

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

1.1 Product identifier

Trade name/designation: Eurorooft PU Membrane Adhesive.

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

Identified uses: 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

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

Considered a hazardous mixture according to Reg. (EC) No 1272/2008 and their amendments. Not classified as Dangerous Goods for transport purposes.

Classification according to regulation (EC) No 1272/2008 [CLP] and amendments ⁽¹⁾:

H334 - Respiratory Sensitizer Category 1, H317 - Skin Sensitizer Category 1, H351 - Carcinogenicity Category 2.

Most important adverse effects:

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:

Danger.

Hazard statements:

H334: May cause allergy or asthma symptoms or breathing difficulties if inhaled.
H317: May cause an allergic skin reaction.
H351: Suspected of causing cancer.

Supplementary statements:

EUH204: Contains isocyanates. May produce an allergic reaction.

Precautionary statements – prevention:

P201: Obtain special instructions before use.
P261: Avoid breathing mist/vapours/spray.
P280: Wear protective gloves/protective clothing/eye protection/face protection.

Precautionary statements – response:

P304+P340: IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P308+P313: IF exposed or concerned: Get medical advice/attention.
P321: Specific treatment (see advice on label).

Precautionary statements – storage:

P405: Store locked up.

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

REACH - Art.57-59: The mixture does not contain Substances of Very High Concern (SVHC) at the SDS print date.

3. COMPOSITION AND INFORMATION ABOUT THE COMPONENTS

3.1 Substance

Solvent & VOC free one-part polyurethane adhesive.

3.2 Mixture

| 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 |
|--|--|--|--|
| 1.9016-87-9 2.Not available 3.Not available 4.01-2119457024-46-XXXX | 5-15 | 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 ^[1] |
| 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 this product comes in contact with eyes:</p> <ul style="list-style-type: none"> - Wash out immediately with water. - If irritation continues, seek medical attention. - Removal of contact lenses after an eye injury should only be undertaken by skilled personnel. |
| Skin contact: | <p>If skin or hair contact occurs:</p> <ul style="list-style-type: none"> - Immediately flush body and clothes with large amounts of water, using safety shower if available. - Quickly remove all contaminated clothing, including footwear. - Wash skin and hair with running water. Continue flushing with water until advised to stop by the Poisons Information Centre. - Transport to hospital, or doctor. |
| Inhalation: | <p>If fumes or combustion products are inhaled remove from contaminated area. Lay patient down. Keep warm and rested. Prostheses such as false teeth, which may block airway, should be removed, where possible, prior to initiating first aid procedures. Apply artificial respiration if not breathing, preferably with a demand valve resuscitator, bag-valve mask device, or pocket mask as trained. Perform CPR if necessary. Transport to hospital, or doctor, without delay. 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> |
| Ingestion: | <p>Immediately give a glass of water. First aid is not generally required. If in doubt, contact a Poisons Information Centre or a doctor.</p> |

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 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.

Foam.

Dry chemical powder.

BCF (where regulations permit).

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

Fire-fighting:

Alert Fire Brigade and tell them location and nature of hazard.

Wear full body protective clothing with breathing apparatus.

Prevent, by any means available, spillage from entering drains or water course.

Fire/explosion hazard:

Combustible.

Moderate fire hazard when exposed to heat or flame.

Heated to high temperatures decomposes rapidly generating vapour which pressures and may then rupture containers with release of flammable and highly toxic isocyanate vapour.

Combustion products include:

- Carbon Dioxide (CO₂).
- Isocyanates.
- Hydrogen Cyanide.
- and minor amounts of nitrogen oxides (NO_x).
- other pyrolysis products typical of burning organic material.

May emit corrosive fumes.

When heated at high temperatures many isocyanates decompose rapidly generating a vapour which pressurises containers, possibly to the point of rupture. Release of toxic and/or flammable isocyanate vapours may then occur.

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 materials for containment and cleaning up

Minor spills:

Remove all ignition sources.

Clean up all spills immediately.

Avoid breathing vapours and contact with skin and eyes.

Major spills:

Liquid Isocyanates and high isocyanate vapour concentrations will penetrate seals on self contained breathing apparatus - SCBA should be used inside encapsulating suit where this exposure may occur.

For isocyanate spills of less than 40 litres (2 m²):

- 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.

Moderate hazard.

Clear area of personnel and move upwind.

Alert Fire Brigade and tell them location and nature of hazard.

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:

Avoid all personal contact, including inhalation.

Wear protective clothing when risk of exposure occurs.

Use in a well-ventilated area.

DO NOT allow clothing wet with material to stay in contact with skin

Fire and explosion protection:

See Section 5.

Other information:

For commercial quantities of isocyanates:

Isocyanates should be stored in adequately bunded areas. Nothing else should be kept within the same bunding. Pre-polymers need not be segregated.

- Store in original containers.
- Keep containers securely sealed.
- No smoking, naked lights or ignition sources.

7.2 Conditions for safe storage, including any incompatibilities

Suitable container:

Metal can or drum.
Packaging as recommended by manufacturer.
Check all containers are clearly labelled and free from leaks.

Storage incompatibility:

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.



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

7.3 Specific end use(s)

See Section 1.2.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

| Ingredient | DNELs Exposure Pattern Worker | PNECs Compartment |
|---------------|----------------------------------|----------------------|
| Not available | Not available | Not available |

* Values for general population.

Occupational Exposure Limits (OEL):

Ingredient data:

| Source | Ingredient | Material name | TWA | STEL | Peak | Notes |
|-------------------------------------|--|---|------------------------|------------------------|---------------|-------|
| UK Workplace Exposure Limits (WELs) | Polymeric Diphenylmethane Diisocyanate | Isocyanates, all (as -NCO) except Methyl Isocyanate | 0.02 mg/m ³ | 0.07 mg/m ³ | Not available | Sen |

Emergency limits:

| Ingredient | Material name | TEEL-1 | TEEL-2 | TEEL-3 |
|--|---|------------------------|-----------------------|----------------------|
| Polymeric Diphenylmethane Diisocyanate | Polymethylene Polyphenyl Isocyanate; (Polymeric Diphenylmethane Diisocyanate) | 0.15 mg/m ³ | 3.6 mg/m ³ | 22 mg/m ³ |

| Ingredient | Original IDLH | Revised IDLH |
|--|---------------|---------------|
| Polymeric Diphenylmethane Diisocyanate | Not available | Not available |

8.2 Exposure controls

Appropriate engineering controls: All processes in which isocyanates are used should be enclosed wherever possible. Total enclosure, accompanied by good general ventilation, should be used to keep atmospheric concentrations below the relevant exposure standards. If total enclosure of the process is not feasible, local exhaust ventilation may be necessary. 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 protection:



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.

The selection of suitable gloves does not only depend on the material, but also on further marks of quality which vary from manufacturer to manufacturer. Where the chemical is a preparation of several substances, the resistance of the glove material cannot be calculated in advance and has therefore to be checked prior to the application. The exact break through time for substances has to be obtained from the manufacturer of the protective gloves and has to be observed when making a final choice. Do NOT wear natural rubber (latex gloves). 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. DO NOT use skin cream unless necessary and then use only minimum amount. Isocyanate vapour may be absorbed into skin cream and this increases hazard.

Body protection: See Other Protection below.

Other protection: All employees working with isocyanates must be informed of the hazards from exposure to the contaminant and the precautions necessary to prevent damage to their health. They should be made aware of the need to carry out their work so that as little contamination as possible is produced, and of the importance of the proper use of all safeguards against exposure to themselves and their fellow workers. Adequate training, both in the proper execution of the task and in the use of all associated engineering controls, as well as of any personal protective equipment, is essential.

Overalls.
P.V.C apron.
Barrier cream.

Respiratory protection:

Full face respirator with supplied air.

- 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.

For spraying or operations which might generate aerosols:

Full face respirator with supplied air.

- In certain circumstances, personal protection of the individual employee is necessary. Personal protective devices should be regarded as being supplementary to substitution and engineering control and should not be used in preference to them as they do nothing to eliminate the hazard.
- However, in some situations, minimising exposure to isocyanates by enclosure and ventilation is not possible, and occupational exposure standards may be exceeded, particularly during on-site mixing of paints, spray-painting, foaming and maintenance of machine and ventilation systems. In these situations, air-line respirators or self-contained breathing apparatus complying with the appropriate national standard must be used.
- Organic vapour respirators with particulate pre-filters and powered, air-purifying respirators are NOT suitable.
- Personal protective equipment must be appropriately selected, individually fitted and workers trained in their correct use and maintenance. Personal protective equipment must be regularly checked and maintained to ensure that the worker is being protected.
- Air-line respirators or self-contained breathing apparatus complying with the appropriate national standard should be used during the clean-up of spills and the repair or clean-up of contaminated equipment and similar situations which cause emergency exposures to hazardous atmospheric concentrations of isocyanate.

Environmental exposure controls:

See Section 12.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

| | | | |
|---|----------------|--|-------------------|
| Appearance: | Pale brown | Relative density (Water = 1): | 1.08-1.15 |
| Physical state: | Liquid | Partition coefficient n-octanol/water: | Not available |
| Odour: | Slight | Auto-ignition temperature (°C): | Not available |
| Odour threshold: | Not available | Decomposition temperature: | Not available |
| pH (as supplied): | Not available | Viscosity (cSt): | 6086.957-8695.652 |
| Melting point / freezing point (°C): | Not available | Molecular weight (g/mol): | Not available |
| Initial boiling point and boiling range (°C): | Not available | Taste: | Not available |
| Flash point (°C): | >200 | Explosive properties: | Not available |
| Evaporation rate: | Not available | Oxidising properties: | Not available |
| Flammability: | Not applicable | Surface Tension (dyn/cm or mN/m): | Not available |
| Upper Explosive Limit (%): | Not available | Volatile Component (%vol): | Not available |
| Lower Explosive Limit (%): | Not available | Gas group: | Not available |
| Vapour pressure (kPa): | Not available | pH as a solution (1%): | Not available |
| Solubility in water: | Not available | VOC g/L: | Not available |
| Vapour density (Air = 1): | Not available | | |

9.2 Other information

No data 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: | <p>There is strong evidence to suggest that this material can cause, if inhaled once, very serious, irreversible damage of organs.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>There is strong evidence to suggest that this material can cause, if swallowed once, very serious, irreversible damage of organs.</p> |
| Ingestion: | <p>There is strong evidence to suggest that this material can cause, if swallowed once, very serious, irreversible damage of organs.</p> <p>The material has NOT been classified by EC Directives or other classification systems as "harmful by ingestion". This is because of the lack of corroborating animal or human evidence.</p> |
| Skin contact: | <p>There is strong evidence to suggest that this material, on a single contact with skin, can cause very serious, irreversible damage of organs. 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.</p> <p>There is some evidence to suggest that this material can cause inflammation of the skin on contact in some persons.</p> <p>Open cuts, abraded or irritated skin should not be exposed to this material</p> <p>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.</p> |
| Eye: | <p>Although the liquid is not thought to be an irritant (as classified by EC Directives), direct contact with the eye may produce transient discomfort characterised by tearing or conjunctival redness (as with windburn).</p> |

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.
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. [CCTRADE-Bayer, APMF]
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.

Euroroof Membrane Adhesive:

| Toxicity | Irritation |
|---------------|---------------|
| Not available | Not available |

Polymeric Diphenylmethane Diisocyanate:

| Toxicity | Irritation |
|--|-----------------------------|
| Dermal (rabbit) LD50: >9400 mg/kg ^[2] | Eye (rabbit): 100 mg - mild |
| Inhalation (rat) LC50; 0.49 mg/L4 ^[2] | |
| Oral (rat) LD50; >2000 mg/kg ^[1] | |

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.

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

Euroroof Membrane 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.
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.

| | | | |
|-----------------------------------|---|--------------------------|---|
| 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

Eurorooft Membrane Adhesive:

| End point | Test duration (Hr) | Species | Value | Source |
|---------------|--------------------|---------------|---------------|---------------|
| Not available | Not available | Not available | Not available | Not available |

Polymeric Diphenylmethane Diisocyanate:

| End point | Test duration (Hr) | Species | Value | Source |
|-----------|--------------------|-------------------------------|------------|--------|
| LC50 | 96 | Fish | >1-mg/L | 2 |
| LC50 | 72 | Algae or other aquatic plants | >1-640mg/L | 2 |

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.

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.

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

No data available for all ingredients.

12.3 Bioaccumulative potential

No data available for all ingredients.

12.4 Mobility in soil

No data available for all ingredients.

12.5 Results of PBT and vPvB assessment

Not applicable.

12.6 Other adverse effects

No data available.

13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

| | |
|-------------------------------|--|
| Product / packaging disposal: | Containers may still present a chemical hazard/ danger when empty. Return to supplier for reuse/ recycling if possible. Otherwise: - If container cannot be cleaned sufficiently well to ensure that residuals do not remain or if the container cannot be used to store the same product, then puncture containers, to prevent re-use, and bury at an authorised landfill. Legislation addressing waste disposal requirements may differ by country, state and/ or territory. Each user must refer to laws operating in their area. In some areas, certain wastes must be tracked. 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. DO NOT recycle spilled material. Consult State Land Waste Management Authority for disposal. Neutralise spill material carefully and decontaminate empty containers and spill residues with 10% ammonia solution plus detergent or a proprietary decontaminant prior to disposal. |
| Waste treatment options: | Not available. |
| Sewage disposal options: | Not available. |

14. TRANSPORT INFORMATION

Labels required:

| | |
|-------------------|------|
| Marine pollutant: | No. |
| Hazchem: | N/A. |

Land transport (ADR): Not regulated for transport of dangerous goods

| | | |
|-----------------------------------|---------------------------------|-----|
| 14.1 UN number | N/A | |
| 14.2 UN proper shipping name | N/A | |
| 14.3 Transport hazard class(es) | Class: | N/A |
| | Subrisk: | N/A |
| 14.4 Packing group | N/A | |
| 14.5 Environmental hazard | N/A | |
| 14.6 Special precautions for user | Hazard identification (Kemler): | N/A |
| | Classification code: | N/A |
| | Hazard label: | N/A |
| | Special provisions: | N/A |
| | Limited quantity: | N/A |
| | Tunnel restriction code: | N/A |

Air transport (ICAO-IATA/DGR): Not regulated for transport of dangerous goods

| | | |
|-----------------------------------|---|-----|
| 14.1 UN number | N/A | |
| 14.2 UN proper shipping name | N/A | |
| 14.3 Transport hazard class(es) | ICAO/IATA class: | N/A |
| | ICAO/IATA subrisk: | N/A |
| | ERG code: | N/A |
| 14.4 Packing group | N/A | |
| 14.5 Environmental hazard | N/A | |
| 14.6 Special precautions for user | Special provisions: | N/A |
| | Cargo only packing instruction: | N/A |
| | Cargo only maximum qty/pack: | N/A |
| | Passenger and cargo packing instruction: | N/A |
| | Passenger and cargo maximum qty/pack: | N/A |
| | Passenger and cargo limited qty packing instructions: | N/A |
| | Passenger and cargo limited maximum qty/pack: | N/A |

Sea transport (IMDG-Code/GGVSee): Not regulated for transport of dangerous goods

| | | |
|---------------------------------|---------------|-----|
| 14.1 UN number | N/A | |
| 14.2 UN proper shipping name | N/A | |
| 14.3 Transport hazard class(es) | IMDG class: | N/A |
| | IMDG subrisk: | N/A |

| | | |
|--|---------------------|-----|
| 14.4 Packing group | N/A | |
| 14.5 Environmental hazard | N/A | |
| 14.6 Special precautions for user | EMS number: | N/A |
| | Special provisions: | N/A |
| | Limited quantities: | N/A |

Inland waterways transport (ADN): Not regulated for transport of dangerous goods

| | | |
|--|----------------------|-----|
| 14.1 UN number | N/A | |
| 14.2 UN proper shipping name | N/A | |
| 14.3 Transport hazard class(es) | Class: | N/A |
| | Subrisk: | N/A |
| 14.4 Packing group | N/A | |
| 14.5 Environmental hazard | N/A | |
| 14.6 Special precautions for user | Classification code: | N/A |
| | Special provisions: | N/A |
| | Limited quantity: | N/A |
| | Equipment required: | N/A |
| | Fire cones numbers: | N/A |

14.7 Transport in bulk according to Annex II of MARPOL and the IBC code

Not applicable.

15. REGULATORY INFORMATION

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

Polymeric Diphenylmethane Diisocyanate is found on the following regulatory lists:

Europe European Customs Inventory of Chemical Substances.
European Chemical Agency (ECHA) Classification & Labelling Inventory - Chemwatch Harmonised classification.
European Trade Union Confederation (ETUC) Priority List for REACH Authorisation
GESAMP/EHS Composite List - GESAMP Hazard Profiles.
IMO IBC Code Chapter 17: Summary of minimum requirements.
IMO MARPOL (Annex II) - List of Noxious Liquid Substances Carried in Bulk.
International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs
International FOSFA List of Banned Immediate Previous Cargoes
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) 2015/830; Regulation (EC) No 1272/2008 as updated through ATPs.

15.2 Chemical safety assessment

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

| National Inventory | Status |
|--------------------------------|---|
| Australia – AIIIC: | Yes |
| Canada – DSL: | Yes |
| Canada – NDSL: | No (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 – ARIPS: | 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). |

16. OTHER INFORMATION

Full text Risk and Hazard codes:

| | |
|-------|--|
| H315: | Causes skin irritation. |
| H319: | Causes serious eye irritation. |
| 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.

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. |
| OSF: | Odour Safety Factor. |
| NOAEL: | No Observed Adverse Effect Level. |
| LOAEL: | Lowest Observed Adverse Effect Level. |
| TLV: | Threshold Limit Value. |
| LOD: | Limit of Detection. |
| OTV: | Odour Threshold Value. |
| BCF: | Bio Concentration Factors. |
| BEI: | Biological Exposure Index. |

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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