FLOORMAX™ Coatings

Phone 877-TECH-986 (877-832-4986)

SAFETY DATA SHEET

Product: PRIME-MAX (ISO SIDE)
Date: 01/31/2016
Revision No: 2

SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

PRODUCT NAME: PRIME-MAX ISO SIDE
CHEMICAL NAME: Blend of Hydroxyl Functional Prepolymers
CHEMICAL FAMILY: Aromatic Polyisocyanate
PRODUCT USE: Damp Concrete Primer (mix with RESIN side)
PHONE NUMBER: (413) 284-0000

SECTION 2: HAZARDS IDENTIFICATION

CLASSIFICATION OF THE SUBSTANCE/MIXTURE:

ACUTE TOXICITY: INHALATION - Category 4
SKIN CORROSION/IRRITATION - Category 2
SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 2A
RESPIRATORY SENSITIZATION - Category 1
SKIN SENSITIZATION - Category 1
SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) [Respiratory tract irritation] - Category 3

GHS LABEL ELEMENTS
HAZARD PICTOGRAMS

SIGNAL WORD: DANGER
HAZARD STATEMENTS: Harmful if inhaled.
Causes serious eye irritation.
Causes skin irritation.
May cause allergy or asthma symptoms or breathing difficulties if inhaled.
May cause an allergic skin reaction.
May cause respiratory irritation.

PRECAUTIONARY STATEMENTS: Wear protective gloves. Wear eye or face protection. In case of inadequate ventilation wear respiratory protection. Use only outdoors or in a well-ventilated area. Avoid breathing vapor. Wash hands thoroughly after handling. Contaminated work clothing should be removed and cleaned or disposed.
May cause eye, skin, and respiratory tract irritation. May cause allergic respiratory reaction. Harmful if inhaled. May cause allergic Skin reaction. May cause lung damage. The onset of the respiratory symptoms may be delayed for several hours after exposure. Hyperreactive responses may develop in sensitized individuals.

OTHER HAZARDS: Not Available

SECTION 3: COMPOSITION / INFORMATION ON INGREDIENTS

INGREDIENT	CAS NO	%WT
Diphenylmethane 4,4'-diisocyanate	Proprietary	27-65
Isocyanic acid, polymethylenepolyphenylene ester	Proprietary	20-65
Propylene Carbonate	108-32-7	13-35
Reaction product of isocyanic acid, polymethylenepolyphenylene ester and poly(oxy-1,2-ethanediyl),.alpha.-methyl-.omega.hydroxy-	Proprietary	2-10

SECTION 4: FIRST AID MEASURES

DESCRIPTION OF FIRST AID MEASURES:
EYES: Flush with clean, lukewarm water for at least 15 minutes, keeping eyelids open. Seek medical attention.
SKIN: Remove contaminated clothing. Wash affected area with soap and water. If symptoms develop, obtain medical attention. A polyglycol-based skin cleanser or corn oil may be more effective than soap and water. Clean contaminated clothing.
INGESTION: Do not induce vomiting. Call physician immediately. Never give anything by mouth to an unconscious person. Wash out mouth with water provided patient is conscious.
INHALATION: Move to fresh air. Keep warm and at rest. Obtain immediate medical attention. Treatment is symptomatic for primary irritation or bronchospasm. Administer oxygen or artificial respiration as necessary.

MOST IMPORTANT SYMPTOMS AND EFFECTS, BOTH ACUTE AND DELAYED:
EYES: Causes irritation.
SKIN: Causes skin irritation. May cause sentization.
INGESTION: May cause irritation. Low oral toxicity..
INHALATION: Harmful if inhaled. This product is a respiratory irritant and potential respiratory sensitizer.

EFFECTS OF OVEREXPOSURE:
EYES: Irritation, pain, watering, redness
SKIN: Irritation, redness.
INGESTION: No data available.
INHALATION: Excessive inhalation of mist may affect respiratory system: Irritation, coughing, wheezing, breathing difficulties, asthma

INDICATION OF ANY IMMEDIATE MEDICAL ATTENTION AND SPECIAL TREATMENT NEEDED:
NOTES TO PHYSICIANS OR FIRST AID PROVIDERS: Provide symptomatic and supportive therapy as needed. Medical follow-up should be monitored for at least 48 hours following severe exposure.

SECTION 5: FIRE-FIGHTING MEASURES

FLAMMABLE LIMITS IN AIR, (% BY VOLUME) UPPER: N/E LOWER: N/E
FLASH POINT: F: >250 C: >121 METHOD USED: Closed Cup
FLASH POINT: F: >300 C: >149 METHOD USED: Open Cup
AUTOIGNITION TEMPERATURE: F: >1100 C: >600

EXTINGUISHING MEDIA: Dry Chemical for small fires. Water spray, fog, or foam for large fires. Do not use water jet.
UNSUITABLE EXTINGUISHING MEDIA: Water may be used if no other media is available, and then in copious quantities. 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 HAZARDS ARISING FROM THE SUBSTANCE OR MIXTURE:
UNUSUAL FIRE AND EXPLOSION HAZARDS: Reacts slowly with water to produce carbon dioxide which may rupture closed containers. This reaction accelerates at higher temperatures.

DECOMPOSITION PRODUCTS: C02, carbon monoxide, oxides of nitrogen, HCN.

ADVICE FOR FIRE FIGHTERS
SPECIAL FIRE FIGHTING PROCEDURES: Full emergency equipment with self-contained breathing apparatus and full protective clothing

SECTION 6: ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS, PROTECTIVE EQUIPMENT AND EMERGENCY PROCEDURES
Evacuate nonessential personnel. Remove all sources of ignition and ventilate the area. Notify appropriate authorities if necessary. Dike or impound the spilled material and control further spillage if possible. Cover the spill with sawdust, vermiculite, Fuller's earth or other absorbent material. Pour decontamination solution over spill area and allow to react for 30 minutes. Collect material in open containers and add further decontamination solution. Mixing with wet earth is also effective, but slower. Test atmosphere for MDI. Decontamination solution: 0.2-0.5% liquid detergent and 3-8% concentrated ammonium hydroxide in water (5-10% sodium carbonate may be substituted for the ammonium hydroxide). Follow all manufacturer / supplier's MSDS when preparing and using solution

ENVIRONMENTAL PRECAUTIONS:
Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air)

METHODS AND MATERIAL FOR CONTAINMENT AND CLEANING UP:
Use absorbent materials (sand, sawdust, vermiculite) to contain and absorb spills and scoop into a container.

REFERENCE TO OTHER SECTIONS:
Refer to Section 8 for PPE.

SECTION 7: HANDLING AND STORAGE

PRECAUTIONS FOR SAFE HANDLING
Always use PPE (see Section 8). Persons with a history of skin sensitization problems or asthma, allergies or chronic or recurrent respiratory disease should not be employed in any process in which this product is used. Avoid exposure - obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Do not get in eyes or on skin or clothing. Do not ingest. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Keep in the original container tightly closed. Blanket with nitrogen to assist with moisture control.

CONDITIONS FOR SAFE STORAGE, INCLUDING ANY INCOMPATABILITITES:
STORAGE TEMPERATURE: 60 deg F / 100 deg F
SHELF LIFE: 6 months at 72 deg F after receipt of material by customer
OTHER PRECAUTIONS: Storage at temperatures greater than 122 deg F can result in an increase in monomeric HDI content. Store in tightly closed containers to prevent moisture contamination. Due to reaction with water, producing CO2 gas, a hazardous build-up of pressure could result if contaminated containers are re-sealed. Nitrogen blanketing of material is recommended. Store indoors in well ventilated area. Do not store in containers made of copper, copper alloys, or galvanized surfaces.

SPECIFIC END USE(S):
Penetrating primer for use on damp/wet surfaces (when mixed with other component of product).

SECTION 8: EXPOSURE CONTROLS / PERSONAL PROTECTION

CONTROL PARAMETERS

Occupational exposure limits

Ingredient name	Exposure limits
4,4'-Methylenediphenyl diisocyanate	ACGIH TLV (United States, 3/2012).

TWA: 0.005 ppm 8 hours.
OSHA PEL (United States, 6/2010).
CEIL: 0.02 ppm
CEIL: 0.2 mg/m3

EXPOSURE CONTROLS

Appropriate Engineering Controls:
Use only with adequate ventilation. Use engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. Diisocyanates can only be smelled if the occupational exposure limit has been exceeded considerably.
Medical supervision of all employees who handle or come in contact with respiratory sensitizers is recommended. Personnel with a history of asthma-type conditions, bronchitis or skin sensitization conditions should not work with MDI based products. The Occupational Exposure Limits listed do not apply to previously sensitized individuals. Sensitized individuals should be removed from any further exposure.

Individual Protection Measures
PREVENTIVE MEASURES: Conditions of use, actual exposures, and engineering controls will dictate the need for specific protection at your site.
RESPIRATORY PROTECTION: Always use with adequate ventilation to avoid exceeding exposure limits. If spraying product, refer to OSHA guidelines for spraying isocyanates.
EYE PROTECTION: Safety glasses, goggles or faceshield
SKIN PROTECTION: Butyl rubber, nitrile rubber, neoprene gloves. Thin latex gloves should be avoided for repeated for long term use. Cover as much exposed skin as possible. Tyvek (or like) suit with headcover is recommended for spray applications.
OTHER PROTECTIVE CLOTHING OR EQUIPMENT: Safety showers and eyewash stations should be available
WORK HYGIENIC PRACTICES: Educate and train all employees in the safe use of product.

Environmental Exposure Controls
Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation.
REFER TO SECTION 6 FOR ADDITIONAL INFORMATION

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE:	Liquid
APPEARANCE:	Amber liquid
ODOR:	Musty
ODOR THRESHOLD:	Not Available
pH:	Not Available
MELTING POINT:	Not Available
FREEZING POINT:	Not Available
BOILING POINT:	> 300C (decomposes)
BOILING RANGE:	Not Available

FLASH POINT: F: >250 C: >121 METHOD USED: Closed Cup
FLASH POINT: F: >300 C: >149 METHOD USED: Open Cup

EVAPORATION RATE:	Not Available
FLAMMABILITY (Solid, Gas):	Not Available

UPPER/LOWER FLAMMABILITY OR EXPLOSIVE LIMITS: Not Available

VAPOR PRESSURE (mmHg):	Not Available
VAPOR DENSITY:	Not Available
DENSITY (H2O = 1):	1.22 @ 68 F
SOLUBILITY IN WATER:	Insoluble

PARTITION COEFFIEIENT: n-octanol/water: Not Available
AUTOIGNITION TEMPERATURE: F: >1100 C: >600

DECOMPOSITION TEMPERATURE:	Not Available
VISCOSITY (DYNAMIC):	58 cP @ 77F (25C)
PERCENT SOLIDS BY WEIGHT:	100

VOLATILE ORGANIC COMPOUNDS (VOC): 0%

SECTION 10: STABILITY AND REACTIVITY

REACTIVITY: No specific data available.
CHEMICAL STABILITY: Stable at room temperature.
POSSIBILITY OF HAZARDOUS REACTIONS: Reaction with water (moisture) produces CO2-gas. Exothermic reaction with materials containing active hydrogen groups. MDI is insoluble with, and heavier than water and sinks to the bottom but reacts slowly at the interface. A solid water-insoluble layer of polyurea is formed at the interface by liberating carbon dioxide gas.
CONDITIONS TO AVOID: Avoid high temperatures.
INCOMPATIBLE MATERIALS: Water, amines, alkalies, acids, alcohols
HAZARDOUS DECOMPOSITION PRODUCTS: CO2 , CO, HCN and Nitrous Oxide

HAZARDOUS POLYMERIZATION: May occur at elevated temperatures in the presence of alkalies, tertiary amines, and metal compounds.

SECTION 11: TOXICOLOGICAL INFORMATION

Product/ingredient name	Test	Endpoint	Species	Result
Isocyanic acid, polymethylenepolyphenylene ester	OECD 403 Acute Inhalation Toxicity	LC50 Inhalation Dusts and mists	Rat - Male, Female	0.49 mg/l
	OECD 402 Acute Dermal Toxicity	LD50 Dermal	Rabbit - Male, Female	>9400 mg/kg
	OECD 401 Acute Oral Toxicity	LD50 Oral	Rat - Male	>10000 mg/kg
Diphenylmethane 4,4'-diisocyanate	OECD 403 Acute Inhalation Toxicity	LC50 Inhalation Dusts and mists	Rat - Male, Female	0.49 mg/l
	OECD 402 Acute Dermal Toxicity	LD50 Dermal	Rabbit - Male, Female	>9400 mg/kg
	OECD 401 Acute Oral Toxicity	LD50 Oral	Rat - Male	>10000 mg/kg
Propylene carbonate	OECD 402 Acute Dermal Toxicity	LD50 Dermal	Rabbit - Male, Female	>2000 mg/kg
	No official guidelines	LD50 Oral	Rat - Male, Female	33520 mg/kg
Reaction product of isocyanic acid, polymethylenepolyphenylene ester and poly(oxy-1, 2-ethanediyl),.alpha.-methyl-omega.hydroxy-	OECD 403 Acute Inhalation Toxicity	LC50 Inhalation Dusts and mists	Rat - Male, Female	0.49 mg/l
	OECD 402 Acute Dermal Toxicity	LD50 Dermal	Rabbit - Male, Female	>9400 mg/kg
	OECD 401 Acute Oral Toxicity	LD50 Oral	Rat - Male	>10000 mg/kg

Conclusion/Summary :
4,4'-Methylenediphenyl diisocyanate: Irritating to respiratory system.

Irritation/Corrosion

Product/ingredient name	Test	Species	Result
Isocyanic acid, polymethylenepolyphenylene ester	OECD 404 Acute Dermal Irritation/Corrosion	Rabbit	Skin - Mild irritant
	OECD 405 Acute Eye Irritation/ Corrosion	Rabbit	Eyes - Non-irritant.
Diphenylmethane 4,4'-diisocyanate	OECD 404 Acute Dermal Irritation/Corrosion	Rabbit	Skin - Irritant
	OECD 405 Acute Eye Irritation/ Corrosion	Rabbit	Eyes - Non-irritant.
Propylene carbonate	EPA OPPTS	Rabbit	Eyes - Moderate irritant
	OECD 404 Acute Dermal Irritation/Corrosion	Rabbit	Skin - Non-irritant.
Reaction product of isocyanic acid, polymethylenepolyphenylene ester and poly(oxy-1,2-ethanediyl), .alpha.-methyl-.omega.hydroxy-	OECD 404 Acute Dermal Irritation/Corrosion	Rabbit	Skin - Mild irritant
	OECD 405 Acute Eye Irritation/ Corrosion	Rabbit	Eyes - Non-irritant.

Conclusion/Summary

Skin:

Isocyanic acid, polymethylenepolyphenylene ester:	Irritating to skin.
Diphenylmethane 4,4'-diisocyanate:	Irritating to skin.
Propylene carbonate	Non-irritating to skin
Reaction product of isocyanic acid, polymethylene-polyphenylene ester and poly(oxy-1, 2-ethanediyl),. alpha.-methyl-.omega.hydroxy	Irritating to skin

Eyes:

Isocyanic acid, polymethylenepolyphenylene ester:	Based on the human occupational exposure data, this substance is considered as irritating to eyes.
Diphenylmethane 4,4'-diisocyanate:	Based on the human occupational exposure data, this substance is considered as irritating to eyes.
Propylene carbonate	Irritating to eyes.
Reaction product of isocyanic acid, polymethylene-polyphenylene ester and poly(oxy-1, 2-ethanediyl),. alpha.-methyl-.omega.hydroxy	Based on the human occupational exposure data, this substance is considered as irritating to eyes.

Respiratory: Isocyanic acid, polymethylenepolyphenylene ester: No additional information.

Diphenylmethane 4,4'-diisocyanate	No additional information.
Propylene carbonate	No additional information.
Reaction product of isocyanic acid, polymethylene-polyphenylene ester and poly(oxy-1, 2-ethanediyl),. alpha.-methyl-.omega.hydroxy	No additional information.

Sensitization

Product/ingredient name	Test	Route of exposure	Species	Result
Isocyanic acid, polymethylenepolyphenylene ester	OECD 406 Skin Sensitization	skin	Guinea pig	Not sensitizing

	No official guidelines	Respiratory	Rat	Sensitizing
	-	skin	Guinea pig	Sensitizing
Diphenylmethane 4,4'-diisocyanate	OECD 429 Skin Sensitization: Local Lymph Node Assay	skin	Mouse	Sensitizing
	OECD 406 Skin Sensitization	skin	Guinea pig	Not sensitizing
	No official guidelines	Respiratory	Guinea pig	Sensitizing
Propylene carbonate	No official guidelines	skin	Human	Not sensitizing
Reaction product of isocyanic acid, polymethylenepolyphenylene ester and poly(oxy-1, 2-ethanediyl),.alpha.-methyl-.omega.hydroxy-	OECD 406 Skin Sensitization	skin	Guinea pig	Not sensitizing
	No official guidelines	Respiratory	Rat	Sensitizing

Mutagenicity

Product/ingredient name	Test	Result
Isocyanic acid, Polymethylenepolyphenylene ester	Experiment: In vitro Subject: Bacteria Metabolic activation: +/-	Negative
	Experiment: In vivo Subject: Mammalian-Animal	Negative
	Experiment: In vivo Subject: Mammalian-Human	Equivocal
Diphenylmethane 4,4'-diisocyanate	Experiment: In vitro Subject: Bacteria Metabolic activation: +/-	Negative
	Experiment: In vivo Subject: Mammalian-Animal	Negative
Propylene carbonate	Experiment: In vitro Subject: Mammalian-Animal	Negative
	Experiment: In vitro Subject: bacteria/yeast Metabolic activation: +/-	Negative
	Experiment: In vivo Subject: Mammalian-Animal	Negative
Reaction product of isocyanic acid, polymethylenepolyphenylene ester and poly(oxy-1, 2-ethanediyl),.alpha.-methyl-.	Experiment: In vitro Subject: Bacteria Metabolic activation: +/-	Negative
omega.hydroxy-	Experiment: In vivo Subject: Mammalian-Animal	Negative
	Experiment: In vivo Subject: Mammalian-Human	Equivocal

Conclusion/Summary:

Isocyanic acid, polymethylenepolyphenylene ester:	No mutagenic effect.
Diphenylmethane 4,4'-diisocyanate:	No mutagenic effect.
Propylene carbonate	Not mutagenic in a standard battery of genetic toxicological tests.
Reaction product of isocyanic acid, polymethylene-polyphenylene ester and poly(oxy-1, 2-ethanediyl),. alpha.-methyl-.omega.hydroxy	No mutagenic effect.

Carcinogenicity

Product/ingredient name	Test	Species	Dose	Exposure	Result/Result type
Isocyanic acid, polymethylene-polyphenylene ester	OECD 453 Combined Chronic Toxicity/Carcinogenicity Studies	Rat - Male, Female	1 mg/m^3	2 years; 5 days / wk	Negative - Inhalation - NOAEL
Diphenylmethane 4,4'-diisocyanate	OECD 453 Combined Chronic Toxicity/ Carcinogenicity Studies	Rat - Male, Female	1 mg/m^3	2 years; 5 days / wk	Positive - Inhalation - NOAEL
Propylene carbonate	OECD 451 Carcinogenicity Studies	Mouse - Male	1500 to 2000 mg/kg	104 weeks; days / wk	Negative - Dermal - NOAEL
Reaction product of isocyanic acid, polymethylenepolyphenylene ester and poly(oxy-1, 2-ethanediyl),.alpha.-methyl-. omega.hydroxy-	OECD 453 Combined Chronic Toxicity/ Carcinogenicity Studies	Rat - Male, Female	1 mg/m^3	2 years; 5 days / wk	Negative - Inhalation - NOAEL

Carcinogenic class

Product/ingredient name	IARC	OSHA
Isocyanic acid, polymethylenepolyphenylene ester	3	-
4,4'-Methylenediphenyl diisocyanate	3	-

Reproductive toxicity

Product/ingredient name	Test	Species	Maternal toxicity	Fertility	Developmental effects
Isocyanic acid, polymethylenepolyphenylene ester	OECD 414 Prenatal Developmental Toxicity Study	Rat - Male, Female	Negative	Negative	Negative
Propylene carbonate	OECD 414 Prenatal Developmental Toxicity Study	Rat	Negative	Negative	Negative

Conclusion/Summary:

Isocyanic acid, polymethylenepolyphenylene ester:	No known significant effects or critical hazards.
Diphenylmethane 4,4'-diisocyanate:	No known significant effects or critical hazards.
Propylene carbonate	No known significant effects or critical hazards.
Reaction product of isocyanic acid, polymethylene-polyphenylene ester and poly(oxy-1, 2-ethanediyl),. alpha.-methyl-.omega.hydroxy	No known significant effects or critical hazards.

Teratogenicity

Product/ingredient name	Test	Species	Result/Result type

Isocyanic acid, polymethylenepolyphenylene ester	OECD 414 Prenatal Developmental Toxicity Study	Rat - Male, Female	Negative - Inhalation
Diphenylmethane 4,4'-diisocyanate	OECD 414 Prenatal Developmental Toxicity Study	Rat - Female	Negative - Inhalation
Propylene carbonate	OECD 414 Prenatal Developmental Toxicity Study	Rat - Male, Female	Negative - Oral
Reaction product of isocyanic acid, polymethylenepolyphenylene ester and poly(oxy-1, 2-ethanediyl),.alpha.-methyl-.omega.hydroxy-	OECD 414 Prenatal Developmental Toxicity Study	Rat - Male, Female	Negative - Inhalation

Conclusion/Summary:

Isocyanic acid, polymethylenepolyphenylene ester:	No known significant effects or critical hazards.
Diphenylmethane 4,4'-diisocyanate:	No known significant effects or critical hazards.
Propylene carbonate	No known significant effects or critical hazards.
Reaction product of isocyanic acid, polymethylene-polyphenylene ester and poly(oxy-1, 2-ethanediyl),. alpha.-methyl-.omega.hydroxy	No known significant effects or critical hazards.

Specific Target Organ Toxicity (single exposure)

Product/ingredient name	Category	Route of exposure	Target organs
Isocyanic acid, polymethylenepolyphenylene ester	Category 3	Not applicable.	Respiratory tract irritation
Diphenylmethane 4,4'-diisocyanate	Category 3	Not applicable.	Respiratory tract irritation
Reaction product of isocyanic acid, polymethylenepolyphenylene ester and poly (oxy-1,2-ethanediyl),.alpha.-methyl-.omega. hydroxy-	Category 3	Not applicable.	Respiratory tract irritation

Specific Target Organ Toxicity (repeated exposure)
Not available.
Aspiration hazard
Not available.
Information on the likely routes of exposure
Not available.

POTENTIAL ACCUTE HEALTH EFFECTS
EYES: Hazardous in case of eye contact. Causes irritation.
INHALATION: Hazardous in case of inhalation. Can cause respiratory tract irritation. This product is a respiratory irritant and potential respiratory sensitizer: repeated inhalation of vapor or aerosol at levels above the occupational exposure limit could cause respiratory sensitization. Symptoms may include irritation to the eyes, nose, throat and lungs, possibly combined with dryness of the throat, tightness of chest and difficulty in breathing. The onset of the respiratory symptoms may be delayed for several hours after exposure. A hyper-reactive response to even minimal concentrations of MDI may develop in sensitized persons. LC50 (rat) : ca. 490 mg/m3 (4 hours) : using experimentally produced respirable aerosol having aerodynamic diameter <5microns.
SKIN: Hazardous in case of skin contact. Causes irritation. May cause sensitization. Animal studies have shown that respiratory sensitization can be induced by skin contact with known respiratory sensitizers including diisocyanates. These results emphasize the need for protective clothing including gloves to be worn at all times when handling these chemicals.
INGESTION: Slightly hazardous in case of ingestion. May cause gastrointestinal irritation. Low oral toxicity.

Symptoms related to the physical, chemical and toxicological characteristics

EYES: Adverse symptoms may include the following:
pain or irritation, watering, redness

INHALATION: Adverse symptoms may include the following:
respiratory tract irritation, coughing, wheezing and breathing difficulties, asthma

SKIN: Adverse symptoms may include the following:
Irritation, redness

INGESTION: No specific data available.

Delayed and immediate effects and also chronic effects from short and long term exposure

Not available

Potential chronic health effects

Product/ingredient name	Test	Endpoint	Species	Result
Isocyanic acid, polymethylenepolyphenylene ester	OECD 453 Combined Chronic Toxicity/ Carcinogenicity Studies	Chronic NOEC Inhalation Dusts and mists	Rat - Male, Female	0.2 mg/m^3
Propylene carbonate	OECD 408 Repeated Dose 90-Day Oral Toxicity Study in Rodents	Sub-chronic NOEL Oral	Rat - Male, Female	>5000 mg/kg
Reaction product of isocyanic acid, polymethylenepolyphenylene ester and poly(oxy-1, 2-ethanediyl),.alpha.-methyl-.omega.hydroxy-	OECD 413 Subchronic Inhalation Toxicity: 90-day Study	Sub-chronic NOEC Inhalation Dusts and mists	Rat - Male, Female	100 mg/m^3
	OECD 453 Combined Chronic Toxicity/ Carcinogenicity Studies	Chronic NOEC Inhalation Dusts and mists	Rat - Male, Female	0.2 mg/m^3
	OECD 412 Repeated Dose Inhalation Toxicity: 28-day or 14-day Study	Sub-acute LOEC Inhalation Dusts and mists	Rat - Male, Female	1.1 mg/m^3

GENERAL: May cause damage to organs through prolonged or repeated exposure if inhaled. Once sensitized, a severe allergic reaction may occur when subsequently exposed to very low levels.

CARCENOGENICITY: Rats have been exposed for two years to a respirable aerosol of polymeric MDI which resulted in chronic pulmonary irritation at high concentrations. Only at the top level (6 mg/m3), there was a significant incidence of a benign tumor of the lung (adenoma) and one malignant tumor (adenocarcinoma). There were no lung tumors at 1 mg/ m3 and no effects at 0.2 mg/m3. Overall, the tumor incidence, both benign and malignant, and the number of animals with the tumors were not different from controls. The increased incidence of lung tumors is associated with prolonged respiratory irritation and the concurrent accumulation of yellow material in the lung, which occurred throughout the study. In the absence of prolonged exposure to high concentrations leading to chronic irritation and lung damage, it is highly unlikely that tumor formation will occur.

MUTAGENICITY: No known significant effects or critical hazards.

TERATOGENICITY: No known significant effects or critical hazards.

DEVELOPMENTAL EFFECTS: No birth defects were seen in two independent animal (rat) studies. Fetotoxicity was observed at doses that were extremely toxic (including lethal) to the mother. Fetotoxicity was not observed at doses that were not maternally toxic. The doses used in these studies were maximal, respirable concentrations, which are well in excess of defined occupational exposure limits

FERTILITY EFFECTS: No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

Route	ATE value
Inhalation (dusts and mists)	1.704 mg/l

Other information : Not available.

SECTION 12: ECOLOGICAL INFORMATION

Toxicity

Product/ingredient name	Test	Endpoint		Exposure	Species	Result	
Isocyanic acid, polymethylenepolyphenylene ester	OECD 201 Alga, Growth Inhibition Test	Acute	EC50	72 hours Static	Algae	>1640	mg/l
	OECD 209 Activated Sludge, Respiration Inhibition Test	Acute	EC50	3 hours Static	Bacteria	>100	mg/l
	OECD 202 *Daphnia* sp. Acute Immobilisation Test	Acute	EC50	24 hours Static	Daphnia	>1000	mg/l
	-	Acute	LC0	96 hours	Fish	>1000	mg/l
	OECD 203 Fish, Acute Toxicity Test	Acute	LC50	96 hours Static	Fish	>1000	mg/l
	OECD 211 *Daphnia Magna* Reproduction Test	Chronic	NOEC	21 days Semi-static	Daphnia	>=10	mg/l
	OECD 201 Alga, Growth Inhibition Test	Chronic	NOECr	72 hours Static	Algae	1640	mg/l
Diphenylmethane 4,4'-diisocyanate	OECD 202 *Daphnia* sp. Acute Immobilisation Test	Acute	EC50	24 hours Static	Daphnia	>1000	mg/l
	OECD 203 Fish, Acute Toxicity Test	Acute	LC50	96 hours Static	Fish	>1000	mg/l
	OECD 211 *Daphnia Magna* Reproduction Test	Chronic	NOEC	21 days Semi-static	Daphnia	>=10	mg/l
	OECD 201 Alga, Growth Inhibition Test	Chronic	NOECr	72 hours Static	Algae	1640	mg/l
Propylene carbonate	DIN DIN 38412 Part 8	Acute	EC50	16 hours Static	Bacteria	25619	mg/l
	OECD 202 *Daphnia* sp. Acute Immobilisation Test	Acute	EC50	48 hours Static	Daphnia	>1000	mg/l
	OECD 201 Alga, Growth Inhibition Test	Acute	ErC50 (growth rate)	72 hours Static	Algae	>900	mg/l
	EU EC C.1 Acute Toxicity for Fish	Acute	LC50	96 hours Semi-static	Fish	>1000	mg/l
	OECD 201 Alga, Growth Inhibition Test	Chronic	NOEC	72 hours Static	Algae	900	mg/l

	OECD 201 Alga, Growth Inhibition Test	Chronic	NOEC	72 hours Static	Algae	929	mg/l
Reaction product of isocyanic acid, polymethylenepolyphenylene ester and poly(oxy-1, 2-ethanediyl),.alpha.-methyl-.omega.hydroxy-	OECD 201 Alga, Growth Inhibition Test	Acute	EC50	72 hours Static	Algae	>1640	mg/l
	OECD 209 Activated Sludge, Respiration Inhibition Test	Acute	EC50	3 hours Static	Bacteria	>100	mg/l
	OECD 202 *Daphnia* sp. Acute	Acute	EC50	24 hours Static	Daphnia	>1000	mg/l
	OECD 203 Fish, Acute Toxicity Test	Acute	LC50	96 hours Static	Fish	>1000	mg/l
	No official guidelines	Chronic	NOEC	112 days Static	Daphnia	>10000	mg/l
	OECD 211 Daphnia Magna Reproduction Test	Chronic	NOEC	21 days Semi-static	Daphnia	>=10	mg/l
	No official guidelines	Chronic	NOEC	112 days Static	Fish	>10000	mg/kg
	OECD 201 Alga, Growth Inhibition Test	Chronic	NOECr	72 hours Static	Algae	1640	mg/l

Persistence and degradability

Product/ingredient name	Test	Period	Result
Isocyanic acid, polymethylenepolyphenylene ester	OECD 302C Inherent Biodegradability: Modified MITI Test (II)	28 days	0 %
Diphenylmethane 4,4'-diisocyanate	OECD 302C Inherent Biodegradability: Modified MITI Test (II)	28 days	0 %
Propylene carbonate	OECD 301B Ready Biodegradability - CO_2 Evolution Test	29 days	83.5 to 87.7 %
Reaction product of isocyanic acid, polymethylenepolyphenylene ester and poly(oxy-1, 2-ethanediyl),.alpha.-methyl-.omega.hydroxy-	OECD 302C Inherent Biodegradability: Modified MITI Test (II)	28 days	0 %

Conclusion/Summary:

Isocyanic acid, polymethylenepolyphenylene ester: Not biodegradable.

Diphenylmethane 4,4'-diisocyanate: Not biodegradable.

Reaction product of isocyanic acid, polymethylene-polyphenylene ester and poly(oxy-1, 2-ethanediyl),. alpha.-methyl-.omega.hydroxy	Not biodegradable.

Product/ingredient name	Aquatic half-life	Photolysis	Biodegradability
Isocyanic acid, polymethylenepolyphenylene ester	Fresh water 0.8 days	-	Not readily
Diphenylmethane 4,4'-diisocyanate	Fresh water 0.83 days	-	Not readily
Propylene carbonate	-	-	Readily
Reaction product of isocyanic acid, polymethylenepolyphenylene ester and poly(oxy-1, 2-ethanediyl),.alpha.-methyl-.omega.hydroxy-	-	-	Not readily

Bioaccumulative potential

Product/ingredient name	$LogP_{ow}$	BCF	Potential
Isocyanic acid, polymethylenepolyphenylene ester	-	200	low
Diphenylmethane 4,4'-diisocyanate	4.51	200	low
Propylene carbonate	-0.5	-	low

Mobility in Soil

Mobility: By considering the production and use of the substance, it is unlikely that significant environmental exposure in the air or water will arise. Immiscible with water, but will react with water to produce inert and non-biodegradable solids. Conversion to soluble products, including diamino- diphenylmethane (MDA), is very low under the optimal laboratory conditions of good dispersion and low concentration. In air, the predominant degradation process is predicted to be a relatively rapid OH radical attack, by calculation and by analogy with related diisocyanates.

Other adverse effects: No known significant effects or critical hazards.

Other ecological information

BOD5 Not determined.
COD Not determined.
TOC Not determined.

SECTION 13: DISPOSAL CONSIDERATIONS

WASTE DISPOSAL METHOD: Waste should be minimized as much as possible. . Avoid contact of waste with soil, waterways, drains and sewers. Dispose of surplus product via a licensed waste disposal contractor. Waste must be disposed of in accordance with federal state and local environmental control regulations.

SECTION 14: TRANSPORT INFORMATION

U.S. DEPARTMENT OF TRANSPORTATION (DOMESTIC SURFACE)

PROPER SHIPPING NAME *see note below	Other Regulated Substances, Liquid, N.O.S. (Methylene Diphenyl Diisocyanate)
HAZARD CLASS	9
UN NUMBER	NA 3082
PACKING GROUP	III
DOT PRODUCT RQ	5,000 lbs (2270 kg)

* When in individual containers of less than the product RQ, this material ships as non-regulated

CANADIAN TDG
PROPER SHIPPING NAME: Not Regulated

ICAO/ IATA AIR TRANSPORTATION:
PROPER SHIPPING NAME: Not Regulated

lMO / IMDG WATER TRANSPORTATION:
PROPER SHIPPING NAME: Not Regulated

SPECIAL PRECAUTIONS FOR USER: Not Applicable

SECTION 15: REGULATORY INFORMATION

U.S. FEDERAL REGULATIONS
OSHA Hazard Communication Standard (29 CFR 1910.1200): HCS Classification: Toxic, Irritating material; Sensitizing material

TSCA (TOXIC SUBSTANCE CONTROL ACT): All components are listed or exempted.

CERCLA (COMPREHENSIVE RESPONSE COMPENSATION, AND LIABILITY ACT): Reportable quantity 5000 lbs

SARA TITLE III (SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT):
313 REPORTABLE INGREDIENTS: Diisocyanate Compounds (Category Code N120) 67-85%

California Prop 65: WARNING: This product contains less than 0.1% of a chemical known to the State of California to cause cancer.

Canadian regulations
CEPA DSL: All components are listed or exempted.
WHMIS Classes: WHMIS Class D-2A: Material causing other toxic effects (Very toxic).
WHMIS Class D-2B: Material causing other toxic effects (Toxic).
This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the SDS contains all the information required by the Controlled Products Regulations.

SECTION 16: OTHER INFORMATION

HMIS HAZARD CLASSIFICATION
HEALTH: 2 FLAMMABILITY: 1 REACTIVITY: 1
PROTECTION: (the customer is responsible for determining the PPE code for this product.)

NATIONAL FIRE PROTECTION ASSOCIATION (USA)
HEALTH: 2 FLAMMABILITY: 1 INSTABILITY: 1 SPECIAL:

Disclaimer: The information and recommendations contained herein are based on standard product and are proprietary and furnished solely for the use of our customers. While believed to be true and accurate, they are offered solely for your consideration, investigation, and verification, and no guarantee or warranty of any kind, expressed or implied, is made by Creative Material Technologies, Ltd. with respect to this data. The applicability of federal, state and local laws and regulations to this product information must be determined by the user.