylenediphenyl diisocyanate****Acute toxicity (Acute oral toxicity)**

LD50, Rat, > 2,000 mg/kg No deaths occurred at this concentration.

**Acute toxicity (Acute dermal toxicity)**

LD50, Rabbit, > 9,400 mg/kg

**Acute toxicity (Acute inhalation toxicity)**

LC50, Rat, 1 Hour, dust/mist, 2.24 mg/l

Acute toxicity estimate, dust/mist, 1.5 mg/l Acute toxicity estimate according to Regulation (EC) No. 1272/2008

**Skin corrosion/irritation**

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**

May cause moderate eye irritation.  
May cause slight temporary corneal injury.

**Respiratory or skin sensitisation**

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.

**Germ cell mutagenicity**

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.

**Carcinogenicity**

Lung tumors have been observed in laboratory animals exposed to respirable aerosol droplets of MDI/Polymeric MDI (6 mg/m<sup>3</sup>) 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.

**Reproductive toxicity**

Toxicity to reproduction assessment :

No relevant data found.

Assessment Teratogenicity:

Has been toxic to the fetus in laboratory animals at doses toxic to the mother. Did not cause birth defects in laboratory animals.

**STOT - single exposure**

May cause respiratory irritation.

Route of Exposure: Inhalation

Target Organs: Respiratory Tract

**STOT - repeated exposure**

Tissue injury in the upper respiratory tract and lungs has been observed in laboratory animals after repeated excessive exposures to MDI/polymeric MDI aerosols.

**Aspiration Hazard**

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

**Trans-1,3,3,3-Tetrafluoropropene (HFO-1234ze)****Acute toxicity (Acute oral toxicity)**

Single dose oral LD50 has not been determined.

**Acute toxicity (Acute dermal toxicity)**

The dermal LD50 has not been determined.

**Acute toxicity (Acute inhalation toxicity)**

LC50, Rat, 4 Hour, gas, > 207000 ppm

**Skin corrosion/irritation**



Prolonged contact is essentially nonirritating to skin.

**Germ cell mutagenicity**

In vitro genetic toxicity studies were negative. Animal genetic toxicity studies were negative.

**Reproductive toxicity**

Toxicity to reproduction assessment :

In animal studies, did not interfere with reproduction.

Assessment Teratogenicity:

Did not cause birth defects or any other fetal effects in laboratory animals. Information given is based on data obtained from similar substances.

**STOT - repeated exposure**

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

Information given is based on data obtained from similar substances.

**Aspiration Hazard**

No aspiration toxicity classification

**11.2. Information on other hazards****Endocrine disrupting properties**

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**

No data available

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**SECTION 12: ECOLOGICAL INFORMATION**

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

**12.1 Toxicity****Diphenylmethane Diisocyanate, isomers and homologues****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

**4,4'-methylenediphenyl diisocyanate****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

**Trans-1,3,3,3-Tetrafluoropropene (HFO-1234ze)****Acute toxicity to fish**

Information given is based on data obtained from similar substances.

LC50, Cyprinus carpio (Carp), 96 Hour, > 117 mg/l, OECD Test Guideline 203

**Acute toxicity to aquatic invertebrates**

Information given is based on data obtained from similar substances.

LC50, Daphnia magna (Water flea), 48 Hour, > 160 mg/l, OECD Test Guideline 202

**Acute toxicity to algae/aquatic plants**

Information given is based on data obtained from similar substances.

EC50, Pseudokirchneriella subcapitata (green algae), 72 Hour, > 170 mg/l, OECD Test Guideline 201

NOEC, Pseudokirchneriella subcapitata (green algae), 72 Hour, > 170 mg/l, OECD Test Guideline 201

**12.2 Persistence and degradability****Diphenylmethane Diisocyanate, isomers and homologues**

**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

**4,4'-methylenediphenyl diisocyanate**

**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

**Trans-1,3,3,3-Tetrafluoropropene (HFO-1234ze)**

**Biodegradability:** Not readily biodegradable.

**Biodegradation:** 0 %

**Exposure time:** 28 d

**Method:** OECD Test Guideline 301

**12.3 Bioaccumulative potential****Diphenylmethane Diisocyanate, isomers and homologues**

**Bioaccumulation:** Bioconcentration potential is low (BCF < 100 or Log Pow < 3). Reacts with water. In the aquatic and terrestrial environment, movement is expected to be limited by its reaction with water forming predominantly insoluble polyureas.

**Bioconcentration factor (BCF):** 92 Cyprinus carpio (Carp) 28 d

#### **4,4'-methylenediphenyl diisocyanate**

**Bioaccumulation:** Bioconcentration potential is low (BCF < 100 or Log Pow < 3). Reacts with water. In the aquatic and terrestrial environment, movement is expected to be limited by its reaction with water forming predominantly insoluble polyureas.

**Bioconcentration factor (BCF):** 92 Cyprinus carpio (Carp) 28 d

#### **Trans-1,3,3,3-Tetrafluoropropene (HFO-1234ze)**

**Bioaccumulation:** Bioaccumulation is unlikely. Information given is based on data obtained from similar substances. Bioconcentration potential is low (BCF < 100 or Log Pow < 3).

**Partition coefficient: n-octanol/water(log Pow):** 1.6 Measured

### **12.4 Mobility in soil**

#### **Diphenylmethane Diisocyanate, isomers and homologues**

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

#### **4,4'-methylenediphenyl diisocyanate**

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

#### **Trans-1,3,3,3-Tetrafluoropropene (HFO-1234ze)**

Potential for mobility in soil is medium (Koc between 150 and 500).

**Partition coefficient (Koc):** 180 Estimated.

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

#### **Diphenylmethane Diisocyanate, isomers and homologues**

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

#### **4,4'-methylenediphenyl diisocyanate**

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

#### **Trans-1,3,3,3-Tetrafluoropropene (HFO-1234ze)**

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

### **12.6 Endocrine disrupting properties**

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 contains no ozone-depleting components. Product contains no ozone-depleting components.

#### **Diphenylmethane Diisocyanate, isomers and homologues**

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

#### **4,4'-methylenediphenyl diisocyanate**

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

#### **Trans-1,3,3,3-Tetrafluoropropene (HFO-1234ze)**

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

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## **SECTION 13: DISPOSAL CONSIDERATIONS**

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### **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.

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## **SECTION 14: TRANSPORT INFORMATION**

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

- |  |  |
|--|--|
| <b>14.1 UN number or ID number</b>       | UN 3500  |
| <b>14.2 UN proper shipping name</b>      | CHEMICAL UNDER PRESSURE, N.O.S.(Trans-1,3,3,3-Tetrafluoroprop-1-ene, Nitrogen) |
| <b>14.3 Transport hazard class(es)</b>   | 2  |
| <b>14.4 Packing group</b>                | Not applicable   |
| <b>14.5 Environmental hazards</b>        | Not considered environmentally hazardous based on available data.              |
| <b>14.6 Special precautions for user</b> | Hazard Identification Number: 20   |

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

- |  |  |
|--|--|
| <b>14.1 UN number or ID number</b>     | UN 3500  |
| <b>14.2 UN proper shipping name</b>    | CHEMICAL UNDER PRESSURE, N.O.S.(Trans-1,3,3,3-Tetrafluoroprop-1-ene, Nitrogen) |
| <b>14.3 Transport hazard class(es)</b> | 2.2  |

14.4	<b>Packing group</b>	Not applicable
14.5	<b>Environmental hazards</b>	Not considered as marine pollutant based on available data.
14.6	<b>Special precautions for user</b>	EmS: F-C, S-V
14.7	<b>Maritime transport in bulk according to IMO instruments</b>	Consult IMO regulations before transporting ocean bulk

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

14.1	<b>UN number or ID number</b>	UN 3500
14.2	<b>UN proper shipping name</b>	Chemical under pressure, n.o.s.(Trans-1,3,3,3-Tetrafluoroprop-1-ene, Nitrogen)
14.3	<b>Transport hazard class(es)</b>	2.2
14.4	<b>Packing group</b>	Not applicable
14.5	<b>Environmental hazards</b>	Not applicable
14.6	<b>Special precautions for user</b>	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.

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## SECTION 15: REGULATORY INFORMATION

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**15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture****REACH Regulation (EC) No 1907/2006**

This product contains only components that have been either registered, are exempt from registration, are regarded as registered or are not subject to registration according to Regulation (EC) No. 1907/2006 (REACH). Polymers are exempted from registration under REACH. All relevant starting materials and additives have been either registered, or are exempt from registration according to Regulation (EC) No. 1907/2006 (REACH). The aforementioned indications of the REACH registration status are provided in good faith and believed to be accurate as of the effective date shown above. However, no warranty, express 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.

**Restrictions on the manufacture, placing on the market and use:**

The following substance/s contained in this product is/are subject through Annex XVII of REACH regulation to restrictions on the manufacture, placing on the market and use when present in certain dangerous substances, mixtures and articles. Users of this product have to comply with the restrictions placed upon it by the aforementioned provision.

CAS-No.: 9016-87-9

Name: Diphenylmethane Diisocyanate, isomers and

	homologues
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Restriction status: listed in REACH Annex XVII

Restricted uses: See Annex XVII to Regulation (EC) no 1907/2006 for Conditions of restriction  
Number on the list: 56, 74

CAS-No.: 101-68-8	Name: 4,4'-methylenediphenyl diisocyanate
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Restriction status: listed in REACH Annex XVII

Restricted uses: See Annex XVII to Regulation (EC) no 1907/2006 for Conditions of restriction  
Number on the list: 56, 74

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

Listed in Regulation: Not applicable

#### Further information

Take note of Directive 92/85/EEC regarding maternity protection or stricter national regulations, where applicable.

Take note of Directive 94/33/EC on the protection of young people at work or stricter national regulations, where applicable.

#### 15.2 Chemical safety assessment

No Chemical Safety Assessment has been carried out for this mixture.

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## SECTION 16: OTHER INFORMATION

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

H280	Contains gas under pressure; may explode if heated.
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 if inhaled.

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

Press. Gas - Liquefied gas - H280 - Based on product data or assessment

Acute Tox. - 4 - H332 - Calculation method

Skin Irrit. - 2 - H315 - Calculation method

Eye Irrit. - 2 - H319 - Calculation method

Resp. Sens. - 1 - H334 - Calculation method

Skin Sens. - 1 - H317 - Calculation method

Carc. - 2 - H351 - Calculation method

STOT SE - 3 - H335 - Calculation method

STOT RE - 2 - H373 - Calculation method

**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: 12081657 / A670 / Issue Date: 14.07.2022 / Version: 3.0

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
GB EH40 BAT	UK. Biological monitoring guidance values
STEL	Short-term exposure limit (15-minute reference period)
TWA	Long-term exposure limit (8-hour TWA reference period)
Acute Tox.	Acute toxicity
Carc.	Carcinogenicity
Eye Irrit.	Eye irritation
Press. Gas	Gases under pressure
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.

SPECIALTY ELECTRONIC MATERIALS UK 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.

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# SAFETY DATA SHEET

DuPont Specialty Products GmbH & Co. KG

Safety Data Sheet according to Regulation (EC) No 1907/2006 - Annex II

**Product name:** FROTH-PAK™ Foam Systems 180 QR POLYOL

**Revision Date:** 22.01.2024

**Version:** 3.0

**Date of last issue:** 03.02.2023

**Print Date:** 01.02.2024

DuPont Specialty Products GmbH & Co. KG 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.

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

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### 1.1 Product identifier

**Product name:** FROTH-PAK™ Foam Systems 180 QR POLYOL

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

**Identified uses:** Component for polyurethane manufacture. Thermal insulation.

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

#### COMPANY IDENTIFICATION

DuPont Specialty Products GmbH & Co. KG  
Hugenottenallee 175,  
63263 NEU-ISENBURG  
GERMANY

#### Customer Information Number:

00800-3876-6838

SDSQuestion-EU@dupont.com

### 1.4 EMERGENCY TELEPHONE NUMBER

**24-Hour Emergency Contact:** +(49)- 69643508409

**Local Emergency Contact:** +(49)- 69643508409

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## SECTION 2: HAZARDS IDENTIFICATION

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### 2.1 Classification of the substance or mixture

#### Classification according to Regulation (EC) No 1272/2008:

Gases under pressure - Liquefied gas - H280

Eye irritation - Category 2 - H319

Skin sensitisation - Category 1 - H317

Reproductive toxicity - Category 1B - H360D

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:

### Hazard pictograms



Signal word: **DANGER**

### Hazard statements

H280	Contains gas under pressure; may explode if heated.
H317	May cause an allergic skin reaction.
H319	Causes serious eye irritation.
H360D	May damage the unborn child.

### Precautionary statements

P201	Obtain special instructions before use.
P261	Avoid breathing mist or vapours.
P280	Wear protective gloves/ protective clothing/ eye protection/ face protection.
P264	Wash skin thoroughly after handling.
P308 + P313	IF exposed or concerned: Get medical advice/ attention.
P333 + P313	If skin irritation or rash occurs: Get medical advice/ attention.
P337 + P313	If eye irritation persists: Get medical advice/ attention.
P501	Dispose of contents/ container to an approved waste disposal plant.

**Contains** 2-Ethylhexanoic acid potassium salt; Dimethylbis((1-oxoneodecyl)oxy)stannane

## 2.3 Other hazards

Endocrine disrupting properties (human health):

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.

Endocrine disrupting properties (environment):

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.

PBT and vPvB 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.

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**SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS**


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**3.2 Mixtures**

This product is a mixture.

Identification number	Component	Classification according to Regulation (EU) 1272/2008 (CLP)	specific concentration limit/ M-Factors/ Acute toxicity estimate	%
<b>CASRN</b> 102687-65-0 <b>EC-No.</b> 700-486-0 <b>Index-No.</b> - <b>REACH No.</b> 01-2119855084-38	trans-1-Chloro-3,3,3-trifluoropropene	Press. Gas Liquefied gas - H280 Aquatic Chronic 3 - H412	Inhalation ATE: 120000 ppm (gas)	>= 20,0 - < 25,0 %
<b>CASRN</b> 1244733-77-4 <b>EC-No.</b> - <b>Index-No.</b> - <b>REACH No.</b> 01-2119486772-26	Reaction products of phosphoryl trichloride and 2-methyloxirane	Acute Tox. 4 - H302	Oral ATE: 632 mg/kg Inhalation ATE: > 7 mg/l (dust/mist) Dermal ATE: > 2 000 mg/kg	>= 10,0 - < 20,0 %
<b>CASRN</b> 78-40-0 <b>EC-No.</b> 201-114-5 <b>Index-No.</b> 015-013-00-7 <b>REACH No.</b> 01-2119492852-28	triethyl phosphate	Acute Tox. 4 - H302 Eye Irrit. 2 - H319	Oral ATE: 1 131 mg/kg Dermal ATE: > 21 400 mg/kg	>= 1,0 - < 10,0 %
<b>CASRN</b> 3164-85-0 <b>EC-No.</b> 221-625-7 <b>Index-No.</b> 607-230-00-6 <b>REACH No.</b> 01-2119980714-29	2-Ethylhexanoic acid potassium salt	Skin Irrit. 2 - H315 Eye Dam. 1 - H318 Repr. 1B - H360Df	Oral ATE: 2 043 mg/kg Inhalation ATE: > 0,11 mg/l (dust/mist) Dermal ATE: > 2 000 mg/kg	>= 1,0 - < 3,0 %
<b>CASRN</b> 111-46-6 <b>EC-No.</b> 203-872-2 <b>Index-No.</b> 603-140-00-6 <b>REACH No.</b> 01-2119457857-21	2,2'-oxybisethanol	Acute Tox. 4 - H302	Oral ATE: 500 mg/kg Inhalation ATE: > 4,6 mg/l (dust/mist) Dermal ATE: 13 330 mg/kg	>= 1,0 - < 10,0 %
<b>CASRN</b> 68928-76-7 <b>EC-No.</b> 273-028-6 <b>Index-No.</b> -	Dimethylbis((1-oxoneodecyl)oxy)stannane	Acute Tox. 4 - H302 Skin Irrit. 2 - H315 Skin Sens. 1A - H317 Aquatic Chronic 3 - H412	Oral ATE: 892 mg/kg	>= 0,25 - < 1,0 %

REACH No. 01-2120770324-57				
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## Substances with a workplace exposure limit

Identification number	Component	Classification according to Regulation (EU) 1272/2008 (CLP)	specific concentration limit/ M-Factors/ Acute toxicity estimate	%
CASRN 25322-68-3 EC-No. 500-038-2 Index-No. - REACH No. -	Polyethylene glycol	Not classified	Oral ATE: > 10 000 mg/kg  Inhalation ATE: > 2,5 mg/l (dust/mist)  Dermal ATE: > 20 000 mg/kg	>= 1,0 - < 10,0 %
CASRN 124-38-9 EC-No. 204-696-9 Index-No. - REACH No. -	Carbon dioxide	Press. Gas Liquefied gas - H280	Inhalation ATE: 58750 ppm (gas)	>= 1,0 - < 10,0 %

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

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## SECTION 4: FIRST AID MEASURES

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### 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. 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 persists. Wash clothing before reuse. 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:**

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:** Treat symptomatically.

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## **SECTION 5: FIREFIGHTING MEASURES**

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### **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. Hydrogen halides.

**Unusual Fire and Explosion Hazards:** Container may rupture from gas generation in a fire situation. Blowing agent vaporizes quickly at room temperature. 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, refer to the relevant sections.

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## SECTION 6: ACCIDENTAL RELEASE MEASURES

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**6.1 Personal precautions, protective equipment and emergency procedures:** Isolate area. Keep unnecessary and unprotected personnel from entering the area. Keep personnel out of confined or poorly ventilated areas. Keep upwind of spill. Ventilate area of leak or spill. Confined space entry procedures must be followed before entering the area. Refer to section 7, Handling, for additional precautionary measures. 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.

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## SECTION 7: HANDLING AND STORAGE

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**7.1 Precautions for safe handling:** Do not enter confined spaces unless adequately ventilated. Avoid contact with eyes. Avoid breathing vapor. Wash thoroughly after handling. Use with adequate ventilation. 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.

### Advice on general occupational hygiene

Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and immediately after handling the product.

**7.2 Conditions for safe storage, including any incompatibilities:** Store in a dry place. Avoid prolonged exposure to heat and air. Protect from atmospheric moisture. Blowing agent may migrate from product and accumulate in some storage situations. Elevated temperatures can cause pressure buildup in closed containers due to the release of blowing agents. See Section 10 for more specific information.

### Storage stability

<b>Storage temperature:</b>	<b>Storage Period:</b>
5 - 30 °C	15 Month

**7.3 Specific end use(s):** Information on specific end use(s) of this product may be provided in a technical data sheet/annex to the SDS (if available).

## 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
2,2'-oxybisethanol	DE TRGS 900	AGW Vapour and aerosols	44 mg/m <sup>3</sup> 10 ppm
	Further information: Y: When there is compliance with the OEL and biological tolerance values, there is no risk of harming the unborn child		
	DE DFG MAK	MAK	44 mg/m <sup>3</sup> 10 ppm
	Further information: C: Damage to the embryo or foetus is unlikely when the MAK value or the BAT value is observed		
Dimethylbis((1-oxodecyl)oxy)stannane	ACGIH	TWA	0,1 mg/m <sup>3</sup> , Tin
	Further information: A4: Not classifiable as a human carcinogen; Skin: Danger of cutaneous absorption		
	ACGIH	STEL	0,2 mg/m <sup>3</sup> , Tin
	Further information: A4: Not classifiable as a human carcinogen; Skin: Danger of cutaneous absorption		
Polyethylene glycol	DE TRGS 900	AGW Inhalable fraction	1 000 mg/m <sup>3</sup>
	Further information: Y: When there is compliance with the OEL and biological tolerance values, there is no risk of harming the unborn child		
	DE TRGS 900	AGW Inhalable fraction	1 000 mg/m <sup>3</sup>
	Further information: Y: When there is compliance with the OEL and biological tolerance values, there is no risk of harming the unborn child		
	DE TRGS 900	AGW Inhalable fraction	200 mg/m <sup>3</sup>
	Further information: Y: When there is compliance with the OEL and biological tolerance values, there is no risk of harming the unborn child		
	DE DFG MAK	MAK inhalable fraction	250 mg/m <sup>3</sup>
	Further information: C: Damage to the embryo or foetus is unlikely when the MAK value or the BAT value is observed		
Carbon dioxide	ACGIH	TWA	5 000 ppm
	ACGIH	STEL	30 000 ppm
	2006/15/EC	TWA	9 000 mg/m <sup>3</sup> 5 000 ppm
	Further information: Indicative		
	DE TRGS 900	AGW	9 100 mg/m <sup>3</sup> 5 000 ppm
	DE DFG MAK	MAK	9 100 mg/m <sup>3</sup> 5 000 ppm

### Derived No Effect Level

2,2'-oxybisethanol

#### 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.	106 mg/kg bw/day	n.a.	n.a.	60 mg/m3
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**Consumers**

<i>Acute systemic effects</i>			<i>Acute local effects</i>		<i>Long-term systemic effects</i>			<i>Long-term local effects</i>	
Dermal	Inhalation	Oral	Dermal	Inhalation	Dermal	Inhalation	Oral	Dermal	Inhalation
n.a.	n.a.	n.a.	n.a.	n.a.	53 mg/kg bw/day	n.a.	n.a.	n.a.	12 mg/m3

**Predicted No Effect Concentration**

2,2'-oxybisethanol

Compartment	PNEC
Fresh water	10 mg/l
Marine water	1 mg/l
Intermittent use/release	10 mg/l
Sewage treatment plant	199,5 mg/l
Fresh water sediment	20,9 mg/kg
Soil	1,53 mg/kg
Marine sediment	2,09 mg/kg

**8.2 Exposure controls**

**Engineering measures:** Use engineering controls to maintain airborne level below exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, use only in enclosed systems or with local exhaust ventilation. Exhaust systems should be designed to move the air away from the source of vapor/aerosol generation and people working at this point.

**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 chemical resistant gloves classified under Standard EN374: Protective gloves against chemicals and micro-organisms. Examples of preferred glove barrier materials include: Chlorinated polyethylene. Polyethylene. Ethyl vinyl alcohol laminate ("EVAL"). Polyvinyl alcohol ("PVA"). Styrene/butadiene rubber. Viton. Examples of acceptable glove barrier materials include: Butyl rubber. Natural rubber ("latex"). 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:** 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, use an approved respirator. When respiratory protection is required, use an approved positive-pressure self-contained breathing apparatus or positive-pressure airline with auxiliary self-contained air supply. For emergency conditions, use an approved positive-pressure self-contained breathing apparatus. In confined or poorly ventilated areas, use an approved self-contained breathing apparatus or positive pressure air line with auxiliary self-contained air supply. Use NIOSH approved respiratory protection.

#### Environmental exposure controls

See SECTION 7: Handling and storage and SECTION 13: Disposal considerations for measures to prevent excessive environmental exposure during use and waste disposal.

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## SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

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### 9.1 Information on basic physical and chemical properties

<b>Physical state</b>	liquid
	<b>Form</b>
	Liquefied gas
<b>Colour</b>	Yellowish-white
<b>Odour</b>	characteristic
	<b>Odour Threshold</b>
	No test data available
<b>Melting point/freezing point</b>	Freezing point: not determined
	Melting point/range: not determined
<b>Boiling point or initial boiling point and boiling range</b>	Boiling point/boiling range: No data available
<b>Flammability</b>	<b>Gases/Solids</b>
	No data available
	<b>Liquids</b>
	No data available
	No data available
<b>Lower explosion limit and upper explosion limit /</b>	<b>Lower explosion limit / Lower flammability limit</b>
	Not applicable

**flammability limit****Upper explosion limit / Upper flammability limit**

Not applicable

**Flash point**

Not applicable

**Auto-ignition temperature**

not flammable

**Decomposition temperature****Thermal decomposition**

No test data available

**pH**

Not applicable

**Viscosity****Viscosity, kinematic**

No data available

**Solubility(ies)****Water solubility**

immiscible

**Partition coefficient: n-octanol/water**

No data available

**Vapour pressure**

Container is under pressure.

**Density and / or relative density****Relative Density (water = 1)**

No data available

**Relative vapour density**

not determined

**Particle characteristics**

Not applicable

**9.2 Other information****Explosives**

Not applicable

**Oxidizing properties**

No data available

**Substances and mixtures, which in contact with water, emit flammable gases**

The substance or mixture does not emit flammable gases in contact with water.

**Evaporation rate**

not determined

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

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## SECTION 10: STABILITY AND REACTIVITY

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**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. Elevated temperatures can cause pressure buildup in closed containers due to the release of blowing agents. 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. Hydrogen halides. Ketones. Polymer fragments.

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## SECTION 11: TOXICOLOGICAL INFORMATION

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

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

#### Acute toxicity

##### Acute toxicity (Acute oral toxicity)

Not classified

Not classified due to lack of data. / Not classified due to data which are conclusive although insufficient for classification.

Acute toxicity estimate, > 2 000 mg/kg Calculation method

##### Acute toxicity (Acute dermal toxicity)

Not classified

Not classified due to lack of data. / Not classified due to data which are conclusive although insufficient for classification.

Product test data not available. Refer to component data.

##### Acute toxicity (Acute inhalation toxicity)

Not classified

Not classified due to lack of data. / Not classified due to data which are conclusive although insufficient for classification.

Product test data not available. Refer to component data.

**Skin corrosion/irritation**

Not classified

Not classified due to lack of data. / Not classified due to data which are conclusive although insufficient for classification.

Product test data not available. Refer to component data.

**Serious eye damage/eye irritation**

Eye irritation, Category 2

H319: Causes serious eye irritation.

Classification procedure: Calculation method

Product test data not available. Refer to component data.

**Respiratory or skin sensitisation**

Skin sensitisation, Category 1

H317: May cause an allergic skin reaction.

Classification procedure: Calculation method

Product test data not available. Refer to component data.

**Germ cell mutagenicity**

Not classified

Not classified due to lack of data. / Not classified due to data which are conclusive although insufficient for classification.

Product test data not available. Refer to component data.

**Carcinogenicity**

Not classified

Not classified due to lack of data. / Not classified due to data which are conclusive although insufficient for classification.

Product test data not available. Refer to component data.

**Reproductive toxicity**

Reproductive toxicity, Category 1B

H360D: May damage the unborn child.

Classification procedure: Calculation method

Toxicity to reproduction assessment :

Product test data not available. Refer to component data.

Assessment Teratogenicity:

Product test data not available. Refer to component data.

**STOT - single exposure**

Not classified

Not classified due to lack of data. / Not classified due to data which are conclusive although insufficient for classification.

Product test data not available. Refer to component data.

**STOT - repeated exposure**

Not classified

Not classified due to lack of data. / Not classified due to data which are conclusive although insufficient for classification.

Product test data not available. Refer to component data.

**Aspiration Hazard**

Not classified

Not classified due to lack of data. / Not classified due to data which are conclusive although insufficient for classification.

Product test data not available. Refer to component data.

**COMPONENTS INFLUENCING TOXICOLOGY:**

**trans-1-Chloro-3,3,3-trifluoropropene**

**Acute toxicity (Acute oral toxicity)**

Single dose oral LD50 has not been determined.

**Acute toxicity (Acute dermal toxicity)**

The dermal LD50 has not been determined.

**Acute toxicity (Acute inhalation toxicity)**

LC50, Rat, 4 Hour, gas, 120000 ppm

**Skin corrosion/irritation**

Brief contact is essentially nonirritating to skin.

**Serious eye damage/eye irritation**

No relevant data found.

**Respiratory or skin sensitisation**

Did not cause allergic skin reactions when tested in humans.

For respiratory sensitization:

No relevant data found.

**Germ cell mutagenicity**

This material was not mutagenic in an Ames bacterial assay.

**Carcinogenicity**

No relevant data found.

**Reproductive toxicity**

Toxicity to reproduction assessment :

No relevant data found.

Assessment Teratogenicity:

No relevant data found.

**STOT - single exposure**

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

**STOT - repeated exposure**

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

**Aspiration Hazard**

Based on available information, aspiration hazard could not be determined.

**Reaction products of phosphoryl trichloride and 2-methyloxirane****Acute toxicity (Acute oral toxicity)**

LD50, Rat, 632 mg/kg EC Directive 92/69/EEC B.1 Acute Toxicity (Oral)

**Acute toxicity (Acute dermal toxicity)**

LD50, Rat, > 2 000 mg/kg OECD Test Guideline 402 No deaths occurred at this concentration.

**Acute toxicity (Acute inhalation toxicity)**

LC50, Rat, 4 Hour, dust/mist, > 7 mg/l OECD Test Guideline 403

**Skin corrosion/irritation**

Brief contact may cause slight skin irritation with local redness.

**Serious eye damage/eye irritation**

May cause lacrimation (tears).

Essentially nonirritating to eyes.

**Respiratory or skin sensitisation**

Did not demonstrate the potential for contact allergy in mice.

For respiratory sensitization:

No relevant information found.

**Germ cell mutagenicity**

In vitro genetic toxicity studies were negative in some cases and positive in other cases.

Animal genetic toxicity studies were negative.

**Carcinogenicity**

No data available.

**Reproductive toxicity**

Toxicity to reproduction assessment :

In animal studies, did not interfere with reproduction.

Assessment Teratogenicity:

Did not cause birth defects in laboratory animals.

**STOT - single exposure**

The substance or mixture is not classified as specific target organ toxicant, single exposure.

**STOT - repeated exposure**

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

**Aspiration Hazard**

Based on available information, aspiration hazard could not be determined.

**triethyl phosphate****Acute toxicity (Acute oral toxicity)**

LD50, Rat, 1 131 mg/kg

**Acute toxicity (Acute dermal toxicity)**

LD50, Guinea pig, > 21 400 mg/kg

**Skin corrosion/irritation**

Prolonged contact may cause slight skin irritation with local redness.

**Serious eye damage/eye irritation**

May cause moderate eye irritation.

May cause slight corneal injury.

**Respiratory or skin sensitisation**

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

For respiratory sensitization:

No relevant data found.

**Germ cell mutagenicity**

In vitro genetic toxicity studies were predominantly negative. Animal genetic toxicity studies were predominantly negative.

**Carcinogenicity**

No relevant data found.

**Reproductive toxicity**

Toxicity to reproduction assessment :

In laboratory animal studies, effects on reproduction have been seen only at doses that produced significant toxicity to the parent animals.

Assessment Teratogenicity:

No relevant data found.

**STOT - single exposure**

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

**STOT - repeated exposure**

Triethyl phosphate is considered to be a weak cholinesterase inhibitor.

Excessive exposure may produce organophosphate type cholinesterase inhibition.

Signs and symptoms of excessive exposure may be headache, dizziness, incoordination, muscle twitching, tremors, nausea, abdominal cramps, diarrhea, sweating, pinpoint pupils, blurred vision, salivation, tearing, tightness in chest, excessive urination, convulsions.

**Aspiration Hazard**



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

### **2-Ethylhexanoic acid potassium salt**

#### **Acute toxicity (Acute oral toxicity)**

Information given is based on data obtained from similar substances. LC50, Rat, 2 043 mg/kg  
OECD Test Guideline 401

#### **Acute toxicity (Acute dermal toxicity)**

Information given is based on data obtained from similar substances. LD50, Rabbit, > 2 000  
mg/kg OECD Test Guideline 402

#### **Acute toxicity (Acute inhalation toxicity)**

An LC50/inhalation/4h/rat could not be determined because no mortality of rats was observed  
at the maximum achievable concentration. LC0, Rat, 4 Hour, dust/mist, > 0,11 mg/l OECD  
Test Guideline 403

#### **Skin corrosion/irritation**

Brief contact may cause severe skin irritation with pain and local redness.

#### **Serious eye damage/eye irritation**

May cause severe irritation with corneal injury which may result in permanent impairment of  
vision, even blindness. Chemical burns may occur.

#### **Respiratory or skin sensitisation**

Did not cause allergic skin reactions when tested in guinea pigs.  
Information given is based on data obtained from similar substances.

No data available

#### **Germ cell mutagenicity**

Animal genetic toxicity studies were negative. In vitro genetic toxicity studies were negative.  
Information given is based on data obtained from similar substances.

#### **Carcinogenicity**

No data available

#### **Reproductive toxicity**

Toxicity to reproduction assessment :

In animal studies, has been shown to interfere with fertility. Information given is based on data  
obtained from similar substances.

Assessment Teratogenicity:

Has caused birth defects in laboratory animals. Information given is based on data obtained  
from similar substances.

#### **STOT - single exposure**

The substance or mixture is not classified as specific target organ toxicant, single exposure.

#### **STOT - repeated exposure**

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

Information given is based on data obtained from similar substances.

**Aspiration Hazard**

No aspiration toxicity classification

**2,2'-oxybisethanol****Acute toxicity (Acute oral toxicity)**

In humans, expected to be moderately toxic if swallowed even though oral toxicity was low when tested in animals. Ingestion of quantities (approximately 65 mL (2 oz.) for diethylene glycol or 100 mL (3 oz.) for ethylene glycol) has caused death in humans. May cause nausea and vomiting. May cause abdominal discomfort or diarrhea. Excessive exposure may cause central nervous system effects, cardiopulmonary effects (metabolic acidosis), and kidney failure. LD50, Rat, male, 19 600 mg/kg

Lethal Dose, Human, adult, 65 ml Estimated.

Acute toxicity estimate, 500 mg/kg Acute toxicity estimate according to Regulation (EC) No. 1272/2008

**Acute toxicity (Acute dermal toxicity)**

LD50, Rabbit, 13 330 mg/kg

**Acute toxicity (Acute inhalation toxicity)**

LC50, Rat, 4 Hour, dust/mist, > 4,6 mg/l The LC50 value is greater than the Maximum Attainable Concentration. No deaths occurred at this concentration.

**Skin corrosion/irritation**

Prolonged contact is essentially nonirritating to skin.

**Serious eye damage/eye irritation**

May cause slight temporary eye irritation.  
Corneal injury is unlikely.

**Respiratory or skin sensitisation**

Did not cause allergic skin reactions when tested in humans.  
Did not cause allergic skin reactions when tested in guinea pigs.

For respiratory sensitization:

No relevant data found.

**Germ cell mutagenicity**

In vitro genetic toxicity studies were negative. Animal genetic toxicity studies were negative.

**Carcinogenicity**

Diethylene glycol has been tested for carcinogenicity in animal studies and is not believed to pose a carcinogenic risk to man.

**Reproductive toxicity**

Toxicity to reproduction assessment :

Diethylene glycol did not interfere with reproduction in animal studies except at very high doses.

Assessment Teratogenicity:

Diethylene glycol has caused toxicity to the fetus and some birth defects at maternally toxic, high doses in animals. Other animal studies have not reproduced birth defects even at much higher doses that caused severe maternal toxicity.

**STOT - single exposure**

The substance or mixture is not classified as specific target organ toxicant, single exposure.

**STOT - repeated exposure**

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

**Aspiration Hazard**

No aspiration toxicity classification

**Dimethylbis((1-oxoneodecyl)oxy)stannane****Acute toxicity (Acute oral toxicity)**

LD50, Rat, 892 mg/kg

**Acute toxicity (Acute dermal toxicity)**

The dermal LD50 has not been determined.

**Acute toxicity (Acute inhalation toxicity)**

The LC50 has not been determined.

**Skin corrosion/irritation**

Brief contact may cause skin irritation with local redness.

**Serious eye damage/eye irritation**

May cause slight temporary eye irritation.

**Respiratory or skin sensitisation**

Has caused allergic skin reactions when tested in guinea pigs.

For respiratory sensitization:

No relevant data found.

**Germ cell mutagenicity**

Not mutagenic in Ames Test

**Carcinogenicity**

No relevant data found.

**Reproductive toxicity**

Toxicity to reproduction assessment :

No relevant data found.

Assessment Teratogenicity:

No relevant data found.

**STOT - single exposure**

Available data are inadequate to determine single exposure specific target organ toxicity.

**STOT - repeated exposure**

No relevant data found.

**Aspiration Hazard**

No aspiration toxicity classification

**Polyethylene glycol****Acute toxicity (Acute oral toxicity)**

Typical for this family of materials. LD50, Rat, > 10 000 mg/kg Estimated.

**Acute toxicity (Acute dermal toxicity)**

Typical for this family of materials. LD50, Rabbit, > 20 000 mg/kg

**Acute toxicity (Acute inhalation toxicity)**

Typical for this family of materials. LC50, Rat, 6 Hour, dust/mist, > 2,5 mg/l No deaths occurred at this concentration.

**Skin corrosion/irritation**

Prolonged exposure not likely to cause significant skin irritation.

May cause more severe response if skin is abraded (scratched or cut).

**Serious eye damage/eye irritation**

May cause slight temporary eye irritation.

Corneal injury is unlikely.

**Respiratory or skin sensitisation**

For this family of materials:

Did not cause allergic skin reactions when tested in humans.

For this family of materials, sensitization studies done in guinea pigs have been negative.

For respiratory sensitization:

No relevant data found.

**Germ cell mutagenicity**

In vitro genetic toxicity studies were negative. Animal genetic toxicity studies were negative.

**Carcinogenicity**

Polyethylene glycols did not cause cancer in long-term animal studies.

**Reproductive toxicity**

Toxicity to reproduction assessment :

In animal studies, did not interfere with reproduction.

Assessment Teratogenicity:

Did not cause birth defects or any other fetal effects in laboratory animals.

**STOT - single exposure**

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

**STOT - repeated exposure**

Recent findings of kidney failure and death in burn patients, as well as some studies using animal burn models, suggest that polyethylene glycol may have been a factor.

The use of topical applications containing this material may not be appropriate in severely burned patients.  
Based on available data, repeated exposures are not anticipated to cause significant adverse effects.

**Aspiration Hazard**

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

**Carbon dioxide****Acute toxicity (Acute oral toxicity)**

Single dose oral LD50 has not been determined.

**Acute toxicity (Acute dermal toxicity)**

The dermal LD50 has not been determined.

**Acute toxicity (Acute inhalation toxicity)**

LC50, Rat, 4 hrs, gas, 58750 ppm

**Skin corrosion/irritation**

No hazard from gas.

Skin contact with the solid ("dry ice") may cause frostbite.

Liquid may cause frostbite upon skin contact.

**Serious eye damage/eye irritation**

No hazard from gas.

Eye contact with the solid ("dry ice") may cause freeze burns.

Liquid may cause frostbite.

**Respiratory or skin sensitisation**

No relevant data found.

For respiratory sensitization:

No relevant data found.

**Germ cell mutagenicity**

No relevant data found.

**Carcinogenicity**

Available data are inadequate to evaluate carcinogenicity.

**Reproductive toxicity**

Toxicity to reproduction assessment :

Available data are inadequate to determine effects on reproduction.

Assessment Teratogenicity:

Available data are inadequate for evaluation of potential to cause birth defects.

**STOT - single exposure**

Available data are inadequate to determine single exposure specific target organ toxicity.

**STOT - repeated exposure**

Experiments with humans and animals suggest that continued exposure to 1.5% carbon dioxide may alter physiological processes, such as acid-base and electrolyte balance in the blood, calcium-phosphorus metabolism, and neuroendocrine activity.

**Aspiration Hazard**

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

**11.2. Information on other hazards****Endocrine disrupting properties**

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**

No data available

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**SECTION 12: ECOLOGICAL INFORMATION**

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

**12.1 Toxicity****trans-1-Chloro-3,3,3-trifluoropropene****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, *Oncorhynchus mykiss* (rainbow trout), Static, 96 Hour, 38 mg/l, OECD Test Guideline 203

**Acute toxicity to aquatic invertebrates**

EC50, *Daphnia magna*, 48 Hour, 82 mg/l, OECD Test Guideline 202

**Acute toxicity to algae/aquatic plants**

EC50, *Pseudokirchneriella subcapitata* (green algae), 72 Hour, Growth inhibition, 106,7 mg/l  
NOEC, *Pseudokirchneriella subcapitata* (green algae), 72 Hour, Growth rate, 115 mg/l

**Reaction products of phosphoryl trichloride and 2-methyloxirane****Acute toxicity to fish**

Material is not classified as dangerous to aquatic organisms (10 < LC50/EC50/IC50/LL50/EL50 <= 100 mg/L and NOEC > 1mg/l in the most sensitive species).

LC50, *Pimephales promelas* (fathead minnow), 96 Hour, 51 mg/l

**Acute toxicity to aquatic invertebrates**

EC50, *Daphnia magna* (Water flea), 48 Hour, 131 mg/l

**Acute toxicity to algae/aquatic plants**

EC50, Pseudokirchneriella subcapitata (green algae), 72 Hour, 82 mg/l, OECD Test Guideline 201

NOEC, Pseudokirchneriella subcapitata (green algae), 72 Hour, 13 mg/l, OECD Test Guideline 201

**Chronic toxicity to aquatic invertebrates**

NOEC, Daphnia magna (Water flea), 21 d, 32 mg/l

**triethyl phosphate**

**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, 48 Hour, 2 140 mg/l, OECD Test Guideline 203 or Equivalent

**Acute toxicity to aquatic invertebrates**

EC50, Daphnia magna (Water flea), static test, 48 Hour, 350 mg/l, OECD Test Guideline 202 or Equivalent

**Acute toxicity to algae/aquatic plants**

EC50, Desmodesmus subspicatus (green algae), 72 Hour, Growth rate inhibition, 900 mg/l, OECD Test Guideline 201

**Toxicity to bacteria**

EC50, activated sludge, Respiration inhibition, 30 min, > 2 985 mg/l, OECD 209 Test

**2-Ethylhexanoic acid potassium salt**

**Acute toxicity to fish**

Information given is based on data obtained from similar substances.

LC50, Oryzias latipes (Orange-red killifish), 96 Hour, > 100 mg/l, OECD Test Guideline 203

**Acute toxicity to aquatic invertebrates**

Information given is based on data obtained from similar substances.

EC50, Daphnia magna (Water flea), 48 Hour, 85,4 mg/l

**Acute toxicity to algae/aquatic plants**

Information given is based on data obtained from similar substances.

EC50, Desmodesmus subspicatus (green algae), 96 Hour, 49,3 mg/l

**Chronic toxicity to aquatic invertebrates**

NOEC, Daphnia magna (Water flea), 21 d, 25 mg/l

**2,2'-oxybisethanol**

**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, Pimephales promelas (fathead minnow), flow-through test, 96 Hour, 75 200 mg/l, OECD Test Guideline 203 or Equivalent

**Acute toxicity to aquatic invertebrates**

EC50, Daphnia magna (Water flea), 24 Hour, > 10 000 mg/l

**Acute toxicity to algae/aquatic plants**

Based on data from similar materials

EC50, Selenastrum capricornutum (green algae), 96 Hour, 6 500 - 13 000 mg/l

#### **Toxicity to bacteria**

EC50, activated sludge, 3 Hour, > 1 000 mg/l, OECD 209 Test

#### **Chronic toxicity to fish**

Based on data from similar materials

NOEC, Pimephales promelas (fathead minnow), 7 d, 15 380 mg/l

#### **Chronic toxicity to aquatic invertebrates**

NOEC, Daphnia magna (Water flea), 21 d, > 15 000 mg/l

#### **Dimethylbis((1-oxoneodecyl)oxy)stannane**

##### **Acute toxicity to aquatic invertebrates**

Material is toxic to aquatic organisms (LC50/EC50/IC50 between 1 and 10 mg/L in the most sensitive species).

EC50, Daphnia magna (Water flea), 48 Hour, 39 mg/l, OECD Test Guideline 202

##### **Acute toxicity to algae/aquatic plants**

EC50, Pseudokirchneriella subcapitata (green algae), 72 Hour, 7,6 mg/l, OECD Test Guideline 201

NOEC, Pseudokirchneriella subcapitata (green algae), 72 Hour, 1,2 mg/l, OECD Test Guideline 201

##### **Toxicity to bacteria**

For similar material(s):

EC50, Bacteria, 3 Hour, Respiration rates., 14 mg/l

#### **Polyethylene glycol**

##### **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, Pimephales promelas (fathead minnow), static test, 96 Hour, > 10 000 mg/l, OECD Test Guideline 203 or Equivalent

##### **Acute toxicity to aquatic invertebrates**

LC50, Daphnia magna (Water flea), 48 Hour, > 10 000 mg/l

##### **Acute toxicity to algae/aquatic plants**

ErC50, Skeletonema costatum (marine diatom), 72 Hour, Growth rate, > 100 mg/l

#### **Carbon dioxide**

##### **Acute toxicity to fish**

May decrease pH of aquatic systems to < pH 5 which may be toxic to aquatic organisms.

LC0, Oncorhynchus mykiss (rainbow trout), 1 Hour, 240 mg/l, Method Not Specified.

##### **Acute toxicity to aquatic invertebrates**

Based on data from similar materials

NOEC, Daphnia magna (Water flea), 48 Hour, > 100 mg/l

#### **12.2 Persistence and degradability**



**trans-1-Chloro-3,3,3-trifluoropropene**

**Biodegradability:** Material is not readily biodegradable according to OECD/EEC guidelines.

**Biodegradation:** 0 %

**Exposure time:** 28 d

**Method:** OECD Test Guideline 301D

**Reaction products of phosphoryl trichloride and 2-methyloxirane**

**Biodegradability:** Material is not readily biodegradable according to OECD/EEC guidelines.

**Biodegradation:** 14 %

**Exposure time:** 28 d

**Method:** OECD Test Guideline 301E

**triethyl phosphate**

**Biodegradability:** Material is ultimately biodegradable (reaches > 70% mineralization in OECD test(s) for inherent biodegradability).

10-day Window: Not applicable

**Biodegradation:** > 90 %

**Exposure time:** 28 d

**Method:** OECD Test Guideline 302B or Equivalent

**2-Ethylhexanoic acid potassium salt**

**Biodegradability:** Readily biodegradable. Information given is based on data obtained from similar substances.

**Biodegradation:** 99 %

**Exposure time:** 28 d

**2,2'-oxybisethanol**

**Biodegradability:** Material is readily biodegradable. Passes OECD test(s) for ready biodegradability.

10-day Window: Pass

**Biodegradation:** 90 - 100 %

**Exposure time:** 20 d

**Method:** OECD Test Guideline 301A or Equivalent

10-day Window: Not applicable

**Biodegradation:** 82 - 98 %

**Exposure time:** 28 d

**Method:** OECD Test Guideline 302C or Equivalent

**Dimethylbis((1-oxodecyl)oxy)stannane**

**Biodegradability:** Material is not readily biodegradable according to OECD/EEC guidelines.

**Biodegradation:** 0 %

**Exposure time:** 28 d

**Method:** OECD Test Guideline 301B or Equivalent

**Polyethylene glycol**

**Biodegradability:** Material is readily biodegradable. Passes OECD test(s) for ready biodegradability.

10-day Window: Pass

**Biodegradation:** 85 %

**Exposure time:** 28 d

**Method:** OECD Test Guideline 301F or Equivalent

**Carbon dioxide**

**Biodegradability:** Biodegradation is not applicable.

**12.3 Bioaccumulative potential**

**trans-1-Chloro-3,3,3-trifluoropropene**

**Bioaccumulation:** No relevant data found.

**Reaction products of phosphoryl trichloride and 2-methyloxirane**

**Bioaccumulation:** Bioaccumulation is unlikely.

**Partition coefficient: n-octanol/water(log Pow):** 2,68 at 30 °C

**triethyl phosphate**

**Bioaccumulation:** Bioconcentration potential is low (BCF < 100 or Log Pow < 3).

**Partition coefficient: n-octanol/water(log Pow):** 0,80 Measured

**2-Ethylhexanoic acid potassium salt**

**Bioaccumulation:** Bioaccumulation is unlikely. Based on information for a similar material: Bioconcentration potential is low (BCF < 100 or Log Pow < 3).

**2,2'-oxybisethanol**

**Bioaccumulation:** Bioaccumulation is unlikely.

**Partition coefficient: n-octanol/water(log Pow):** -1,98 at 20 °C

**Bioconcentration factor (BCF):** 100 Fish Measured

**Dimethylbis((1-oxoneodecyl)oxy)stannane**

**Partition coefficient: n-octanol/water(log Pow):** 5,503

**Polyethylene glycol**

**Partition coefficient: n-octanol/water(log Pow):** -0,698 Pow: 0,2 at 30 °C

**Carbon dioxide**

**Bioaccumulation:** Bioconcentration potential is low (BCF < 100 or Log Pow < 3).

**Partition coefficient: n-octanol/water(log Pow):** 0,83 Measured

**12.4 Mobility in soil**

**trans-1-Chloro-3,3,3-trifluoropropene**

No relevant data found.

**triethyl phosphate**

Potential for mobility in soil is very high (Koc between 0 and 50).

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):** 48 Estimated.

**2-Ethylhexanoic acid potassium salt**

Based on information for a similar material:

Potential for mobility in soil is very high (Koc between 0 and 50).

#### **2,2'-oxybisethanol**

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.

Potential for mobility in soil is very high (Koc between 0 and 50).

**Partition coefficient (Koc):** < 1 Estimated.

#### **Dimethylbis((1-oxoneodecyl)oxy)stannane**

No relevant data found.

#### **Polyethylene glycol**

No relevant data found.

#### **Carbon dioxide**

No relevant data found.

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

#### **trans-1-Chloro-3,3,3-trifluoropropene**

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

#### **Reaction products of phosphoryl trichloride and 2-methyloxirane**

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

#### **triethyl phosphate**

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

#### **2-Ethylhexanoic acid potassium salt**

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

#### **2,2'-oxybisethanol**

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).

#### **Dimethylbis((1-oxoneodecyl)oxy)stannane**

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

#### **Polyethylene glycol**

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

#### **Carbon dioxide**

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

### **12.6 Endocrine disrupting properties**

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

### trans-1-Chloro-3,3,3-trifluoropropene

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

### Reaction products of phosphoryl trichloride and 2-methyloxirane

No relevant data found.

### triethyl phosphate

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

### 2-Ethylhexanoic acid potassium salt

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

### 2,2'-oxybisethanol

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

### Dimethylbis((1-oxododecyl)oxy)stannane

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

### Polyethylene glycol

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

### Carbon dioxide

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

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## SECTION 13: DISPOSAL CONSIDERATIONS

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### 13.1 Waste treatment methods

Do not dump into any sewers, on the ground, or into any body of water. 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.

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.

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## SECTION 14: TRANSPORT INFORMATION

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

14.1 UN number or ID number	UN 3500
14.2 UN proper shipping name	CHEMICAL UNDER PRESSURE, N.O.S.(Carbon dioxide, Nitrogen)
14.3 Transport hazard class(es)	2
14.4 Packing group	Not applicable
14.5 Environmental hazards	Not considered environmentally hazardous based on available data.

**14.6 Special precautions for user**

Hazard Identification Number: 20

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

- |   |  |
|---|--|
| <b>14.1 UN number or ID number</b>                                  | UN 3500  |
| <b>14.2 UN proper shipping name</b>                                 | CHEMICAL UNDER PRESSURE, N.O.S.(Carbon dioxide, Nitrogen)          |
| <b>14.3 Transport hazard class(es)</b>                              | 2.2  |
| <b>14.4 Packing group</b>   | Not applicable   |
| <b>14.5 Environmental hazards</b>                                   | Not considered as marine pollutant based on available data.        |
| <b>14.6 Special precautions for user</b>                            | EmS: F-C, S-V  |
| <b>14.7 Maritime transport in bulk according to IMO instruments</b> | Consult IMO regulations before transporting ocean bulk instruments |

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

- |  |   |
|--|---|
| <b>14.1 UN number or ID number</b>       | UN 3500   |
| <b>14.2 UN proper shipping name</b>      | Chemical under pressure, n.o.s.(Carbon dioxide, Nitrogen) |
| <b>14.3 Transport hazard class(es)</b>   | 2.2   |
| <b>14.4 Packing group</b>                | Not applicable  |
| <b>14.5 Environmental hazards</b>        | Not applicable  |
| <b>14.6 Special precautions for user</b> | 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.

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**SECTION 15: REGULATORY INFORMATION**

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**15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture****REACH Regulation (EC) No 1907/2006**

This product contains only components that have been either registered, are exempt from registration, are regarded as registered or are not subject to registration according to Regulation (EC) No. 1907/2006 (REACH). The aforementioned indications of the REACH registration status are provided in good faith and believed to be accurate as of the effective date shown above. However, no warranty, express 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.

**Restrictions on the manufacture, placing on the market and use:**

The following substance/s contained in this product is/are subject through Annex XVII of REACH regulation to restrictions on the manufacture, placing on the market and use when present in certain dangerous substances, mixtures and articles. Users of this product have to comply with the restrictions placed upon it by the aforementioned provision.

CAS-No.: 68928-76-7	Name: Dimethylbis((1-oxoneodecyl)oxy)stannane
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Restriction status: listed in REACH Annex XVII

Restricted uses: See Annex XVII to Regulation (EC) no 1907/2006 for Conditions of restriction  
Number on the list: 20

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

Listed in Regulation: Not applicable

**Wassergefährdungsklasse (Deutschland)**

WGK 3: highly hazardous to water

**Further information**

Take note of Law on the protection of mothers at work, in education and in studies (Maternity Protection Act - MuSchG).

Take note of Directive 94/33/EC on the protection of young people at work or stricter national regulations, where applicable.

The product is subject to the supply restrictions of the Ordinance on the Prohibition of Chemicals.

**15.2 Chemical safety assessment**

No Chemical Safety Assessment has been carried out for this mixture.

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**SECTION 16: OTHER INFORMATION**

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

H280	Contains gas under pressure; may explode if heated.
H302	Harmful if swallowed.
H315	Causes skin irritation.
H317	May cause an allergic skin reaction.
H318	Causes serious eye damage.
H319	Causes serious eye irritation.
H360D	May damage the unborn child.
H360Df	May damage the unborn child. Suspected of damaging fertility.
H412	Harmful to aquatic life with long lasting effects.

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

Press. Gas - Liquefied gas - H280 - Based on product data or assessment

Eye Irrit. - 2 - H319 - Calculation method

Skin Sens. - 1 - H317 - Calculation method

Repr. - 1B - H360D - Calculation method

**Revision**

Identification Number: 12082183 / A940 / Issue Date: 22.01.2024 / Version: 3.0

Most recent revision(s) are noted by the bold, double bars in left-hand margin throughout this document.

**Legend**

2006/15/EC	Europe. Indicative occupational exposure limit values
ACGIH	USA. ACGIH Threshold Limit Values (TLV)
AGW	Time Weighted Average
DE DFG MAK	Germany. MAK BAT Annex IIa
DE TRGS 900	Germany. TRGS 900 - Occupational exposure limit values.
MAK	MAK value
STEL	Short-term exposure limit
TWA	8-hour, time-weighted average
Acute Tox.	Acute toxicity
Aquatic Chronic	Long-term (chronic) aquatic hazard
Eye Dam.	Serious eye damage
Eye Irrit.	Eye irritation
Press. Gas	Gases under pressure
Repr.	Reproductive toxicity
Skin Irrit.	Skin irritation
Skin Sens.	Skin sensitisation

**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.

DuPont Specialty Products GmbH & Co. KG 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.

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