



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

**Product Name:** GREAT STUFF(TM) Pro Multi-Purpose Fire Rated  
Gun Foam

**Revision Date:** 2012/07/16

**Print Date:** 13 Sep 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**

GREAT STUFF™ Pro Multi-Purpose Fire Rated Gun Foam

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

**Identified uses**

Cavity sealing foam.

### 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

	Carcinogen category 3.	R40	Limited evidence of a carcinogenic effect.
F+		R12	Extremely flammable.
Xn		R48/20	Harmful: danger of serious damage to health by prolonged exposure through inhalation.

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Xi	R36/37/38	Irritating to eyes, respiratory system and skin.
	R42/43	May cause sensitization by inhalation and skin contact.

## 2.2 Label elements

### Labelling according to EC Directives

#### Hazard Symbol:

F+ - Extremely flammable.

Xn - Harmful.

#### Risk Phrases :

R12 - Extremely flammable.

R40 - Limited evidence of a carcinogenic effect.

R48/20 - Harmful: danger of serious damage to health by prolonged exposure through inhalation.

R36/37/38 - Irritating to eyes, respiratory system and skin.

R42/43 - May cause sensitization by inhalation and skin contact.

#### Safety Phrases :

S1/2 - Keep locked up out of reach of children.

S16 - Keep away from sources of ignition - no smoking.

S23 - Do not breathe spray.

S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection.

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

**Contains:** Diphenylmethane-4,4'-di-isocyanate

Contains isocyanates. See information supplied by the manufacturer.

- || Pressurized container: protect from sunlight and do not expose to temperatures exceeding 50 °C.
- Do not pierce or burn, even after use.
- Do not spray on a naked flame or any incandescent material.

## 2.3 Other Hazards

No information available.

## Section 3. Composition/information on ingredients

### 3.2 Mixture

This product is a mixture.

CAS-No. / EC-No. / Index	REACH No.	Amount	Component	Classification: REGULATION (EC) No 1272/2008
CAS-No. Not available EC-No. Polymer	—	25.0 - 45.0 %	Prepolymer of MDI and polyol	Skin Sens., 1, H317 Resp. Sens., 1, H334
CAS-No. 9016-87-9 EC-No. 618-498-9	—	15.0 - 35.0 %	Diphenylmethane Diisocyanate, isomers and homologues	Acute Tox., 4, H332 Eye cor/irr, 2, H319 Skin cor/irr, 2, H315 Resp. Sens., 1, H334 Skin Sens., 1, H317 Carc., 2, H351 STOT RE, 2, H373 STOT SE, 3, H335

<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> 101-68-8 <b>EC-No.</b> 202-966-0 <b>Index</b> 615-005-00-9	01- 2119457014- 47	5.0 - 15.0 %	Diphenylmethane-4,4'-di-isocyanate	Acute Tox., 4, H332 Eye cor/irr, 2, H319 Skin cor/irr, 2, H315 Skin Sens., 1, H317 Resp. Sens., 1, H334 STOT SE, 3, H335 STOT RE, 2, H373 Carc., 2, H351
<b>CAS-No.</b> 115-10-6 <b>EC-No.</b> 204-065-8 <b>Index</b> 603-019-00-8	—	3.0 - 7.0 %	Dimethyl ether	Flam. Gas, 1, H220 Press. Gas, H280
<b>CAS-No.</b> 74-98-6 <b>EC-No.</b> 200-827-9 <b>Index</b> 601-003-00-5	01- 2119486944- 21	2.0 - 5.0 %	Propane	Flam. Gas, 1, H220 Press. Gas, H280
<b>CAS-No.</b> 75-28-5 <b>EC-No.</b> 200-857-2 <b>Index</b> 601-004-00-0	01- 2119485395- 27	2.0 - 5.0 %	Isobutane	Flam. Gas, 1, H220

<b>CAS-No. / EC-No. / Index</b>	<b>Amount</b>	<b>Component</b>	<b>Classification: 67/548/EEC</b>
<b>CAS-No.</b> Not available <b>EC-No.</b> Polymer	25.0 - 45.0 %	Prepolymer of MDI and polyol	R42/43
<b>CAS-No.</b> 9016-87-9 <b>EC-No.</b> 618-498-9	15.0 - 35.0 %	Diphenylmethane Diisocyanate, isomers and homologues	Carc. 3: R40; Xn: R20, R48/20; Xi: R36/37/38; R42/43
<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> 101-68-8 <b>EC-No.</b> 202-966-0 <b>Index</b> 615-005-00-9	5.0 - 15.0 %	Diphenylmethane-4,4'-di-isocyanate	Carc. 3: R40; Xn: R20, R48/20; Xi: R36/37/38; R42/43
<b>CAS-No.</b> 115-10-6 <b>EC-No.</b>	3.0 - 7.0 %	Dimethyl ether	F+: R12

204-065-8			
<b>Index</b>			
603-019-00-8			
<b>CAS-No.</b>	2.0 - 5.0 %	Propane	F+: R12
74-98-6			
<b>EC-No.</b>			
200-827-9			
<b>Index</b>			
601-003-00-5			
<b>CAS-No.</b>	2.0 - 5.0 %	Isobutane	F+: R12
75-28-5			
<b>EC-No.</b>			
200-857-2			
<b>Index</b>			
601-004-00-0			

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

See Section 16 for full text of R-phrases.

Note: CAS 101-68-8 is an MDI isomer that is part of CAS 9016-87-9 and of CAS 26447-40-5.

## Section 4. First-aid measures

### 4.1 Description of first aid measures

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

**Inhalation:** Move person to fresh air. 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.

**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:** 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. May cause respiratory sensitization or asthma-like symptoms. Bronchodilators, expectorants and antitussives may be of help. Treat bronchospasm with inhaled beta2 agonist and oral or parenteral corticosteroids. Respiratory symptoms, including pulmonary edema, may be delayed. Persons receiving significant exposure should be observed 24-48 hours for signs of respiratory distress. If you are sensitized to diisocyanates, consult your physician regarding working with other respiratory irritants or sensitizers. This material is a cholinesterase inhibitor. Treat symptomatically. In case of severe acute poisoning, use antidote immediately after establishing an open airway and respiration. Atropine, only by injection, is the preferable antidote. Oximes, such as 2-PAM/protopam, may be therapeutic if used early; however, use only in conjunction with atropine. Attempt seizure control with diazepam 5-10 mg (adults) intravenous over 2-3 minutes. Repeat every 5-10 minutes as needed. Monitor for hypotension, respiratory depression, and need for intubation. Consider second agent if seizures persist after 30 mg. If seizures persist or recur administer phenobarbital 600-1200 mg (adults) intravenous diluted in 60 ml 0.9% saline given at 25-50 mg/minute. Evaluate for hypoxia, dysrhythmia,

electrolyte disturbance, hypoglycemia (treat adults with dextrose 100 mg intravenous). If exposed, plasma and red blood cell cholinesterase tests may indicate significance of exposure (baseline data are useful). Exposure may increase "myocardial irritability". Do not administer sympathomimetic drugs such as epinephrine unless absolutely necessary. Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient.

Excessive exposure may aggravate preexisting asthma and other respiratory disorders (e.g. emphysema, bronchitis, reactive airways dysfunction syndrome).

## **Section 5. 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. Straight or direct water streams may not be effective to extinguish 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 chloride. Carbon monoxide. Carbon dioxide. Hydrogen cyanide.

**Unusual Fire and Explosion Hazards:** Contains flammable propellant. Aerosol cans exposed to fire can rupture and become flaming projectiles. Propellant release may result in a fireball. Vapors are heavier than air and may travel a long distance and accumulate in low lying areas. Ignition and/or flash back may occur. Dense smoke is produced when product burns.

### **5.3 Advice for firefighters**

**Fire Fighting Procedures:** Keep people away. Isolate fire and deny unnecessary entry. Stay upwind. Keep out of low areas where gases (fumes) can accumulate. Water may not be effective in extinguishing fire. 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. Eliminate ignition sources. 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.

## **Section 6. Accidental Release Measures**

**6.1 Personal precautions, protective equipment and emergency procedures:** Only trained and properly protected personnel must be involved in clean-up operations. Keep unnecessary and unprotected personnel from entering the area. If available, use foam to suppress vapors. Use appropriate safety equipment. For additional information, refer to Section 8, Exposure Controls and Personal Protection. See Section 10 for more specific information.

**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:** Spills should be contained by, and covered with large quantities of sand, earth or any other readily available absorbent material which is then brushed in vigorously to assist absorption. The mixture can then be collected into drums and removed for disposal. Wash area from residues with soap and water and rinse down.

## Section 7. Handling and Storage

### 7.1 Precautions for safe handling

#### Handling

**General Handling:** Keep away from heat, sparks and flame. Use only with adequate ventilation.

**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

Keep in a cool, well-ventilated place. Keep away from sources of ignition. See Section 10 for more specific information.

**Storage Period:**

18 Months

**Storage temperature:**

15 - 25 °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
Diphenylmethane-4,4'-di-isocyanate	ACGIH	TWA	0.005 ppm
	UK WEL	TWA as NCO	0.02 mg/m <sup>3</sup> SEN
	UK WEL	STEL as NCO	0.07 mg/m <sup>3</sup> SEN
Isobutane	ACGIH	TWA	1,000 ppm
Propane	UK WEL	Asphyxiant	Included in the regulation but with no data values. See regulation for further details
	ACGIH	TWA	1,000 ppm
Dimethyl ether	Ireland OELV	TWA	1,920 mg/m <sup>3</sup> 1,000 ppm Indicative OELV
	AIHA WEEL	TWA	1,880 mg/m <sup>3</sup> 1,000 ppm
	EU IOELV	TWA	1,920 mg/m <sup>3</sup> 1,000 ppm
	UK WEL	TWA	766 mg/m <sup>3</sup> 400 ppm
	UK WEL	STEL	958 mg/m <sup>3</sup> 500 ppm

A "SEN" notation following the exposure guideline refers to the potential to produce sensitization, as confirmed by human or animal data.

### 8.2 Exposure controls

#### Personal Protection

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

**Skin 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.

**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. Chlorinated polyethylene. Polyethylene. Ethyl vinyl alcohol laminate

(“EVAL”). Examples of acceptable glove barrier materials include: Neoprene. Nitrile/butadiene rubber (“nitrile” or “NBR”). Viton. 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. **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:** 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. 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 the following CE approved air-purifying respirator: Organic vapor cartridge with a particulate pre-filter, type AP2.

**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 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. 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**

<b>Physical State</b>	Foam
<b>Color</b>	Pink
<b>Odor</b>	Musty
<b>Odor Threshold</b>	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>	No test data available.
<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>	insoluble, reacts, evolution of CO <sub>2</sub>
<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>Kinematic Viscosity</b>	Not applicable

**Explosive properties** Not explosive  
**Oxidizing properties** 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. 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. 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.

## 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.

Based on information for component(s): Estimated. LD50, rat > 5,000 mg/kg

##### Aspiration hazard

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

##### Dermal

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

As product: The dermal LD50 has not been determined.

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

##### Inhalation

In confined or poorly ventilated areas, vapor can easily accumulate and can cause unconsciousness and death due to displacement of oxygen. Excessive exposure may cause irritation to upper respiratory tract (nose and throat) and lungs. May cause pulmonary edema (fluid in the lungs.)

Effects may be delayed. May cause central nervous system depression. Symptoms of excessive exposure may be anesthetic or narcotic effects; dizziness and drowsiness may be observed.

Excessive exposure may increase sensitivity to epinephrine and increase myocardial irritability

(irregular heartbeats). Decreased lung function has been associated with overexposure to isocyanates.

As product: The LC50 has not been determined.

**Eye damage/eye irritation**

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

**Skin corrosion/irritation**

Prolonged contact may cause moderate skin irritation with local redness. Material may stick to skin causing irritation upon removal. May stain skin.

**Sensitization**

**Skin**

Skin contact may cause an allergic skin reaction. Animal studies have shown that skin contact with isocyanates may play a role in respiratory sensitization.

**Respiratory**

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

**Repeated Dose Toxicity**

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

**Chronic Toxicity and 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.

**Developmental Toxicity**

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.

**Reproductive Toxicity**

No relevant data found.

**Genetic Toxicology**

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.

**Component Toxicology - Prepolymer of MDI and polyol**

<b>Inhalation</b>	As product: The LC50 has not been determined.
<b>Inhalation</b>	For similar material(s): 4,4'-Methylenediphenyl diisocyanate (CAS 101-68-8). LC50, 1 h, Aerosol, rat 2.24 mg/l
<b>Inhalation</b>	For similar material(s): 2,4'-Diphenylmethane diisocyanate (CAS 5873-54-1). LC50, 4 h, Aerosol, rat 0.31 mg/l
<b>Component Toxicology - Diphenylmethane Diisocyanate, isomers and homologues</b>	
<b>Inhalation</b>	LC50, 4 h, Aerosol, rat 0.49 mg/l
<b>Inhalation</b>	For similar material(s): 2,4'-Diphenylmethane diisocyanate (CAS 5873-54-1). LC50, 4 h, Aerosol, rat 0.31 mg/l
<b>Inhalation</b>	For similar material(s): 4,4'-Methylenediphenyl diisocyanate (CAS 101-68-8). LC50, 1 h, Aerosol, rat 2.24 mg/l
<b>Component Toxicology - Tris(1-chloro-2-propyl) phosphate</b>	
<b>Inhalation</b>	LC50, 4 h, Aerosol, rat > 7 mg/l
<b>Component Toxicology - 4,4' -Methylenediphenyl diisocyanate</b>	
<b>Inhalation</b>	LC50, 1 h, Aerosol, rat 2.24 mg/l
<b>Component Toxicology - Methyl ether</b>	
<b>Inhalation</b>	LC50, 4 h, Vapor, mouse 222,716 ppm
<b>Component Toxicology - Propane</b>	
<b>Inhalation</b>	LC50, 4 h, Vapor, rat, male and female > 425,000 ppm
<b>Component Toxicology - Isobutane</b>	
<b>Inhalation</b>	LC50, 1 h, mouse 52 mg/l

## Section 12. Ecological Information

### 12.1 Toxicity

#### Data for Component: Prepolymer of MDI and polyol

Material is not classified as dangerous to aquatic organisms.

#### Data for Component: Diphenylmethane Diisocyanate, isomers and homologues

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).

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

Based on information for a similar material: LC50, Danio rerio (zebra fish), static test, 96 h: > 1,000 mg/l

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

Based on information for a similar material: EC50, Daphnia magna (Water flea), static test, 24 h: > 1,000 mg/l

##### **Aquatic Plant Toxicity**

Based on information for a similar material: NOEC, Desmodesmus subspicatus (green algae), static test, Growth rate inhibition, 72 h: 1,640 mg/l

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

Based on information for a similar material: EC50; activated sludge, static test, 3 h: > 100 mg/l

##### **Toxicity to Soil Dwelling Organisms**

EC50, Eisenia fetida (earthworms), 14 d: > 1,000 mg/kg

#### 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, OECD 209 Test; activated sludge, 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: Diphenylmethane-4,4'-di-isocyanate

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).

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

Based on information for a similar material: LC50, Danio rerio (zebra fish), static test, 96 h: > 1,000 mg/l

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

Based on information for a similar material: EC50, Daphnia magna (Water flea), static test, 24 h: > 1,000 mg/l

##### **Aquatic Plant Toxicity**

Based on information for a similar material: NOEC, Desmodesmus subspicatus (green algae), static test, Growth rate inhibition, 72 h: 1,640 mg/l

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

Based on information for a similar material: EC50; activated sludge, static test, 3 h: > 100 mg/l

##### **Toxicity to Soil Dwelling Organisms**

EC50, Eisenia fetida (earthworms), 14 d: > 1,000 mg/kg

Data for Component: Dimethyl ether

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, Poecilia reticulata (guppy), semi-static test, 96 h: > 4,000 mg/l

**Aquatic Invertebrate Acute Toxicity**

LC50, Daphnia magna (Water flea), 48 h, immobilization: > 4,000 mg/l

Data for Component: Propane

Material is not classified as dangerous to aquatic organisms.

Data for Component: Isobutane

Material is not classified as dangerous to aquatic organisms.

## 12.2 Persistence and Degradability

Data for Component: Prepolymer of MDI and polyol

Expected to degrade only slowly in the environment.

Data for Component: Diphenylmethane Diisocyanate, isomers and homologues

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.

**OECD Biodegradation Tests:** Based on information for a similar material:

Biodegradation	Exposure Time	Method	10 Day Window
0 %	28 d	OECD 302C Test	Not applicable

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: Diphenylmethane-4,4'-di-isocyanate

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.

**OECD Biodegradation Tests:** Based on information for a similar material:

Biodegradation	Exposure Time	Method	10 Day Window
0 %	28 d	OECD 302C Test	Not applicable

Data for Component: Dimethyl ether

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
5 %	28 d	OECD 301A Test	fail

Data for Component: Propane

No relevant data found.

Data for Component: Isobutane

Biodegradation may occur under aerobic conditions (in the presence of oxygen).

## 12.3 Bioaccumulative potential

Data for Component: **Prepolymer of MDI and polyol**

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

Data for Component: **Diphenylmethane Diisocyanate, isomers and homologues**

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

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: **Diphenylmethane-4,4'-di-isocyanate**

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

Data for Component: **Dimethyl ether**

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

**Partition coefficient, n-octanol/water (log Pow):** 0.10 Measured

Data for Component: **Propane**

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

**Partition coefficient, n-octanol/water (log Pow):** 2.36 Measured

Data for Component: **Isobutane**

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

**Partition coefficient, n-octanol/water (log Pow):** 2.76 Measured

## 12.4 Mobility in soil

Data for Component: **Prepolymer of MDI and polyol**

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

Data for Component: **Diphenylmethane Diisocyanate, isomers and homologues**

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

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: **Diphenylmethane-4,4'-di-isocyanate**

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

Data for Component: **Dimethyl ether**

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

**Partition coefficient, soil organic carbon/water (Koc):** 1.29 - 14 Estimated.

**Henry's Law Constant (H):** 9.78E-04 atm\*m3/mole; 25 °C Measured

Data for Component: **Propane**

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

**Partition coefficient, soil organic carbon/water (Koc):** 24 - 460 Estimated.

**Henry's Law Constant (H):** 7.07E-01 atm\*m3/mole; 25 °C Measured

Data for Component: **Isobutane**

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

**Partition coefficient, soil organic carbon/water (Koc):** 35 Estimated.

**Henry's Law Constant (H):** 1.19E+00 atm\*m3/mole; 25 °C Measured

## 12.5 Results of PBT and vPvB assessment

Data for Component: **Prepolymer of MDI and polyol**

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

Data for Component: **Diphenylmethane Diisocyanate, isomers and homologues**

This substance is not 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: **Diphenylmethane-4,4'-di-isocyanate**

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

Data for Component: **Dimethyl ether**

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: **Propane**

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: **Isobutane**

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

**12.6 Other adverse effects**

Product contains no ozone-depleting components.

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## **Section 13. Disposal Considerations**

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**13.1 Waste treatment methods**

Contents under pressure. Do not puncture or incinerate container. Relieve all pressure prior to disposal. **DO NOT DUMP INTO ANY SEWERS, ON THE GROUND, OR INTO ANY BODY OF WATER.** Any disposal practice must be in compliance with all local and national laws and regulations. The generation of waste should be avoided or minimized wherever possible. Refer to manufacturer/supplier for information on recovery/recycling.

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## **Section 14. Transport Information**

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**ROAD & RAIL**

**Proper Shipping Name:** AEROSOLS, FLAMMABLE

**Hazard Class:** 2 **ID Number:** UN1950

**Classification:** 5F

**Environmental Hazard:** No

**OCEAN**

**Proper Shipping Name:** AEROSOLS, FLAMMABLE

**Hazard Class:** 2 **ID Number:** UN1950

**EMS Number:** F-D,S-U

**Marine pollutant.:** No

**AIR**

**Proper Shipping Name:** AEROSOLS, FLAMMABLE

**Hazard Class:** 2.1 **ID Number:** UN1950 **Cargo Packing Instruction:** 203

**Passenger Packing Instruction:** 203

**Environmental Hazard:** No

**INLAND WATERWAYS**

**Proper Shipping Name:** AEROSOLS, FLAMMABLE

**Hazard Class:** 2 **ID Number:** UN1950

**Classification:** 5F

**Environmental Hazard:** No

## 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.

#### - Other regulations

Persons already sensitised to diisocyanates may develop allergic reactions when using this product. Persons suffering from asthma, eczema or skin problems should avoid contact, including dermal contact, with this product.

This product should not be used under conditions of poor ventilation unless a protective mask with an appropriate gas filter (i.e. type A1 according to standard EN 14387) is used.

### 15.2 Chemical Safety Assessment

Not applicable.

## Section 16. Other Information

### Hazard statement in the composition section

H220	Extremely flammable gas.
H280	Contains gas under pressure; may explode if heated.
H302	Harmful if swallowed.
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.

### Risk-phrases in the Composition section

R12	Extremely flammable.
R20	Harmful by inhalation.
R22	Harmful if swallowed.
R36/37/38	Irritating to eyes, respiratory system and skin.
R40	Limited evidence of a carcinogenic effect.
R42/43	May cause sensitization by inhalation and skin contact.
R48/20	Harmful: danger of serious damage to health by prolonged exposure through inhalation.

### Revision

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

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