MATERIAL SAFETY DATA SHEET POLYFOAM PRODUCTS, INC.

P.O. BOX. 1539

TOMBALL, TX 77375-1539

FOR CHEMICAL EMERGENCY * SPILL * LEAK * FIRE * EXPOSURE * ACCIDENT * CALL CHEMTREC DAY OR NIGHT 800-424-9300

Manufacturer's Name	Polyfoam Produ	ets Inc	Phone number:	(281) 350-8888		
Product Name		omponent A	Chomical Family:	(201) 330-0000 Diisooyanate		
Synonyme	POLYPRO® Component A		Chemical ranny.	Not Applicable (mixtur		
CAS Number	Polymeric MDI		Chemical name:	Not Applicable (inixtui		
C.A.5. Number:	9010-87-9					
Date Prepared:	October 17, 1989		Date Revised:	February 3, 2003		
	*SE	CTION II - INGREE	DIENTS *			
<u>COMPONENTS</u>	% w/w	CAS#	ACGIH-TLV			
Polymeric Diphenylmethane	100	9016-87-9	not listed			
Diisocyanate (polymeric MDI)						
Contains:						
4,4=-Diphenylmethane						
Diisocyanate (4,4= MDI)						
(approx. 45%)		101-68-8	0.005 ppm			
MDI isomers/oligomers		9016-87-9	not listed			
* SECT	ION III - PHYSIC	CAL / CHEMICAL C	CHARACTERISTICS *			
Color:		Brown				
Odor:		Slight musty odor				
Molecular Weight		Not applicable (mixture)				
Melt Point/Freeze Point:	Below 32°F (0°C) For MDI					
Boiling Point:	not applicable					
Vapor Pressure:	Approx. 4x10-6					
Vapor Density:		8.5 (MDI) (Air = 1)				
Viscosity:	200 cps @ 77 degrees F (25 degrees C)					
Specific Gravity:		1.24 (<i>a</i>) 77 degrees F (25	degrees C)			
% Volatile by Volume:		negligible				
Appearance:		liquid	1 11 4 11 4 202			
Solubility in Water:		not soluble. Reacts slow	ly with water to liberate CO2 g	as.		

FLASH POINT (METHOD) °F (°C):

425.0°F (218°C)

EXTINGUISHING MEDIA:

Dry chemical; carbon dioxide, appropriate chemical foam, water spray for large fires. If water is used, very large quantities are required. Reaction between water and hot isocyanate may be vigorous. Contain runoff water with temporary barriers.

SPECIAL FIRE FIGHTING PROCEDURES/UNUSUAL FIRE OR EXPLOSION HAZARDS: Full emergency equipment with selfcontained breathing apparatus and full protective clothing should be worn by firefighters. During a fire, MDI vapors and other irritating, highly toxic gases may be generated by thermal decomposition or combustion. (See Section VIII). At temperatures greater than 400°F (204°C), polymeric MDI can polymerize and decompose which can cause pressure build-up in closed containers. Explosive rupture is possible. Therefore, use cold water to cool fire-exposed containers.

* SECTION V - HUMAN HEALTH DATA *

Hazardous Ingredients:	4,4= Diphenylmethane Diisocyanate
ACGIH TLV	0.005 PPM (8 hr., 40 hours/week)
OSHA PEL CEILING	0.02 PPM
NIOSH REL/TWA	0.005 PPM (1 hr., 40 hours/week)
NIOSH REL/CEILING	0.02 PPM (10 minute)
ROUTES OF ENTRY:	Skin Contact - From liquid and aerosols (spray application). Inhalation - Although MDI is low in
volatility an inhalation hazard can exis	st from MDI aerosols or vapors formed during heating foaming or spraving

HUMAN EFFECTS AND SYMPTONS OF OVEREXPOSURE:

Acute Inhalation- MDI vapors or mists at concentrations above the TLV can irritate (burning sensation) the mucous membranes in the respiratory tract (nose, throat, lungs) causing runny nose, sore throat, coughing, chest discomfort, shortness of breath, and reduced lung function (breathing obstruction). Persons with a pre-existing, nonspecific bronchial hyperreativity can respond to concentrations below the TLV with similar symptoms as well as asthma attack. Exposure well above the TLV may lead to bronchitis, bronchial spasm and pulmonary edema (fluid in lungs). These affects are usually reversible. Chemical or hypersensitive pneumonitis, with flu-like symptoms (e.g. fever and chills) has also been reported. These symptoms can be delayed up to several hours after exposure.

* SECTION V - HUMAN HEALTH Chronic Inhalation – As a result of previous repeated over-exposures or a single large dose, certain individuals develop isocyanate sensitization (chemical asthma) which will cause them to react to a later exposure to isocyanate at levels well below the TLV. These symptoms, which can include chest tightness, wheezing, cough, shortness of breath, or asthma attack, could be immediate or delayed (up to several hours after exposure). Similar to many non-specific asthmatic responses, there are reports that once sensitized an individual can experience these symptoms upon exposure to dust, cold air, or other irritants. This increased lung sensitivity can persist for weeks and in severe cases for several years. Overexposure to isocyanates has also been reported to cause lung damage (including decrease in lung function) which may be permanent. Sensitization can either be temporary or permanent

<u>ACUTE SKIN CONTACT:</u>- Isocyanates react with skin protein and moisture and can cause irritation which may include the following symptoms: reddening, swelling, rash, scaling, or blistering. Cured material is difficult to remove. **Chronic Skin Contact** - Prolonged contact can cause reddening, swelling, rash, scaling, blistering, and in some cases skin sensitization. Individuals who have developed a skin sensitization can develop these symptoms from contact with liquid or vapors. Animal tests have indicated that

respiratory sensitization can result from skin contact with MDI. This data reinforces the need to prevent direct skin contact with MDI. (See Toxicological Information, SENSITIZATION.)

ACUTE EYE CONTACT: Liquid, aerosols or vapors are irritating and can cause tearing, reddening, and swelling. If left untreated, corneal damage can occur and injury is slow to heal. However, damage is usually reversible. See section VI for treatment. CHRONIC EYE CONTACT: None Found

ACUTE INGESTION: Can result in irritation and corrosive damage in the mouth, stomach tissue and the digestive tract. Symptoms can include sore throat, abdominal pain, nausea, vomiting, and diarrhea.

CHRONIC INGESTION: None Found

MEDICAL CONDITIONS:

Aggravated By Exposure - Asthma, other respiratory disorders (bronchitis, emphysema, bronchial hyperactivity), skin allergies, eczema.

CARCINOGENICITY - Neither MDI nor polymeric MDI are listed by NTP, IARC, or regulated by OSHA as carcinogens.

NTP: N	Jot Listed
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IARC:	Not List	ted					
OSHA:	Not reg	ulate	d				
OTHER	~ ~	1.	C .	1	1	. •	1

OTHER:..... See results of two-year inhalation study in Toxicological Information,

CARCINOGENICITY

* SECTION VI - EMERGENCY AND FIRST AID PROCEDURES *

EYE CONTACT: Flush with copious amount of water, preferably, lukewarm water for at least 15 minutes, holding eyelids open all the time. Refer individual for physician or ophthalmologist for immediate follow-up.

SKIN CONTACT: Remove contaminated clothing. Wash affected skin thoroughly with soap and water. Wash contaminated clothing thoroughly before reuse. For severe exposures, get under safety shower after removing clothing, then get medical attention. For lesser exposures, seek medical attention if irritation develops or persists after the area is washed.

INHALATION: Move to 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. Consult physician should this occur.

INGESTION: DO NOT INDUCE VOMITING. Give 1 to 2 cups of milk or water to drink. **DO NOT GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON.** Consult physician.

<u>NOTE TO PHYSICIAN:</u> <u>Eyes</u> - Stain for evidence of corneal injury. If cornea is burned, instill antibiotic steroid preparation frequently. Workplace vapors have produced reversible corneal epithelial edema impairing vision. <u>Skin</u> - This compound is a known skin sensitizer. Treat symptomatically as for contact dermatitis or thermal burns. If burned, treat as thermal burn. <u>Ingestion</u> - Treat symptomatically. There is no specific antidote. Inducing vomiting is contradicted because of the irritating nature of this compound. <u>Respiratory</u> - This compound is a known pulmonary sensitizer. Treatment is essentially symptomatic. An individual having a skin or pulmonary sensitization to this material should be removed from exposure to any isocyanate.

* SECTION VII - EMPLOYEE PROTECTION RECOMMENDATIONS *

EYE PROTECTION - Liquid chemical goggles or full-face shield. Vapor resistant goggles should be worn when contact lenses are in use. In a splash hazard environment chemical goggles should be used in combination with a full face - shield.

SKIN PROTECTION - Permeation resistant gloves (butyl rubber, nitrile rubber, polyvinyl alcohol). However, please note that PVA degrades in water. Cover as much of the exposed skin area as possible with appropriate clothing. If skin creams are used, keep the area covered by the cream to a minimum.

RESPIRATORY PROTECTION: Concentrations greater than the TLV can occur when MDI is sprayed, heated or used in a poorly ventilated area. In such cases, or whenever concentrations of MDI exceed the TLV, respiratory protection must be worn. A supplied-air respirator or a self-contained breathing apparatus is recommended. In situations where MDI is not sprayed or heated and a supplied air or self-contained apparatus is unavailable or its use impractical, at least an air-purifying respirator equipped with an organic cartridge and a particulate filter must be worn. HOWEVER, THIS SHOULD BE PERMITTED ONLY FOR SHORT PERIODS OF TIME (LESS THAN ONE HOUR) AT RELATIVELY LOW CONCENTRATIONS (AT OR NEAR THE TLV). However, due to the poor warning properties of MDI, proper fit and timely replacement of filter elements must be ensured. Observe OSHA regulations for respirator use (29 CFR 1910.134).

VENTILATION: Local exhaust should be used to maintain levels below the TLV whenever MDI is processed, heated or spray applied. For spray applications, an air-supplied respirator must be worn. Standard reference sources regarding industrial ventilation (i.e., ACGIH Industrial Ventilation) should be consulted for guidance about adequate ventilation.

MONITORING: MDI exposure levels should be monitored by accepted monitoring techniques to ensure that the TLV is not exceeded.

MEDICAL SURVEILLANCE: Medical supervision of all employees who handle or come in contact with polymeric MDI is recommended. These should include pre-employment and periodic medical examinations with respiratory function tests (FEV, FVC as a minimum). Persons with asthmatic-type conditions, chronic bronchitis, other chronic respiratory type diseases or recurrent skin eczema or sensitization should be excluded from working with MDI. Once a person is diagnosed as sensitized by MDI, no further exposure can be permitted.

OTHER: Safety showers and eye wash stations should be available. Educate and train employees in safe use of product. Follow all label instructions.

* SECTION VIII - REACTIVITY DATA *

STABILITY: This is a stable material

POLYMERIZATION: May occur if in contact with moisture or other materials which react with isocyanates. May occur at temperatures over 400°F (204°C), may cause polymerization.

INCOMPATIBILITY: (Materials to Avoid) - Water, amines, strong bases, alcohols. Will cause some corrosion to copper alloys and aluminum.

HAZARDOUS DECOMPOSITION

PRODUCTS: By high heat and fire - carbon monoxide, oxides of nitrogen, traces of HCN, MDI vapors or aerosols.

* SECTION IX - SPILL OR LEAK PROCEDURES *

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Evacuate and ventilate spill area; dike spill to prevent entry into water system; wear full protective equipment, including respiratory equipment during cleanup. (See Section VII).

MAJOR SPILL: Call Polyfoam Products, Inc. at 1-(281)-350-8888. If transportation spill, call Chemtrec 1-(800) 434-9300. If temporary control of isocyanates vapor is required a blanket of protein foam (available at most fire departments) may be placed over the spill. Large quantities may be pumped into closed, but not sealed, containers of disposal.

MINOR SPILL: Absorb isocyanates with sawdust or other absorbent, shovel into suitable unsealed containers, transport to well-ventilated area (outside) and treat with neutralizing solution: mixture of water (80%) with non-ionic surfactant Tergitol TMN-10 (20%), or; water (90%), concentrated ammonia (3-8%) and detergent (2%). Add about 10 parts of neutralizer per part of isocyanate, with mixing. Allow to stand uncovered for 48 hours to let CO2 escape.

CLEAN-UP: Decontaminate floor with decontamination solution letting stand for at least 15 minutes.

CERCLA (SUPERFUND) REPORTABLE QUANTITY: None reported.

WASTE DISPOSAL METHOD: Waste must be disposed of in accordance with federal, state, and local environmental control regulations. Incineration is the preferred method. Empty containers must be handled with care due to product residue. Decontaminate containers prior to disposal. Empty decontaminated containers should be crushed to prevent reuse. DO NOT HEAT OR CUT EMPTY CONTAINER WITH ELECTRIC OR GAS TORCH. (See Sections IV and VIII) Vapors and gases may be highly toxic.

* SECTION X - SPECIAL PRECAUTIONS AND STORAGE DATA *

STORAGE TEMPERATURE (MIN./MAX.): 64°F (18°C) / 86°F (30°C)

AVERAGE SHELF LIFE: 6 months

SPECIAL SENSITIVITY (HEAT, LIGHT, MOISTURE): If container is exposed to high heat, 400°F (204°C) it can be pressurized and possibly rupture. MDI reacts slowly with water to form CO2 gas. This gas can cause sealed containers to expand and possibly rupture. **PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING:** Store in tightly closed containers to prevent moisture contamination. Do not reseal if contamination is suspected. Avoid contact with skin and eyes. Do not breathe aerosols or vapors. Warning properties (irritation of the eyes, nose and throat or odor) are not adequate to prevent chronic overexposure from inhalation. This material can produce asthmatic sensitization upon either single inhalation exposure to a relatively high concentration or upon repeated inhalation exposures to lower concentrations. Exposure to vapors or heated MDI can be extremely dangerous. Employee education and training in the safe use and handling of this compound are required under the OSHA Hazard Communication Standard.

* SECTION XI - SHIPPING DATA *

DOT: Single containers of less than 5000 lbs. are not regulated.

Single containers with 5000 lbs. or more of 4,4=- MDI are regulated as: Other Regulated Substances, Liquid N.O.S. (Methylene Diphenyl Diisocyanate), 9, NA3082, PGIII, RQ

Transportation Emergency Telephone Number: 1-800-424-9300 (CHEMTREC)

TDG: Not Regulated

IMO: Not regulated

IATA/ICAO: Not Regulated

* SECTION XII – ANIMAL TOXICITY DATA *

ACUTE TOXICITY

ORAL, LD50: Greater than 15,800 mg/kg (Rats)

DERMAL, LD50: Greater than 5010 but less than 7,940 mg/kg (Rabbits)

INHALATION, LC50: The 4-hour LC50 for polymeric MDI in rats ranges from 370 to 490 mg/m3. The LC50 for monomeric MDI was estimated to be between 172 and 187 mg/m3.

EVE EFFECTS: Slightly irritating. A maximum primary eye irritation score for polymeric MDI of 12.0/110 (24 hr) was obtained. This score is fairly typical for a number of MDI products.

SKIN EFFECTS: Slight to moderate irritant. Primary dermal irritations scores are typically below 3.4/8.0 (Draize).

SENSITIZATION: Has been known to produce dermal sensitization in guinea pigs, rabbits, and dogs. Although not well defined in experimental animals models, MDI is known to induce pulmonary and dermal sensitization in humans. In addition, there is some evidence to suggest that cross-sensitization between different types of diisocyanates may occur.

<u>CHRONIC TOXICITY</u>: In a chronic inhalation exposure study, rats were exposed to an aerosol of polymeric MDI for 6 hours per day, 5 days per week for a period of two years. The exposure concentrations were 0, 0.2, 1.0, and 6.0 mg/m3. Microscopic examination of tissues revealed the effects of irritation to the nasal cavity and lungs in animals exposed to 1.0 and 6.0 mg/m3. The No Observable Effect Level (NOEL) was 0.2 mg/m3.

<u>CARCINOGENICITY</u>: In the same two-year inhalation study described above (See Chronic Toxicity), the occurrence of pulmonary adenomas (benign tumors) and a single pulmonary adenocarcinoma (malignant tumor) was considered to be related to the exposure. These tumors were observed only in rats exposed to the high concentration of 6.0 mg/m3.

<u>MUTAGENICITY</u>: Monomeric MDI is positive in the Ames essay (with hepatic microsomal activation). However, it was negative in an in vivo-in vitro micronucleus assay.

<u>AQUATIC TOXICITY</u>: LC50 - 24HR (static): Greater than 500mg/liter for Daphnia magna, Limnea stagnalis, and zebra fish (Brachydanio rerio) for both polymeric and monomeric MDI.

DEVELOPMENTAL TOXICITY: Rats were exposed to polymeric MDI at air concentrations of 0, 1, 4 and 12 mg/m3 during days 6-15 of gestation. Maternal Toxicity (including mortality) was observed at the highest concentration of 12 mg/m3 accompanied by embryo and fetal toxicity. However, no teratogenic effects even at this lethal concentration.

*SECTION XIII – REGULATORY INFORMATION *

OSHA STATUS: This product is hazardous under the criteria of the federal OSHA Hazard Communication Standard 29CFR 1910.1200..

TSCA STATUS: On TSCA inventory. **CERCLA REPORTABLE QUANTITY**: 5000 lb for 4,4=-Diphenylmethane Diisocyanate, CAS# 101-68-8

SARA TITLE III: SECTION 302 EXTREMELY HAZARDOUS SUBSTANCES: None SECTION 311/312 HAZARD CATEGORIES: Immediate Health Hazard; Delayed Health Hazard; Reactive Hazard SECTION 313 TOXIC CHEMICALS: Polymeric Diphenylmethane Diisocyanate, CAS# 9016-87-9, 100% 4,4=-Diphenylmethane Diisocyanate, CAS# 101-68-8; Upper Bound 45%

RCRA STATUS: MDI is not listed as a hazardous waste. To the best of our knowledge, MDI does not meet the criteria of a hazardous waste if discarded in its purchased form. However, under RCRA, it is the responsibility of the user of the products to determine, at the time of disposal whether a product meets any of the criteria for a hazardous waste. This is because product uses, transformations, mixtures, processes, etc., may render the resulting material hazardous, under the criteria of ignitability, corrosivity, reactivity and toxicity characteristics under the new Toxicity Characteristics Leaching Procedure (TCLP) 40 Code of Federal Regulations 261.20-24.

* SECTION XIV – OTHER REGULATORY INFORMATION *

The following chemicals are specifically listed by individual states; other product specific health and safety data in other sections of the MSDS may also be applicable for state requirements. For details on your regulatory requirements you should contact the appropriate agency in your state.

<u>COMP(</u>	DNENT NAME / CA	AS NUMBER		<u>CONCENTRATION</u>		STATE CODE		
4,4 -DIPHENYLMETHANE-DIISOCYANATE (MDI) 101-68-8				UPPER BOUND 45%	PA1, MA, NJ1, NJ4, CN2			
DIPHENYLMETHANE-DIISOCYANATE (2, 2; 2, 4) 26447-40-5				UPPER BOUND 10%		PA3, NJ4		
HIGHER OLIGOMERS OF MDI				UPPER BOUND 55%		PA3, NJ4		
PHENY	L ISOCYANATE 10	3-71-9		TRACE		MA		
$\begin{array}{rcl} MA = & MASSACHUSETTS HAZARDOUS SUBSTANCE LIST \\ NJ1 = & NEW JERSEY HAZARDOUS SUBSTANCE LIST \\ NJ4 = & NEW JERSEY OTHER - INCLUDED IN 5 PREDOMINANT INGREDIENTS > 1° \\ PA1 = & PENNSYLVANIA HAZARDOUS SUBSTANCE LIST \\ PA3 = & PENNSYLVANIA NON-HAZARDOUS PRESENT AT 3° OR GREATER \\ CN2 = & CANADA WHMIS INGREDIENT DISCLOSURE LIST OVER 0.1° \\ NFPA & 704M RATINGS: Health Flammability Reactivity Other \\ & 3 & 1 & 1 \end{array}$								
0=Minin	nal 1=	Slight	2=Mode	rate	3=Serio	us	4=Severe	
*=Chron	ic Health Hazard							

Polyfoam Products, Inc. method of hazard communication is comprised of Product Labels and Material Safety Data Sheets. HMIS and NFPA ratings are provided by Polyfoam Products, Inc. as a customer service.

Prepared By: Steve Schultz

Date: February 3, 2003

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