SAFETY DATA SHEET

LM 95-Part B

Section 1. Identification

GHS product Identifier : LM 95- Part B
Other means of identification : Not available

Relevant identified used of the substance or mixtures and uses advised against
Component of a Polyurethane System

Supplier's details : Polyguard Products, Inc.
3801 South I 45
Ennis, TX 75119
Tel: (214) 515-5000

Emergency telephone number) with hours of operation) : CHEMTREC, US 1-800-424-9300 International 1-703-527-3887

: (24/7)

Section 2. Hazards Identification

OSHA/HCS status : This material is considered hazardous by the OSHA Hazardous Communications Standard (49CFR1910.1200) .

Classification of the substance or mixture : 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 toxicity (single exposure) (Respiratory system) – Category 3

GHS label elements
Hazard pictogram

Signal word : Danger
Hazard statement : Harmful if inhaled.
Causes skin and eye irritation.
May cause allergy or asthma symptoms or breathing difficulties if inhaled.
May cause an allergic skin reaction.
May cause respiratory irritation.

Precautionary statements
Prevention : Avoid breathing dust/fume/gas/mist/vapors/spray. Wash skin throughly after handling. Use only outdoors or in a well ventilated area.Contaminated work clothing should not be allowed out of the workplace. Wear protective gloves.In case of inadequate ventilation wear respoiratory protection.

Section 2. Hazards Identification

Response : IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or physician if you feel unwell. If experiencing respiratory symptoms: Call a POISON CENTER or physician. IF ON SKIN: Wash with plenty of soap and water. Take off contaminated clothing and wash before reuse. If skin irritation or rash occurs: Get medical advice/attention. IF IN EYES; Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.

Storage : Store locked up. Store in a well-ventilated place. Keep container tightly closed.

Disposal : Dispose of contents and container in accordance with all local, regional, national, and international regulations.

Hazards not otherwise classified : None known

Section 3. Composition/Information on Ingredients

Substance/Mixture : Mixture

Other means of identification : Not available

Ingredient name	%	CAS Number
4,4'-Methylenediphenyl diisocyanate	50 - 70	101-68-8
Diphenylmethanediisocyanate	30 - 50	9016-87-9
Diphenylmethane-2,4'- diisocyanate	10 - 20	5873-54-1

Any concentration shown as a range is to protect confidentiality or is due to batch variation.
Occupational exposure limits, if available , are listed in Section 8.

Section 4. First Aid Measures

Description of necessary first aid measures.

General advise : Move out of dangerous area.
Do not leave the victim unattended.
Consult a physician.
Show this safety data sheet to the doctor in attendance.

Eye contact : In case of eye contact, remove contact lens and rinse immediately with plenty of water, also under eyelids, for at least 15 minutes.
Protect unharmed eyes.
Keep eye wide open while rinsing.
If eye irritation persists, consult a specialist.

Inhalation : If breathed in, move person into fresh air. Call a physician or poison control center immediately. Keep patient warm and at rest. Keep respiratory tract clear. If breathing is difficult, give oxygen. If breathing is irregular or stopped, administer artificial respiration. If unconscious, place in recovery position and seek medical advice. Consult a physician immediately if symptoms such as shortness of breath or asthma are observed. A hyperactive response to even minimal concentrations of diisocyanates may develop in sensitized persons. LC50(rat): ca. 490 mg/m^3 (4 hours): using experimentally produced respirable aerosol having aerodynamic diameter < 5 microns.

Section 4. First Aid Measures

Skin contact : In case of contact, immediately flush skin with soap and plenty of water. Take off contaminated clothing and shoes immediately. Wash contaminated clothing before reuse. Thoroughly clean shoes before reuse. Call a physician if irritation develops or persists. An MDI study has demonstrated that a polyglycol- based skin cleaner (such as D-TamTM PEG-400) or corn oil may be more effective than soap and water.

Ingestion : Gently wipe or rinse the inside of the mouth with water. DO NOT induce vomiting unless directed to do so by a physician or poison control center. Keep respiratory tract clear. Keep at rest. If a person vomits when lying on his back, place him in the recovery position. Never give anything by mouth to an unconscious person. If symptoms persist, call a physician. Take victim immediately to hospital.

Most important symptoms/effects, acute and delayed : Severe allergic skin reactions, bronchospasms, and anaphylactic shock.

Indication of immediate medical attention and special treatment needed, if necessary.

Notes to physician: : Symptomatically treatment and supportive therapy as indicated. Following severe exposure, the patient should be kept under medical review for at least 48 hours. The first aid procedure should be established in consultation with the doctor responsible for industrial medicine.

Protection of first aiders: : No action shall be taken involving any personal risk or without suitable training. If potential for exposure exists refer to Section 8 for specific personal protective equipment. First Aid responders should pay attention to self-protection and use the recommended protective clothing. It may be dangerous to the person providing the aid to give mouth to mouth resuscitation.

Section 5. Fire-Fighting Measures

Extinguishing media

Suitable extinguishing media : Use extinguishing measures that are appropriate to local circumstances and the surrounding environment. Use CO_2, foam, or dry powder.

Unsuitable extinguishing media : High volume water jets.

Specific hazards arising from the chemical : Do not allow run-off from firefighting to enter drains or water courses. The pressure in sealed containers can increase under the influence of heat. Exposure to hazardous products may be hazardous to health.

Hazardous thermal decomposition products : Decomposition products may include the following materials: Carbon Monoxide, Carbon Dioxide, nitrogen oxides, hydrocarbons and HCN and unburned hydrocarbon smoke.

Specific extinguishing methods : Cool containers/tanks with water spray.

Special protective equipment for fire fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full-face piece operated in a positive pressure mode. PVC boots, gloves, safety helmet and protective clothing should be worn.

Section 5. Fire-Fighting Measures

Remarks : Standard procedure for chemical fires. Due to reaction with water producing CO_2 gas, a hazardous build-up of pressure could result if contaminated containers are re-sealed. Use extinguishing measures that are appropriate to local circumstances and the surrounding environment. Collect contaminated fire extinguishing water separately. This must not be discharged into drains. Prevent fire extinguishing water from contaminating surface water or the ground water system. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.

Section 6. Accidental Release Measures

Personal precautions, protective equipment, and emergency procedures.

For non emergency personal : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk thru spilled material. Avoid breathing vapor or mist.Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment(see section 8).

For emergency responders : Use personal protective equipment. Immediately evacuate personnel to safe area. Ensure adequate ventilation. Keep 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. Treat recovered material as described in section “Disposal considerations.” For disposal considerations see section 13. Make sure there is a sufficient amount of neutralizing/absorbent material near the storage area. The danger areas must be delimited and identified using relevant warning and safety signs.

Enviromental precautions : Do not allow uncontrolled discharge of product into the environment. Do not allow material to contaminate ground water system. Prevent product from entering drains. Prevent further leakage or spillage if safe to do so. Local authorities should be advised if significant spillages cannot be contained. If product contaminates rivers and lakes or drains inform respective authorities.

Methods and materials for containment and cleaning up : **Clean- up methods- small spillage.**

Dilute with plenty of water. Contain spillage, soak up with non-combustible absorbent material, (e.g., sand, earth, diatomaceous earth, vermiculite) and transfer to a container and transfer to a container for disposal according to local/national regulations (See section 13). Clean contaminated surfaces thoroughly. Sweep up or vacuum up spillage and collect in suitable container for disposal. Neutralize small spillages with decontaminate. The compositions of liquid decontaminates are given in section 16. Remove and dispose of residues.

Clean up methods- large spills

If the product is in its solid form: 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: Absorb spillages with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, saw dust). Leave to react for at least 30 minutes. Shovel into open- top drums for further decontamination. Wash spillage area with water. Test atmosphere for MDI vapors. Keep in suitable, closed conatines for disposal.

Section 7. Handling and Storage

Precautions for safe handling

Protective measures/Advice on general occupation hygiene : Ensure that eyewash stations and safety showers are close to the workstation location. Use only with adequate ventilation. Normal measures for preventive fire protection. For personal protection see section 8. Avoid formation of aerosol. Do not breathe vapors/dust. Avoid exposure-obtain special instruction before use. Avoid contact with skin and eyes. Smoking, eating, and drinking should be prohibited in the application area. Provide sufficient air exchange and/or exhaust in work rooms. Open container carefully as contents may be under pressure. Dispose of rinse water in accordance with local and national regulations. Persons susceptible to 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.

Conditions for safe storage, including any incompatibilities : Keep container tightly closed in a cool, well-ventilated place. Observe label precautions. Electrical installations/working materials must comply with technological safety standards.

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

Protective measures : Personal protective equipment comprising suitable protective gloves, safety goggles and protective clothing. The type of protective clothing must be selected according to the concentration and amount of the dangerous substance at the specific workplace. Ensure that eye flushing systems and safety showers are located close to the working place.

Hygiene measure: : Handle in accordance with good industrial hygiene and safety practices. Wash face, hands, and any exposed skin thoroughly after handling. Remove contaminated clothing and protective equipment before entering eating area. When using do not eat or drink. When using do not smoke. Contaminated clothing should not be allowed outside the workplace. Wash hands before breaks and at end of workday.

Eye/face protection : Safety eyewear complying with an approved standard should be used when risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases and dusts. Chemical splash goggles. Always wear eye protection when the potential for inadvertent eye contact with the product cannot be excluded. 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.

Respiratory protection : Use a properly fitted, air purifying or supplied air 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

Skin Protection

Hand protection : For prolonged or repeated contact use protective gloves. Protective gloves should be worn when handling freshly made polyurethane products to avoid contact with trace residual materials which may be hazardous in contact with skin.
Use chemical resistant gloves classified under Standard EN374: protective gloves against chemicals and microorganisms. Examples of gloves material that might prove suitable protection include: Butyl rubber, Chlorinated polyethylene, Polyethylene, Ethyl vinyl alcohol copolymers laminated (“EVAL”), Polychloroprene (Neoprene*), Nitrile/butadiene rubber (“ nitrile” or”NBR”), Polyvinyl chloride (“PVC” or “vinyl”), Fluoroelastomer (“Viton”).
When prolonged or frequent repeated contact may occur, a glove with protection class 5 or higher (breakthrough time is greater than 240 minutes according to EN 374) is recommended.
When only brief contact is expected, a glove with protection class 3 or higher (breakthrough time greater than 60 minutes accroding to EN 374) is recommended.
Contaminated gloves should be decontaminated and diposed of.
Notice: The selection of a specific glove for a particular application and duration of use in the workplace should also take into account all requisite workplace factors such as but not limited to: other chemicals that may be handled, physical requirements (cut/puncture protection, dexterity, thermal protection), as well as instructions/specifications provided by the glove manufacturer.

Skin and Body protection : Impervious clothing. Choose body protection according to the amount and concentration of the dangerous substance at the workplace. Recommended: Overall (preferably heavy cotton) or Tyvek-Pro Tech “C”, Tyvek-Pro “F” disposable coverall.

Respiratory protection : Use a properly fitted, air purifying or supplied air 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 9. Physical and Chemical Properties

Appearance

Physical state	: Liquid
Color	: Light brown
Odor	: Slight, musty
Odor threshold	: Not available
pH	: Not applicable
Melting point	: Not applicable
Boiling point	: Not available
Flash Point	: Closed cup: >110 ˚C (>230 ˚F) [Seta closed cup]
Evaporation rate:	: Not available
Flammability (solid, gas)	: Not applicable
Lower & upper explosive (flammable) limits	: Not available
Vapor density	: Not available
Vapor pressure	: Not available
Relative density	: 1.2 (20 ºC)
Density	: 1.23 g/cm^3 (20 ºC)
Solubility-water	: Not available
Solubility-other solvents	: Not available
Partition coefficient: n-octanol/water	: Not available
Auto- ignition temperature	: Not available

Section 9. Physical and Chemical Properties

Decomposition temperature : Not available
Self-accelerating decomposition temperature (SADT) : Not available
VOC : Not available
Viscosity : 55 mPa s (25 °C)

Section 10. Stability and Reactivity

Reactivity : No dangerous reaction is known under conditions of normal use.
Chemical stability : Stable at room temperature.
Possibility of hazardous reactions : Reaction with water (moisture) produces CO_2 – gas. Exothermic reaction with materials containing active hydrogen groups. The reaction becomes progressively more vigorous and can be violent at higher temperatures if miscibility of the reaction partners is good or is supported by the presence of solvents. 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 polyuria is formed at the interface by liberating carbon dioxide gas.
Conditions to avoid: : Avoid high temperatures and direction sunlight. Exposure to air or moisture over prolonged periods.
Incompatible materials : Water, alcohols, amines, metals, bases, and acids.
Hazardous decomposition products : Combustion products may include Carbon oxides (CO, CO_2), nitrogen oxides (NO, NO_2, etc.), hydrocarbons, dense black smoke and HCN. Burning produces noxious and toxic fumes.

Section 11. Toxicological Information

Information on toxicological effects
Acute toxicity

Product/ingredient name	Test
4,4'-Methylenediphenyl diisocyanate	LD50 (Rate, male) :>10,000 mg/kg Method: OECD Test Guideline 401 Acute dermal toxicity: LD50 (Rabbit, male and female): >9,400 mg/kg Method: OCED Test Guideline 402
Isocyanic acid, polymethylenepolyphenylene ester	LD50 (Rate, male) :>10,000 mg/kg Method: OECD Test Guideline 401 Acute dermal toxicity: LD50 (Rabbit, male and female): >9,400 mg/kg Method: OCED Test Guideline 402
Diphenylmethane-2,4'-diisocyanate	Acute dermal toxicity: LD50 (Rabbit, male and female): >9,400 mg/kg Method: OCED Test Guideline 402
Acute inhalation toxicity-Product	Acute toxicity estimate: 1.4 mg/l Exposure time: 4 hours Test atmosphere: dust/mist Method: calculation method
Acute toxicity (other routes of administration)	No data available

Section 11. Toxicological Information

Irritation/Corrosion

Product/ingredient name	Test	Result
4,4'-Methylenediphenyl diisocyanate	Species: Rabbit Method: OECD Test Guideline 404	Irritating to skin
Isocyanic acid, polymethylenepolyphenylene ester	Species: Rabbit Assessment: Irritating to skin Method: OECD Test Guideline 404	Skin irritation
Diphenylmethane-2,4'-diisocyanate	Species: Rabbit Assessment: Irritant Method: OECD Test Guideline 404	Irritating to skin

Serious eye damage/eye irritation

Product/ingredient name	Test	Result
4,4'-Methylenediphenyl diisocyanate	Species: Rabbit	Mild eye irritation
Isocyanic acid, polymethylenepolyphenylene ester	Species: Rabbit Assessment: Mild eye irritant Method: OECD Test Guideline 405	Irritation to eyes, reversing in 7 days
Diphenylmethane-2,4'-diisocyanate	Species: Human Assessment: Irritant Method: OECD Test Guideline 405	Irritation to eyes, reversing in 7 days. Remark: mild eye irritation

Respiratory or Skin Sensitization

Product/ingredient name	Test	Result
4,4'-Methylenediphenyl diisocyanate	Exposure routes: Skin Species: Mouse Method: OECD Test Guideline 429 Exposure routes: Respiratory Tract Species: Guinea pig Method: OECD Test Guideline 429	May cause sensitization by skin contact. May cause sensitization by inhalation.
Isocyanic acid, polymethylenepolyphenylene ester	Exposure routes: Skin Species: Guinea Pig Method: OECD Test Guideline 406 Exposure routes: Respiratory Tract Species: Rat	May cause sensitization by skin contact. May cause sensitization by inhalation.
Diphenylmethane-2,4'-diisocyanate	Exposure routes: Skin Species: Mouse Assessment: May cause sensitization by skin contact Exposure routes: Respiratory Tract Species: Guinea pig Assessment: May cause sensitization by inhalation	Causes sensitization. Causes sensitization.

Section 11. Toxicological Information

Components:

4,4'-Methylenediphenyl diisocyanate

Assessment: May cause sensitization by inhalation and skin contact.

Isocyanic acid, polymethylenepolyphenylene ester

Assessment: May cause an allergic skin reaction. May cause allergy or asthma symptoms or breathing difficulties if inhaled.

Diphenylmethane-2,4'- diisocyanate

Assessment: Mild eye irritation.

Germ Cell mutagenicity

Product/ingredient name	Test	Result
4,4'-Methylenediphenyl diisocyanate	Genotoxicity in vitro Concentration: 200 ug/plate Metabolic activation: with and without metabolic activation Method: Directive 67/548/EEC, Annex, B. 13/14 Genotoxicity in vitro Application route: Inhalation Exposure time: 3 weeks Dose: 118 mg/m^3 Method: OECD Test Guideline 474	Negative Negative
Isocyanic acid, polymethylenepolyphenylene ester	Genotoxicity in vitro Concentration: 200 ug/plate Metabolic activation: with and without metabolic activation Method: Directive 67/548/EEC, Annex, B. 13/14 Genotoxicity in vitro Not classified due to inconclusive data. Application route: Inhalation Exposure time: 3 weeks Dose: 113 mg/m^3 Method: OECD Test Guideline 474	Negative Negative
Diphenylmethane-2,4'-diisocyanate	Genotoxicity in vitro Metabolic activation: with and without metabolic activation Method: OECD Test Guideline 471 Genotoxicity in vitro Application route: Inhalation Exposure time: 3 weeks Dose: 118 mg/m^3 Method: OECD Test Guideline 474	Negative Negative

Components:

Isocyanic acid, polymethylenepolyphenylene ester

Germ cell mutagenicity-assessment. : Test on bacterial or mammalian cell cultures did not show mutagenic effects.

Section 11. Toxicological Information

Carcinogenicity

Product/ingredient name	Test	Result
4,4'-Methylenediphenyl diisocyanate	Species: Rat, (Male and female) Application Route: Inhalation Exposure time: 24 months Dose 1 mg/m^3 Frequency of treatment: 5 daily Method: OECD Test Guideline 453	Positive Target organs: Lungs
Isocyanic acid, polymethylenepolyphenylene ester	Species: Rat, (Male and female) Application Route: Inhalation Exposure time: 24 months Dose 1 mg/m^3 Frequency of treatment: 5 daily Method: OECD Test Guideline 453	Positive
Diphenylmethane-2,4'-diisocyanate	Species: Rat, (Male and female) Application Route: Inhalation Exposure time: 24 months Dose 1 mg/m^3 Frequency of treatment: 5 daily Method: OECD Test Guideline 453	Positive Target organs: Lungs

Carcinogenicity – Assessment : No data available

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

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

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

Reproductive Toxicity

Product/ingredient name	Test	Results
4,4'-Methylenediphenyl diisocyanate	Effect on fetal development Species: Rat, female General Toxicity Maternal: No observed adverse effect level: 4 mg/m^3 Method: OECD Test Guideline 414	No teratogenic effects.
Isocyanic acid, polymethylenepolyphenylene ester	Effects on fertility Species: Rat, (Male and female) Application Route: Inhalation Method: OECD Test Guideline 414 Effect on fetal development Species: Rat, male and female Application route: Inhalation General Toxicity Maternal: 4 mg/m^3 Method: OECD Test Guideline 414	No significant adverse effects were reported. No teratogenic effects.

Section 11. Toxicological Information

Reproductive Toxicity (cont.)

Product/ingredient name	Test	Results
Diphenylmethane-2,4'-diisocyanate	Effects on fertility Species: Rat, female Application Route: Inhalation Method: OECD Test Guideline 414 Effects on fertility Species: Rat, male Application Route: Inhalation Method: OECD Test Guideline 414 Effect on fetal development Species: Rat, female General Toxicity Maternal: No observed adverse effect level: 4 mg/m^3 Method: OECD Test Guideline 414	Animal testing did not show any effects on fertility. Animal testing did not show any effects on fertility. No teratogenic effects.

Components

Isocyanic acid, polymethylenepolyphenylene ester

Reproductive toxicity: : No toxicity to reproduction

Assessment : No evidence of adverse effects on sexual function and fertility, or on development, based on animal experiments.

STOT- Single exposure

Product/ingredient name	Test
4,4'-Methylenediphenyl diisocyanate	Exposure route: Inhalation Target organs: respiratory Tract Assessment: May cause respiratory irritation
Isocyanic acid, polymethylenepolyphenylene ester	Exposure route: Inhalation Target organs: respiratory Tract Assessment: May cause respiratory irritation
Diphenylmethane-2,4'-diisocyanate	Exposure route: Inhalation Target organs: respiratory Tract Assessment: The substance or mixture is classified as specific target organ toxicant, single exposure, category 3 with respiratory tract irritation.

STOT- repeated exposure: No data available

Repeated dose toxicity

Product/ingredient name	Test
4,4'-Methylenediphenyl diisocyanate	Species: Rat, male and female Dose: 0.2 mg/m^3 Exposure time: 2 years Number of exposures: 5 d Method: OECD Test Guideline 453
Isocyanic acid, polymethylenepolyphenylene ester	Species: Rat, male and female Dose: 0.2 mg/m^3 Test atmosphere: dust/mist Exposure time: 2 years Number of exposures: 5 d Method: OECD Test Guideline 453

Section 11. Toxicological Information

Repeated dose toxicity (cont.)

Product/ingredient name	Test
Diphenylmethane-2,4'-diisocyanate	Species: Rat, male and female Dose: 0.2 mg/m^3 Test atmosphere: dust/mist Exposure time: 2 years Number of exposures: 5 d Method: OECD Test Guideline 453

Components:
Diphenylmethane-2,4'- diisocyanate
Repeated dose toxicity Assessment : Mild eye irritation

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
Ingestion : No data available.

Section 12. Ecological Information

Ecotoxicity

Product/ingredient name	Test
4,4'-Methylenediphenyl diisocyanate	Toxicity to fish LC50 (Brachydanio rerio (Zebrafish)): > 1,000 mg/l Exposure time: 96 hours Test type: static test Method: OECD Test Guideline 203
	Toxicity to daphnia and aquatic invertebrates EC50 (Daphnia magma (Water flea)): > 1,000 mg/l Exposure time: 24 hours Test type: static test Test substance: Fresh water Method: OECD Test Guideline 202
	Toxicity to daphnia and aquatic invertebrates (Chronic toxicity) NOEC (Daphnia magma (Water flea)): ≥ 10 mg/l Exposure time: 21 days Test type: semi-static test Test substance: Fresh water Method: OECD Test Guideline 211
	Toxicity to soil dwelling NOEC (Eisenia fetida (earthworms)): ≥ 1,000 mg/l Exposure time: 336 hours Method: OECD Test Guideline 207

Section 12. Ecological Information

Ecotoxicity (con't)

Product/ingredient name	Test
Isocyanic acid, polymethylenepolyphenylene ester	Toxicity to fish LC50 (Brachydanio rerio (Zebrafish)): > 1,000 mg/l Exposure time: 96 hours Test type: static test Test substance: Fresh water Method: OECD Test Guideline 203 LC0: > 1,000 mg/l Exposure time: 95 hours
	Toxicity to daphnia and aquatic invertebrates EC50 (Daphnia magma (Water flea)): > 1,000 mg/l Exposure time: 24 hours Test type: static test Test substance: Fresh water Method: OECD Test Guideline 202
	Toxicity to Algae EC50 (Desmodesmus subspicatus (Secenedesmus subspicatus)): > 1,640 mg/l Exposure time: 72 hours Test type: static test Test substance: Fresh water Method: OECD Test Guideline 201 M-Factor (Acute aquatic toxicity): No data available Toxicity to fish (Chronic toxicity): No data available
	Toxicity to daphnia and aquatic invertebrates (Chronic toxicity) NOEC (Daphnia magma (Water flea)): ≥ 10 mg/l Exposure time: 21 days Test type: semi-static test Test substance: Fresh water Method: OECD Test Guideline 211
	Toxicity to microorganisms EC50 (Activated sludge): > 100 mg/l Exposure time: 3 hours Test type: static test Test substance: Fresh water Method: OECD Test Guideline 209
	Toxicity to soil dwelling NOEC (Eisenia fetida (earthworms)): ≥ 1,000 mg/l Exposure time: 336 hours Method: OECD Test Guideline 207
Diphenylmethane-2,4'-diisocyanate	Toxicity to fish LC50 (Brachydanio rerio (Zebrafish)): > 1,000 mg/l Exposure time: 96 hours Test type: static test Test substance: Fresh water Method: OECD Test Guideline 203
	Toxicity to daphnia and aquatic invertebrates EC50 (Daphnia magma (Water flea)): > 1,000 mg/l Exposure time: 24 hours Test type: static test Test substance: Fresh water Method: OECD Test Guideline 202

Section 12. Ecological Information

Ecotoxicity (con't)

Product/ingredient name	Test
Diphenylmethane-2,4'-diisocyanate	Toxicity to daphnia and aquatic invertebrates (Chronic toxicity) NOEC (Daphnia magma (Water flea)): ≥ 10 mg/l Exposure time: 21 days Test type: semi-static test Test substance: Fresh water Method: OECD Test Guideline 211 M-Factor (Chronic aquatic toxicity): No available data
	Toxicity to microorganisms EC50 (Activated sludge): > 100 mg/l Exposure time: 3 hours Test type: static test Test substance: Fresh water Method: OECD Test Guideline 209
	Toxicity to soil dwelling NOEC (Eisenia fetida (earthworms)): ≥ 1,000 mg/l Exposure time: 336 hours Method: OECD Test Guideline 207

Plant toxicity	: No data available
Sediment toxicity	: No data available
Toxicity to terrestrial organisms	: No data available
Ecotoxiciology Assessment Acute aquatic toxicity	: No data available
Chronic aquatic toxicity	: No data available
Toxicity Data on Soil	: No data available
Other organism relevant to the environment	: No data available

Persistence and degradabilty

Product/ingredient name	Test	Result
4,4'-Methylenediphenyl diisocyanate	Biodegradability Inoculm: Domestic sewage Concentration: 30 mg/l Exposure time: 28 days Method: Inherent Biodegradability: Modified MITI Test (II)	Not biodegradable
Isocyanic acid, polymethylenepolyphenylene ester	Biodegradability Inoculm: Domestic sewage Concentration: 30 mg/l Biodegration: 0% Exposure time: 28 days Method: Inherent Biodegradability: Modified MITI Test (II)	Not biodegradable
Diphenylmethane-2,4'-diisocyanate	Biodegradability Inoculm: Domestic sewage Concentration: 30 mg/l Biodegration: 0% Exposure time: 28 days Method: Inherent Biodegradability: Modified MITI Test (II)	Not biodegradable

Section 12. Ecological Information

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

Components:

4,4'-Methylenediphenyl diisocyanate
Stability in water : Degradation half-life (DT50): 20 hours (25 ^{O}C)
Method: no information available
Remarks: Fresh water

Isocyanic acid, polymethylenepolyphenylene ester
Stability in water : Degradation half-life (DT50): 0.8 days (25 ^{O}C)
Method: no information available
Remarks: Fresh water
Photodegradation : No data available
Impact on sewage treatment : No data available

Bioaccumulation potential

Product/ingredient name	Test
4,4'-Methylenediphenyl diisocyanate	Bioaccumulation Species: Cyprinus carpio (Carp) Bioconcentration factor (BCF):200 Remarks: Bioaccumulation is unlikely
	Partition coefficient: n-octanol/water Log Pow: 4.51 (20 ^{o}C) pH:7 Method: OCED Test Guideline 117
Isocyanic acid, polymethylenepolyphenylene ester	Bioaccumulation Species: Cyprinus carpio (Carp) Bioconcentration factor (BCF):200 Remarks: Bioaccumulation is unlikely
Diphenylmethane-2,4'-diisocyanate	Bioaccumulation Species: Cyprinus carpio (Carp) Bioconcentration factor (BCF):200 Remarks: Bioaccumulation is unlikely
	Partition coefficient: n-octanol/water Log Pow: 4.51 (20 ^{o}C) pH:7 Method: OCED Test Guideline 117

Mobility in soil

Mobility : No data available
Distribution among environmental compartments : No data available
Stability in soil : No data available

Section 12. Ecological Information

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
Adsorbed organic bound halogens (AOX)	: 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 Substance. 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	: 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

	Proper shipping name	UN/NA Number	Class	PG*	Additional information
DOT	Other Regulated Substance, Liquid, N.O.S. (Methylene Diphenyl Diisocyanate)	NA 3082	9	III	Small containers may not require the class 9 labeling. Refer to current DOT regulations.
TDG	Not regulated	-	-	-	-
IMDG	Not regulated	-	-	-	-
IATA	Not regulated	-	-	-	-

PG*: Packing group, ERG code 171

Section 15. Regulatory Information

Safety, health, and environmental regulations specific for the product

United States Regulations

TSCA 5(a)2 final significant new use rule (SNUR) : No ingredients listed.

Section 15. Regulatory Information

TSCA 12(b) export notification : No ingredients listed.
SARA 311/312 : Immediate (acute) health hazard.

	Product name	CAS #	Concentrations %
SARA 313 Form R- Reporting requirements	4,4'-Methylenediphenyl diisocyanate	101-68-8	50-70
	Isocyanic acid, polymethylenepolyphenylene ester	9016-87-9	30-50

The following chemical is listed as HAP under the U.S. Clean Air act, Section 12 (40 CFR 61)

Product name	CAS #	Concentrations %
4,4'-Methylenediphenyl diisocyanate	101-68-8	53.62 %

EPCRA- Emergency Planning and Community Right -to- Know Act

CERCLA Reportable Quantity

Components	CAS #	Components RQ (Lbs)	Calculated product RQ (Lbs)
Chlorobenzene	108-90-7	100	*
4,4'-Methylenediphenyl diisocyanate	101-68-8	5000	9324*

* Calculated RQ exceeds reasonably attainable upper limit.

State Regulations

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

Section 16. Other Information

Hazardous Material Information System (USA)

Health -2* **Flammability-1** **Physical hazards 0**

Caution: HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. Although HMIS® ratings are not required on SDSs under 29 CFR1910.1200, the preparer may choose to provide them. HMIS® ratings are to be used with fully implemented HMIS® program. HMIS® is a registered trademark of the National Paint & Coating Association (NPCA). HMIS® materials may be purchased exclusively from J.J. Keller.

National Fire Protection Association (USA) NFPA 704

Health -2 **Flammability-1** **Instability-0** **Special- N/A**

NFPA-704 was copyrighted by the National Fire Protection Association of Quincy, MA. This warning system is intended to be interpreted and applied only by properly trained individuals to identify fire, health and reactive hazards of chemicals. The user is referred to a certain limited number of recommended classifications in NFPA 49 and NFPA 325, which would be used as guidelines only. Whether the chemicals are classified by NFPA or not, anyone using the 704 systems to classify chemicals does so at their own risk.

Liquid decontaminates (percentages by weight or volume)
Decontaminate 1: *- sodium carbonate: 5-10 % * - liquid detergent: 0.2-2% *- Water: to make up 100 %
Decontaminate 2: *- concentrated ammonia solution: 3-8 % * - liquid detergent: 0.2-2% *- Water: to make up 100 %
Decontaminate 1 reacts slower with diisocyanates but is more environmentally friendly that decontaminate 2.
Decontaminate 2 contains ammonia. Ammonia presents health hazards. (See supplier safety information).

Section 16. Other Information

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Revisions:	: Update corporate address.
Version	: 5
Prepared by	: C. Rogalski

Notice to reader.

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