

## 1. IDENTIFICATION OF THE SUBSTRATE/PREPARATION AND OF THE COMPANY/UNDERTAKING

### 1.1 Product identifier

Trade name/designation: Alumasc PVC Contact Adhesive – spray applied.

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

Main use category: Adhesive.

### 1.3 Manufacturer/Supplier

Supplier:  
Alumasc Building Products Ltd  
White House Works, Bold Road, Sutton, St Helens, Merseyside, United Kingdom, WA9 4JG  
Tel: +44 (0)1744 648400  
e-mail: [technical@alumascroofing.com](mailto:technical@alumascroofing.com)

### 1.4 Manufacturer/Supplier

Emergency telephone: 01744 648 400 - (Mon-Thurs – 08.30-17.00 Fri – 08.30-16.00)

## 2. HAZARDS IDENTIFICATION

### 2.1 Classification of the substance or mixture

#### Classification according to Regulation (EU) No. 1272/2008 [CPL] and amendments<sup>(1)</sup>:

H334 - Respiratory Sensitizer Category 1, H336 - Specific target organ toxicity - single exposure Category 3 (narcotic effects), H315 - Skin Corrosion/Irritation Category 2, H319 - Eye Irritation Category 2, H317 - Skin Sensitizer Category 1, H351 - Carcinogenicity Category 2, H222+H229 - Aerosols Category 1.

#### Legend:

1. Classified by Chemwatch; 2. Classification drawn from Regulation (EU) No 1272/2008 - Annex VI.

### 2.2 Labelling according to Regulation (EU) 1272/2008

Hazard pictures:



Signal word: Warning.

Hazard statements:  
H334: May cause allergy or asthma symptoms or breathing difficulties if inhaled.  
H336: May cause drowsiness or dizziness.  
H315: Causes skin irritation.  
H319: Causes serious eye irritation.  
H317: May cause an allergic skin reaction.  
H351: Suspected of causing cancer.  
H222+H229: Extremely flammable aerosol; Pressurized container: may burst if heated.

Supplementary statement(s):  
EUH044: Risk of explosion if heated under confinement.  
EUH204: Contains isocyanates. May produce an allergic reaction.

Precautionary statements prevention:  
P201: Obtain special instructions before use.  
P210: Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.  
P211: Do not spray on an open flame or other ignition source.  
P251: Do not pierce or burn, even after use.  
P261: Avoid breathing vapour/ spray.  
P271: Use only outdoors or in a well-ventilated area.  
P280: Wear protective gloves/ protective clothing/ eye protection/face protection.

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Precautionary statements response:	P302+P352: IF ON SKIN: Wash with plenty of water. P304+P340: IF INHALED: Remove person to fresh air and keep comfortable for breathing. P305+P351+P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. P308+P313: IF exposed or concerned: Get medical advice/ attention. P312: Call a POISON CENTER/doctor if you feel unwell. P321: Specific treatment (see advice on this label).
Precautionary statements storage:	P405 Store locked up. P410+P412: Protect from sunlight. Do not expose to temperatures exceeding 50°C/ 122°F. P403+P233: Store in a well-ventilated place. Keep container tightly closed.
Precautionary statements disposal:	P501: Dispose of contents/container to authorised hazardous or special waste collection point in accordance with any local regulation.

### 2.3 Other hazards

Dimethyl Ether:	Listed in the Europe Regulation (EC) No 1907/2006 - Annex XVII (Restrictions may apply).
Methylene Chloride:	Listed in the Europe Regulation (EC) No 1907/2006 - Annex XVII (Restrictions may apply).
Ethyl Acetate:	Listed in the Europe Regulation (EC) No 1907/2006 - Annex XVII (Restrictions may apply).
Polymeric Diphenylmethane Diisocyanate:	Listed in the Europe Regulation (EC) No 1907/2006 - Annex XVII (Restrictions may apply).

## 3. COMPOSITION AND INFORMATION ABOUT THE COMPONENTS

### 3.1 Substances

Spray applied nitrile contact adhesive.

### 3.2 Mixtures

1.CAS No 2.EC No 3.Index No 4.REACH No	%[weight]	Name	Classification according to regulation (EC) No 1272/2008 [CLP] and amendments
1.115-10-6 2.204-065-8 3.603-019-00-8 4.01-2119472128-37-XXXX	30-60	Dimethyl Ether *	Gas under Pressure, Flammable Gas Category 1; H280, H220 <sup>[2]</sup>
1.75-09-2 2.200-838-9 3.602-004-00-3 4.01-2119480404-41-XXXX   01-2120763590-53-XXXX	10-30	Methylene Chloride *	Carcinogenicity Category 2; H351 <sup>[2]</sup>
1.141-78-6 2.205-500-4 3.607-022-00-5 4.01-2119475103-46-XXXX   01-2120767619-37-XXXX	10-30	Ethyl Acetate *	Flammable Liquid Category 2, Specific Target Organ Toxicity - Single Exposure Category 3 (Narcotic Effects), Eye Irritation Category 2; H225, H336, H319, EUH066 <sup>[2]</sup>
1.9016-87-9 2.Not available 3.Not available 4.01-2119457024-46-XXXX	5-10	Polymeric Diphenylmethane Diisocyanate	Acute Toxicity (Inhalation) Category 4, Skin Corrosion/Irritation Category 2, Eye Irritation Category 2, Skin Sensitizer Category 1, Carcinogenicity Category 2, Specific Target Organ Toxicity - Single Exposure Category 3 (Respiratory Tract Irritation), Specific Target Organ Toxicity - Repeated Exposure Category 2, Respiratory Sensitizer Category 1; H332, H315, H319, H317, H351, H335, H373, H334, EUH204 <sup>[1]</sup>

#### Legend:

1. Classified by Chemwatch; 2. Classification drawn from Regulation (EU) No 1272/2008 - Annex VI; 3. Classification drawn from C&L; \* EU IOELVs available

## 4. FIRST AID MEASURES

### 4.1 Description of first aid measures

Eye contact:	<p>If product comes in contact with eyes remove the patient from gas source or contaminated area.</p> <p>Take the patient to the nearest eye wash, shower or other source of clean water.</p> <p>Open the eyelid(s) wide to allow the material to evaporate.</p> <p>Gently rinse the affected eye(s) with clean, cool water for at least 15 minutes. Have the patient lie or sit down and tilt the head back. Hold the eyelid(s) open and pour water slowly over the eyeball(s) at the inner corners, letting the water run out of the outer corners.</p> <p>The patient may be in great pain and wish to keep the eyes closed. It is important that the material is rinsed from the eyes to prevent further damage.</p> <p>Ensure that the patient looks up, and side to side as the eye is rinsed in order to better reach all parts of the eye(s).</p> <p>If adhesive bonding occurs, do not force eyelids apart.</p> <p>Transport to hospital or doctor.</p> <p>Even when no pain persists and vision is good, a doctor should examine the eye as delayed damage may occur.</p> <p>If the patient cannot tolerate light, protect the eyes with a clean, loosely tied bandage.</p> <p>Ensure verbal communication and physical contact with the patient.</p> <p>DO NOT allow the patient to rub the eyes.</p> <p>DO NOT allow the patient to tightly shut the eyes.</p> <p>DO NOT introduce oil or ointment into the eye(s) without medical advice.</p> <p>DO NOT use hot or tepid water.</p>
Skin contact:	<p>If skin or hair contact occurs:</p> <ul style="list-style-type: none"><li>- Immediately flush body and clothes with large amounts of water, using safety shower if available.</li><li>- Quickly remove all contaminated clothing, including footwear.</li><li>- Wash skin and hair with running water. Continue flushing with water until advised to stop by the Poisons Information Centre.</li><li>- Transport to hospital, or doctor.</li></ul>
Inhalation:	<p>Following uptake by inhalation, move person to an area free from risk of further exposure. Oxygen or artificial respiration should be administered as needed. Asthmatic-type symptoms may develop and may be immediate or delayed up to several hours. Treatment is essentially symptomatic. A physician should be consulted.</p> <ul style="list-style-type: none"><li>- Following exposure to gas, remove the patient from the gas source or contaminated area.</li><li>- NOTE: Personal Protective Equipment (PPE), including positive pressure self-contained breathing apparatus may be required to assure the safety of the rescuer.</li><li>- Prostheses such as false teeth, which may block the airway, should be removed, where possible, prior to initiating first aid procedures.</li><li>- If the patient is not breathing spontaneously, administer rescue breathing.</li><li>- If the patient does not have a pulse, administer CPR.</li><li>- If medical oxygen and appropriately trained personnel are available, administer 100% oxygen.</li><li>- Summon an emergency ambulance. If an ambulance is not available, contact a physician, hospital, or Poison Control Centre for further instruction.</li><li>- Keep the patient warm, comfortable and at rest while awaiting medical care.</li><li>- MONITOR THE BREATHING AND PULSE, CONTINUOUSLY.</li><li>- Administer rescue breathing (preferably with a demand-valve resuscitator, bag-valve mask-device, or pocket mask as trained) or CPR if necessary.</li></ul>
Ingestion:	<p>Not considered a normal route of entry.</p> <ul style="list-style-type: none"><li>- Avoid giving milk or oils.</li><li>- Avoid giving alcohol.</li></ul>

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

See Section 11.

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

#### For intoxication due to Freons/Halons:

A: Emergency and Supportive Measures

- Maintain an open airway and assist ventilation if necessary
- Treat coma and arrhythmias if they occur. Avoid (adrenaline) epinephrine or other sympathomimetic amines that may precipitate ventricular arrhythmias. Tachyarrhythmias caused by increased myocardial sensitisation may be treated with propranolol, 1-2 mg IV or esmolol 25-100 microg/kg/min IV.
- Monitor the ECG for 4-6 hours.

B: Specific drugs and antidotes:

- There is no specific antidote.

C: Decontamination:

- Inhalation; remove victim from exposure, and give supplemental oxygen if available.
- Ingestion; (a) Prehospital: Administer activated charcoal, if available. DO NOT induce vomiting because of rapid absorption and the risk of abrupt onset CNS depression. (b) Hospital: Administer activated charcoal, although the efficacy of charcoal is unknown. Perform gastric lavage only if the ingestion was very large and recent (less than 30 minutes).

D: Enhanced elimination:

- There is no documented efficacy for diuresis, haemodialysis, haemoperfusion, or repeat-dose charcoal.

POISONING and DRUG OVERDOSE Californian Poison Control System Ed. Kent R Olson; 3rd Edition:

- Do not administer sympathomimetic drugs unless absolutely necessary as material may increase myocardial irritability.
- No specific antidote.
- Because rapid absorption may occur through lungs if aspirated and cause systematic effects, the decision of whether to induce vomiting or not should be made by an attending physician.
- If lavage is performed, suggest endotracheal and/or esophageal control.
- Danger from lung aspiration must be weighed against toxicity when considering emptying the stomach.
- Treatment based on judgment of the physician in response to reactions of the patient.

#### For lower Alkyl Ethers:

##### Basic treatment:

- Establish a patent airway with suction where necessary.
- Watch for signs of respiratory insufficiency and assist ventilation as necessary.
- Administer oxygen by non-rebreather mask at 10 to 15 l/min.
- A low-stimulus environment must be maintained.
- Monitor and treat, where necessary, for shock.
- Anticipate and treat, where necessary, for seizures.
- DO NOT use emetics. Where ingestion is suspected rinse mouth and give up to 200 ml water (5 ml/kg recommended) for dilution where patient is able to swallow, has a strong gag reflex and does not drool.

##### Advanced treatment:

- Consider orotracheal or nasotracheal intubation for airway control in unconscious patient or where respiratory arrest has occurred.
- Positive-pressure ventilation using a bag-valve mask might be of use.
- Monitor and treat, where necessary, for arrhythmias.
- Start an IV D5W TKO. If signs of hypovolaemia are present use lactated Ringers solution. Fluid overload might create complications.
- Drug therapy should be considered for pulmonary oedema.
- Hypotension without signs of hypovolaemia may require vasopressors.
- Treat seizures with diazepam.
- Proparacaine hydrochloride should be used to assist eye irrigation.

##### Emergency department:

- Laboratory analysis of complete blood count, serum electrolytes, BUN, creatinine, glucose, urinalysis, baseline for serum aminotransferases (ALT and AST), calcium, phosphorus and magnesium, may assist in establishing a treatment regime. Other useful analyses include anion and osmolar gaps, arterial blood gases (ABGs), chest radiographs and electrocardiograph.
- Ethers may produce anion gap acidosis. Hyperventilation and bicarbonate therapy might be indicated.
- Haemodialysis might be considered in patients with impaired renal function.

- Consult a toxicologist as necessary.

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EMERGENCY CARE FOR HAZARDOUS MATERIALS EXPOSURE: 2nd Ed. 1994.

#### For simple Esters:

##### Basic treatment:

- Establish a patent airway with suction where necessary.
- Watch for signs of respiratory insufficiency and assist ventilation as necessary.
- Administer oxygen by non-rebreather mask at 10 to 15 l/min.
- Monitor and treat, where necessary, for pulmonary oedema.
- Monitor and treat, where necessary, for shock.
- DO NOT use emetics. Where ingestion is suspected rinse mouth and give up to 200 ml water (5 ml/kg recommended) for dilution where patient is able to swallow, has a strong gag reflex and does not drool.
- Give activated charcoal.

**Advanced treatment:**

- Consider orotracheal or nasotracheal intubation for airway control in unconscious patient or where respiratory arrest has occurred.
- Positive-pressure ventilation using a bag-valve mask might be of use.
- Monitor and treat, where necessary, for arrhythmias.
- Start an IV D5W TKO. If signs of hypovolaemia are present use lactated Ringers solution. Fluid overload might create complications.
- Drug therapy should be considered for pulmonary oedema.
- Hypotension with signs of hypovolaemia requires the cautious administration of fluids. Fluid overload might create complications.
- Treat seizures with diazepam.
- Proparacaine hydrochloride should be used to assist eye irrigation.

**Emergency department:**

- Laboratory analysis of complete blood count, serum electrolytes, BUN, creatinine, glucose, urinalysis, baseline for serum aminotransferases (ALT and AST), calcium, phosphorus and magnesium, may assist in establishing a treatment regime. Other useful analyses include anion and osmolar gaps, arterial blood gases (ABGs), chest radiographs and electrocardiograph.
- Positive end-expiratory pressure (PEEP)-assisted ventilation may be required for acute parenchymal injury or adult respiratory distress syndrome. Consult a toxicologist as necessary.

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**For gas exposures:**

**Basic treatment:**

- Establish a patent airway with suction where necessary.
- Watch for signs of respiratory insufficiency and assist ventilation as necessary.
- Administer oxygen by non-rebreather mask at 10 to 15 l/min.
- Monitor and treat, where necessary, for pulmonary oedema.
- Monitor and treat, where necessary, for shock.
- Anticipate seizures.

**Advanced treatment:**

- Consider orotracheal or nasotracheal intubation for airway control in unconscious patient or where respiratory arrest has occurred.
- Positive-pressure ventilation using a bag-valve mask might be of use.
- Monitor and treat, where necessary, for arrhythmias.
- Start an IV D5W TKO. If signs of hypovolaemia are present use lactated Ringers solution. Fluid overload might create complications.
- Drug therapy should be considered for pulmonary oedema.
- Hypotension with signs of hypovolaemia requires the cautious administration of fluids. Fluid overload might create complications.
- Treat seizures with diazepam.
- Proparacaine hydrochloride should be used to assist eye irrigation.

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**For sub-chronic and chronic exposures to Isocyanates:**

- This material may be a potent pulmonary sensitiser which causes bronchospasm even in patients without prior airway hyperreactivity.
- Clinical symptoms of exposure involve mucosal irritation of respiratory and gastrointestinal tracts.
- Conjunctival irritation, skin inflammation (erythema, pain vesiculation) and gastrointestinal disturbances occur soon after exposure.
- Pulmonary symptoms include cough, burning, substernal pain and dyspnoea.
- Some cross-sensitivity occurs between different isocyanates.
- Noncardiogenic pulmonary oedema and bronchospasm are the most serious consequences of exposure. Markedly symptomatic patients should receive oxygen, ventilatory support and an intravenous line.
- Treatment for asthma includes inhaled sympathomimetics (epinephrine [adrenalin], terbutaline) and steroids.
- Activated charcoal (1 g/kg) and a cathartic (sorbitol, magnesium citrate) may be useful for ingestion.
- Mydriatics, systemic analgesics and topical antibiotics (Sulamyd) may be used for corneal abrasions.
- There is no effective therapy for sensitised workers.

[Ellenhorn and Barceloux; Medical Toxicology]

**NOTE:** Isocyanates cause airway restriction in naive individuals with the degree of response dependant on the concentration and duration of exposure. They induce smooth muscle contraction which leads to bronchoconstrictive episodes. Acute changes in lung function, such as decreased FEV1, may not represent sensitivity.

[Karol & Jin, Frontiers in Molecular Toxicology, pp 56-61, 1992]

Personnel who work with isocyanates, isocyanate prepolymers or polyisocyanates should have a pre-placement medical examination and periodic examinations thereafter, including a pulmonary function test. Anyone with a medical history of chronic respiratory disease, asthmatic or bronchial attacks, indications of allergic responses, recurrent eczema or sensitisation conditions of the skin should not handle or work with isocyanates. Anyone who develops chronic respiratory distress when working with isocyanates should be removed from exposure and examined by a physician. Further exposure must be avoided if a sensitivity to isocyanates or polyisocyanates has developed.

## 5. FIRE-FIGHTING MEASURES

### 5.1 Extinguishing media

Small quantities of water in contact with hot liquid may react violently with generation of a large volume of rapidly expanding hot sticky semi-solid foam.  
Presents additional hazard when fire fighting in a confined space.  
Cooling with flooding quantities of water reduces this risk.  
Dry chemical powder.  
BCF (where regulations permit).  
Carbon dioxide.

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

#### Fire incompatibility:

Avoid contamination with oxidising agents i.e. nitrates, oxidising acids, chlorine bleaches, pool chlorine etc. as ignition may result.

### 5.3 Advice for fire-fighters

#### General:

Alert Fire Brigade and tell them location and nature of hazard.  
Wear full body protective clothing with breathing apparatus.  
Fight fire from a safe distance, with adequate cover

#### Fire/explosion hazard:

Combustible.  
Moderate fire hazard when exposed to heat or flame.  
When heated to high temperatures decomposes rapidly generating vapour which pressures and may then rupture containers with release of flammable and highly toxic isocyanate vapour.  
- Containers may explode when heated - ruptured cylinders may rocket.  
- May burn but does not ignite easily.  
- Fire exposed cylinders may vent contents through pressure relief devices thereby increasing vapour concentration.  
- Fire may produce irritating, poisonous or corrosive gases.

#### Decomposition may produce toxic fumes of:

Carbon Monoxide (CO).  
Carbon Dioxide (CO<sub>2</sub>).  
Isocyanates.

Hydrogen Cyanide.

#### and minor amounts of:

Hydrogen Chloride.

Phosgene.

Nitrogen Oxides (Nox).

Other Pyrolysis products typical of burning organic material.

#### Contains low boiling substance:

Closed containers may rupture due to pressure build up under fire conditions.

## 6. ACCIDENTAL RELEASE MEASURES

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

See Section 8.

### 6.2 Environmental precautions

See Section 12.

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

#### Minor spills:

Avoid breathing vapour and any contact with liquid or gas. Protective equipment including respirator should be used.  
DO NOT enter confined spaces where gas may have accumulated.

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#### Major spills:

##### For Isocyanate spills of less than 40 litres (2 m<sup>2</sup>):

Evacuate area from everybody not dealing with the emergency, keep them upwind and prevent further access, remove ignition sources and, if inside building, ventilate area as well as possible.

Notify supervision and others as necessary.

Put on personal protective equipment (suitable respiratory protection, face and eye protection, protective suit, gloves and impermeable boots).

Avoid contamination with water, alkalis and detergent solutions.

Material reacts with water and generates gas, pressurises containers with even drum rupture resulting.

DO NOT reseal container if contamination is suspected. Clear area of all unprotected personnel and move upwind.

Alert Emergency Authority and advise them of the location and nature of hazard. Wear full body clothing with breathing apparatus.

Remove leaking cylinders to a safe place.

Fit vent pipes. Release pressure under safe, controlled conditions.

Burn issuing gas at vent pipes.

DO NOT exert excessive pressure on valve; DO NOT attempt to operate damaged valve.

#### 6.4 Reference to other sections

Personal protective equipment advice is contained in Section 8.

## 7. HANDLING AND STORAGE

### 7.1 Precautions for safe handling

#### Safe handling:

Consider use in closed pressurised systems, fitted with temperature, pressure and safety relief valves which are vented for safe dispersal. Use only properly specified equipment which is suitable for this product, its supply pressure and temperature.

The tubing network design connecting gas cylinders to the delivery system should include appropriate pressure indicators and vacuum or suction lines.

Fully-welded types of pressure gauges, where the bourdon tube sensing element is welded to the gauge body, are recommended.

DO NOT transfer gas from one cylinder to another.

#### Fire and explosion protection:

See Section 5.

#### Other information:

Cylinders should be stored in a purpose-built compound with good ventilation, preferably in the open. Such compounds should be sited and built in accordance with statutory requirements.

The storage compound should be kept clear and access restricted to authorised personnel only.

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

#### Suitable container:

Cylinder.

Ensure the use of equipment rated for cylinder pressure.

Ensure the use of compatible materials of construction.

Valve protection cap to be in place until cylinder is secured, connected.

#### Storage incompatibility:

##### Dimethyl Ether:

- is a peroxidisable gas.
- may be heat and shock sensitive.
- is able to form unstable peroxides on prolonged exposure to air.
- reacts violently with oxidisers, aluminium hydride, lithium aluminium hydride.
- is incompatible with strong acids, metal salts.

##### Methylene Chloride:

- is a combustible liquid under certain circumstances even though there is no measurable flash point and it is difficult to ignite.
- it is flammable in ambient air in the range 12-23%; increased oxygen content can greatly enhance fire and explosion potential contact with hot surfaces and elevated temperatures can form fumes of hydrogen chloride and phosgene.
- reacts violently with active metals, aluminium, lithium, methanol, peroxydisulphuryl difluoride, potassium, potassium tert-butoxide, sodium.
- forms explosive mixtures with nitric acid.
- is incompatible with strong oxidisers, strong caustics, alkaline earths and alkali metals.
- attacks some plastics, coatings and rubber.
- may generate electrostatic charge due to low conductivity.

Our company policy is one of continuous research and development; we therefore reserve the right to amend content herein without prior notice.

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- Esters react with acids to liberate heat along with alcohols and acids.
- Strong oxidising acids may cause a vigorous reaction with esters that is sufficiently exothermic to ignite the reaction products.
- heat is also generated by the interaction of esters with caustic solutions.
- segregate from alcohol, water.

**Ethers:**

- may react violently with strong oxidising agents and acids.
- can act as bases - they form salts with strong acids and addition complexes with Lewis acids; the complex between diethyl ether and boron trifluoride is an example.
- are generally stable to water under neutral conditions and ambient temperatures.
  - The tendency of many ethers to form explosive peroxides is well documented.
  - Ethers lacking non-methyl hydrogen atoms adjacent to the ether link are thought to be relatively safe.
  - When solvents have been freed from peroxides (by percolation through a column of activated alumina for example), the absorbed peroxides must promptly be desorbed by treatment with the polar solvents methanol or water, which should be discarded safely.
- Avoid reaction with water, alcohols and detergent solutions. Isocyanates are electrophiles, and as such they are reactive toward a variety of nucleophiles including alcohols, amines, and even water. Upon treatment with an alcohol, an isocyanate forms a urethane linkage.
  - A range of exothermic decomposition energies for isocyanates is given as 20-30 kJ/mol.
  - The relationship between energy of decomposition and processing hazards has been the subject of discussion; it is suggested that values of energy released per unit of mass, rather than on a molar basis (J/g) be used in the assessment.
  - For example, in "open vessel processes" (with man-hole size openings, in an industrial setting), substances with exothermic decomposition energies below 500 J/g are unlikely to present a danger, whilst those in "closed vessel processes" (opening is a safety valve or bursting disk) present some danger where the decomposition energy exceeds 150 J/g.
  - Compressed gases may contain a large amount of kinetic energy over and above that potentially available from the energy of reaction produced by the gas in chemical reaction with other substances.



- X: Must not be stored together.
- O: May be stored together with specific preventions.
- +: May be stored together.

**7.3 Specific end uses(s)**

See Section 1.2.

**8. EXPOSURE CONTROLS/PERSONAL PROTECTION**

**8.1 Control parameters**

Ingredient	DNELs Exposure Pattern Worker	PNECs Compartment
Dimethyl Ether	Inhalation 1 894 mg/m <sup>3</sup> (Systemic, Chronic) Inhalation 471 mg/m <sup>3</sup> (Systemic, Chronic) *	0.155 mg/L (Water (Fresh)) 0.016 mg/L (Water - Intermittent release) 1.549 mg/L (Water (Marine)) 0.681 mg/kg sediment dw (Sediment (Fresh Water)) 0.069 mg/kg sediment dw (Sediment (Marine)) 0.045 mg/kg soil dw (Soil) 1.60 mg/L (STP)
Methylene Chloride	Dermal 12 mg/kg bw/day (Systemic, Chronic) Inhalation 176 mg/m <sup>3</sup> (Systemic, Chronic) Dermal 5.82 mg/kg bw/day (Systemic, Chronic) * Inhalation 44 mg/m <sup>3</sup> (Systemic, Chronic) * Oral 0.06 mg/kg bw/day (Systemic, Chronic) *	0.31 mg/L (Water (Fresh)) 0.031 mg/L (Water - Intermittent release) 0.27 mg/L (Water (Marine)) 2.57 mg/kg sediment dw (Sediment (Fresh Water)) 0.26 mg/kg sediment dw (Sediment (Marine)) 0.33 mg/kg soil dw (Soil) 26 mg/L (STP)



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Ethyl Acetate	Dermal 63 mg/kg bw/day (Systemic, Chronic) Inhalation 734 mg/m <sup>3</sup> (Systemic, Chronic) Inhalation 734 mg/m <sup>3</sup> (Local, Chronic) Inhalation 1 468 mg/m <sup>3</sup> (Systemic, Acute) Inhalation 1 468 mg/m <sup>3</sup> (Local, Acute) Dermal 37 mg/kg bw/day (Systemic, Chronic) * Inhalation 367 mg/m <sup>3</sup> (Systemic, Chronic) * Oral 4.5 mg/kg bw/day (Systemic, Chronic) * Inhalation 367 mg/m <sup>3</sup> (Local, Chronic) * Inhalation 734 mg/m <sup>3</sup> (Systemic, Acute) * Inhalation 734 mg/m <sup>3</sup> (Local, Acute) *	0.24 mg/L (Water (Fresh)) 0.024 mg/L (Water - Intermittent release) 1.65 mg/L (Water (Marine)) 1.15 mg/kg sediment dw (Sediment (Fresh Water)) 0.115 mg/kg sediment dw (Sediment (Marine)) 0.148/kg soil dw (Soil) 650 /L (STP) 0.2 g/kg food (Oral)
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\* Values for general population.

### Occupational exposure limits (OEL):

#### Ingredient data:

Source	Ingredient	Material name	TWA	STEL	Peak	Notes
UK Workplace Exposure Limits (WELs)	Dimethyl Ether	Dimethyl Ether	400 ppm / 766 mg/m <sup>3</sup>	958 mg/m <sup>3</sup> / 500 ppm	Not available	Not available
EU Consolidated List of Indicative Occupational Exposure Limit Values (IOELVs)	Dimethyl Ether	Dimethyl Ether	1000 ppm / 1920 mg/m <sup>3</sup>	Not available	Not available	Not available
UK Workplace Exposure Limits (WELs)	Methylene Chloride	Dichloromethane	100 ppm / 353 mg/m <sup>3</sup>	706 mg/m <sup>3</sup> / 200 ppm	Not available	BMGV, Sk
EU Consolidated List of Indicative Occupational Exposure Limit Values (IOELVs)	Methylene Chloride	Methylene Chloride; Dichloromethane	100 ppm / 353 mg/m <sup>3</sup>	706 mg/m <sup>3</sup> / 200 ppm	Not available	Skin
UK Workplace Exposure Limits (WELs)	Ethyl Acetate	Ethyl Acetate	200 ppm / 734 mg/m <sup>3</sup>	1468 mg/m <sup>3</sup> / 400 ppm	Not available	Not available
EU Consolidated List of Indicative Occupational Exposure Limit Values (IOELVs)	Ethyl Acetate	Ethyl Acetate	200 ppm / 734 mg/m <sup>3</sup>	1 468 mg/m <sup>3</sup> / 400 ppm	Not available	Not available
UK Workplace Exposure Limits (WELs)	Polymeric Diphenylmethane Diisocyanate	Isocyanates, All (As -NCO) Except Methyl Isocyanate	0.02 mg/m <sup>3</sup>	0.07 mg/m <sup>3</sup>	Not available	Sen
Europe ECHA Occupational exposure limits - Activity list	Polymeric Diphenylmethane Diisocyanate	Not available	Not available	Not available	Not available	Not available

#### Emergency limits:

Ingredient	TEEL-1	TEEL-2	TEEL-3
Dimethyl Ether	3,000 ppm	3800* ppm	7200* ppm
Methylene Chloride	Not available	Not available	Not available
Ethyl Acetate	1,200 ppm	1,700 ppm	10000** ppm
Polymeric Diphenylmethane Diisocyanate	0.15 mg/m <sup>3</sup>	3.6 mg/m <sup>3</sup>	22 mg/m <sup>3</sup>

Ingredient	Original IDLH	Revised IDLH
Dimethyl Ether	Not available	Not available
Methylene Chloride	2,300 ppm	Not available
Ethyl Acetate	2,000 ppm	Not available
Polymeric Diphenylmethane Diisocyanate	Not available	Not available

### 8.2 Exposure controls

Appropriate engineering controls: Engineering controls are used to remove a hazard or place a barrier between the worker and the hazard. Well-designed engineering controls can be highly effective in protecting workers and will typically be independent of worker interactions to provide this high level of protection.

The basic types of engineering controls are:  
Process controls which involve changing the way a job activity or process is done to reduce the risk.



Personal protective:

Eye and face protection:

Safety glasses with side shields.  
Chemical goggles.  
Contact lenses may pose a special hazard; soft contact lenses may absorb and concentrate irritants.

Skin protection:

See hand protection below.

Hands/feet protection:

NOTE:

- The material may produce skin sensitisation in predisposed individuals. Care must be taken, when removing gloves and other protective equipment, to avoid all possible skin contact.
- Contaminated leather items, such as shoes, belts and watch-bands should be removed and destroyed.

For Esters:

- Do NOT use natural rubber, butyl rubber, EPDM or polystyrene-containing materials. Isocyanate resistant materials include Teflon, Viton, nitrile rubber and some PVA gloves. Protective gloves and overalls should be worn as specified in the appropriate national standard.
- Contaminated garments should be removed promptly and should not be re-used until they have been decontaminated.
- When handling sealed and suitably insulated cylinders wear cloth or leather gloves.

Body protection:

See other protection below.

Other protection:

Protective overalls, closely fitted at neck and wrist.  
Eye-wash unit.  
Ensure availability of lifeline in confined spaces.

Environmental exposure controls:

See Section 12.

### Recommended material(s):

#### Glove selection index:

Glove selection is based on a modified presentation of the:  
"Forsberg Clothing Performance Index".

The effect(s) of the following substance(s) are taken into account in the computer-generated selection:  
Alumasc PVC Contact Adhesive.

Material	CPI
Butyl	C
Butyl/Neoprene	C
Cpe	C
Hypalon	C
Natural Rubber	C
Natural+Neoprene	C
Neoprene	C
Neoprene/Natural	C
Nitrile	C
Nitrile+Pvc	C
Pe/Eval/Pe	C
Pva	C
Pvc	C
Saranex-23	C
Saranex-23 2-Ply	C

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Teflon	C
Viton	C
Viton/Butyl	C
Viton/Chlorobutyl	C

#### CPI - Chemwatch Performance Index:

A: Best selection.

B: Satisfactory; may degrade after 4 hours continuous immersion.

C: Poor to Dangerous Choice for other than short term immersion.

NOTE: As a series of factors will influence the actual performance of the glove, a final selection must be based on detailed observation.

\*Where the glove is to be used on a short term, casual or infrequent basis, factors such as "feel" or convenience (e.g. disposability), may dictate a choice of gloves which might otherwise be unsuitable following long-term or frequent use. A qualified practitioner should be consulted.

#### Respiratory protection:

Cartridge respirators should never be used for emergency ingress or in areas of unknown vapour concentrations or oxygen content.

The wearer must be warned to leave the contaminated area immediately on detecting any odours through the respirator. The odour may indicate that the mask is not functioning properly, that the vapour concentration is too high, or that the mask is not properly fitted. Because of these limitations, only restricted use of cartridge respirators is considered appropriate.

Cartridge performance is affected by humidity. Cartridges should be changed after 2 hr of continuous use unless it is determined that the humidity is less than 75%, in which case, cartridges can be used for 4 hr. Used cartridges should be discarded daily, regardless of the length of time used.

Positive pressure, full face, air-supplied breathing apparatus should be used for work in enclosed spaces if a leak is suspected or the primary containment is to be opened (e.g. for a cylinder change).

Air-supplied breathing apparatus is required where release of gas from primary containment is either suspected or demonstrated.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

### 9.1 Information on basic physical and chemical properties

<b>Appearance:</b>	Yellow		
<b>Physical state:</b>	Compressed gas	<b>Relative density (Water= 1):</b>	Not available
<b>Odour:</b>	Characteristic	<b>Partition coefficient n-octanol / water:</b>	Not available
<b>Odour threshold:</b>	Not available	<b>Auto-ignition temperature (°C):</b>	Not available
<b>pH (as supplied):</b>	Not available	<b>Decomposition Temperature:</b>	Not available
<b>Melting point / freezing point (°C):</b>	Not applicable	<b>Viscosity (cSt):</b>	600-700
<b>Initial boiling point and boiling range (°C):</b>	Not available	<b>Molecular weight (g/mol):</b>	Not available
<b>Flash point (°C):</b>	Not available	<b>Taste:</b>	Not available
<b>Evaporation rate:</b>	Not available	<b>Explosive properties:</b>	In use may form flammable/explosive vapour-air mixture
<b>Flammability:</b>	Not available	<b>Oxidising properties:</b>	Does not meet criteria for classification as oxidising
<b>Upper Explosive Limit (%):</b>	Not available	<b>Surface Tension (dyn/cm or mN/m):</b>	Not available
<b>Lower Explosive Limit (%):</b>	Not available	<b>Volatile Component (%vol):</b>	Not available
<b>Vapour pressure (kPa):</b>	Not available	<b>Gas group:</b>	Not available
<b>Solubility in water:</b>	Immiscible	<b>pH as a solution (1%):</b>	Not available
<b>Vapour density (Air = 1):</b>	Not available	<b>VOC g/L:</b>	Not available

### 9.2 Other information

Not available.

## 10. STABILITY AND REACTIVITY

### 10.1 Reactivity

See Section 7.2.

### 10.2 Chemical stability

Unstable in the presence of incompatible materials.  
Product is considered stable.  
Hazardous polymerisation will not occur.

### 10.3 Possibility of hazardous reactions

See Section 7.2.

### 10.4 Conditions to avoid

See Section 7.2.

### 10.5 Incompatible materials

See Section 7.2.

### 10.6 Hazardous decomposition products

See Section 5.3.

## 11. TOXICOLOGICAL INFORMATION

### 11.1 Information on toxicological effects

Inhaled:

The material is not thought to produce adverse health effects or irritation of the respiratory tract (as classified by EC Directives using animal models). Nevertheless, good hygiene practice requires that exposure be kept to a minimum and that suitable control measures be used in an occupational setting.

Inhalation of vapours may cause drowsiness and dizziness. This may be accompanied by sleepiness, reduced alertness, loss of reflexes, lack of co-ordination, and vertigo.

Inhalation of the vapour is hazardous and may even be fatal

The use of a quantity of material in an unventilated or confined space may result in increased exposure and an irritating atmosphere developing. Before starting consider control of exposure by mechanical ventilation.

Exposure to 400ppm ethyl acetate may cause mild eye, nose and throat irritation in an unacclimated persons. However, production workers with regular exposure have better tolerance.

Inhalation of toxic gases may cause:

- Central Nervous System effects including depression, headache, confusion, dizziness, stupor, coma and seizures; respiratory: acute lung swellings, shortness of breath, wheezing, rapid breathing, other symptoms and respiratory arrest; heart: collapse, irregular heartbeats and cardiac arrest;
- gastrointestinal: irritation, ulcers, nausea and vomiting (may be bloody), and abdominal pain.

Inhalation hazard is increased at higher temperatures.

The vapour/mist may be highly irritating to the upper respiratory tract and lungs; the response may be severe enough to produce bronchitis and pulmonary oedema. Possible neurological symptoms arising from isocyanate exposure include headache, insomnia, euphoria, ataxia, anxiety neurosis, depression and paranoia. Gastrointestinal disturbances are characterised by nausea and vomiting.

Following inhalation, ethers cause lethargy and stupor. Inhaling lower alkyl ethers results in headache, dizziness, weakness, blurred vision, seizures and possible coma.

Material is highly volatile and may quickly form a concentrated atmosphere in confined or unventilated areas. The vapour may displace and replace air in breathing zone, acting as a simple asphyxiant. This may happen with little warning of overexposure.

Inhalation of high concentrations of gas/vapour causes lung irritation with coughing and nausea, central nervous depression with headache and dizziness, slowing of reflexes, fatigue and incoordination.

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Inhalation of aerosols (mists, fumes), generated by the material during the course of normal handling, may produce severely toxic effects.  
Relatively small amounts absorbed from the lungs may prove fatal.

**Ingestion:** There is strong evidence to suggest that this material can cause, if swallowed once, very serious, irreversible damage of organs. Not normally a hazard due to physical form of product.  
Considered an unlikely route of entry in commercial/industrial environments.  
Acute intoxication by ethyl acetate causes impaired co-ordination, exhilaration, slurred speech, nausea, vomiting, and may progress to stupor, coma and death from failure of breathing or blood circulation.  
Ingestion of alkyl ethers may produce stupor, blurred vision, headache, dizziness and irritation of the nose and throat. Respiratory distress and asphyxia may result.  
Accidental ingestion of the material may be harmful; animal experiments indicate that ingestion of less than 150 gram may be fatal or may produce serious damage to the health of the individual.

**Skin contact:** The material may accentuate any pre-existing dermatitis condition.  
Skin contact is not thought to have harmful health effects (as classified under EC Directives); the material may still produce health damage following entry through wounds, lesions or abrasions.  
Alkyl ethers may defat and dehydrate the skin producing dermatoses. Absorption may produce headache, dizziness, and central nervous system depression.  
Open cuts, abraded or irritated skin should not be exposed to this material.  
Entry into the blood-stream, through, for example, cuts, abrasions or lesions, may produce systemic injury with harmful effects. Examine the skin prior to the use of the material and ensure that any external damage is suitably protected.  
Skin contact with the material may damage the health of the individual; systemic effects may result following absorption.

**Eye:** Not considered to be a risk because of the extreme volatility of the gas. Eye contact with alkyl ethers (vapour or liquid) may produce irritation, redness and tears.  
There is some evidence that material may produce eye irritation in some persons and produce eye damage 24 hours or more after instillation. Moderate inflammation may be expected with redness; conjunctivitis may occur with prolonged exposure.  
The liquid produces a high level of eye discomfort and is capable of causing pain and severe conjunctivitis. Corneal injury may develop, with possible permanent impairment of vision, if not promptly and adequately treated.

**Chronic:** There has been concern that this material can cause cancer or mutations, but there is not enough data to make an assessment. Inhaling this product is more likely to cause a sensitisation reaction in some persons compared to the general population.  
Skin contact with the material is more likely to cause a sensitisation reaction in some persons compared to the general population. Main route of exposure to the gas in the workplace is by inhalation.  
Persons with a history of asthma or other respiratory problems or are known to be sensitised, should not be engaged in any work involving the handling of isocyanates.  
The chemistry of reaction of isocyanates, as evidenced by MDI, in biological milieu is such that in the event of a true exposure of small MDI doses to the mouth, reactions will commence at once with biological macromolecules in the buccal region and will continue along the digestive tract prior to reaching the stomach. Reaction products will be a variety of polyureas and macromolecular conjugates with for example mucus, proteins and cell components.  
Chronic exposure to alkyl ethers may result in loss of appetite, excessive thirst, fatigue, and weight loss.  
Isocyanate vapours are irritating to the airways and can cause their inflammation, with wheezing, gasping, severe distress, even loss of consciousness and fluid in the lungs. Nervous system symptoms that may occur include headache, sleep disturbance, euphoria, incoordination, anxiety, depression and paranoia.

**Alumasc PVC Contact Adhesive:**

Toxicity	Irritation
Not available	Not available

**Dimethyl Ether:**

Toxicity	Irritation
Inhalation (Rat) LC50; >20000 ppm4h <sup>[1]</sup>	Not available

**Methylene Chloride:**

Toxicity	Irritation
Dermal (Rat) LD50: >2000 mg/kg <sup>[2]</sup>	Eye (Rabbit): 162 mg - moderate
Inhalation (Rat) LC50; 76 mg/L4h <sup>[2]</sup>	Eye (Rabbit): 500 mg/24hr - mild
Oral (Rat) LD50; >2000 mg/kg <sup>[2]</sup>	Skin (Rabbit): 100mg/24hr - moderate
	Skin (Rabbit): 810 mg/24hr - SEVERE

**Ethyl Acetate:**

Toxicity	Irritation
Dermal (Rabbit) LD50: >22.222 mg/kg <sup>[2]</sup>	Eye (Human): 400 ppm
Inhalation (Mouse) LC50; >18 mg/l4h <sup>[1]</sup>	Eye: no adverse effect observed (not irritating) <sup>[1]</sup>
Oral (Rat) LD50; 12.556 mg/kg <sup>[1]</sup>	Skin: no adverse effect observed (not irritating) <sup>[1]</sup>

**Polymeric Diphenylmethane Diisocyanate:**

Toxicity	Irritation
Dermal (Rabbit) LD50: >9400 mg/kg <sup>[2]</sup>	Eye (Rabbit): 100 mg - mild
Inhalation (Rat) LC50; 0.49 mg/L4h <sup>[2]</sup>	
Oral (Rat) LD50; 43000 mg/kg <sup>[2]</sup>	

**Legend:**

1. Value obtained from Europe ECHA Registered Substances - Acute toxicity 2.\* Value obtained from manufacturer's SDS. Unless otherwise specified data extracted from RTECS - Register of Toxic Effect of chemical Substances.

**Methylene Chloride:**

The material may cause severe skin irritation after prolonged or repeated exposure and may produce on contact skin redness, swelling, the production of vesicles, scaling and thickening of the skin. Repeated exposures may produce severe ulceration. WARNING: This substance has been classified by the IARC as Group 2A: Probably Carcinogenic to Humans. Inhalation (human) TClO: 500 ppm/ 1 y - I Eye(rabbit): 10 mg – mild.

**Polymeric Diphenylmethane Diisocyanate:**

Isocyanate vapours are irritating to the airways and can cause their inflammation, with wheezing, gasping, severe distress, even loss of consciousness and fluid in the lungs. Nervous system symptoms that may occur include headache, sleep disturbance, euphoria, inco-ordination, anxiety, depression and paranoia.

Aromatic and aliphatic diisocyanates may cause airway toxicity and skin sensitization. Monomers and prepolymers exhibit similar respiratory effect. Of the several members of diisocyanates tested on experimental animals by inhalation and oral exposure, some caused cancer while others produced a harmless outcome.

The substance is classified by IARC as Group 3:

NOT classifiable as to its carcinogenicity to humans.

Evidence of carcinogenicity may be inadequate or limited in animal testing.

**Alumasc PVC Contact Adhesive & Polymeric Diphenylmethane Diisocyanate:**

Allergic reactions involving the respiratory tract are usually due to interactions between IgE antibodies and allergens and occur rapidly. Allergic potential of the allergen and period of exposure often determine the severity of symptoms. Some people may be genetically more prone than others, and exposure to other irritants may aggravate symptoms.

Attention should be paid to atopic diathesis, characterised by increased susceptibility to nasal inflammation, asthma and eczema. Exogenous allergic alveolitis is induced essentially by allergen specific immune-complexes of the IgG type; cell-mediated reactions (T lymphocytes) may be involved. Such allergy is of the delayed type with onset up to four hours following exposure.

The following information refers to contact allergens as a group and may not be specific to this product.

Contact allergies quickly manifest themselves as contact eczema, more rarely as urticaria or Quincke's oedema. The pathogenesis of contact eczema involves a cell-mediated (T lymphocytes) immune reaction of the delayed type. Other allergic skin reactions, e.g. contact urticaria, involve antibody-mediated immune reactions.

**Methylene Chloride & Polymeric Diphenylmethane Diisocyanate:**

The material may produce moderate eye irritation leading to inflammation. Repeated or prolonged exposure to irritants may produce conjunctivitis.

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#### Ethyl Acetate & Polymeric Diphenylmethane Diisocyanate:

Asthma-like symptoms may continue for months or even years after exposure to the material ends. This may be due to a non-allergic condition known as reactive airways dysfunction syndrome (RADS) which can occur after exposure to high levels of highly irritating compound. Main criteria for diagnosing RADS include the absence of previous airways disease in a non-atopic individual, with sudden onset of persistent asthma-like symptoms within minutes to hours of a documented exposure to the irritant.

Acute Toxicity	✗	Carcinogenicity	✓
Skin Irritation/Corrosion	✓	Reproductivity	✗
Serious Eye Damage/Irritation	✓	STOT - Single Exposure	✓
Respiratory or Skin sensitisation	✓	STOT - Repeated Exposure	✗
Mutagenicity	✗	Aspiration Hazard	✗

#### Legend:

- ✗ Data either not available or does not fill the criteria for classification.
- ✓ Data available to make classification.

## 12. ECOLOGICAL INFORMATION

### 12.1 Toxicity

#### Alumasc PVC Contact Adhesive:

End point	Test Duration (hr)	Species	Value	Source
Not available	Not available	Not available	Not available	Not available

#### Dimethyl Ether:

End point	Test Duration (hr)	Species	Value	Source
EC50	48	Crustacea	>4400mg/L	2
LC50	96	Fish	1783.04mg/l	2
NOEC(ECx)	48	Crustacea	>4000mg/l	1
EC50	96	Algae or other aquatic plants	154.917mg/l	2

#### Methylene Chloride:

End point	Test Duration (hr)	Species	Value	Source
NOEC(ECx)	96	Crustacea	0.147mg/L	4
BCF	1008	Fish	2-5.4	7
LC50	96	Fish	0.973-1.32mg/L	4
EC50	48	Crustacea	150-218mg/l	4
EC50	72	Algae or other aquatic plants	>2.3mg/L	4
EC50	96	Algae or other aquatic plants	0.98mg/l	4

#### Ethyl Acetate:

End point	Test Duration (hr)	Species	Value	Source
EC50	48	Crustacea	164mg/l	1
LC50	96	Fish	>75.6mg/l	2
NOEC(ECx)	72	Algae or other aquatic plants	>100mg/l	1

#### Polymeric Diphenylmethane Diisocyanate:

Endpoint	Test Duration (hr)	Species	Value	Source
Not available	Not available	Not available	Not available	Not available

#### Legend:

Extracted from 1. IUCLID Toxicity Data 2. Europe ECHA Registered Substances - Ecotoxicological Information - Aquatic Toxicity 3. EPIWIN Suite V3.12 (QSAR) - Aquatic Toxicity Data (Estimated) 4. US EPA, Ecotox database - Aquatic Toxicity Data 5. ECETOC Aquatic Hazard Assessment Data 6. NITE (Japan) - Bioconcentration Data 7. METI (Japan) - Bioconcentration Data 8. Vendor Data.

For polyisocyanates: Polyisocyanates are not readily biodegradable. However, due to other elimination mechanisms (hydrolysis, adsorption), long retention times in water are not to be expected. The resulting polyurea is more or less inert and, due to its molecular size, not bioavailable.

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For Methylene Chloride: Log Kow: 1.25; Log Koc: 1.68; Log Kom: 1.44; Henry's atm m3 /mol: 2.68E-03; Henry's Law Constant: 0.002 atm/m3/mol; BCF: 5.

Atmospheric Fate: Methylene chloride is a volatile liquid that tends to evaporate to the atmosphere from water and soil. The main degradation pathway for methylene chloride in air is via reactions with hydroxyl radicals the average atmospheric lifetime is estimated to be 130 days.

Most ethers are very resistant to hydrolysis, and the rate of cleavage of the carbon-oxygen bond by abiotic processes is expected to be insignificant. Direct photolysis will not be an important removal process since aliphatic ethers do not absorb light at wavelengths >290 nm

For Isocyanate Monomers: Environmental Fate: Isocyanates, (di- and polyfunctional isocyanates), are commonly used to make various polymers, such as polyurethanes. Polyurethanes find significant application in the manufacture of rigid and flexible foams. They are also used in the production of adhesives, elastomers, and coatings.

DO NOT discharge into sewer or waterways.

## 12.2 Persistence and degradability

Ingredient	Persistence: Water/Soil	Persistence: Air
Dimethyl Ether	LOW	LOW
Methylene Chloride	LOW (Half-life = 56 days)	HIGH (Half-life = 191 days)
Ethyl Acetate	LOW (Half-life = 14 days)	LOW (Half-life = 14.71 days)

## 12.3 Bio accumulative potential

Ingredient	Bioaccumulation
Dimethyl Ether	LOW (LogKOW = 0.1)
Methylene Chloride	LOW (BCF = 40)
Ethyl Acetate	HIGH (BCF = 3300)

## 12.4 Mobility in soil

Ingredient	Mobility
Dimethyl Ether	HIGH (KOC = 1.292)
Methylene Chloride	LOW (KOC = 23.74)
Ethyl Acetate	LOW (KOC = 6.131)

## 12.5 Results of PBT and vPvB assessment

No data available.

## 12.6 Other adverse effects

No data available.

## 13. DISPOSAL CONSIDERATIONS

### 13.1 Waste treatment methods

Product / packaging disposal: DO NOT allow wash water from cleaning or process equipment to enter drains. It may be necessary to collect all wash water for treatment before disposal. In all cases disposal to sewer may be subject to local laws and regulations and these should be considered first. Evaporate residue at an approved site. Return empty containers to supplier. If containers are marked non-returnable establish means of disposal with manufacturer prior to purchase.

Waste treatment options: Not available.

Sewage disposal options: Not available.

## 14. TRANSPORT INFORMATION

Labels required:



Marine pollutant:  
Hazchem:

No.  
2YE.

Our company policy is one of continuous research and development; we therefore reserve the right to amend content herein without prior notice.



**Land transport (ADR-RID):**

- 14.1 UN number** 3501.  
**14.2 UN proper shipping name** Chemical under pressure, flammable, n.o.s. (contains polymeric diphenyl-methane diisocyanate, ethyl acetate, dimethyl ether and methylene chloride).  
**14.3 Transport hazard class(es)** Class: 2.1.  
 Subrisk: Not applicable.  
**14.4 Packing group** Not applicable.  
**14.5 Environmental hazard** Not applicable.

**14.6 Special precautions for user**

Hazard identification (Kemler)	23
Classification code	8F
Hazard label	2.1
Special provisions	274 659
Limited quantity	0
Tunnel restriction code	2 (B/D)

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

- 14.1 UN number** 3501.  
**14.2 UN proper shipping name** Chemical under pressure, flammable, n.o.s. (contains polymeric diphenyl-methane diisocyanate, ethyl acetate, dimethyl ether and methylene chloride).  
**14.3 Transport hazard class(es)** Class: 2.1.  
 Subrisk: Not applicable.  
 ERG code: 10L.  
**14.4 Packing group** Not applicable.  
**14.5 Environmental hazard** Not applicable.

**14.6 Special precautions for user**

Special provisions	A1 A187
Cargo only packing instructions	218
Cargo only maximum qty / pack	75 kg
Passenger and cargo packing instructions	Forbidden
Passenger and cargo maximum qty / pack	Forbidden
Passenger and cargo limited quantity packing instructions	Forbidden
Passenger and cargo limited maximum qty / pack	Forbidden

**Sea transport (IMDG-Code / GGVSee):**

- 14.1 UN number** 3501.  
**14.2 UN proper shipping name** Chemical under pressure, flammable, n.o.s. (contains polymeric diphenyl-methane diisocyanate, ethyl acetate, dimethyl ether and methylene chloride).  
**14.3 Transport hazard class(es)** Class: 2.1.  
 Subrisk: Not applicable.  
**14.4 Packing group** Not applicable.  
**14.5 Environmental hazard** Not applicable.

**14.6 Special precautions for user**

EMS No.	F-D, S-U
Special provisions	274 362
Limited quantities	0

#### Inland waterways transport (ADN):

<b>14.1 UN number</b>	3501.
<b>14.2 UN proper shipping name</b>	Chemical under pressure, flammable, n.o.s. (contains polymeric diphenyl-methane diisocyanate, ethyl acetate, dimethyl ether and methylene chloride).
<b>14.3 Transport hazard class(es)</b>	Class: 2.1. Subrisk: Not applicable.
<b>14.4 Packing group</b>	Not applicable.
<b>14.5 Environmental hazard</b>	Not applicable.

#### 14.6 Special precautions for user

Classification code	8F
Special provisions	274; 659
Limited quantity	0
Equipment required	PP, EX, A
Fire cones number	1

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

Not applicable.

#### 14.8 Transport in bulk accordance with MARPOL Annex V and the IMSBC Code

Not available.

#### 14.9 Transport in bulk in accordance with the ICG Code

Not available.

### 15. REGULATORY INFORMATION

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

##### Dimethyl Ether is found on the following regulatory list:

EU Consolidated List of Indicative Occupational Exposure Limit Values (IOELVs).  
EU REACH Regulation (EC) No 1907/2006 - Annex XVII - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles.  
Europe EC Inventory.  
European Union - European Inventory of Existing Commercial Chemical Substances (EINECS).  
European Union (EU) Regulation (EC) No 1272/2008 on Classification, Labelling and Packaging of Substances and Mixtures - Annex VI.  
UK Workplace Exposure Limits (WELs).

##### Methylene Chloride is found on the following regulatory list:

Chemical Footprint Project - Chemicals of High Concern List.  
EU Consolidated List of Indicative Occupational Exposure Limit Values (IOELVs).  
EU European Chemicals Agency (ECHA) Community Rolling Action Plan (CoRAP) List of Substances  
EU REACH Regulation (EC) No 1907/2006 - Annex XVII - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles.  
Europe EC Inventory.  
European Union - European Inventory of Existing Commercial Chemical Substances (EINECS).  
European Union (EU) Regulation (EC) No 1272/2008 on Classification, Labelling and Packaging of Substances and Mixtures - Annex VI.  
International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs.  
International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs - Group 2A: Probably carcinogenic to humans.  
UK Workplace Exposure Limits (WELs).

##### Ethyl Acetate is found on the following regulatory list:

EU Consolidated List of Indicative Occupational Exposure Limit Values (IOELVs).  
EU REACH Regulation (EC) No 1907/2006 - Annex XVII - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles.  
Europe EC Inventory.

European Union - European Inventory of Existing Commercial Chemical Substances (EINECS).  
European Union (EU) Regulation (EC) No 1272/2008 on Classification, Labelling and Packaging of Substances and Mixtures - Annex VI.  
UK Workplace Exposure Limits (WELs).

**Polymeric Diphenylmethane Diisocyanate is found on the following regulatory list:**

EU REACH Regulation (EC) No 1907/2006 - Annex XVII - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles.  
International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs.  
UK Workplace Exposure Limits (WELs).

This safety data sheet is in compliance with the following EU legislation and its adaptations - as far as applicable - Directives 98/24/EC, - 92/85/EEC, - 94/33/EC, - 2008/98/EC, - 2010/75/EU; Commission Regulation (EU) 2020/878; Regulation (EC) No 1272/2008 as updated through ATPs.

**15.2 Chemical Safety Assessment**

No chemical safety assessment has been carried out.

**16. OTHER INFORMATION**

National Inventory	Status
Australia - AIIC / Australia Non-Industrial Use	Yes
Canada - DSL	Yes
Canada - NDSL	No (Dimethyl Ether; Methylene Chloride; Ethyl Acetate; Polymeric Diphenylmethane Diisocyanate)
China - IECSC	Yes
Europe - EINEC / ELINCS / NLP	No (Polymeric Diphenylmethane Diisocyanate)
Japan - ENCS	Yes
Korea - KECI	Yes
New Zealand - NZIoC	Yes
Philippines - PICCS	Yes
USA - TSCA	Yes
Taiwan - TCSI	Yes
Mexico - INSQ	Yes
Vietnam - NCI	Yes
Russia - FBEPH	Yes

**Legend:**

Yes = All CAS declared ingredients are on the inventory.

No = One or more of the CAS listed ingredients are not on the inventory and are not exempt from listing (see specific ingredients in brackets).

**Full text risk & hazard codes:**

H220:	Extremely flammable gas.
H225:	Highly flammable liquid and vapour.
H280:	Contains gas under pressure; may explode if heated.
H332:	Harmful if inhaled.
H335:	May cause respiratory irritation.
H373:	May cause damage to organs through prolonged or repeated exposure.

**Other information:**

Classification of the preparation and its individual components has drawn on official and authoritative sources as well as independent review by the Chemwatch Classification committee using available literature references.

The SDS is a Hazard Communication tool and should be used to assist in the Risk Assessment. Many factors determine whether the reported Hazards are Risks in the workplace or other settings. Risks may be determined by reference to Exposures Scenarios.

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**For detailed advice on Personal Protective Equipment, refer to the following EU CEN Standards:**

EN 166:	Personal eye-protection.
EN 340:	Protective clothing.
EN 374:	Protective gloves against chemicals and micro-organisms.
EN 13832:	Footwear protecting against chemicals.
EN 133:	Respiratory protective devices.

**Definitions and abbreviations:**

PC—TWA:	Permissible Concentration-Time Weighted Average.
PC—STEL:	Permissible Concentration-Short Term Exposure Limit.
IARC:	International Agency for Research on Cancer.
ACGIH:	American Conference of Governmental Industrial Hygienists.
STEL:	Short Term Exposure Limit.
TEEL:	Temporary Emergency Exposure Limit.
IDLH:	Immediately Dangerous to Life or Health Concentrations.
ES:	Exposure Standard.
OSF:	Odour Safety Factor.
NOAE:	No Observed Adverse Effect Level.
LOAEL:	Lowest Observed Adverse Effect Level.
TLV:	Threshold Limit Value.
LOD:	Limit Of Detection.
OTV:	Odour Threshold Value.
BCF:	BioConcentration Factors.
BEI:	Biological Exposure Index.
AiIC:	Australian Inventory of Industrial Chemicals.
DSL:	Domestic Substances List.
NDSL:	Non-Domestic Substances List.
IECSC:	Inventory of Existing Chemical Substance in China.
EINECS:	European INventory of Existing Commercial chemical Substances.
ELINCS:	European List of Notified Chemical Substances.
NLP:	No-Longer Polymers.
ENCS:	Existing and New Chemical Substances Inventory.
KECI:	Korea Existing Chemicals Inventory.
NZIoC:	New Zealand Inventory of Chemicals.
PICCS:	Philippine Inventory of Chemicals and Chemical Substances.
TSCA:	Toxic Substances Control Act.
TCSI:	Taiwan Chemical Substance Inventory.
INSQ:	Inventario Nacional de Sustancias Químicas.
NCI:	National Chemical Inventory.
FBEPH:	Russian Register of Potentially Hazardous Chemical and Biological Substances.

The contents and format of this SDS are in accordance with EEC Commission Directive 1999/45/EC, 67/548/EC, 1272/2008/EC and EEC Commission Regulation 1907/2006/EC (REACH) Annex II.

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