

# Material Safety Data Sheet

FE 800A

MSDS No. 00000003

Date of Preparation: 04/07/99

Revision: 16

## Section 1 - Chemical Product and Company Identification

**Product/Chemical Name:** Polymeric diphenylmethane diisocyanate (PMDI)

**CAS Number:** 9016-87-9

**Manufacturer:** Foam Enterprises, Inc., 1703 Crosspoint, Houston, Texas 77054, Phone (713)796-9743, FAX (713)796-1530, Foam Enterprises, Inc., 13630 Watertower Circle, Minneapolis, MN 55441, (763) 559-9390, FAX (763)559-0945 Chemtrec (800) 424-9300

## Section 2 - Composition / Information on Ingredients

Ingredient Name	CAS Number	% wt or % vol
Polymeric Diphenylmethane	9016-87-9	100
Diisocyanate(polymeric MDI) contains: 4,4' - Diphenylmethane Diisocyanate (4,4' - MDI) (approx. 45%)	101-68-8	
Other MDI isomers and oligomers	9016-87-9	

### Trace Impurities:

Ingredient	OSHA PEL		ACGIH TLV		NIOSH REL		NIOSH IDLH
	TWA	STEL	TWA	STEL	TWA	STEL	
4,4' Diphenylmethane Diisocyanate	0.02 ppm	none estab.	0.005 ppm (8 hr.,40 hr/wk)	none estab.	0.005 ppm (10 hr, 40 hr/wk)	0.02 ppm (15 min.)	none estab.

## Section 3 - Hazards Identification

### ☆☆☆☆☆ Emergency Overview ☆☆☆☆☆

#### HMIS

H	3
F	1
R	1

### POTENTIAL HEALTH EFFECTS

**Primary Entry Routes:** Inhalation

**Target Organs:** Skin, respiratory, eyes.

#### Acute Effects

**Inhalation:** Chronic cough, tightness of chest with difficulty in breathing. These symptoms may be immediate or delayed up to several hours after exposure.

**Skin:** No irritation is likely to develop following short contact periods with human skin. Skin sensitization and /or irritation may develop after repeated and /or prolong contact with human skin. Data derived from an animal model (guinea pig) demonstrate that dermal exposure to MDI can lead to respiratory sensitization. The data indicate that the greater the amount of MDI skin exposure, the greater the risk of developing respiratory sensitization.

**Ingestion:** Acute oral LD50 in rat reported above 10,000 mg/kg. Irritation of the mouth, pharynx, esophagus and stomach can develop. Single dose is practically non-toxic.

**Carcinogenicity:** IARC, NTP, and OSHA do not list as a carcinogen.

**Medical Conditions Aggravated by Long-Term Exposure:**

**Chronic Effects:** Cough

## Section 4 - First Aid Measures

**Inhalation:** Move to an area free from risk of further exposure. Administer oxygen or artificial respiration as needed. Obtain medical attention. Asthmatic-type symptoms may develop and may be immediate or delayed up to several hours. Treatment is essentially symptomatic.

**Eye Contact:** Flush with clean, luke warm water (low pressure) for at least 15 minutes occasionally lifting eyelids and obtain medical attention.

**Skin Contact:** Remove contaminated clothing, wash affected areas thoroughly with soap and water. If redness, itching, or a burning sensation develops, have skin examined and treated by medical personnel.

**Ingestion:** Do not induce vomiting. Give one or two glasses of milk or water to drink. (Do not give anything by mouth to unconscious person.) Consult physician.

*After first aid, get appropriate in-plant, paramedic, or community medical support.*

**Note to Physicians:** Symptomatic and supportive therapy may be needed following severe exposure. In such cases, medical follow-up should be maintained for at least 48 hours.

**Special Precautions/Procedures:** Store in sealed containers to prevent moisture contamination. Avoid contact with skin and eyes.

## Section 5 - Fire-Fighting Measures

**Flash Point:** 425 °F (218 °C)

**Flash Point Method:** COC

**Autoignition:** 464°F (240°C)

**Burning Rate:** Not Established

**LEL:** Not Established

**UEL:** Not Established

**Extinguishing Media:** Dry chemical, carbon dioxide, high expansion chemical foam. If water is used, use very large quantities. The reaction between water and hot isocyanate may be vigorous.

**Unusual Fire or Explosion Hazards:** During a fire, MDI vapors and other thermal decomposition products may be generated and include carbon monoxide, carbon dioxide, water vapor and trace amounts of hydrogen cyanide and oxides of nitrogen. Water contamination of liquid will produce carbon dioxide. Do not reseal containers of FE 800A if contaminated with water, since pressure build-up may rupture them.

**Hazardous Decomposition Products:** By high heat and fire; carbon monoxide, oxides of nitrogen, traces HCN, MDI.

**Fire-Fighting Instructions:** Do not release runoff from fire control methods to sewers or waterways.

**Fire-Fighting Equipment:** Full emergency equipment with self-contained breathing apparatus and full protective clothing should be worn by fire fighters. Use cold water to cool fire-exposed containers.

## Section 6 - Accidental Release Measures

**Spill /Leak Procedures:** Don appropriate personal protective equipment. Cover spill with absorbent material (sawdust, vermiculite, Fuller's earth or other absorbent material). Shovel mixture into drum or other appropriate container and remove from work area. Add decontamination solution. Decontamination solution is prepared by adding 0.2-0.5% liquid detergent and 3-8% concentrated ammonium hydroxide to water (5-10 % sodium carbonate may be substituted for ammonium hydroxide). Follow precautions on supplier's MSDS.

**Containment:** For large spills, dike far ahead of liquid spill for later disposal. Do not release into sewers or waterways.

**Regulatory Requirements:** Follow applicable OSHA regulations (29 CFR 1910.120).

## Section 7 - Handling and Storage

**Handling Precautions:** Avoid contact with skin and eyes.

**Storage Requirements:** Store in sealed containers to prevent moisture contamination. Ideal storage temperature 60 - 100°F.

## Section 8 - Exposure Controls / Personal Protection

**Engineering Controls:**

**Ventilation:** Provide general or local exhaust ventilation systems to maintain airborne concentrations below OSHA PELs (Sec. 2). Local exhaust ventilation is preferred because it prevents contaminant dispersion into the work area by controlling it at its source.

**Administrative Controls:**

**Respiratory Protection:** Seek professional advice prior to respirator selection and use. Follow OSHA respirator regulations (29 CFR 1910.134) and, if necessary, wear a MSHA/NIOSH-approved respirator. Select respirator based on its suitability to provide adequate worker protection for given working conditions, level of airborne contamination, and presence of sufficient oxygen. For emergency or nonroutine operations (cleaning spills, reactor vessels, or storage tanks), wear an SCBA. *Warning! Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.* If respirators are used, OSHA requires a written respiratory protection program that includes at least: medical certification, training, fit-testing, periodic environmental monitoring, maintenance, inspection, cleaning, and convenient, sanitary storage areas.

**Hazardous Ingredient(s):**

4,4' - Diphenylmethane Diisocyanate:

ACGIH TLV	0.005 ppm (8 hr, 40 hr/wk)
OSHA PEL CEILING	0.02 ppm
NIOSH TLV	0.005 ppm (10 hr, 40 hr/wk)
NIOSH STEL	0.02 ppm (15 minute)

NOTE: The Occupational Exposure Limits listed for isocyanates do not apply to previously sensitized individuals.

**Protective Clothing/Equipment:** Wear chemically protective gloves, boots, aprons, and gauntlets to prevent prolonged or repeated skin contact. Wear protective eyeglasses or chemical safety goggles, per OSHA eye- and face-protection regulations (29 CFR 1910.133). Contact lenses are not eye protective devices. Appropriate eye protection must be worn instead of, or in conjunction with contact lenses.

**Safety Stations:** Make emergency eyewash stations, safety/quick-drench showers, and washing facilities available in work area.

**Contaminated Equipment:** Separate contaminated work clothes from street clothes. Launder before reuse. Remove this material from your shoes and clean personal protective equipment.

**Comments:** Never eat, drink, or smoke in work areas. Practice good personal hygiene after using this material, especially before eating, drinking, smoking, using the toilet, or applying cosmetics.

## Section 9 - Physical and Chemical Properties

**Appearance and Odor:** Dark brown liquid, aromatic odor

**Vapor Pressure:** <0.0001 (mm Hg at 20°C)

**Vapor Density (Air=1):** 8.5 (MDI)

**Specific Gravity (H<sub>2</sub>O=1, at 25 °C):** 1.2

**pH:** N/A

**Water Solubility:** Reacts

**Boiling Point:** 406°F (208°C) at 5 mm Hg

**Freezing/Melting Point:** N/A

**% Volatile:** Negligible

**Evaporation Rate:** N/A

## Section 10 - Stability and Reactivity

**Stability:** Stable at room temperature in closed containers under normal storage and handling conditions.

**Polymerization:** Hazardous polymerization may occur at elevated temperatures in the presence of alkalines, tertiary amines and metal compounds.

**Chemical Incompatibilities:** Amines, strong bases, alcohols. Will cause corrosion to copper alloys and aluminum. Will react with water (slowly when the water temperature is below 50°C) to produce solid polyureas and carbon dioxide gas.

**Conditions to Avoid:** High temperatures and freezing

**Hazardous Decomposition Products:** By high heat and fire; carbon monoxide, oxides of nitrogen, traces of HCN, MDI.

## Section 11- Toxicological Information

### Toxicity Data:

**Eye Effects:** The aerosol, vapor or liquid will irritate human eyes following contact.

**Skin Effects:** Moderate irritant. Repeated and/or prolonged contact may cause skin 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 or in maintenance work.

### Acute Inhalation Effects:

Rat, inhalation, TC<sub>Lo</sub>: 490 mg/m<sup>3</sup> per 4 hours (respirable aerosol)

### Acute Oral Effects:

Rat, oral, LD50: >5000 mg/kg

**Chronic Effects:** A study where groups of rats were exposed for 6 hours/day, 5 days/week for a lifetime to atmospheres of respirable polymeric MDI aerosol. Overall, the tumor incidence, both benign and malignant, and the number of animals with tumors were not different from controls. Only at the top level (6 mg/m<sup>3</sup>), 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/m<sup>3</sup>. The increased incidence of lung tumors is associated with prolonged respiratory irritation and 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.

**Carcinogenicity:** The ingredients of this product are not classified as carcinogenic by ACGIH or IARC, not regulated as carcinogens by OSHA, and not listed as carcinogens by NTP.

**Mutagenicity:** There is no substantial evidence of mutagenic potential.

## Section 12 - Ecological Information

(For detailed Ecological data, write or call the address or non-emergency number shown in Section 1)

### Environmental Fate

**Movement and Partitioning:** Movement in the environment is expected to be limited by the formation of insoluble polymers.

**Degradation and Transformation:** Biodegradation is not applicable (for the isocyanate itself). Material is expected to biodegrade only very slowly. Fails to pass OECD modified MITI test; hydrolysis products degrade slowly. Degradation is expected in the atmospheric environment.

**Ecotoxicology:** Material is practically non-toxic to aquatic organisms on an acute basis (LC50 greater than 100 mg/l in most sensitive species).

## Section 13 - Disposal Considerations

**Disposal:** Contact your supplier or a licensed contractor for detailed recommendations. Follow applicable Federal, state, and local regulations.

**Disposal Regulatory Requirements:** Waste must be disposed of in accordance with federal, state and local environmental control regulations.

## Section 14 - Transport Information

### DOT CLASSIFICATION / DESCRIPTION

**Technical Shipping Name:** Methylene diphenyl diisocyanate

**Freight Class Bulk:** Methylene diphenyl diisocyanate

**Freight Class Package:** Chemicals, NOI (Isocyanate), NMFC 60000

**Product Label:** Product Label Established

### DOT (DOMESTIC SURFACE)

**Proper Shipping Name:** Other Regulated Substances, Liquid, N.O.S. \*See note below

**Hazard Class or Division:** 9

**UN/NA Number:** NA3082

**Packaging Group:** PG III

**Hazardous Substance:** MDI, (Methylene diphenyl diisocyanate)

**DOT Product RQ lbs (kgs):** 5000 lbs (2270 kgs)

**Hazard Label (s):** Class 9

**Hazard Placard(s):** Class 9

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

### IMO / IMDG CODE (OCEAN)

**Hazard Class Division Number:** Non-Regulated

### ICAO / IATA (AIR)

**Hazard Class Division Number:** Non-Regulated

## Section 15 - Regulatory Information

### EPA Regulations:

SARA Toxic Chemical (40 CFR 372.65): Methylenebis (phenylisocyanate), (also known as 4, 4' -Diphenylmethane diisocyanate 101-68-8) <50%

## Section 16 - Other Information

**Prepared By:** Dressel/Shekari/Walsh

**Revision Notes:** Section 14.

**Disclaimer:** This document is prepared pursuant to the OSHA Hazard Communication Standard (29 CFR 1910.1200). In addition, other substances not "hazardous" per this OSHA standard may be listed. Where proprietary ingredient shows, the identity may be available as provided in this standard.

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