TYPE W01 - RAPID SILICATE RESIN
SAFETY DATA SHEET

PART B

1. PRODUCT AND COMPANY IDENTIFICATION

Product Name	**TYPE W01 - RAPID SILICATE RESIN - PART B**
Revision Date	08-2020
Product Code	Type W01 - Rapid Silicate Resin
Company	S1E, 300 S. Dayton St., Davison, MI 48423
Company Contact	Tony Dipzinski
Company Phone	810-412-4740
Emergency	Domestic Shipments and to Canada: 1-800-633-8253 International Shipments: 1-801-629-0667

2. HAZARDS IDENTIFICATION

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

Hazard classes/categories

Acute Tox.	4
Skin Irrit.	2
Skin Sens.	1B
Eye Irrit.	2
Acute Tox.	4
Resp. Sens.	1
STOT SE	3
Carc.	2
STOT RE	2

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

Labeling according to Regulation (EC) No 1272/2008 (CLP):

Signal Word	Danger



Hazard statements

H315	Causes skin irritation
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H335	May cause respiratory irritation
H351	Suspected of causing cancer
H373	May cause damage to organs through prolonged or repeated exposure: respiratory system, inhalation

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).

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

Chemical characterization:

Name	*EC-Nr.*	*CAS-Nr.*	*REACH Reg. Nr.*	*Content (%)*	*Classification according to Regulation (EC) No 1272/2008 (CLP)*	
					Hazard categories[1]	*H-phrase(s)*[1]
Polymer 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
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)][4]	500-410-4	15885-25-7	[5]	≤10	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
Triisobutyl phosphate	204-798-3	126-71-6	[6]	≤10	Skin Sens. 1B	H317

[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] – Contains cca. 10% 4,4'-MDI (4,4'-methylenediphenyl diisocyanate)(CAS: 101-68-8).
[5] – We have still not received the data from our suppliers.
[6] – 01-2119957118-32-XXXX

4. FIRST AID MEASURE

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.

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.

Indication of any immediate medical attention and special treatment needed
Depending on the degree of exposure, periodic medical examination is suggested.

5. FIRE FIGHTING MEASURES

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.

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.

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 breathingapparatus (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.

6. ACCIDENTAL RELEASE MEASURES

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.

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.

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.

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

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.

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.

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.

8. EXPOSURE CONTROLS/ PERSONAL PROTECTION

Control parameters

A workplace exposure level (WEL) of 0.02mg/m^3 for total isocyanates (as NCO) as an 8 hour TWA, and a short term WEL (15 min) of 0.07 mg/m^3 have been assigned in the United Kingdom. A BMGV for isocyanates, based on the measurement of urinary diamines, has been set at 1 Qmol diamine/mol creatinine.

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/m^3
Acute/short-term exposure- local effects (dermal):	DNEL = 28.7 mg/cm^2

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.

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.

9. PHYSICAL & CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Appearance	liquid, dark-brown
Odor	damp
Odor 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	1,19±0,02 g/cm^3 (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	280 - 340 mPa.s (at 20°C)
Explosive properties	non-explosive
Oxidising properties	no data
Other information	Not applicable.

10. CHEMICAL STABILITY & REACTIVITY INFORMATION

Reactivity

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

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.)

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.

Conditions to avoid

High temperature, moisture, strong light.

Incompatible materials

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

Hazardous decomposition products

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

11. TOXICOLOGICAL INFORMATION

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

Information on toxicological effects

Acute toxicity - oral	Harmful
Rats (female)	LD_{50} = 632 mg/kg Tris (2-chloro-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 13674-84-5
Rats	LC_{50} > 5,14 g/m³ (4 h) Inhalation Dust and mists OECD 403 Acute Inhalation Toxicity Triisobutyl phosphate (CAS: 126-71-6)
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

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
Ingredient name	Triisobutyl phosphate (CAS: 126-71-6)
Result	Skin - Erythema/ Eschar
Species	Rabbit
Score	0,67
Exposure	—
Test	OECD 404 Acute Derm. Irrit./Corr.
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.

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)
Ingredient name	Triisobutyl phosphate (CAS: 126-71-6)
Route of exposure	Skin
Species	Guinea pig
Result	Sensitising
Test	OECD 406 Skin Sens
Respiratory sensitisation	Guinea pig Sensitizing.

Mutagenicity

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

Carcinogenity

Carc. Cat. 2

Rats (inhalation)	NOAEC = 0.2 mg/ m^3 air (Toxicity) (2 years; 6 h/day, 5 days/week) NOAEC = 1 mg/m^3 air (Carcinogenicity) (2 years; 6 h/day, 5 days/week) LOAEC = 6 mg/m^3 air (Carcinogenicity) (2 years; 6 h/day, 5 days/week) OECD Guideline 414

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/m^3 air (developmental toxicity) (10 days; 1/day, 6 h) NOAEL = 4 mg/m^3 air (maternal toxicity) (10 days; 1/day, 6 h) OECD Guideline 453

STOT-single exposure

MDIs are irritant to the respiratory tract.

STOT-repeated exposure

Rats (inhalation)	LOAEC = 1.0 mg/m^3 air (2 years; 6 h/day, 5 days/week) Target organs: respiratory – lung. OECD Guideline 453

Aspiration hazard

Not classified due to lack of data.

12. ECOLOGICAL INFORMATION

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

Toxicity

Aquatic toxicity

Short-term toxicity to fish	Freshwater fish (Brachydanio rerio) LC_{50} > 1000 mg/l (96 h) OECD Guideline 203
Fish	LC_{50} = 56,2 mg/l (96 h) Tris(2-chloro-1-methylethyl) phosphate, CAS: 13674-84-5
Fish	LC_{50} = 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. 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 Daphnia magna: EC_{50} = 131 mg/l (48 h) Tris(2-chloro-1-methylethyl) phosphate, CAS: 13674-84-5 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 (Daphnia magna) NOEC ≥ 10 mg/l (21 days) 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-chloro-1-methylethyl) phosphate, CAS: 13674-84-5 Algae (Desemodesmus subspicatus) Acute IC50 = 34,1 mg/l (72 h) growth rate DIN3812, Part 9 Triisobutyl phosphate, CAS: 126-71-6 Algae (Desemodesmus subspicatus): Acute IC50 = 33,2 mg/l (72 h) growth rate, biomass DIN 3812, 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 (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.

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.

Terrestrial toxicity

Toxicity to soil macroorganisms except arthropods:

Eisenia fetida	LC_{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.

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)

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) (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.

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

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

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.

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.

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

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

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.

Waste treatment options

Incinerate in suitable incineration plant, observing local authority regulations.

14. TRANSPORT INFORMATION

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

UN number	Not dangerous goods
UN proper shipping name	Not dangerous goods
Transport hazard class(es)	Not dangerous goods
Packaging group	Not dangerous goods
Environmental hazards	Marine pollutant: no
Special precautions for users	EmS number: Not dangerous goods

Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code: Not relevant.

15. REGULATORY INFORMATION

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.

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.

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
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

Key literature references and sources for data

Safety data sheets, received from the raw materials suppliers.

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

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
Carc.	Carcinogenity
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

Disclaimer

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