

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006 and 453/2010 EU REACH

Trade name: epros®silicate resin type W01 Comp. B

Date of print: 16/04/2014

Revision date: 15/04/2014

Version: 2.3 / EN

SECTION 1. Identification of the substance/mixture and of the company/undertaking

1.1 Product identifier: epros®silicate resin type W01 Komp. B

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

“B” component for water glass – polyisocyanate based two-component synthetic resin. The synthetic resin (components “A”+“B”) is used for the lining of sewer pipes and manholes. The application has to be carried out under professional, industrial conditions by persons having proper previous training.

1.3 Details of the supplier of the safety data sheet

Manufacturer/Supplier:

TrelleborgPipe Seals Duisburg GmbH

Street/POB:

Dr.-Alfred-Herrhausen-Allee 36

Postcode/City/Country:

47228 Duisburg/ Germany

E-mail address for a competent person

responsible for the safety data sheet:

technic.epros@trelleborg.com

Phone:

+49 (0) 2065 999-0

1.4 Emergency telephone number

+49 (0) 2065 999-150

SECTION 2. Hazards identification

2.1. Classification of the substance or mixture

2.1.1. Classification according to Regulation (EC) No. 1272/2008 (CLP):

<i>Hazard classes / categories</i>	<i>Hazard statements</i>
Skin Irrit. 2	H315 Causes skin irritation
Skin Sens. 1	H317 May cause an allergic skin reaction
Eye Irrit. 2	H319 Causes serious eye irritation
Acute Tox. 4.	H332 Harmful if inhaled
Resp. Sens. 1	H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled
STOT SE 3	H335 May cause respiratory irritation
Carc. 2	H351 Suspected of causing cancer
STOT RE 2	H373 May cause damage to organs through prolonged or repeated exposure through prolonged or repeated exposure

2.1.2. Classification according to Directive 1999/45/EC:

<i>Classification</i>	<i>R-phrases</i>
Xn Harmful	R20 Harmful by inhalation
Xi Irritant	R36/37/38 Irritating to eyes, respiratory system and skin
Carc. Cat. 3	R40 Limited evidence of a carcinogenic effect
	R42/43 May cause sensitisation by inhalation and skin contact
Xn Harmful	R48/20 Harmful: danger of serious damage to health by prolonged exposure through inhalation

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2.2. Label elements

2.2.1. Labeling according to Regulation (EC) No 1272/2008 [CLP]

Hazard pictograms:



Signal word: Danger

Hazard statements:

H315	Causes skin irritation
H317	May cause an allergic skin reaction
H319	Causes serious eye irritation
H332	Harmful if inhaled
H334	May cause allergy or asthma symptoms or breathing difficulties if inhaled
H335	May cause respiratory irritation
H351	Suspected of causing cancer
H373	May cause damage to organs through prolonged or repeated exposure through prolonged or repeated exposure

Supplemental hazard information (EU):

EUH204	Contains isocyanates. May produce an allergic reaction.
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Precautionary statements:

P260	Do not breathe dust/fume/gas/mist/vapours/spray.
P280	Wear protective gloves/protective clothing/eye protection/face protection.
P285	In case of inadequate ventilation wear respiratory protection.
P302+P352	IF ON SKIN: Wash with plenty of soap and water.
P304+P340	IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
P309+P311	IF exposed or if you feel unwell: Call a POISON CENTER or doctor/physician.

Hazard determining component(s) for labelling: contains: **Diphenylmethan diisocyanate, isomers and homologes (CAS: 9016-87-9); Tris(2-chloro-1-methylethyl) phosphate (CAS: 13674-84-5).**

2.3. Other hazards

The mixture does not meet persistent (P) and bioaccumulation (B) criteria, but it meets the criteria for toxicity (T).

The mixture is not PBT and vPvB.

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SECTION 3. Composition/information on ingredients

3.2. Mixtures

Chemical characterization

Name	EC-Nr.	CAS-Nr.	REACH Reg. Nr.	Content (%)	Classification according to 67/548/EEC		Classification according to 1272/2008 (CLP)	
					Hazard symbol(s) ¹	R-phrased(s) ¹	Hazard categories ¹	H-phrased(s) ¹
Polymer MDI ²	(polymer)	9016-87-9	(polymer)	>60	Xn Xi Carc. 3 Xn	R20 R36/37/38 R40 R42/43 R48/20	Acute tox. 4 Skin irrit. 2 Eye irrit. 2 Resp. sens. 1 Skin sens. 1 Carc. 2 STOT SE 3 STOT RE 2	H332 H315 H319 H334 H317 H351 H335 H373
Tris(2-chloro-1-methyl-ethyl) phosphate (TCPP)	237-158-7	13674-84-5	³	>10	Xn	R22	Acute tox. 4	H302
4,4'-Methylenediphenyl diisocyanate, oligomeric reaction products with 2,4'-diisocyanato-diphenylmethane, 2,2'-methylenediphenyl diisocyanate and α-hydro-ω-hydroxypoly [oxy(methyl-1,2-ethanediyl)]	500-410-4	15885-25-7	⁴	≤10	Xn Xi Carc. 3 Xn	R20 R36/37/38 R40 R42/43 R48/20	Acute Tox. 4 Skin Irrit. 2 Eye Irrit. 2 Resp. Sens. 1 Skin Sens. 1 Carc. 2 STOT SE 3 STOT RE 2	H332 H315 H319 H334 H317 H351 H335 H373
Triisobutylphosphate	204-798-3	126-71-6	⁵	≤10	Xi	R43 R52/53	Skin sens. 1 Aquat. chron. 3	H317 H412

¹ – See Section 16 for the full text of the abbreviations declared above.

² – The mixture contains <25% 4,4'-MDI (CAS: 101-68-8).

³ – 01-2119486772-26-0000

⁴ - We have not received the data from our suppliers.

⁵ - 01-2119957118-32-0003

SECTION 4. First aid measures

4.1. Description of first aid measures

Immediately remove contaminated clothing.

If inhaled: Keep patient calm, remove to fresh air, seek medical attention.

On skin contact: After contact with skin, wash immediately with plenty of water. Consult a doctor if skin irritation persists.

On contact with eyes: Immediately wash affected eyes for at least 15 minutes under running water with eyelids held open, consult an eye specialist.

On ingestion: Immediately rinse mouth and then drink plenty of water, do not induce vomiting, seek medical attention.

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006 and 453/2010 EU REACH

Trade name: **epros[®]silicate resin type W01 Comp. B**

Date of print: 16/04/2014

Revision date: 15/04/2014

Version: 2.3 / EN

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

Symptoms: tightness in the chest, coughing, difficulty breathing.

Overexposure can cause: Attacks, depression, hypoxemia, tremor.

Hazards: Symptoms can appear later.

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

Treatment: Treat according to symptoms (decontamination, vital functions), no known specific antidote, administer corticosteroid dose aerosol to prevent pulmonary oedema.

SECTION 5. Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media: dry powder, carbon dioxide, alcohol-resistant foam, water spray

5.2. Special hazards arising from the substance or mixture

Carbon dioxide, carbon monoxide, hydrogen cyanide, nitrogen oxides, isocyanate.

The substances/groups of substances mentioned can be released in case of fire.

5.3. Advice for firefighter

Special protective equipment: Wear self-contained breathing apparatus and chemical-protective clothing.

Further information: Keep containers cool by spraying with water if exposed to fire. Dispose of fire debris and contaminated extinguishing water in accordance with official regulations.

SECTION 6. Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Use personal protective clothing. Ensure adequate ventilation. Use breathing apparatus if exposed to vapours/dust/aerosol.

6.2. Environmental precautions

Do not empty into drains. Do not discharge into the subsoil/soil.

6.3. Methods and material for containment and cleaning up

For large amounts: Pump off product.

For residues: Pick up with absorbent material (e.g. sand, sawdust, general-purpose binder). Dispose of absorbed material in accordance with regulations.

Neutralize with a solution of 5 - 10 % Sodium carbonate, 0,2 - 2 % detergents and 90 - 95 % water.

6.4. Reference to other sections

Information regarding exposure controls/personal protection and disposal considerations can be found in section 8 and 13.

SECTION 7. Handling and storage

7.1. Precautions for safe handling

Provide suitable exhaust ventilation at the processing machines. Ensure thorough ventilation of stores and work areas. Avoid aerosol formation. When handling heated product, vapours of the product should be ventilated, and respiratory protection

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Revision date: 15/04/2014

Version: 2.3 / EN

used. Wear respiratory protection when spraying. Danger of bursting when sealed gastight. Protect against moisture. Products freshly manufactured from isocyanates can contain incompletely reacted isocyanates and other dangerous substances.

7.2. Conditions for safe storage, including any incompatibilities

Keep away from water. Segregate from foods and animal feeds. Segregate from acids and bases.

Suitable materials for containers: High density polyethylene (HDPE), Low density polyethylene (LDPE), Steel

Unsuitable materials for containers: paper, board.

Further information on storage conditions: Keep container tightly closed in a cool, well-ventilated place. Protect against moisture. Formation of CO₂ and build up of pressure possible. Danger of bursting when sealed gastight.

Storage class VCI: (10) Flammable liquids (if not LGK 3 A or 3 B).

7.3. Specific end use(s)

For the relevant identified use(s) listed in Section 1 the advice mentioned in this section 7 is to be observed.

SECTION 8. Exposure controls/personal protection

8.1. Control parameters

A workplace exposure level (WEL) of 0.02mg/m³ for total isocyanates (as NCO) as an 8 hour TWA, and a short term WEL (15 min) of 0.07 mg/m³ have been assigned in the United Kingdom. A BMGV for isocyanates, based on the measurement of urinary diamines, has been set at 1 µmol diamine/mol creatinine. (<http://www.hse.gov.uk/foi/internalops/sectors/manuf/03-10-07.htm>)

8.2. Exposure controls

Respiratory protection: Respiratory protection in case of vapour/aerosol release. Combination filter for gases/vapours of organic, inorganic, acid inorganic particles (f. e. EN 14387 Type ABEK).

Hand protection: Chemical resistant protective gloves (EN 374)

Suitable materials also with prolonged, direct contact (Recommended: Protective index 6, corresponding > 480 minutes of permeation time according to EN 374):

butyl rubber (butyl) - 0.7 mm coating thickness

nitrile rubber (NBR) - 0.4 mm coating thickness

chloroprene rubber (CR) - 0.5 mm coating thickness

Unsuitable materials

polyvinylchloride (PVC) - 0.7 mm coating thickness

Polyethylene-Laminate (PE laminate) - ca. 0.1 mm coating thickness

Eye protection: Safety glasses with side-shields (frame goggles) (e.g. EN 166)

Body protection: safety shoes (e.g. according to EN 20346)

General safety and hygiene measures:

Do not breathe vapour/spray. With products freshly manufactured from isocyanates body protection and chemical resistant protective gloves is recommended. Wearing of closed work clothing is required additionally to the stated personal protection equipment. No eating, drinking, smoking or tobacco use at the place of work. Take off immediately all contaminated clothing. Hands and/or face should be washed before breaks and at the end of the shift. At the end of the shift the skin should be cleaned and skin-care agents applied.

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Trade name: **epros[®]silicate resin type W01 Comp. B**

Date of print: 16/04/2014

Revision date: 15/04/2014

Version: 2.3 / EN

SECTION 9. Physical and chemical properties

9.1. Information on basic physical and chemical properties

- | | |
|-------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|
| a) Appearance: | liquid, dark-brown |
| b) Odour: | not applicable |
| c) Odour threshold: | no data |
| d) pH-value: | not applicable |
| e) Melting point/freezing point: | no data |
| f) Boiling range: | no data |
| g) Flash point: | >200 °C MDI |
| h) Evaporation rate: | no data |
| i) Flammability (solid, gaseous): | no data |
| j) Ignitable, explosive range: | no data |
| k) Vapour pressure: | < 0.00001 mbar (at 20°C) |
| l) Vapour density: | no data |
| m) Density: | 1,19±0,02 g/cm ³ (at 25°C) |
| n) Solubility: | Reacts with water at the border area with slow CO ₂ appearance into non soluble, high melting point or not melting polyurea |
| o) Partition coefficient n-octanol/water: | not applicable |
| p) Self-ignition temperature: | no data |
| q) Decomposition temperature: | no data |
| r) Viscosity: | 280 - 340 mPa.s (at 20°C) |
| s) Explosive properties: | no data |
| t) Oxidising properties: | no data |

9.2. Other information

Not applicable.

SECTION 10. Stability and reactivity

10.1. Reactivity

No corrosive effect on metal.

10.2. Chemical stability

The product is stable if stored and handled as prescribed/indicated.

10.3. Possibility of hazardous reactions

Dangerous reactions: On contact with water, gaseous decomposition products are formed, causing overpressure in tightly closed containers. Risk of bursting. Reactions with substances containing active hydrogen.

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Version: 2.3 / EN

10.4. Conditions to avoid

Temperature: > 90 °C

Thermal decomposition: > 230 °C

10.5. Incompatible materials

Substances to avoid: acids, alcohols, amines, water, alkalines.

10.6. Hazardous decomposition products

No hazardous decomposition products if stored and handled as prescribed/indicated.

SECTION 11. Toxicological information

Information is related to Polymer MDI if no other is mentioned.

11.1. Information on toxicological effects

Acute toxicity – oral: Harmful

Rats LD50 = 630-2000 mg/kg (Guideline 92/69/EEC, B.1)
Tris(2-chlor-1-methylethyl)phosphat CAS: 13674-84-5
Rats LD50 > 5000 mg/kg, EPA OPP 81-1
Triisobutyl phosphate CAS: 126-71-6

Acute toxicity – vapour inhalation: Harmful

Rats LC50 = 0.49 mg/l (4 h)
Rats LC50 = >5,14 g/m³ (4 h), dust and vapour, OECD 403
Triisobutyl phosphate CAS: 126-71-6

Acute toxicity – dermal: Not classified. Based on available data, the classification criteria are not met.

Rabbit LD50 > 9400 mg/kg bw (24 h)
Rabbit LD50 > 5000 mg/kg bw, EPA OPP 81-2
Triisobutyl phosphate CAS: 126-71-6

11.2. Irritation/Corrosion: Summarized the results of the studies together with human occupational case reports support the official classification.

Skin corrosion/Skin irritation: Irritating

Irritating in rabbits.

Eye damage/Irritation: Irritating

Not irritating in rabbits.

(Read-across based on 4,4-Methylenediphenyldiisocyanate – CAS 101-68-8.)

Summarized the available animal data would not support classification of MDI as an eye irritant. But together with human occupational case reports in which symptoms of eye irritation were reported the legal classification as eye irritant should be applied.

11.3. Sensitisation: Animal data as well as studies in humans provide evidence of possible skin sensitisation, and of respiratory sensitisation due to MDI. Animal studies indicate that MDI is a strong allergen. Human case reports describe the occurrence of allergic contact dermatitis due to MDI exposure.

Respiratory sensitisation: respiratory sensitizers

Skin sensitisation: skin sensitizers
Sensitizing in rats.

11.4. Mutagenicity: Not classified. Based on available data, the classification criteria are not met.

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Revision date: 15/04/2014

Version: 2.3 / EN

11.5. Carcinogenicity: Carc. Cat. 2

Rats (inhalation) NOAEC = 0.2 mg/ m³ (Toxicity)
NOAEC = 1 mg/m³ (Carcinogenicity)
LOAEC = 6 mg/m³ (Carcinogenicity)

11.6. Reproductive toxicity: Not classified. Based on available data, the classification criteria are not met.

Effects on fertility: No fertility nor multigeneration studies are available for MDI.

Developmental toxicity: MDI is not a developmental toxicant.

Rats NOAEL = 4 mg/m³ (maternal and foetal toxicity)
NOAEL = 12 mg/m³ (teratogenicity)

11.7. STOT-single exposure: Harmful

(Read-across based on 4,4-Methylenediphenyldiisocyanate – CAS 101-68-8)

11.8. STOT-repeated exposure: Harmful

Rats (inhalation) NOAEC = 0.2 mg/m³ (2 years)
LOAEC = 1.0 mg/m³

11.9. Aspiration hazard: Not classified due to lack of data.

11.10. Toxicokinetics (absorption, metabolism, distribution and elimination)

(Read-across based on 4,4-Methylenediphenyldiisocyanate – CAS 101-68-8)

Oral exposure: No information is available on the toxicokinetics of MDI following oral exposure in animals.

Dermal exposure: No radioactivity was absorbed through human skin during a 54h continuous exposure, and only small amounts (maximally 0.23% of applied dose) were absorbed through rat and guinea pig skin. The majority of applied MDI equivalents were found to be associated with the skin.

Inhalation exposure: With respect to inhalation exposure, there is good and reliable data regarding distribution/excretion in experimental animals.

Most of the systemically available dose was excreted via bile, and a slightly lower amount via urine.

11.11. Genetic toxicity: Not classified. Based on available data, the classification criteria are not met.

SECTION 12. Ecological information

Information is related to Polymer MDI if no other is mentioned

12.1. Toxicity

12.1.1. Aquatic toxicity

Short-term toxicity to fish:

Freshwater fish LC50 = 1000 mg/l (96 h)

Fish – *Leuciscus idus*: acute LC50 = 17,8-21,5 mg/l (96 h) (Triisobutyl phosphate CAS: 126-71-6)

Long-term toxicity to fish: Data waiving. In accordance with column 2 of REACH Annex IX the long-term toxicity testing on fish shall be proposed if the chemical safety assessment according to Annex I indicates the need to investigate further the effects on aquatic organisms. MDI is rapidly hydrolysed in aqueous solution. However, MDI is hydrophobic and poorly soluble in water and thus the heterogeneous reaction with water or soil is less rapid. The major product of such a reaction is a solid, insoluble polyurea. All methylenediphenyl isocyanates are produced in closed systems. Formation of insoluble polyurea due to the presence of water would cause abrasion problems and blockage of valves and pipes. Therefore, production plant releases of MDI to effluents are expected to be non-existent. Releases to soil and sediment are also expected

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006 and 453/2010 EU REACH

Trade name: epros[®]silicate resin type W01 Comp. B

Date of print: 16/04/2014

Revision date: 15/04/2014

Version: 2.3 / EN

to be negligible. Furthermore, the EUSES program has been used to calculate PEC values based on measured emission data provided by MDI producers and processors, including polyurethane producers. The corresponding PEC/PNEC ratios would be less than 1. Taking into account the scientific and exposure arguments, it appears appropriate to waive the long-term fish/plant/soil and sediment toxicity studies.

Short-term toxicity to aquatic invertebrates:

Freshwater invertebrates EC50/LC50 = >1000 mg/l (24 h)

Daphnia – Daphnia magna: acute EC50 = 11 mg/l (48 h), DIN 38412, part 11 (Triisobutyl phosphate CAS: 126-71-6)

Long-term toxicity to aquatic invertebrates:

Freshwater invertebrates EC10/LC10 or NOEC = 10 mg/l (21 day)

Toxicity to aquatic algae and cyanobacteria:

Freshwater algae EC50/LC50 >1640 mg/l (72 h)

Alga – *Desmodesmus subspicatus*: acute IC50 = 34,1 mg/l (72 h), DIN 38412, part 9 (Triisobutyl phosphate CAS: 126-71-6)

Alga – *Desmodesmus subspicatus*: acute IC50 = 33,2 mg/l (72 h), DIN 38412, part 9 (Triisobutyl phosphate CAS: 126-71-6)

Bacteria – activated sludge: chronic EC50 = 37,2 mg/l (28 days), OECD 301B Ready Biodegradability – CO₂ Evolution Test (Triisobutyl phosphate CAS: 126-71-6)

Toxicity to aquatic plants other than algae: Data waiving. Not required by REACH annexes. However, a mesocosm study with PMDI exists in which the toxicity towards macrophytes (*Potamogeton crispus* and *Zannichellia palustris*) was assessed. No toxicity was observed at a loading of 1000 and 10,000 mg/l, approximately 100% of the substance was found in the sediment as hardened material.

Toxicity to microorganisms:

Microorganisms EC50/LC50 >100 mg/l (3 h)

Toxicity to other aquatic organisms: This information is not available, but not required under REACH.

12.1.2. Sediment toxicity: Data waiving. Annex X states that this study need not be conducted if the chemical safety assessment does not indicate a need to further investigate the effects on sediment organisms. MDI is rapidly hydrolysed in aqueous solution. However, MDI is hydrophobic and poorly soluble in water and thus the heterogeneous reaction with water or soil is less rapid. The major product of such a reaction is insoluble polyurea. In the production of PMDI the formation of insoluble polyurea would cause abrasion problems and blockage of valves and pipes and therefore releases of PMDI to effluents are expected to be non-existent. Since production is performed in closed systems, releases to soil and sediment are also expected to be negligible. Furthermore, the EUSES program has been used to calculate PEC values based on measured emission data provided by PMDI producers and processors, including polyurethane producers. The corresponding PEC/PNEC ratios would be extremely small and less than 1. Taking into account the scientific and exposure arguments, it appears appropriate to waive the long-term fish/plant/soil and sediment toxicity studies.

12.1.3. Terrestrial toxicity

Toxicity to soil macroorganisms except arthropods:

Eisenia fetida EC50 > 1000 mg/kg soil dw (14 days)

Toxicity to terrestrial arthropods: Data waiving. Not required by REACH annexes.

Toxicity to terrestrial plants:

Avena sativa EC50 > 1000 mg/kg soil dw (14 days)

Lactuca sativa EC50 > 1000 mg/kg soil dw (14 days)

Toxicity to soil microorganisms: Data waiving. Annex IX states that this study need not be conducted if direct or indirect exposure to soil is unlikely. MDI is rapidly hydrolysed in aqueous solution. However, MDI is hydrophobic and poorly soluble in water and thus the heterogeneous reaction with water or soil is less rapid. The major product of such a reaction is insoluble

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006 and 453/2010 EU REACH

Trade name: epros[®]silicate resin type W01 Comp. B

Date of print: 16/04/2014

Revision date: 15/04/2014

Version: 2.3 / EN

polyurea. In the production of PMDI the formation of insoluble polyurea would cause abrasion problems and blockage of valves and pipes and therefore releases of PMDI to effluents are expected to be non-existent. Since production is performed in closed systems, releases to soil and sediment are also expected to be negligible. Furthermore, the EUSES program has been used to calculate PEC values based on measured emission data provided by PMDI producers and processors, including polyurethane producers. The corresponding PEC/PNEC ratios would be extremely small and less than 1. Taking into account the scientific and exposure arguments, it appears appropriate to waive the long-term fish/plant/soil and sediment toxicity studies.

Toxicity to birds and mammals: Data waiving. Annex X states that this study needs to be considered taking into account the mammalian dataset that is usually available. Toxicity data in rats and dogs show no overt toxicity by the oral route. Oral PMDI to rats showed the LD50 to be in excess of 10,000 mg/kg body weight. Ingested PMDI forms mainly inert polyureas. Exposure to birds is not expected. There is no reason to suppose that PMDI will show significant oral toxicity to birds. Therefore no tests are deemed necessary.

Toxicity to other above-ground organisms: Data waiving. Not required by REACH annexes.

12.1.4 Conclusion on classification:

Hazardous to the aquatic environment (acute): Not classified. (EC/LC50 for fish, invertebrates and algae > 1000 mg/l)

Hazardous to the aquatic environment (chronic): Not classified. (NOEC for algae >1640 mg/l, NOEC for invertebrates > 10 mg/l)

12.2. Persistence and degradability

Phototransformation in air:

Half-life (DT50): 0.92 day

(Read-across based on 4,4-Methylenediphenyldiisocyanate – CAS 101-68-8)

Hydrolysis: MDI reacts with water to form predominantly inert polyurea.

Half-life (DT50): 20 h (at 25°C)

Hydrolysis rate constant: 0.5-1h

(Read-across based on Oligomer MDI – CAS 32055-14-4)

Phototransformation in water and soil: This information is not available.

Biodegradation in water: Under test conditions no biodegradation observed.

Biodegradation in water and sediment: Data waiving. Annex IX states that this study need not be conducted if direct or indirect exposure to water/sediment is unlikely. MDI is rapidly hydrolysed in aqueous solution. However, MDI is hydrophobic and poorly soluble in water and thus the heterogeneous reaction with water or soil is less rapid. The major product of such a reaction is insoluble polyurea. In the production of PMDI the formation of insoluble polyurea would cause abrasion problems and blockage of valves and pipes and therefore releases of PMDI to effluents are expected to be non-existent. Since production is performed in closed systems, releases to soil and sediment are also expected to be negligible. Furthermore, the EUSES program has been used to calculate PEC values based on measured emission data provided by PMDI producers and processors, including polyurethane producers. The corresponding PEC/PNEC ratios would be extremely small and less than 1. Taking into account the scientific and exposure arguments, it appears appropriate to waive the long-term fish/plant/soil and sediment toxicity studies.

Biodegradation in soil: Data waiving. See at Biodegradation in water and sediment.

12.3. Bioaccumulative potential: Data waiving. Bioaccumulation study on MDI is waived because exposure to aquatic compartment is unlikely.

12.4. Mobility in soil:

Adsorption/desorption: data waiver. According to Annex VIII the study need not be done if the substance degrades rapidly. MDI is rapidly hydrolysed in aqueous solution. However, MDI is hydrophobic and poorly soluble in water and thus the

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Trade name: epros[®]silicate resin type W01 Comp. B

Date of print: 16/04/2014

Revision date: 15/04/2014

Version: 2.3 / EN

heterogeneous reaction with water or soil is less rapid. The major product of such a reaction is insoluble polyurea. In the production of PMDI the formation of insoluble polyurea would cause abrasion problems and blockage of valves and pipes and therefore releases of PMDI to effluents are expected to be non-existent. Since production is performed in closed systems, releases to soil and sediment are also expected to be negligible. Furthermore, the EUSES program has been used to calculate PEC values based on measured emission data provided by PMDI producers and processors, including polyurethane producers. The corresponding PEC/PNEC ratios would be extremely small and less than 1. Taking into account the scientific and exposure arguments, it appears appropriate to waive the long-term fish/plant/soil and sediment toxicity studies.

12.5. Results of PBT and vPvB assessment:

(Read-across based on 4,4-methylenediphenyldiisocyanate – CAS 101-68-8)

Conclusion for the P criterion: The results from the biodegradation test indicate that PMDI is not biodegradable. Based on experimental hydrolysis and indirect photolysis half-lives, PMDI is not considered to be persistent in the environment and is identified as not P. Based on the justification in the category approach, it is assumed that all MDI analogues included in the category are not P.

Conclusion for the B criterion: Although MDI has a high measured log Kow value (4.51), a full bioaccumulation test with 4,4'-MDI indicated that the bioaccumulation potential is low. Due to the fast hydrolysis, exposure of the environment to the substance is unlikely or very low, there is no potential for significant bioaccumulation possible. Hence, 4,4'-MDI does not fulfil the requirements for the B criterion and is identified as not B. Based on the justification in the category approach, it is assumed that all MDI analogues included in the category are not B.

Conclusion for the T criterion: The concentrations tested were far above the water solubility of the MDI substances (7.5 mg/l). However, the water solubility limit of MDI is far above the criteria for T and on the basis of aquatic toxicity tests MDI is identified as not T. However, according to Annex I of 67/548/EEC MDI is classified as Xn, R48, which automatically triggers a T. Based on this classification MDI is identified as T.

12.6. Other adverse effects: It is not expected that PMDI has an effect on global warming, ozone depletion in the stratosphere or ozone formation in the troposphere.

SECTION 13. Disposal considerations

13.1. Waste treatment methods: The products becoming useless and the contaminated containers not suitable for product storage must be handled as hazardous waste in accordance with EU and regional hazardous waste regulations.
European Waste Catalogue code: 08 05 01

13.1.1. Product / Packaging disposal: Contaminated packaging should be emptied as far as possible; than it can be passed on for recycling after being thoroughly cleaned. Wrappings cleaned from contamination with suitable cleaning process (e.g. by steaming, treating with washing fluid, etc.) must be considered as non hazardous waste.

13.1.2. Waste treatment options: Incinerate in suitable incineration plant, observing local authority regulations.

SECTION 14. Transport information

Land transport (ADR/RID/GGVSE)

Sea transport (IMDG-Code/GGVSee)

Air transport (ICAO-IATA/DGR)

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006 and 453/2010 EU REACH

Trade name: epros[®]silicate resin type W01 Comp. B

Date of print: 16/04/2014

Revision date: 15/04/2014

Version: 2.3 / EN

14.1. UN number:	Not dangerous goods
14.2. UN proper shipping name:	Not dangerous goods
14.3. Transport hazard class(es):	Not dangerous goods
14.4. Packaging group:	Not dangerous goods
14.5. Environmental hazards:	Marine pollutant: no
14.6. Special precautions for users: EmS number:	Not dangerous goods
14.7. Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code:	Not relevant.

SECTION 15. Regulatory information

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

15.1.1 **Information regarding relevant Community safety, health and environmental provisions:** Polymeric MDI is not listed in Annex I of Directive 96/82/EC (Seveso II).

15.1.2. EU regulations

- COUNCIL DIRECTIVE of 27 June 1967 on the approximation of laws, regulations and administrative provisions relating to the classification, packaging and labelling of dangerous substances (67/548/EEC).
- Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006.
- REGULATION (EC) No 1907/2006 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), establishing a European Chemicals Agency, amending Directive 1999/45/EC and repealing Council Regulation (EEC) No 793/93 and Commission Regulation (EC) No 1488/94 as well as Council Directive 76/769/EEC and Commission Directives 91/155/EEC, 93/67/EEC, 93/105/EC and 2000/21/EC.
- Council Directive 96/82/EC of 9 December 1996 on the control of major-accident hazards involving dangerous substances.
- Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain Directives.
- International Chemical Safety Cards (WHO/IPCS/ILO)
- ISOPA guidelines (www.isopa.org)
- MDI&TDI Safety, Health and Environment, John Wiley & Sons Ltd. 2003
- ESIS - European Chemical Substances Information System (<http://ecb.jrc.ec.europa.eu/esis>)

15.1.3. National regulations

Carc. Cat 3: Category 3: Substances which cause concern for man owing to possible carcinogenic effects but in respect of which the available information is not adequate for making a satisfactory assessment.

Based on the existing data, classification according to a causal relationship between human exposure to the substance and impaired fertility is not possible.

Based on the existing data, classification according to a causal relationship between human exposure to the substance and mutagenicity is not possible.

15.2. Chemical Safety Assessment: In accordance with REACH Chemical Safety Assessment has not been carried out for the substance.

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006 and 453/2010 EU REACH

Trade name: **epros[®]silicate resin type W01 Comp. B**

Date of print: 16/04/2014

Revision date: 15/04/2014

Version: 2.3 / EN

SECTION 16. Other information

The information given corresponds with our actual knowledge and experience. This information is meant to describe our product in view of possible safety requirements.

16.1. Indication of changes: This version replaces all previous versions.

16.2. Abbreviations and acronyms:

bw: bodyweight Carc.:

Carcinogenicity

CAS number: Chemical Abstracts Service number

CLP: Classification Labelling Packaging Regulation

CSR: Chemical Safety Report

DNEL: Derived No Effect Level

dw: dry weight

EC: European Commission

EC number: EINECS and ELINCS number

EC50: Half maximal effective concentration

EINECS: European Inventory of Existing Commercial Chemical Substances

ELINCS: European List of Notified Chemical Substances

LC50: Lethal concentration, 50 %

LD50: Median Lethal dose

LOAEC: Lowest Observed Adverse Effect Concentration

MDI: Methylene diphenyl diisocyanate

NOAEC: No Observed Adverse Effect Concentration

NOEC: No Observed Effect Concentration

PBT: Persistent, Bioaccumulative and Toxic

P-MDI: Polymethylene polyphenyl poliisocyanate

PNEC: Predicted No Effect Concentration

REACH: The Registration, Evaluation, Authorisation and Restriction of Chemicals

STOT: Specific Target Organ Toxicity

STOT SE: Specific target organ toxicity — single exposure

STOT RE: Specific target organ toxicity — repeated exposure

TCCP: Tris(2-chloro-1-methyl-ethyl) phosphate

vPvB: Very Persistent and Very Bioaccumulative

16.3. Key literature references and sources for data: safety data sheets, received from the raw materials suppliers.

16.4. Full text of abbreviations

Hazard symbol(s)

Xn	Harmful
Xi	Irritant
Carc.	Carcinogenic

R-Phrases

R20	Harmful by inhalation
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Date of print: 16/04/2014

Revision date: 15/04/2014

Version: 2.3 / EN

R22	Harmful if swallowed
R36/37/38	Irritating to eyes, respiratory system and skin
R40	Limited evidence of a carcinogenic effect
R43	May cause sensitisation by skin contact
R42/43	May cause sensitisation by inhalation and skin contact
R48/20	Harmful: danger of serious damage to health by prolonged exposure through inhalation R52/53 Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment

H-Phrases

H302	Harmful if swallowed
H315	Causes skin irritation
H317	May cause an allergic skin reaction
H319	Causes serious eye irritation
H332	Harmful if inhaled
H334	May cause allergy or asthma symptoms or breathing difficulties if inhaled
H335	May cause respiratory irritation
H351	Suspected of causing cancer
H373	May cause damage to organs through prolonged or repeated exposure
H412	Harmful to aquatic life with long lasting effects

Supplemental hazard information (EU):

EUH204 Contains isocyanates. May produce an allergic reaction.

P- Phrases

P260	Do not breathe dust/fume/gas/mist/vapours/spray.
P280	Wear protective gloves/protective clothing/eye protection/face protection.
P285	In case of inadequate ventilation wear respiratory protection.
P302+P352	IF ON SKIN: Wash with plenty of soap and water.
P304+P340	IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
P309+P311	IF exposed or if you feel unwell: Call a POISON CENTER or doctor/physician.

Hazard classes

Acute Tox.	Acute Toxicity
Aquat. chron.	Hazardous to the aquatic environment
Carc.	Carcinogenicity
Eye irrit.	Serious eye irritation
Resp. Sens.	Respiratory sensitization
Skin Irrit.	Skin irritation
Skin Sens.	Skin sensitization
STOT RE	Specific target organ toxicity – repeated exposure
STOT SE	Specific target organ toxicity – single exposure