



**Safety Data Sheet**  
Dow Chemical Company Ltd  
Safety Data Sheet according to Reg. (EC) N. 453/2010

**Product Name:** FROTH-PAK(TM) 600 Polyol QR

**Revision Date:** 2013/02/12

**Print Date:** 22 Mar 2013

Dow Chemical Company Ltd 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/preparation and of the company/undertaking

### 1.1 Product identifiers

**Product Name**

FROTH-PAK™ 600 Polyol QR

### 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**

Dow Chemical Company Ltd  
Diamond House, Lotus Park  
Kingsbury Crescent  
TW18 3AG Staines, Middlesex  
United Kingdom

Customer Information Number:

0203 139 4000

[SDSQuestion@dow.com](mailto:SDSQuestion@dow.com)

### 1.4 EMERGENCY TELEPHONE NUMBER

**24-Hour Emergency Contact:**

0031 115 694 982

**Local Emergency Contact:**

00 31 115 69 4982

## Section 2. Hazards Identification

### 2.1 Classification of the substance or mixture

Classification according to EU Directives 67/548/EEC or 1999/45/EC

Xn

R22

Harmful if swallowed.

### 2.2 Label elements

Labelling according to EC Directives

**Hazard Symbol:**

®(TM)\*Trademark

Xn - Harmful.

**Risk Phrases :**

R22 - Harmful if swallowed.

**Safety Phrases :**

S51 - Use only in well-ventilated areas.

S23 - Do not breathe vapour/gas/fumes/spray.

S2 - Keep out of the reach of children.

S45 - In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

S56 - Dispose of this material and its container to hazardous or special waste collection point.

**Contains:** Tris(1-chloro-2-propyl) phosphate

Pressurized container: protect from sunlight and do not expose to temperatures exceeding 50 °C.

Do not pierce or burn, even after use.

**2.3 Other Hazards**

No information available.

### Section 3. Composition/information on ingredients

**3.2 Mixture**

This product is a mixture.

<b>CAS-No. / EC-No. / REACH No. Index</b>	<b>Amount</b>	<b>Component</b>	<b>Classification: REGULATION (EC) No 1272/2008</b>
<b>CAS-No.</b> 811-97-2 <b>EC-No.</b> 212-377-0	— 15.0 - 30.0 %	1,1,1,2-Tetrafluoroethane #	Not classified
<b>CAS-No.</b> Not available <b>EC-No.</b> Polymer	— 15.0 - 30.0 %	Polyether polyol##	Not classified
<b>CAS-No.</b> 13674-84-5 <b>EC-No.</b> 237-158-7	— 15.0 - < 25.0 %	Tris(1-chloro-2-propyl) phosphate	Acute Tox., 4, H302
<b>CAS-No.</b> Confidential <b>EC-No.</b> Polymer	— 10.0 - 20.0 %	Polyester polyol##	Not classified
<b>CAS-No.</b> 111-46-6 <b>EC-No.</b> 203-872-2 <b>Index</b> 603-140-00-6	— 2.5 - < 5.0 %	Diethylene glycol	Acute Tox., 4, H302 STOT RE, 2, H373
<b>CAS-No.</b> 78-40-0 <b>EC-No.</b> 201-114-5 <b>Index</b>	— 1.0 - < 2.5 %	Triethyl phosphate	Acute Tox., 4, H302 Eye cor/irr, 2, H319

015-013-00-7	—	1.0 - < 2.5 %	2-Ethylhexanoic acid potassium salt	Eye cor/irr, 2, H319
<b>CAS-No.</b> 3164-85-0				
<b>EC-No.</b> 221-625-7				

<b>CAS-No. / EC-No. / Index</b>	<b>Amount</b>	<b>Component</b>	<b>Classification: 67/548/EEC</b>
<b>CAS-No.</b> 811-97-2 <b>EC-No.</b> 212-377-0	15.0 - 30.0 %	1,1,1,2-Tetrafluoroethane#	Not classified.
<b>CAS-No.</b> Not available <b>EC-No.</b> Polymer	15.0 - 30.0 %	Polyether polyol##	Not classified.
<b>CAS-No.</b> 13674-84-5 <b>EC-No.</b> 237-158-7	15.0 - < 25.0 %	Tris(1-chloro-2-propyl) phosphate	Xn: R22
<b>CAS-No.</b> Confidential <b>EC-No.</b> Polymer	10.0 - 20.0 %	Polyester polyol##	Not classified.
<b>CAS-No.</b> 111-46-6 <b>EC-No.</b> 203-872-2 <b>Index</b> 603-140-00-6	2.5 - < 5.0 %	Diethylene glycol	Xn: R22
<b>CAS-No.</b> 78-40-0 <b>EC-No.</b> 201-114-5 <b>Index</b> 015-013-00-7	1.0 - < 2.5 %	Triethyl phosphate	Xn: R22
<b>CAS-No.</b> 3164-85-0 <b>EC-No.</b> 221-625-7	1.0 - < 2.5 %	2-Ethylhexanoic acid potassium salt	Xi: R36

# Substance(s) with an Occupational Exposure Limit.

## Voluntarily disclosed component(s).

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

See Section 16 for full text of R-phrases.

## Section 4. First-aid measures

### 4.1 Description of first aid measures

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

**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:** Wash skin with plenty of water.

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

**Ingestion:** Do not induce vomiting. Call a physician and/or transport to emergency facility immediately.

#### **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), no additional symptoms and effects are anticipated.

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

Maintain adequate ventilation and oxygenation of the patient. Due to structural analogy and clinical data, this material may have a mechanism of intoxication similar to ethylene glycol. On that basis, treatment similar to ethylene glycol intoxication may be of benefit. In cases where several ounces (60 - 100 ml) have been ingested, consider the use of ethanol and hemodialysis in the treatment. Consult standard literature for details of treatment. If ethanol is used, a therapeutically effective blood concentration in the range of 100 - 150 mg/dl may be achieved by a rapid loading dose followed by a continuous intravenous infusion. Consult standard literature for details of treatment. 4-Methyl pyrazole (Antizol®) is an effective blocker of alcohol dehydrogenase and should be used in the treatment of ethylene glycol (EG), di- or triethylene glycol (DEG, TEG), ethylene glycol butyl ether (EGBE), or methanol intoxication if available. Fomepizole protocol (Brent, J. et al., New England Journal of Medicine, Feb. 8, 2001, 344:6, p. 424-9): loading dose 15 mg/kg intravenously, follow by bolus dose of 10 mg/kg every 12 hours; after 48 hours, increase bolus dose to 15 mg/kg every 12 hours. Continue fomepizole until serum methanol, EG, DEG, TEG or EGBE are undetectable. The signs and symptoms of poisoning include anion gap metabolic acidosis, CNS depression, renal tubular injury, and possible late stage cranial nerve involvement. Respiratory symptoms, including pulmonary edema, may be delayed. Persons receiving significant exposure should be observed 24-48 hours for signs of respiratory distress. In severe poisoning, respiratory support with mechanical ventilation and positive end expiratory pressure may be required. If lavage is performed, suggest endotracheal and/or esophageal control. Danger from lung aspiration must be weighed against toxicity when considering emptying the stomach. Exposure may increase "myocardial irritability". Do not administer sympathomimetic drugs such as epinephrine unless absolutely necessary. Cholinesterase inhibition has been noted in human exposure but is not of benefit in determining exposure and is not correlated with signs of exposure. Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient.

## **Section 5. Fire Fighting Measures**

### **5.1 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.

**Extinguishing Media to Avoid:** 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.

## Section 6. Accidental Release Measures

**6.1 Personal precautions, protective equipment and emergency procedures:** Isolate area. Keep unnecessary and unprotected personnel from entering the area. 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.

## Section 7. Handling and Storage

### 7.1 Precautions for safe handling

#### Handling

**General Handling:** Avoid contact with eyes. Avoid breathing vapor. Wash thoroughly after handling. Use with adequate ventilation. Keep container closed. Do not enter confined spaces unless adequately ventilated. This material is hygroscopic in nature. See Section 8, EXPOSURE CONTROLS AND PERSONAL PROTECTION.

**Other Precautions:** 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

#### Storage

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 Period:**

15 Months

**Storage temperature:**

5 - 30 °C

### 7.3 Specific end uses

See the technical data sheet on this product for further information.

## Section 8. Exposure Controls / Personal Protection

### 8.1 Control parameters

#### Exposure Limits

Component	List	Type	Value
1,1,1,2-Tetrafluoroethane	AIHA WEEL	TWA	4,240 mg/m <sup>3</sup> 1,000 ppm
	UK WEL	TWA	4,240 mg/m <sup>3</sup> 1,000 ppm
Diethylene glycol	AIHA WEEL	TWA	10 mg/m <sup>3</sup>
	UK WEL	TWA	101 mg/m <sup>3</sup> 23 ppm
Triethyl phosphate	AIHA WEEL	TWA	7.45 mg/m <sup>3</sup>

### 8.2 Exposure controls

#### Personal Protection

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

**Skin Protection:** Wear clean, body-covering clothing.

**Hand protection:** Use gloves chemically resistant to this material when prolonged or frequently repeated contact could occur. Use chemical resistant gloves classified under Standard EN374: Protective gloves against chemicals and micro-organisms. 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 4 or higher (breakthrough time greater than 120 minutes according to EN 374) is recommended. When only brief contact is expected, a glove with a protection class of 1 or higher (breakthrough time greater than 10 minutes according to EN 374) is recommended. 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.

**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.

**Ingestion:** Use good personal hygiene. Do not consume or store food in the work area. Wash hands before smoking or eating.

#### Engineering Controls

**Ventilation:** 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. Lethal concentrations may exist in areas with poor ventilation.

## Section 9. Physical and Chemical Properties

### 9.1 Information on basic physical and chemical properties

#### Appearance

Physical State	Liquid.
Color	Colorless
Odor	Characteristic
Odor Threshold	No test data available

<b>pH</b>	Not applicable
<b>Melting Point</b>	No test data available
<b>Freezing Point</b>	No test data available
<b>Boiling Point (760 mmHg)</b>	Not applicable.
<b>Flash Point - Closed Cup</b>	No test data available
<b>Evaporation Rate (Butyl Acetate = 1)</b>	No test data available
<b>Flammability (solid, gas)</b>	Not applicable to liquids
<b>Flammable Limits In Air</b>	<b>Lower:</b> No test data available <b>Upper:</b> No test data available
<b>Vapor Pressure</b>	Container is under pressure.
<b>Vapor Density (air = 1)</b>	No test data available
<b>Specific Gravity (H<sub>2</sub>O = 1)</b>	1.1 - 1.2 25 °C/25 °C <i>Supplier</i>
<b>Solubility in water (by weight)</b>	partially miscible
<b>Partition coefficient, n-octanol/water (log Pow)</b>	No data available for this product. See Section 12 for individual component data.
<b>Autoignition Temperature</b>	No test data available
<b>Decomposition Temperature</b>	No test data available
<b>Dynamic Viscosity</b>	Not applicable
<b>Kinematic Viscosity</b>	Not applicable
<b>Explosive properties</b>	Not explosive
<b>Oxidizing properties</b>	No

## 9.2 Other information

**Molecular Weight** Not applicable

## Section 10. Stability and Reactivity

### 10.1 Reactivity

No dangerous reaction known under conditions of normal use.

### 10.2 Chemical stability

Stable under recommended storage conditions. See Storage, Section 7.

### 10.3 Possibility of hazardous reactions

Polymerization 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.

## Section 11. Toxicological Information

### 11.1 Information on toxicological effects

#### Acute Toxicity

##### Ingestion

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

and symptoms of excessive exposure may include: May cause lacrimation (tears). Salivation. Convulsions. Tremors. Increased activity (hyperactivity).

As product: Single dose oral LD50 has not been determined. Estimated. LD50, rat > 2,000 mg/kg

#### **Aspiration hazard**

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

#### **Dermal**

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

As product: The dermal LD50 has not been determined.

The dermal LD50 has not been determined. Estimated. LD50, rabbit > 2,000 mg/kg

#### **Inhalation**

Prolonged excessive exposure may cause adverse effects. In confined or poorly ventilated areas, vapor can easily accumulate and can cause unconsciousness and death due to displacement of oxygen. May cause respiratory irritation and central nervous system depression. Excessive exposure may increase sensitivity to epinephrine and increase myocardial irritability (irregular heartbeats). Symptoms of excessive exposure may be anesthetic or narcotic effects; dizziness and drowsiness may be observed.

As product: The LC50 has not been determined.

#### **Eye damage/eye irritation**

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

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

Prolonged contact may cause slight skin irritation with local redness.

#### **Sensitization**

##### **Skin**

No relevant data found.

##### **Respiratory**

No relevant data found.

#### **Repeated Dose Toxicity**

Contains a component which is reported to be a weak organophosphate-type 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. Contains component(s) which have been reported to cause effects on the following organs in humans: Kidney. Gastrointestinal tract. In animals, effects have been reported on the following organs: Liver.

#### **Chronic Toxicity and Carcinogenicity**

No relevant data found.

#### **Developmental Toxicity**

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. Contains component(s) which did not cause birth defects in animals; other fetal effects occurred only at doses toxic to the mother. Contains component(s) which, in laboratory animals, have been toxic to the fetus at doses nontoxic to the mother.

#### **Reproductive Toxicity**

In animal studies on component(s), effects on reproduction were seen only at doses that produced significant toxicity to the parent animals. Diethylene glycol did not interfere with reproduction in animal studies except at very high doses.

#### **Genetic Toxicology**

Contains component(s) which were negative in some in vitro genetic toxicity studies and positive in others. Contains component(s) which were negative in some animal genetic toxicity studies and positive in others.

#### **Component Toxicology - 1,1,1,2-Tetrafluoroethane**

<b>Inhalation</b>	LC50, 4 h, rat > 500,000 ppm
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#### **Component Toxicology - Tris(1-chloro-2-propyl) phosphate**

<b>Inhalation</b>	LC50, 4 h, Aerosol, rat > 7 mg/l
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#### **Component Toxicology - Diethylene glycol**

<b>Inhalation</b>	LC50, 4 h, Aerosol, rat > 4.6 mg/l
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<b>Inhalation</b>	The LC50 value is greater than the Maximum Attainable Concentration. No deaths occurred at this concentration.
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**Component Toxicology - Triethyl phosphate**

Inhalation	LC50, 4 h, Aerosol, rat > 2.35 mg/l
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## Section 12. Ecological Information

### 12.1 Toxicity

#### Data for Component: **1,1,1,2-Tetrafluoroethane**

Material is not classified as dangerous to aquatic organisms (LC50/EC50/IC50/LL50/EL50 greater than 100 mg/L in most sensitive species).

#### **Fish Acute & Prolonged Toxicity**

LC50, Oncorhynchus mykiss (rainbow trout), static test, 96 h: 450 mg/l

#### **Aquatic Invertebrate Acute Toxicity**

EC50, Daphnia magna (Water flea), 48 h, immobilization: 980 mg/l

#### Data for Component: **Polyether polyol**

For similar material(s): Material is not classified as dangerous to aquatic organisms.

#### Data for Component: **Tris(1-chloro-2-propyl) phosphate**

Material is not classified as dangerous to aquatic organisms.

#### **Fish Acute & Prolonged Toxicity**

LC50, Lepomis macrochirus (Bluegill sunfish), static test, 96 h: 84 mg/l

#### **Aquatic Invertebrate Acute Toxicity**

EC50, Daphnia magna (Water flea), 48 h, immobilization: 131 mg/l

#### **Aquatic Plant Toxicity**

ErC50, Pseudokirchneriella subcapitata (green algae), static test, Growth rate inhibition, 96 h: 82 mg/l

#### **Toxicity to Micro-organisms**

EC50, activated sludge test (OECD 209), Respiration inhibition, 3 h: 784 mg/l

#### **Aquatic Invertebrates Chronic Toxicity Value**

Daphnia magna (Water flea), semi-static test, 21 d, number of offspring, NOEC: 32 mg/l

#### Data for Component: **Polyester polyol**

For similar material(s): Material is not classified as dangerous to aquatic organisms (LC50/EC50/IC50/LL50/EL50 greater than 100 mg/L in most sensitive species).

#### Data for Component: **Diethylene glycol**

Material is not classified as dangerous to aquatic organisms (LC50/EC50/IC50/LL50/EL50 greater than 100 mg/L in most sensitive species).

#### **Fish Acute & Prolonged Toxicity**

LC50, Pimephales promelas (fathead minnow), flow-through test, 96 h: 75,200 mg/l

#### **Aquatic Invertebrate Acute Toxicity**

EC50, Daphnia magna (Water flea), static test, 24 h, immobilization: > 10,000 mg/l

#### **Toxicity to Micro-organisms**

EC50, OECD 209 Test; activated sludge, Respiration inhibition, 3 h: > 1,000 mg/l

#### Data for Component: **Triethyl phosphate**

Material is not classified as dangerous to aquatic organisms (LC50/EC50/IC50/LL50/EL50 greater than 100 mg/L in most sensitive species).

#### **Fish Acute & Prolonged Toxicity**

LC50, Leuciscus idus (Golden orfe), static test, 48 h: 2,140 mg/l

#### **Aquatic Invertebrate Acute Toxicity**

EC50, Daphnia magna (Water flea), static test, 48 h, immobilization: 350 mg/l

#### **Aquatic Plant Toxicity**

EC50, Desmodesmus subspicatus (green algae), Growth rate inhibition, 72 h: 900 mg/l

#### **Toxicity to Micro-organisms**

EC50, activated sludge test (OECD 209), Respiration inhibition, 30 min: > 2,985 mg/l

#### Data for Component: **2-Ethylhexanoic acid potassium salt**

Based on information for a similar material: Material is harmful to aquatic organisms (LC50/EC50/IC50 between 10 and 100 mg/L in the most sensitive species).

## 12.2 Persistence and Degradability

### Data for Component: 1,1,1,2-Tetrafluoroethane

Material is expected to biodegrade only very slowly (in the environment). Fails to pass OECD/EEC tests for ready biodegradability.

#### OECD Biodegradation Tests:

Biodegradation	Exposure Time	Method	10 Day Window
4 %	28 d	OECD 301D Test	fail

### Data for Component: Polyether polyol

Most polyols are expected to degrade only slowly in the environment.

### Data for Component: Tris(1-chloro-2-propyl) phosphate

Material is expected to biodegrade only very slowly (in the environment). Fails to pass OECD/EEC tests for ready biodegradability.

#### OECD Biodegradation Tests:

Biodegradation	Exposure Time	Method	10 Day Window
14 %	28 d	OECD 301E Test	fail
95 %	64 d	OECD 302A Test	Not applicable

### Data for Component: Polyester polyol

No relevant data found.

### Data for Component: Diethylene glycol

Material is readily biodegradable. Passes OECD test(s) for ready biodegradability. Material is ultimately biodegradable (reaches > 70% biodegradation in OECD test(s) for inherent biodegradability).

OECD Biodegradation Tests: Based on analogy.

Biodegradation	Exposure Time	Method	10 Day Window
90 - 100 %	20 d	OECD 301A Test	pass
82 - 98 %	28 d	OECD 302C Test	Not applicable

### Data for Component: Triethyl phosphate

Material is ultimately biodegradable (reaches > 70% biodegradation in OECD test(s) for inherent biodegradability).

#### OECD Biodegradation Tests:

Biodegradation	Exposure Time	Method	10 Day Window
> 90 %	28 d	OECD 302B Test	Not applicable

### Data for Component: 2-Ethylhexanoic acid potassium salt

Based on information for a similar material: Material is expected to be readily biodegradable. Material is ultimately biodegradable (reaches > 70% biodegradation in OECD test(s) for inherent biodegradability).

## 12.3 Bioaccumulative potential

### Data for Component: 1,1,1,2-Tetrafluoroethane

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

**Partition coefficient, n-octanol/water (log Pow):** 1.68 Estimated.

### Data for Component: Polyether polyol

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

### Data for Component: Tris(1-chloro-2-propyl) phosphate

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

**Partition coefficient, n-octanol/water (log Pow):** 2.59 Measured

**Bioconcentration Factor (BCF):** 0.8 - 4.6; Cyprinus carpio (Carp); Measured

Data for Component: Polyester polyol

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

Data for Component: Diethylene glycol

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

**Partition coefficient, n-octanol/water (log Pow):** -1.98 Estimated.

**Bioconcentration Factor (BCF):** 100; Fish; Measured

Data for Component: Triethyl phosphate

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

**Partition coefficient, n-octanol/water (log Pow):** 0.80 Measured

Data for Component: 2-Ethylhexanoic acid potassium salt

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

## 12.4 Mobility in soil

Data for Component: 1,1,1,2-Tetrafluoroethane

**Mobility in soil:** Potential for mobility in soil is high (Koc between 50 and 150).

**Partition coefficient, soil organic carbon/water (Koc):** 97 Estimated.

**Henry's Law Constant (H):** 5.00E-02 atm\*m3/mole; 25 °C Measured

Data for Component: Polyether polyol

**Mobility in soil:** No relevant data found.

Data for Component: Tris(1-chloro-2-propyl) phosphate

**Mobility in soil:** Potential for mobility in soil is slight (Koc between 2000 and 5000).

**Partition coefficient, soil organic carbon/water (Koc):** 1,300 Estimated.

**Henry's Law Constant (H):** < 1.35E-05 atm\*m3/mole; 25 °C Estimated.

Data for Component: Polyester polyol

**Mobility in soil:** No data available.

Data for Component: Diethylene glycol

**Mobility in soil:** 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, soil organic carbon/water (Koc):** < 1 Estimated.

**Henry's Law Constant (H):** 7.96E-10 atm\*m3/mole; 25 °C Estimated.

Data for Component: Triethyl phosphate

**Mobility in soil:** 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, soil organic carbon/water (Koc):** 48 Estimated.

**Henry's Law Constant (H):** 3.60E-08 atm\*m3/mole; 25 °C Measured

Data for Component: 2-Ethylhexanoic acid potassium salt

**Mobility in soil:** For similar material(s)., Potential for mobility in soil is very high (Koc between 0 and 50).

## 12.5 Results of PBT and vPvB assessment

Data for Component: 1,1,1,2-Tetrafluoroethane

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).

Data for Component: Polyether polyol

This mixture contains no substance considered to be persistent, bioaccumulating and toxic (PBT).

Data for Component: Tris(1-chloro-2-propyl) phosphate

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).

Data for Component: Polyester polyol

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

Data for Component: Diethylene glycol

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).

Data for Component: **Triethyl phosphate**

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

Data for Component: **2-Ethylhexanoic acid potassium salt**

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

**12.6 Other adverse effects**

Product contains no ozone-depleting components.

**Section 13. Disposal Considerations****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.

**Section 14. Transport Information****ADR/RID****14.1 UN number**

UN3500

**14.2 UN proper shipping name**

Proper Shipping Name: CHEMICAL UNDER PRESSURE, N.O.S.

Technical Name: 1,1,1,2-Tetrafluoroethane

**14.3 Transport hazard class(es)**

Hazard Class: 2.2

**14.4 Packing Group**

Not applicable

**14.5 Environmental hazards**

Not considered environmentally hazardous based on available data

**14.6 Special precautions for user**

Special Provisions: no data available

Hazard identification No:20

**ADNR / ADN****14.1 UN number**

UN3500

**14.2 UN proper shipping name**

Proper Shipping Name: CHEMICAL UNDER PRESSURE, N.O.S.

Technical Name: 1,1,1,2-Tetrafluoroethane

**14.3 Transport hazard class(es)**

Hazard Class: 2.2

**14.4 Packing Group**

Not applicable

**14.5 Environmental hazards**

Not considered environmentally hazardous based on available data

**14.6 Special precautions for user**

no data available

**IMDG****14.1 UN number**

UN3500

**14.2 UN proper shipping name**

Proper Shipping Name: CHEMICAL UNDER PRESSURE, N.O.S.

Technical Name: 1,1,1,2-Tetrafluoroethane

**14.3 Transport hazard class(es)**

Hazard Class: 2.2

**14.4 Packing Group**

Not applicable

**14.5 Environmental hazards**

Not considered environmentally hazardous based on available data

**14.6 Special precautions for user**

EMS Number: F-C,S-V

**14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code**

Not applicable

**ICAO/IATA****14.1 UN number**

UN3500

**14.2 UN proper shipping name**

Proper Shipping Name: CHEMICAL UNDER PRESSURE, N.O.S.

Technical Name: 1,1,1,2-Tetrafluoroethane

**14.3 Transport hazard class(es)**

Hazard Class: 2.2

**14.4 Packing Group**

Not applicable

**14.5 Environmental hazards**

Not considered environmentally hazardous based on available data

**14.6 Special precautions for user**

no data available

**Section 15. Regulatory Information****15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture****European Inventory of Existing Commercial Chemical Substances (EINECS)**

The components of this product are on the EINECS inventory or are exempt from inventory requirements.

**15.2 Chemical Safety Assessment**

Not applicable.

**Section 16. Other Information****Hazard statement in the composition section**

H302	Harmful if swallowed.
H319	Causes serious eye irritation.
H373	May cause damage to organs through prolonged or repeated exposure.

**Risk-phrases in the Composition section**

R22	Harmful if swallowed.
R36	Irritating to eyes.

**Revision**

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

*Dow Chemical Company Ltd 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*

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