Silicate Resin 3P S1

Standard (Comp. B)

according to Regulation (EC) No. 1907/2006 and Regulation (EU) 2015/830

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

1.1 Product identifier

Fluvius Silicate Resin-3P Type S1 Standard (Comp. 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

Company	Fluvius GmbH
Street/POB	Schiessstrasse 56
Postcode/City/Country	D-40549 Düsseldorf
Phone	+49 (0) 211-691 682-0
Telefax	+49 (0) 211-691 682-19
E-mail	info@fluvius.de

1.4 Emergency telephone number

Medical emergency information in case of intoxication
Giftinformationszentrum (GIZ) Mainz

Emergency telephone number	+49 (0) 6131 19240 (Advice in German or English)

2. Hazards identification

2.1 Classification of the substance or mixture

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

Hazard classes	Hazard statements
Skin Irrit. 2	H315 Causes skin irritation.
Skin Sens. 1B	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 of 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: respiratory system, inhalation.

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 of 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: respiratory system, inhalation.

Silicate Resin 3P S1

Standard (Comp. B)

according to Regulation (EC) No. 1907/2006 and Regulation (EU) 2015/830

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

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 or vPvB.

3. Composition/information on ingredients

Mixtures / Chemical characterization

Name	EC-No.	CAS-No.	REACH-No.	Content (%)	Classification according to Regulation (EG) No. 1272/2008 (CLP)	
					Hazard categories [1]	H-phrase(s) [1]
Isocyanic acid, polymethylen-epolyphenylene ester (Polymeric MDI)[2]	(polymer)	9016-87-9	(polymer)	>60	Acute Tox. 4 Skin Irrit. 2 Eye Irrit. 2 Resp. Sens. 1 Skin Sens. 1B 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	Acute Tox. 4	H302
Phenol, isopropylated, phosphate (3:1)[4]	273-066-3	68937-41-7	[5]	<2,5	Repr. 2 STOT RE 2 Aquatic Chronic 2	H361 H373 H411
Hexamethylene-1,6-diisocyanate homopolymer	500-060-2	28182-81-2	[6]	≤2	Acute Tox. 4 Skin Sens. 1 STOT SE 3	H332 H317 H335

[1] See Section 16 for the full text of the abbreviations declared above.
[2] Contains <25% 4,4'-MDI (4,4'-methylenediphenyl diisocyanate)(CAS: 101-68-8).
[3] 01-2119486772-26-XXXX
[4] The mixture contains <1% Triphenyl phosphate (CAS: 115-86-6).
[5] We have still not received the data from our suppliers.
[6] 01-2119488934-20-XXXX

Silicate Resin 3P S1

Standard (Comp. B)

according to Regulation (EC) No. 1907/2006 and Regulation (EU) 2015/830

4. First aid measures

4.1 Description of first aid measures

General advice	Soiled, fairly soaked clothing and shoes must be immediately removed.
In case of inhalation	If inhaled, remove to fresh air. If not breathing, give artificial respiration. Get medical attention immediately.
In case of skin contact	In the event of contact with the skin, preferably wash alternately with a cleanser based on polyethylene glycol and with plenty of warm water and soap. Consult a doctor in the event of a skin reaction. Wash the less clothing before reuse. Clean shoes thoroughly before reuse.
In case of eye contact	Hold the eyes open and rinse with water for a sufficiently long period of time (at least 10 minutes). Get medical attention immediately.
In case of ingestion	DO NOT induce the patient to vomit, medical advice is required. Never give anything by mouth to an unconscious person. Provided the patient is conscious, wash out mouth with water.
Information to physician	The product irritates the respiratory tract and may trigger sensitisation of the skin and respiratory tract. Treatment of acute irritation or bronchial constriction is primarily symptomatic. Following severe exposure the patient should be kept under medical review for at least 48 hours.

4.2 Most important symptoms and effects, both acute and delayed

Headache, nausea, shortness of breath, sore throat, redness on the skin. Repeated or prolonged contact may cause skin sensitization. Repeated or prolonged inhalation exposure may cause asthma.

4.3 Indication of any immediate medical attention and special treatment needed

Depending on the degree of exposure, periodic medical examination is suggested.

5. Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media	Foam, CO^2 or dry powder. Water spray may be used if no other available and then in copious quantities.
Unsuitable extinguishing media	High volume water jet.

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

Reaction between water and hot isocyanate may be vigorous. Prevent washings from entering water courses, keep fire exposed containers cool by spraying with water.

Special protective equipment	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode. Safety boots, gloves, safety helmet and protective clothing should be worn.
Further information	In the event of fire and/or explosion do not breathe fumes. Fire in vicinity poses risk of pressure build-up and rupture. Containers at risk from fire should be cooled with water and, if possible, removed from the danger area. Due to reaction with water producing CO^2 gas, a hazardous build-up of pressure could result if contaminated containers are re-sealed. Containers may burst if overheated.

Silicate Resin 3P S1

Standard (Comp. B)

according to Regulation (EC) No. 1907/2006 and Regulation (EU) 2015/830

6. Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Immediately contact emergency personnel. Evacuate the area. Keep upwind to avoid inhalation of vapours. Clean-up should only be performed by trained personnel. Keep unauthorized persons away.

For non-emergency personnel	Remove not affected people. Inform the relevant emergency services and authorities.
For emergency responders	People dealing with major spillages should wear full protective clothing including respiratory protection. Use suitable protective equipment.

6.2 Environmental precautions

Do not allow contaminated extinguishing water to enter the soil, ground-water or surface waters. Avoid dispersal of spilt material and runoff and contact with drains and sewers.

6.3 Methods and material for containment and cleaning up

Absorb spillages onto sand, earth or any suitable adsorbent material. Leave to react for at least 30 minutes. Do not absorb onto sawdust or other combustible materials. Contaminated absorbent material shall be disposed according to Section 13.) Wash the spillage area with water.

6.4 Reference to other sections

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

7. Handling and storage

7.1 Precautions for safe handling

Protective measures

Provide sufficient air exchange and/or exhaust in work rooms. In all workplaces of the plant where high concentrations of isocyanate aerosols and/or vapours may be generated (e.g. during pressure release, mould venting or when cleaning mixing heads with an air blast), appropriately located exhaust ventilation must be provided in order to prevent occupational exposure limits from being exceeded. The air should be drawn away from the personnel handling the product. The efficiency of the ventilation system must be monitored regularly because of the possibility of blockage. Atmospheric concentrations should be minimised and kept as low as reasonably practicable below the occupational exposure limit.

Advice on general occupational hygiene

No eating, drinking, smoking or tobacco use at the place of work. Contact with skin and eyes and inhalation of vapours must be avoided under all circumstances. Keep equipment clean. A basic essential in sampling, handling and storage is the prevention of contact with water. Keep stocks of decontaminant readily available.

7.2 Conditions for safe storage, including any incompatibilities

Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabelled containers. Use appropriate containment to avoid environmental contamination. Suitable containers: steel, stainless steel. Unsuitable containers: copper, copper alloy and galvanised surfaces.

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.

Silicate Resin 3P S1

Standard (Comp. B)

according to Regulation (EC) No. 1907/2006 and Regulation (EU) 2015/830

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 DNEL/PNEC-values

The risk characterization of MDI (CAS: 9016-87-9) is the following

Workers

Acute/short-term exposure
systemic effects (dermal) DNEL = 50 mg/kg bw/day

Acute/short-term exposure
systemic effects (inhalation) DNEL = 0,1 mg/m³

Acute/short-term exposure
local effects (dermal) DNEL = 28,7 mg/cm²

Acute/short-term exposure
local effects (inhalation) DNEL = 0,1 mg/m³

Long-term exposure
systemic effects (inhalation) DNEL = 0,05 mg/m³

Long-term exposure
systemic effects (dermal) Not applicable.

Long-term exposure
local effects (inhalation) DNEL = 0,05 mg/m³

Long-term exposure
local effects (dermal) Not applicable.

PNEC sediment	As PMDI is a reactant with water, access of water to PMDI and vice versa is strictly controlled. Furthermore, PMDI polymerizes in the presence of water and thus exposure of PMDI to sediment is highly likely to be negligible. Therefore, PNEC sediment cannot be derived for PMDI.
PNEC soil	1 mg/kg soil dw (dry weight)
PNEC oral	There are no data on effects of oral PMDI to birds. Exposure to birds is not expected and data from experimental animals show PMDI to be of low oral toxicity.

8.3 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) shall be used.
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.

Silicate Resin 3P S1

Standard (Comp. B)

according to Regulation (EC) No. 1907/2006 and Regulation (EU) 2015/830

9. Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance	liquid, dark-brown
Odour	damp
Odour threshold	no data
pH-value	not applicable
Melting point/ freezing point	no data
Boiling range	no data
Flash point	>200 °C MDI
Evaporation rate	no data
Flammability (solid, gaseous)	no data
Ignitable, explosive range	no data
Vapour pressure	< 0,00001 mbar (at 20 °C)
Vapour density	no data
Density	124±0,02 g/cm³ (at 25 °C)
Solubility	Reacts with water at the border area with slow CO_2 appearance into non soluble, high melting point or not melting polyurea.
Partition coefficient (n-octanol/water)	not applicable
Self-ignition temperature	no data
Decomposition temperature	no data
Viscosity	310-370 mPa·s (at 20 °C)
Explosive properties	non-explosive
Oxidising properties	no data

9.2 Other information

Not applicable.

10. Stability and reactivity

10.1 Reactivity

Reacts with water, acids, alcohols, amines, bases and oxidants.

10.2 Chemical stability

The main removal mechanism of MDIs in the environment is hydrolysis. MDI reacts quickly with water to form predominantly solid, insoluble polyureas. Under conditions typical of many types of environmental contact, i. e. with relatively poor dispersion of the isocyanate, the interfacial reaction leads to the formation of a solid crust encasing partially reacted product. This crust restricts ingress of water and egress of amine, and hence slows and modifies hydrolysis.

Stability in organic solvents

All MDI isomers and forms are highly unstable in dimethylsulhpoxide solvent, water content of the DMSO is increasing breakdown. MDI is more stable in EGDE (ethyleneglycoldimethylether) as solvent.

(Read-across based on 4,4'-methylenediphenyl diisocyanate - CAS 101-68-8.)

10.3 Possibility of hazardous reactions

Reaction is slow with cold or warm water (<50°C), with hot water or steam the reaction is faster, producing carbon-dioxide causing pressure increase. Acids, alcohols, amines, bases and oxidants cause fire and explosion hazard.

10.4 Conditions to avoid

High temperature, moisture, strong light.

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.

Silicate Resin 3P S1

Standard (Comp. B)

according to Regulation (EC) No. 1907/2006 and Regulation (EU) 2015/830

11. Toxicological information

Information is related to 4,4-Methylenediphenyldiisocyanate if no other is mentioned.

11.1 Information on toxicological effects

Acute toxicity – oral	Harmful Rats (female) LD_{50} = 632 mg/kg Tris(2-chlor-1-methylethyl)phosphate (CAS-Number: 13674-84-5)
Acute toxicity – inhalation	Harmful Rats LC_{50} > 2,24 mg/l air (1 h) OECD Guideline 403 Rats LC_{50} > 7 mg/l air (4 h) dusts and mists OECD 403 Acute Inhalation Toxicity / 433 Acute Inhalation Toxicity-Fixed Dose Procedure Tris(2-chloro-1-methylethyl) phosphate (CAS-Number: 13674-84-5)
Acute toxicity – dermal	Not classified. Based on available data, the classification criteria are not met. Rabbit LD_{50} > 9400 mg/kg bw (24 h) OECD Guideline 402

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. (4 h / 14 days) OECD Guideline 404
Eye damage/ Irritation	Not irritating in rabbits (24 h / 21 days) OECD Guideline 405 (Read-across based on methylenediphenyl diisocyanate - CAS 26447-40-5.)

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.

Skin sensitisation	Mice Sensitizing. OECD Guideline 429 (LLNA)
Respiratory sensitisation	Guinea pig Sensitizing.

11.4 Mutagenicity

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

11.5 Carcinogenity

Carc. Cat. 2	Rats (inhalation) NOAEC = 0,2 mg/m³ air (Toxicity) (2 years; 6 h/day, 5 days/week) NOAEC = 1 mg/m³ air (Carcinogenicity) (2 years; 6 h/day, 5 days/week) LOAEC = 6 mg/m³ air (Carcinogenicity) (2 years; 6 h/day, 5 days/week) OECD Guideline 414

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. Rats (inhalation) NOAEL = 4 mg/m³ air (developmental toxicity) (10 days; 1/day, 6 h) NOAEL = 4 mg/m³ (maternal toxicity) (10 days; 1/day, 6 h) OECD Guideline 453

Phenol, isopropylated, phosphate (3:1) (CAS: 68937-41-7) may be assumed to influence fertility or may harm the foetus in womb.

Silicate Resin 3P S1

Standard (Comp. B)

according to Regulation (EC) No. 1907/2006 and Regulation (EU) 2015/830

11.7 STOT-single exposure

MDIs are irritant to the respiratory tract.

11.8 STOT-repeated exposure

Harmful	Rats (inhalation) LOAEC = 1 mg/m³ air (2 years; 6 h/day, 5 days/week) Target organs: respiratory - lung OECD Guideline 453

11.9 Aspiration hazard

Not classified due to lack of data.

12. Ecological information

Information is related to 4,4-Methylenediphenyldiisocyanate if no other is mentioned.

12.1 Toxicity

12.1.1 Aquatic toxicity

Short-term toxicity to fish

Freshwater fish (Brachydanio rerio)	LC_{50} > 1000 mg/l (96 h) OECD Guideline 203
Oncorhynchus mykiss	LC_{50} = 1,6 mg/l (96 h) Phenol, isopropylated, phosphate (3:1), CAS: 68937-41-7
Pimpephales promelas (fathed minnow)	LC50 = 10,8 mg/l (96 h) Phenol, isopropylated, phosphate (3:1), CAS: 68937-41-7
Fisch	LC_{50} = 56,2 mg/l (96 h) Tris(2-chlor-1-methylethyl)phosphate (CAS-Number: 13674-84-5)

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. The corresponding PEC/PNEC ratios would be less than 1. Taking into account the scientific and exposure arguments, it appears appropriate to waiver the long-term fish/plant/soil and sediment toxicity studies.

Short-term toxicity to aquatic invertebrates

Freshwater invertebrates (Daphnia magna)	EC_{50} >1000 mg/l (24 h) OECD Guideline 202
Freshwater invertebrates (Daphnia magna)	EC_{50} = 131 mg/l (48 h) Tris(2-chlor-1-methylethyl)phosphate (CAS-Number: 13674-84-5)

Long-term toxicity to aquatic invertebrates

Freshwater invertebrates (Daphnia magna)	NOEC >= 10 mg/l (21 h) OECD Guideline 211

Toxicity to aquatic algae and cyanobacteria

Freshwater algae (Desmodesmus subspicatus)	EC_{50} >1640 mg/l (72 h) OECD Guideline 201
Freshwater algae (Desmodesmus subspicatus)	EC_{50} = 82 mg/l (72 h) Tris(2-chlor-1-methylethyl)phosphate (CAS-Number: 13674-84-5)

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 (activated sludge)	EC_{50} >100 mg/l (3 h) OECD Guideline 209

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.

Silicate Resin 3P S1

Standard (Comp. B)

according to Regulation (EC) No. 1907/2006 and Regulation (EU) 2015/830

12.1.3Terrestrial toxicity

Toxicity to soil macroorganisms except arthropods

Eisenia fetida	EC_{50} > 1000 mg/kg soil dw (14 days) OECD Guideline 207

Toxicity to terrestrial arthropods

Data waiving. Based on the chemical safety assessment and the risk assessment, there is no need to further investigate the terrestrial arthropods toxicity as there is no risk for the terrestrial environment as indicated by the PEC/PNEC ratio being < 0.239. Direct/indirect exposure to soil is unlikely.

Toxicity to terrestrial plants

Avena sativa	EC_{50} > 1000 mg/kg soil dw (14 days)
Lactuca sativa	EC_{50} > 1000 mg/kg soil dw (14 days) OECD Guideline 208

Toxicity to soil microorganisms

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.

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)

Based on available data, the classification criteria are not met. (EC/LC_{50} for fish, invertebrates and algae > 1000 mg/l)

Hazardous to the aquatic environment (chronic)

Based on available data, the classification criteria are not met. (NOEC for algae >1640 mg/L; NOEC for invertebrates > 10 mg/l).

12.2 Persistence and degradability

Phototransformation in air

Half-life (DT_{50})	1 day

Hydrolysis

MDI reacts with water to form predominantly inert polyurea.

Half-life (DT_{50})	20 h (at 25°C)
Reaction rate hydrolysis	0.5-1 h

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

Phototransformation in water and soil

There are no phototransformation data in water and soil for the test substance.

Biodegradation in water

Under test conditions no biodegradation observed.
(28 days) OECD Guideline 302C

Biodegradation in water and sediment

Data waiving. In accordance with Annex XI, simulation biodegradation tests are technically not feasible as the test substance reacts quickly with water. The corresponding PEC/PNEC ratios would be less than 1. Taking into account the scientific and exposure arguments, it appears appropriate to waiver 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

Bioaccumulation - aquatic/sediment: Due to the high reactivity of the substances of the MDI category with water, bioaccumulation tests can in principle not be performed with these substances. However, one bioaccumulation test with 4,4' MDI and a mesocosm study with PMDI with an indication of bioaccumulation potential have been performed. As no analytical measurements were done, it cannot be determined if the values are truly related to MDI. However, based on the available information and the reactivity of MDI substances of the category approach, no new bioaccumulation study is deemed necessary.

Silicate Resin 3P S1

Standard (Comp. B)

according to Regulation (EC) No. 1907/2006 and Regulation (EU) 2015/830

BCF (Cyprinus carpio)	200 (28 days) OECD Guideline 305 E

Terrestrial bioaccumulation

No data is available on terrestrial bioaccumulation, but it is not required under REACH.

12.4 Mobility in soil

Adsorption/desorption	Data waiving. According to Annex VIII the study need not be done if the test substance degrades rapidly. The corresponding PEC/PNEC ratios would be less than 1. Taking into account the scientific and exposure arguments, it appears appropriate to waiver the long-term fish/plant/soil and sediment toxicity studies.
Volatilisation	The estimated Henry's Law Constant, calculated from the measured vapour pressure and the calculated water solubility, is 2.263 x 10^{-7} atm-m^3/mole. Hence, volatilization is unlikely to be a significant removal mechanism for MDI substances of the category approach.

12.5 Results of PBT and vPvB assessment

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 Pow 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 not identified as 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 substance has an effect on global warming, ozone depletion in the stratosphere or ozone formation in the troposphere.

Secondary poisoning: Based on the available information, there is no indication of a bioaccumulation potential and, hence, secondary poisoning is not considered relevant.

Exposure to birds is not expected and data from experimental animals show MDI to be of low oral toxicity.

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.

Silicate Resin 3P S1

Standard (Comp. B)

according to Regulation (EC) No. 1907/2006 and Regulation (EU) 2015/830

14. Transport information

Land transport (ADR/RID/GGVSE)
Sea transport (IMDG-Code/GGVSee)
Air transport (ICAO-IATA/DGR)

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.

15. Regulatory information

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

Information regarding relevant Community safety, health and environmental provisions

ISOPA, the European Diisocyanate & Polyol Producers Association has elaborated a Guideline document for the safe treatment of MDI containing products. The Guidelines have been built into this data sheet.

15.2 Chemical Safety Assessment

In accordance with REACH Chemical Safety Assessment has not been carried out for the product. However, the results from the CSA for 4,4'-MDI were transposed into this SDS.

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. Classification of the mixture is based on the classification of components.

16.1 Indication of changes

Due to the transition to the classification according to CLP, the safety data sheet shall be regarded as fully new.

16.2 Abbreviations and acronyms

bw	bodyweight
CAS number	Chemical Abstracts Service number.
CLP	Regulation on classification, labelling and packaging.
DNEL	Derived no effect level.
dw	dry weight
EC number	EINECS and ELINCS number.
EC_{50}	Half maximal effective concentration.
EINECS	European Inventory of Existing Commercial Chemical Substances.
ELINCS	European List of Notified Chemical Substances.
LC_{50}	Lethal concentration, 50 %.
LD_{50}	Median Lethal dose.
LOAEC	Lowest Observed Adverse Effect Concentration.
NOAEC	No Observed Adverse Effect Concentration.
NOAEL	No Observed Adverse Effect Level.
NOEC	No Observed Effect Concentration.
OECD	Organisation for Economic Cooperation and Development.
PBT	Persistent, Bioaccumulative and Toxic.

Silicate Resin 3P S1

Standard (Comp. B)

according to Regulation (EC) No. 1907/2006 and Regulation (EU) 2015/830

Polymeric MDI	Polymethylene polyphenyl poliisocyanate.
PEC	Predicted Environmental Concentration.
PNEC	Predicted No Effect Concentration.
REACH	The Registration, Evaluation, Authorisation and Restriction of Chemicals.
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

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: respiratory system, inhalation.
H411	Toxic to aquatic life with long lasting effects.

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
Aquatic Chronic	Hazardous to the aquatic environment
Carc.	Carcinogenity
Eye Irrit.	Serious eye irritation
Repr.	Reproductive toxicity
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