

Section 1. Identification

GHS Product Identifier	: Delcrete® MD Part B
Chemical Name	: 4,4'-Methylenediphenyl diisocyanate, oligomeric reaction products with butane-1,3-diol, 2,4'-diisocyanatodiphenylmethane, 1,1'-methylenebis(4-isocyanatobenzene) homopolymer, [(methylethylene)bis(oxy)]dipropanol and propane-1,2-diol
Other Means of Identification	: Not available.
Material Uses	: Component of a Polyurethane System.
Supplier/Manufacturer	: The D.S. Brown Company 300 East Cherry Street North Baltimore, Ohio 45872
In Case of Emergency	: Chemtrec 1-800-424-9300 International 01-703-741-5500

Section 2. Hazards Identification

GHS Classification	: Acute toxicity (Inhalation): Category 4 Skin corrosion/irritation: Category 2 Serious eye damage/eye irritation: Category 2B Respiratory sensitization: Category 1 Skin sensitization: Category 1 Specific target organ systemic toxicity - single exposure: Category 3 (respiratory System)
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**GHS Label Element
Hazard Pictograms**



Signal Word

: **Danger**

Hazard Statements

: H315 + H320 Causes skin and eye irritation.
H317 May cause an allergic skin reaction.
H332 Harmful if inhaled.
H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.
H335 May cause respiratory irritation.

**Precautionary Statements
Prevention**

: P261 Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.
P264 Wash skin thoroughly after handling.
P271 Use only outdoors or in a well-ventilated area.
P272 Contaminated work clothing must not be allowed out of the workplace.
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.
P284 In case of inadequate ventilation wear respiratory protection.

Section 2. Hazards Identification *cont'd.*

Precautionary Statements *cont'd.*

- Response** : P302 + P352 IF ON SKIN: Wash with plenty of soap and water.
 P304 + P340 + P312 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or doctor/ physician if you feel unwell.
 P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
 P333 + P313 If skin irritation or rash occurs: Get medical advice/ attention.
 P337 + P313 If eye irritation persists: Get medical advice/ attention.
 P342 + P311 If experiencing respiratory symptoms: Call a POISON CENTER or doctor/ physician.
 P362 + P364 Take off contaminated clothing and wash it before reuse.
- Storage** : P403 + P233 Store in a well-ventilated place. Keep container tightly closed.
 P405 Store locked up.
- Disposal** : P501 Dispose of contents/ container to an approved waste disposal plant.

Section 3. Composition/Information on Ingredients

Hazardous Ingredients

Ingredient name	CAS number	Concentration (%)
4,4'-methylenediphenyl diisocyanate	101-68-8	60 - 100
Benzene, 1-isocyanato-2-[(4-isocyanatophenyl)methyl]-	5873-54-1	1 - 3
Phenol, 2,6-bis(1,1-dimethylethyl)-4-methyl-	128-37-0	0.1 - 1

Section 4. First Aid Measures

- General Advice** : Move out of dangerous area.
 Consult a physician.
 Show this material safety data sheet to the doctor in attendance.
 Do not leave the victim unattended.
- If Inhaled** : Remove to fresh air immediately. Get medical attention immediately.
 If breathing is difficult, give oxygen.
 If breathing is irregular or stopped, administer artificial respiration.
- In Case of Skin Contact** : Take off contaminated clothing and shoes immediately.
 Wash off immediately with plenty of water for at least 15 minutes.
 If symptoms persist, call a physician.
 Wash contaminated clothing before reuse.
 Thoroughly clean shoes before reuse.
 An MDI study has demonstrated that a polyglycol-based skin cleanser (such as D-Tam™, PEG-400) or corn oil may be more effective than soap and water.

Section 4. First Aid Measures *cont'd.*

- In Case of Eye Contact** : In case of eye contact, remove contact lens and rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes.
Protect unharmed eye.
Keep eye wide open while rinsing.
If eye irritation persists, consult a specialist.
- If Swallowed** : If swallowed, DO NOT induce vomiting unless directed to do so by medical personnel.
Never give anything by mouth to an unconscious person.
If symptoms persist, call a physician or Poison Control Center immediately.
- Most Important Symptoms and Effects, Both Acute and Delayed** : None known.
- Protection of First-Aiders** : No action shall be taken involving any personal risk or without suitable training.
First Aid responders should pay attention to self-protection and use the recommended protective clothing
It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.
- Notes to Physician** : Symptomatic and supportive therapy as needed. Following severe exposure medical follow-up should be monitored for at least 48 hours.

Section 5. Fire-Fighting Measures *cont'd.*

- Suitable Extinguishing Media** : Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
Foam
Carbon dioxide (CO₂)
Dry powder
- Unsuitable Extinguishing media** : Do NOT use water jet.
- Specific Hazards During Fire Fighting** : Cool closed containers exposed to fire with water spray.
Do not allow run-off from fire fighting to enter drains or water courses.
- Hazardous Combustion Products** : Carbon monoxide
Carbon dioxide (CO₂)
Nitrogen oxides (NO_x)
- Specific Extinguishing Media** : No data is available on the product itself.
- Further Information** : Use a water spray to cool fully closed containers.
Collect contaminated fire extinguishing water separately. This must not be discharged into drains.
Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.
Due to reaction with water producing CO₂-gas, a hazardous build-up of pressure could result if contaminated containers are re-sealed.
- Special Protective Equipment for Fire-Fighters** : Wear an approved positive pressure self-contained breathing apparatus in addition to standard fire fighting gear.

Section 6. Accidental Release Measures

Personal Precautions, Protective Equipment and Emergency Procedures	<ul style="list-style-type: none"> : Immediately evacuate personnel to safe areas. Ensure adequate ventilation. Use personal protective equipment. Keep people away from and upwind of spill/leak. Only qualified personnel equipped with suitable protective equipment may intervene. Never return spills in original containers for re-use. The danger areas must be delimited and identified using relevant warning and safety signs.
Environmental Precautions	<ul style="list-style-type: none"> : Do not allow uncontrolled discharge of product into the environment. Do not allow material to contaminate ground water system. If the product contaminates rivers and lakes or drains inform respective authorities.
Methods and Materials for Containment and Cleaning Up	<ul style="list-style-type: none"> : Clean-up methods - small spillage Contain spillage, soak up with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and transfer to a container for disposal according to local / national regulations (see section 13). Clean contaminated surface thoroughly. Sweep up or vacuum up spillage and collect in suitable container for disposal. Neutralize small spillages with decontaminant. Remove and dispose of residues. The compositions of liquid decontaminants are given in Section 16. Clean-up methods - large spillage If the product is in its solid form: <ul style="list-style-type: none"> Spilled MDI flakes should be picked up carefully. The area should be vacuum cleaned to remove remaining dust particles completely. If the product is in its liquid form: <ul style="list-style-type: none"> Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust). Leave to react for at least 30 minutes. Shovel into open-top drums for further decontamination. Wash the spillage area with water. Test atmosphere for MDI vapor. Keep in suitable, closed containers for disposal.

Section 7. Handling and Storage

Technical Measures	<ul style="list-style-type: none"> : Ensure that eyewash stations and safety showers are close to the workstation location.
Local/Total Ventilation	<ul style="list-style-type: none"> : Do not use in areas without adequate ventilation.
Advice on Protection Against Fire and Explosion	<ul style="list-style-type: none"> : Normal measures for preventive

Section 7. Handling and Storage *cont'd.*

- Advice on Safe Handling** : Avoid exceeding the given occupational exposure limits (see section 8).
For personal protection see section 8.
Do not get on skin or clothing.
Do not breathe vapors or spray mist.
Do not swallow.
Persons with a history of skin sensitization problems or asthma, allergies, chronic or recurrent respiratory disease should not be employed in any process in which this mixture is being used.
Smoking, eating and drinking should be prohibited in the application area.
Provide sufficient air exchange and/or exhaust in work rooms.
Keep container closed when not in use.
Dispose of rinse water in accordance with local and national regulations.
- Conditions for Safe Storage** : Keep in properly labeled containers.
Keep containers tightly closed in a dry, cool and well-ventilated place.
Containers which are opened must be carefully resealed and kept upright to prevent leakage.
Do not store near combustible materials.
To maintain product quality, do not store in heat or direct sunlight.
- Recommended Storage Temperature** : 16 - 38 °C
- Storage Period** : 12 months.

Section 8. Exposure Controls/Personal Protection

Ingredients with Workplace Control Parameters

Ingredients	CAS-No.	Value Type	Control Parameters/ (Form of Exposure) Permissible Concentration	Basis
4,4'-methylenediphenyl diisocyanate	101-68-8	TWA	0.005 ppm	ACGIH
		TWA	0.005 ppm 0.05 mg/m ³	NIOSH REL
		C	0.02 ppm 0.2 mg/m ³	NIOSH REL
		C	0.02 ppm 0.2 mg/m ³	OSHA Z-1
		C	0.02 ppm 0.2 mg/m ³	OSHA P0

- Engineering Measures** : Handle only in a place equipped with local exhaust (or other appropriate exhaust)
- Personal Protective Equipment
Respiratory Protection** : Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary.
Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Section 8. Exposure Controls/Personal Protection *cont'd.*

Hand Protection	
Material	: butyl-rubber
Break Through Time	: > 8 h
Rate of Permeability	: 10 - 480 min
Remarks	: Solvent-resistant gloves (butyl-rubber) Nitrile rubber Neoprene gloves
Eye Protection	: Please follow all applicable local/national requirements when selecting protective measures for a specific workplace. Ensure that eyewash stations and safety showers are close to the workstation location.
Skin and Body Protection	: Impervious clothing Choose body protection according to the amount and concentration of the dangerous substance at the work place. Safety shoes Change working clothes after each work-shift.
Protective Measures	: Personal protective equipment comprising: suitable protective gloves, safety goggles and protective clothing Ensure that eye flushing systems and safety showers are located close to the working place.
Hygiene Measures	: It is good practice in industrial hygiene to avoid contact with solvents by using appropriate protective measures whenever possible. Avoid prolonged contact with eyes, skin and clothing. When using do not eat, drink or smoke. Wash hands and face before breaks and immediately after handling the product. Wash hands before breaks and at the end of workday. Contaminated work clothing should not be allowed out of the workplace.

Section 9. Physical and Chemical Properties

Appearance	: liquid
Color	: No data is available on the product itself.
Odor	: No data is available on the product itself.
Odor Threshold	: No data is available on the product itself.
pH	: No data is available on the product itself.
Flash Point	: 455 °F
Evaporation Rate	: No data is available on the product itself.
Flammability (Solid, Gas)	: No data is available on the product itself.
Upper Explosion Limit	: No data is available on the product itself.
Lower Explosion Limit	: No data is available on the product itself.
Vapor Pressure	: No data is available on the product itself.

Section 9. Physical and Chemical Properties *cont'd.*

APPEARANCE

Relative Vapor Density	: No data is available on the product itself.
Relative Density	: 1.22
Density	: No data is available on the product itself.
Solubility(ies)	
Water Solubility	: No data is available on the product itself.
Solubility in Other Solvents	: No data is available on the product itself.
Partition Coefficient: n-octanol/water	: No data is available on the product itself.
Autoignition Temperature	: No data is available on the product itself.
Thermal Decomposition	: No data is available on the product itself.
Viscosity	
Viscosity, Dynamic	: 450 mPa.s (25 °C)
Self-Accelerating Decomposition Temperature (SADT)	: No data is available on the product itself.

Section 10. Stability and Reactivity

Reactivity	: No decomposition if stored and applied as directed.
Chemical Stability	: No decomposition if stored and applied as directed.
Possibility of Hazardous Reactions	: No decomposition if stored and applied as directed.
Conditions to Avoid	: No data available.

Section 11. Toxicological Information

Information on Likely Routes of Exposure	: No data is available on the product itself.
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ACUTE TOXICITY

Acute Oral Toxicity - Product	: Acute toxicity estimate : > 5,000 mg/kg Method: Calculation method.
Acute Inhalation Toxicity - Product	: Acute toxicity estimate: 1.52 mg/l Exposure time: 4 h Test atmosphere: dust/mist Method: Calculation method.

Section 11. Toxicological Information *cont'd.*

INGREDIENTS

4,4'-methylenediphenyl diisocyanate

Acute Dermal Toxicity : LD50 (Rabbit, male and female): > 9,400 mg/kg
Method: OECD Test Guideline 402.

Benzene, 1-isocyanato-2-[(4-isocyanatophenyl)methyl]-

Acute Dermal Toxicity : LD50 (Rabbit, male and female): > 9,400 mg/kg
Method: OECD Test Guideline 402.

Phenol, 2,6-bis(1,1-dimethylethyl)-4-methyl-

Acute Dermal Toxicity : LD50 (Rat, male and female): > 2,000 mg/kg
Method: OECD Test Guideline 402.

Acute Toxicity (Other Routes of Administration) : No data available.

SKIN CORROSION/IRRITATION

Product : Remarks: May cause skin irritation and/or dermatitis.

SERIOUS EYE DAMAGE/EYE IRRITATION

Product : Remarks: Vapors may cause irritation to the eyes, respiratory system and the skin.

RESPIRATORY OR SKIN SENSITIZATION

Product : Remarks: Causes sensitization.
Assessment: No data available.

GERM CELL MUTAGENICITY

INGREDIENTS:

4,4'-methylenediphenyl diisocyanate

Genotoxicity in Vitro : Concentration: 200 ug/plate.
Metabolic activation: with and without metabolic activation.
Method: Directive 67/548/EEC, Annex V, B.13/14.
Result: negative

Benzene, 1-isocyanato-2-[(4-isocyanatophenyl)methyl]-

Genotoxicity in Vitro : Metabolic activation: with and without metabolic activation.
Method: OECD Test Guideline 471.
Result: negative

Phenol, 2,6-bis(1,1-dimethylethyl)-4-methyl-

Genotoxicity in Vitro : Metabolic activation: with and without metabolic activation.
Result: negative
Metabolic activation: Metabolic activation.
Result: negative
Concentration: 1 00 - 1000 ug/plate.
Dose: 118 mg/m³
Method: OECD Test Guideline 474.
Result: negative

Section 11. Toxicological Information *cont'd.*

Phenol, 2,6-bis(1,1-dimethylethyl)-4-methyl-

Genotoxicity in Vivo : Application Route: Intraperitoneal injection.
Dose: 75 mg/kg
Result: negative

Application Route: Oral
Exposure time: 9 months.
Dose: ca 750 mg/kg
Result: negative

CARCINOGENICITY

INGREDIENTS:

4,4'-methylenediphenyl diisocyanate

: Species: Rat, (male and female)
Application Route: Inhalation
Exposure time: 24 month(s)
Dose: 1 mg/m³
Frequency of Treatment: 5 daily
Method: OECD Test Guideline 453.
Result: positive
Target Organs: Lungs

Benzene, 1-isocyanato-2-[(4-isocyanatophenyl)methyl]-

: Species: Rat, (male and female)
Application Route: Inhalation
Exposure time: 24 month(s)
Dose: 1 mg/m³
Frequency of Treatment: 5 daily
Method: OECD Test Guideline 453.
Result: positive
Target Organs: Lungs

Phenol, 2,6-bis(1,1-dimethylethyl)-4-methyl-

: Species: Rat, (male and female).
Application Route: Oral
Result: negative
Target Organs: Liver

Carcinogenicity - Assessment : No data available.

IARC : No ingredient of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

ACGIH : No ingredient of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

OSHA : No ingredient of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

NTP : No ingredient of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

Section 11. Toxicological Information *cont'd.***REPRODUCTIVE TOXICITY****INGREDIENTS:****4,4'-methylenediphenyl diisocyanate**

: Effects on fertility: Method: OECD Test Guideline 414.

Benzene, 1-isocyanato-2-[(4-isocyanatophenyl)methyl]-

: Species: Rat, female

Application Route: Inhalation

Method: OECD Test Guideline 414.

Species: Rat, male and female.

Application Route: Inhalation

Method: OECD Test Guideline 414.

Phenol, 2,6-bis(1,1-dimethylethyl)-4-methyl-

: Species: Rat, male and female.

Application Route: Oral

General Toxicity Maternal: NOAEL (No observed adverse effect level): 4 mg/m³

Method: OECD Test Guideline 414.

Result: No teratogenic effects.

Phenol, 2,6-bis(1,1-dimethylethyl)-4-methyl-

: Species: Rat

Application Route: Oral

General Toxicity Maternal: NOAEL (No observed adverse effect level): 100 mg/kg body weight.

Result: No teratogenic effects.

**Reproductive Toxicity -
Assessment**

: No data available.

STOT - Single Exposure

: No data available.

STOT - Repeated Exposure

: No data available.

**REPEATED DOSE TOXICITY -
INGREDIENTS****4,4'-methylenediphenyl diisocyanate**

: Species: Rat, male and female

NOEC: 0.2 mg/m³

Exposure time: 2 yr

Number of exposures: 5 d

Method: OECD Test Guideline 453.

Benzene, 1-isocyanato-2-[(4-isocyanatophenyl)methyl]

: Species: Rat, male and female

NOEC: 0.2 mg/m³

Exposure time: 2 yr

Number of exposures: 5 d

Method: OECD Test Guideline 453.

Section 11. Toxicological Information *cont'd.*

Phenol, 2,6-bis(1,1-dimethylethyl)-4-methyl-

: Species: Rat, male and female.
 NOAEL (No observed adverse effect level): 25 mg/kg/d.
 Application Route: Ingestion
 Method: Chronic toxicity.

Repeated Dose Toxicity Assessment : No data available.

Aspiration Toxicity : No data available.

EXPERIENCE WITH HUMAN EXPOSURE

General Information : No data available.

Inhalation : No data available.

Skin Contact : No data available.

Eye Contact : No data available.

Ingestion : No data available.

Toxicology, Metabolism, Distribution : No data available.

Neurological effects: : No data available.

FURTHER INFORMATION

Product : Remarks: No data available.

Section 12. Ecological Information

EXOTOXICITY

INGREDIENTS

4,4'-methylenediphenyl diisocyanate

Toxicity to Fish : LC50 (Brachydanio rerio (zebrafish)): > 1,000 mg/l
 Exposure time: 96 h
 Test Type: static test.
 Method: OECD Test Guideline 203.

Benzene, 1-isocyanato-2-[(4-isocyanatophenyl)methyl]

Toxicity to Fish : LC50 (Brachydanio rerio (zebrafish)): > 1,000 mg/l
 Exposure time: 96 h
 Test Type: static test.
 Test substance: Fresh water.
 Method: OECD Test Guideline 203.

Section 12. Ecological Information *cont'd.*

INGREDIENTS

4,4'-methylenediphenyl diisocyanate

Toxicity to Daphnia and Other Aquatic Invertebrates : EC50 (Daphnia magna (Water flea)): > 1,000 mg/l
 Exposure time: 24 h
 Test Type: Static test.
 Test substance: Fresh water.
 Method: OECD Test Guideline 202.

Benzene, 1-isocyanato-2-[(4-isocyanatophenyl)methyl]-

Toxicity to Daphnia and Other Aquatic Invertebrates : EC50 (Daphnia magna (Water flea)): > 1,000 mg/l
 Exposure time: 24 h
 Test Type: Static test.
 Test substance: Fresh water.
 Method: OECD Test Guideline 202.

Phenol, 2,6-bis(1,1-dimethylethyl)-4-methyl-

Toxicity to Daphnia and Other Aquatic Invertebrates : EC50 (Daphnia magna (Water flea)): 0.61 mg/l
 Exposure time: 48 h
 Test Type: Static test.
 Test substance: Fresh water.
 Method: OECD Test Guideline 202.

INGREDIENTS

Phenol, 2,6-bis(1,1-dimethylethyl)-4-methyl-

Toxicity to Algae : EC50 (Desmodesmus subspicatus (Scenedesmus subspicatus)): > 0.4 mg/l
 Exposure time: 72 h
 Test Type: Static test.
 Method: Directive 67/548/EEC, Annex V, C.3.

INGREDIENTS

Phenol, 2,6-bis(1,1-dimethylethyl)-4-methyl-

M-Factor (Acute Aquatic Toxicity) : 1

INGREDIENTS

Phenol, 2,6-bis(1,1-dimethylethyl)-4-methyl-

Toxicity to Fish (Chronic Toxicity) : LC0 (Brachydanio rerio (zebrafish)): >= 0.57 mg/l
 Exposure time: 96 hrs
 Test Type: Semi-static test.
 Method: Directive 67/548/EEC, Annex V, C.1.

INGREDIENTS

4,4'-methylenediphenyl diisocyanate

Toxicity to Daphnia and Other Aquatic Invertebrates (Chronic toxicity) : NOEC (Daphnia magna (Water flea)): >= 10 mg/l
 Exposure time: 21 d
 Test Type: Semi-static test.
 Test substance: Fresh water.
 Method: OECD Test Guideline 211.

Section 12. Ecological Information *cont'd.*

INGREDIENTS

Benzene, 1-isocyanato-2-[(4-isocyanatophenyl)methyl]-

Toxicity to Daphnia and Other Aquatic Invertebrates (Chronic Toxicity) : NOEC (Daphnia magna (Water flea)): ≥ 10 mg/l
 Exposure time: 21 d
 Test Type: Semi-static test.
 Test substance: Fresh water.
 Method: OECD Test Guideline 211.

Phenol, 2,6-bis(1,1-dimethylethyl)-4-methyl-

Toxicity to Daphnia and Other Aquatic Invertebrates (Chronic Toxicity) : NOEC (Daphnia magna (Water flea)): 0.32 mg/l
 Exposure time: 21 d
 Test Type: Semi-static test.
 Method: OECD Test Guideline 202.

EC0 (Daphnia magna (Water flea)): ≥ 0.31 mg/l
 Exposure time: 48 hrs
 Test Type: Static test.
 Method: Directive 67/548/EEC, Annex V, C.2.

NOEC (Daphnia magna (Water flea)): 0.23 mg/l
 Exposure time: 48 hrs
 Test Type: Static test.
 Method: OECD Test Guideline 202.

NOEC (Daphnia magna (Water flea)): 0.316 mg/l
 Exposure time: 21 d
 Test Type: Semi-static test.
 Method: OECD Test Guideline 202.

M-Factor (Chronic Aquatic toxicity) : No data available.

INGREDIENTS

Benzene, 1-isocyanato-2-[(4-isocyanatophenyl)methyl]-

Toxicity to Bacteria : EC50 (activated sludge): > 100 mg/l
 Exposure time: 3 h
 Test Type: Static test.
 Test substance: Fresh water.
 Method: OECD Test Guideline 209.

Phenol, 2,6-bis(1,1-dimethylethyl)-4-methyl-

Toxicity to Bacteria : IC50 (activated sludge): > 500 mg/l
 Exposure time: 0.5 h
 Method: Directive 67/548/EEC, Annex V, C.11.

EC50 (activated sludge): $> 10,000$ mg/l
 Exposure time: 3 h
 Test Type: Static test.
 Method: Directive 67/548/EEC, Annex V, B.15.

Section 12. Ecological Information *cont'd.*

INGREDIENTS

4,4'-methylenediphenyl diisocyanate

Toxicity to Soil Dwelling Organisms : NOEC (Eisenia fetida (earthworms)): >= 1,000 mg/kg
Exposure time: 336 h
Method: OECD Test Guideline 207.

Benzene, 1-isocyanato-2-[(4-isocyanatophenyl)methyl]-

Toxicity to Soil Dwelling Organisms : NOEC (Eisenia fetida (earthworms)): >= 1,000 mg/kg
Exposure time: 336 h
Method: OECD Test Guideline 207

Plant Toxicity : No data available.

Sediment Toxicity : No data available.

Toxicity to Terrestrial Organisms : No data available.

ECOTOXICOLOGY ASSESSMENT

Acute Aquatic Toxicity : No data available.

Chronic Aquatic Toxicity : No data available.

Toxicity Data on Soil : No data available.

Other Organisms Relevant to the Environment : No data available.

Further information : No data available.

PERSISTENCE AND DEGRADABILITY

INGREDIENTS

4,4'-methylenediphenyl diisocyanate

Biodegradability : Inoculum: Domestic sewage.
Concentration: 30 mg/l
Result: Not biodegradable.
Biodegradation: 0 %
Exposure time: 28 d
Method: Inherent Biodegradability: Modified MITI Test (II).

Benzene, 1-isocyanato-2-[(4-isocyanatophenyl)methyl]-

Biodegradability : Inoculum: Domestic sewage.
Concentration: 30 mg/l
Result: Not biodegradable.
Biodegradation: 0 %
Exposure time: 28 d
Method: Inherent Biodegradability: Modified MITI Test (II).

Phenol, 2,6-bis(1,1-dimethylethyl)-4-methyl-

Biodegradability : Inoculum: Activated sludge.
Result: Inherently biodegradable.
Biodegradation: 5.2 %
Exposure time: 112 d

Section 12. Ecological Information *cont'd.*

Biochemical Oxygen Demand (BOD) : No data available.

Chemical Oxygen Demand (COD) : No data available.

BOD/COD : No data available.

ThOD : No data available.

BOD/ThOD : No data available.

Dissolved Organic Carbon (DOC) : No data available.

Physico-Chemical Removability: No data available.

Stability in Water : No data available.

Photodegradation : No data available.

Impact on Sewage Treatment : No data available.

BIOACCUMULATIVE POTENTIAL

INGREDIENTS

4,4'-METHYLENEDIPHENYL DIISOCYANATE

Bioaccumulation : Species: Cyprinus carpio (Carp)
Bioconcentration factor (BCF): 200
Remarks: Bioaccumulation is unlikely.

Benzene, 1-isocyanato-2-[(4-isocyanatophenyl)methyl]-

Bioaccumulation : Species: Cyprinus carpio (Carp)
Bioconcentration factor (BCF): 200
Remarks: Bioaccumulation is unlikely.

Phenol, 2,6-bis(1,1-dimethylethyl)-4-methyl-

Bioaccumulation : Species: Cyprinus carpio (Carp)
Bioconcentration factor (BCF): 330 - 1,800.
Exposure time: 28 d
Method: Flow-through test.

INGREDIENTS:

4,4'-methylenediphenyl diisocyanate:

Partition Coefficient n-octanol/water : log Pow: 4.51 (20 °C)
pH: 7
Method: OECD Test Guideline 117.
GLP: no

Benzene, 1-isocyanato-2-[(4-isocyanatophenyl)methyl]-

Partition coefficient n-octanol/water : log Pow: 4.51 (20 °C)
pH: 7
Method: OECD Test Guideline 117.
GLP: no

Phenol, 2,6-bis(1,1-dimethylethyl)-4-methyl-

Partition coefficient n-octanol/water : log Pow: 5.1

Section 12. Ecological Information *cont'd.*

Mobility in Soil
Mobility : No data available.

INGREDIENTS

Phenol, 2,6-bis(1,1-dimethylethyl)-4-methyl-

Distribution Among : Koc.: 8183

Environmental Compartments

Stability in Soil : No data available.

OTHER ADVERSE EFFECTS

Environmental Fate and Pathways : No data available.

Results of PBT and vPvB Assessment : No data available.

Endocrine Disrupting Potential : No data available.

Absorbed Organic Bound : No data available.

HAZARDOUS TO THE OZONE LAYER

Ozone-Depletion Potential : Regulation: 40 CFR Protection of Environment; Part 82 Protection of Stratospheric Ozone - CAA Section 602 Class I Substances.

Remarks: This product neither contains, nor was manufactured with a Class I or Class II ODS as defined by the U.S. Clean Air Act Section 602 (40 CFR 82, Subpt. A, App.A + B).

Additional Ecological Information - Product : No data available.

Global Warming Potential (GWP) : No data available.

Section 13. Disposal Considerations

Disposal Methods

Waste from Residues : Do not dispose of waste into sewer.
 Do not contaminate ponds, waterways or ditches with chemical or used container.
 Send to a licensed waste management company.

Contaminated Packaging : Empty remaining contents.
 Dispose of as unused product.
 Do not re-use empty containers.

Section 14. Transport Information

INTERNATIONAL REGULATION

IATA : Not regulated as a dangerous good.
IMDG : Not regulated as a dangerous good.
Transport in Bulk According to Annex II of MARPOL 73/78 and the IBC Code : Not applicable for product as supplied.

DOMESTIC REGULATION

DOT Classification
UN/ID/NA number : NA 3082.

Proper Shipping Name : OTHER REGULATED SUBSTANCES, LIQUID, N.O.S.
 (Methylene Diphenyl Diisocyanate)

Class : 9

Packing Group : III

Labels : CLASS 9.

ERG Code : 171

Section 15. Regulatory Information

EPCRA - Emergency Planning and Community Right-to-Know CERCLA Reportable Quantity

Ingredients	CAS-No.	Component RQ (lbs)	Calculated Product RQ (lbs)
4,4'-methylenediphenyl diisocyanate	101-68-8	5000	*

*Calculated RQ exceeds reasonably attainable upper limit.

SARA 311/312 Hazards : Acute Health Hazard

SARA 313 : The following components are subject to reporting levels established by SARA Title III, Section 313:

Ingredients	CAS-No.	Concentration (%)
4,4'-methylenediphenyl diisocyanate	101-68-8	92.924%

Section 15. Regulatory Information

Clean Air Act : This product neither contains, nor was manufactured with a Class I or Class II ODS as defined by the U.S. Clean Air Act Section 602 (40 CFR 82, Subpt. A, App.A + B). The following chemical(s) are listed as HAP under the U.S. Clean Air Act, Section 12 (40 CFR 61):

Ingredients	CAS-No.	Concentration (%)
4,4'-methylenediphenyl diisocyanate	101-68-8	92.924%

This product does not contain any chemicals listed under the U.S. Clean Air Act Section 111 SOCOMI Intermediate or Final VOC's (40 CFR 60.489).

Pennsylvania Right to Know :

Ingredients	CAS-No.	Concentration (%)
4,4'-methylenediphenyl diisocyanate	101-68-8	90-100%

California Prop 65 : This product does not contain any chemicals known to the State of California to cause cancer, birth, or any other reproductive defects.

THE INGREDIENTS OF THIS PRODUCT ARE REPORTED IN THE FOLLOWING INVENTORIES:

TSCA : On TSCA Inventory

DSL : This product contains the following components listed on the Canadian NDSL. All other components are on the Canadian DSL.
1-PHENYL-3-METHYL PHOSPHOLENE OXIDE
SILQUEST A-1871

Inventories : AICS (Australia), DSL (Canada), IECSC (China), REACH (European Union), ENCS (Japan), ISHL (Japan), KECI (Korea), NZIoC (New Zealand), PICCS (Philippines), TSCA (USA)

Section 16. Other Information

Hazardous Material

NFPA : Health 1
Flammability 1
Instability 0
Special Hazard.

HMIS III : Health 1*
Flammability 1
Instability 0
0 = not significant, 1 = Slight, 2 = Moderate, 3 = High, 4 = Extreme, * = Chronic

Liquid decontaminants (percentages by weight or volume) :

Decontaminant 1 : *- sodium carbonate : 5 - 10 % *- liquid detergent : 0.2 - 2 % *- water : to make up to 100 %.

Decontaminant 2 : *- concentrated ammonia solution : 3 - 8 % *- liquid detergent : 0.2 - 2 % *- water : to make up to 100 %.

Section 16. Other Information *cont'd.*

: Decontaminant 1 reacts slower with diisocyanates but is more environmentally friendly than decontaminant 2.

Decontaminant 2 contains ammonia. Ammonia presents health hazards.
(See supplier safety information.)

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IN ALL CASES, IT IS THE RESPONSIBILITY OF THE USER TO DETERMINE THE APPLICABILITY OF SUCH INFORMATION AND RECOMMENDATIONS AND THE SUITABILITY OF ANY PRODUCT FOR ITS OWN PARTICULAR PURPOSE. THE PRODUCT MAY PRESENT HAZARDS AND SHOULD BE USED WITH CAUTION. WHILE CERTAIN HAZARDS ARE DESCRIBED IN THIS PUBLICATION, NO GUARANTEE IS MADE THAT THESE ARE THE ONLY HAZARDS THAT EXIST.

Hazards, toxicity and behavior of the products may differ when used with other materials and are dependent upon the manufacturing circumstances or other processes. Such hazards, toxicity and behaviour should be determined by the user and made known to handlers, processors and end users.

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