



TYPE W1 - WINTER SILICATE RESIN SAFETY DATA SHEET

PART B

1. PRODUCT AND COMPANY IDENTIFICATION

| | |
|-----------------|---|
| Product Name | TYPE W1 - WINTER SILICATE RESIN - PART B |
| Revision Date | 08-2020 |
| Product Code | Type W1 - Winter 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

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

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

Signal Word: Danger



Hazard statements

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

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 homologs (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 1272/2005 (CLP) | |
|---|-----------|-------------|-------------------|----------------|--|--|
| | | | | | Hazard categories ¹ | H-phrases ¹ |
| Isoeonic acid, polymethylene polyphenylene ester (Polymeric MDI) ² | (polymer) | 9016-87-9 | (polymer) | >90 | 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 H354 H317 H351 H335 H373 |
| Tris(2-chloro-1-methylethyl)phosphite (TCPP) ³ | 237-158-7 | 13674-84-5 | 7 | >10 | Acute Tox. 4 | H302 |
| 4,4'-Methylenediphenyl diisocyanate, oligomeric reaction products with 2,2'- diisocyanato-diphenylmethane, 2,2'- methylenediphenyl diisocyanate and o- hydroxy- ω -hydroxy poly[oxy(methyl-1,2- ethanediyl)] ⁴ | 500-410-1 | 158883-25-7 | 8 | <5 | 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 H354 H317 H351 H335 H373 |

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 - No data.

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**

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|--------------------------------|--|
| 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 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 CO₂ 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 spill 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 adsorbent 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/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 Qmol diamino/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 / mg/cm ² |
| Acute/short-term exposure- local effects (inhalation): | DNEL = 0.1 mg/m ³ |



| | |
|---|-------------------------------|
| Long-term exposure - systemic effects (inhalation): | DNEL = 0.05 mg/m ³ |
| Long-term exposure - systemic effects (dermal): | Not applicable |
| Long-term exposure - local effects (inhalation): | DNEL = 0.05 mg/m ³ |
| Long-term exposure - local effects (dermal): | Not applicable |

PNFC 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, PNFC sediment cannot be derived for PMDI.

PNFC 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 (i.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-laminated (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 | 1,24±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 | 310 - 370 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 dimethylsulphoxide 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 |
| 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 |
| 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 (I I NA) |
| 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/ 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

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)

NOAFL = 4 mg/m³ air (developmental toxicity) (10 days; 1/day, 6 h)
 NOAEL = 4 mg/m³ 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/m³ 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) LC₅₀ > 1000 mg/l (96 h)
 OECD Guideline 203

Fish

LC₅₀ = 56.2 mg/l (96 h)
 Tris(2-chloro-1-methylethyl) phosphate, CAS: 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 waive the long-term fish/plant/soil and sediment toxicity studies.

Short-term toxicity to aquatic invertebrates

Freshwater invertebrates (Daphnia magna) EC₅₀ > 1000 mg/l (24 h)
 OECD Guideline 202

Daphnia magna: EC₅₀ = 131 mg/l (48 h)

Tris(2-chloro-1-methylethyl) phosphate, CAS: 13674-84-5

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 (<i>Desmodesmus subspicatus</i>) EC ₅₀ >1640 mg/l (72 h) OECD Guideline 201 Freshwater algae (<i>Desmodesmus subspicatus</i>) LC ₅₀ = 82 mg/l (/2 h) |
| Toxicity to aquatic plants other than algae: | Tris(2-chloro-1-methylethyl) phosphate, CAS: 13674-84-5 Data waiving. Not required by REACH annexes. However, a mesocosm study with PMDI exists in which the toxicity towards macrophytes (<i>Potamogeton crispus</i> and <i>Zannichellia palustris</i>) 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: | |
| Fisenia 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 PCC/PNFC 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/LC₅₀ 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 waive 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 305.1

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 waive 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 $2,263 \times 10^{-4}$ atm·m³/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 (75 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 MARPOL 73/78 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 |
| FC 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 polyisocyanate |
| 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
P304+P340

P309+P311

Hazard classes

Acute Tox.
Carc.
Eye Irrit.
Resp. Sens.
Skin Irrit.
Skin Sens.
STOT RE
STOT SE

IF ON SKIN: Wash with plenty of soap and water.
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
IF exposed or if you feel unwell: Call a POISON CENTER or doctor/physician.

Acute Toxicity
Carcinogenicity
Serious eye irritation
Respiratory sensitization
Skin irritation
Skin sensitization
Specific target organ toxicity - repeated exposure
Specific target organ toxicity - single exposure

Disclaimer

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