MATERIAL SAFETY DATA SHEET

Spray Foam Polymers, LLC
PO Box 1182
New Canaan, CT 06840
Phone/fax – 800-853-1577
www.sprayfoampolymers.com

For Chemical Emergency
Spill Leak Fire Exposure or Accident
Call CHEMTREC Day or Night

DOMESTIC NORTH AMERICA
800-424-9300
INTERNATIONAL, CALL 703-527-3887
(collect calls accepted)

SECTION 1 - PRODUCT IDENTIFICATION

PRODUCT NAME: Thermoseal A-Side

CHEMICAL FAMILY: Aromatic Isocyanate

CHEMICAL NAME: POLYMETHANE POLYPHENYL ISOCYANATE

SYNONYMS: Polymeric Diphenylmethane Diisocyanate (PMDI), Polymethylene Polyphenyl Isocyanate

CAS NUMBER: 9016-87-9

FORMULA: Not Applicable

SECTION 2 - COMPOSITION/INFORMATION ON INGREDIENTS

INGREDIENT NAME/CAS NUMBER	EXPOSURE LIMITS **HAZARDOUS INGREDIENTS**	CONCENTRATION (%)
Polymeric Diphenylmethane Diisocyanate 9016-87-9		Upper Bound 55%
Methylene Diphenyldiisocyanate 101-68-8		Upper Bound 45%

Percentage is dependent on the monomer content of the product which will vary from lot to lot.

SECTION 3 - HAZARDS IDENTIFICATION

Emergency Overview

Color: Brown Liquid **Odor:** Musty

Sprayed or heated material is harmful if inhaled. Avoid skin and eye contact. Skin and lung sensitizer - may cause allergic skin and respiratory reactions including possible lung injury.

Avoid temperatures above 410C (1050F) – closed containers may rupture due to material decomposition. Toxic and or flammable fumes may be released during burning or thermal decomposition.

Slowly reacts with water forming carbon dioxide and possibly rupturing closed containers. Elevated temperatures accelerate this reaction.

POTENTIAL HEALTH EFFECTS:

EYE:

Can cause eye irritation. Symptoms include stinging, tearing, redness, and swelling of eyes. Prolonged exposure may cause temporary corneal injury.

SKIN:

Can cause skin irritation. Symptoms may include redness and burning of skin, and other skin damage. Additional symptoms of skin contact may include: allergic skin reaction (delayed skin rash which may be followed by blistering, scaling and other skin effects)

SWALLOWING:

Swallowing this material may be harmful or fatal. Symptoms may include severe stomach and intestinal irritation (nausea, vomiting, diarrhea), abdominal pain, and vomiting of blood. Swallowing this material may cause burns and destroy tissue in the mouth, throat, and digestive tract. Low blood pressure and shock may occur as a result of severe tissue injury. This material can get into the lungs during swallowing or vomiting. This results in lung inflammation and other lung injury.

INHALATION:

At room temperature vapor concentrations are low due to the low volatility of this material and are not likely to cause harmful effects. At concentrations above the TLV or PEL, vapors may cause respiratory irritation or other adverse effects. Symptoms may include runny nose, sore throat, coughing, chest discomfort, shortness of breath, and reduced lung function. Acute exposure may result in irritation of the upper respiratory tract and lungs and cause pulmonary edema (fluid in the lungs). Some individuals may become permanently sensitized to this material and experience asthma-like symptoms even at levels well below recommended exposure guidelines. These effects may be delayed and may be life threatening. Overexposure may result in fibrosis and permanent decreased lung function.

SYMPTOMS OF EXPOSURE:

Signs and symptoms of exposure to this material through breathing, swallowing, and/or passage of the material through the skin may include: irritation (nose, throat, airways), allergic reaction (causes narrowing of the air passages of the lungs, sweating, flushing, hives, rapid heart rate and lowered blood pressure).

TARGET ORGAN EFFECTS:

Overexposure to this material (or its components) has been suggested as a cause of the following effects in humans: skin sensitization, respiratory sensitization.

DEVELOPMENTAL INFORMATION:

None Found

CANCER INFORMATION:

In a two-year inhalation study in rats, exposure to polymeric methylene bisphenylisocyanate (MDI) aerosol caused a significant increase in benign (non-carcinogenic) lung tumors, along with a single carcinogenic lung tumor, at the highest dose only (6 mg/m^3). The tumors occurred along with irritation of the respiratory tract and the accumulation of a yellow material in the lungs. There was irritation only at 1.0 mg/m^3 and no effect at 0.2 mg/m^3. MDI is not listed as carcinogenic by IARC, NTP or OSHA.

OTHER HEALTH EFFECTS:

None Found

PRIMARY ROUTE(S) OF ENTRY:

Inhalation, Skin contact

SECTION 4 - FIRST AID MEASURES

FIRST AID FOR EYES:

If symptoms develop, immediately move individual away from exposure and into fresh air. Flush eyes gently with water for at least 15 minutes while holding eyelids apart; seek immediate medical attention.

FIRST AID FOR SKIN:

Remove contaminated clothing. Flush exposed area with large amounts of water. If skin is damaged, seek immediate medical attention. Launder clothing before reuse.

FIRST AID FOR INHALATION:

If symptoms develop, immediately move individual away from exposure and into fresh air. Seek immediate medical attention; keep person warm and quiet. If person is not breathing, begin artificial respiration. If breathing is difficult, administer oxygen. Monitor individual for the development of asthmatic symptoms, which may be immediate or develop after several hours.

FIRST AID FOR SWALLOWING:

Seek medical attention. If individual is drowsy or unconscious, do not give anything by mouth; place individual on left side with the head down. Contact a physician. medical facility, or poison control center for advice about whether to induce vomiting. If possible, do not leave individual unattended.

NOTE TO PHYSICIANS:

This material is an aspiration hazard. Potential danger from aspiration must be weighed against possible oral toxicity (See Section 3-Swallowing) when deciding whether to induce vomiting. Preexisting disorders of the following organs (or organ systems) may be aggravated by exposure to this material: respiratory tract, skin, lung (for example, asthma-like conditions).

SECTION 5 - FIRE FIGHTING MEASURES

FLASH POINT: 230^0C

EXPLOSIVE LIMIT: No Data

AUTOIGNITION TEMPERATURE: No Data

HAZARDOUS PRODUCTS OF COMBUSTION:

May form: carbon dioxide and carbon monoxide, hydrogen cyanide, nitrogen compounds and various hydrocarbons.

OTHER FLAMMABILITY INFORMATION:

Isocyanates react with water. This reaction may produce heat and or gasses. This reaction may be violent. Closed containers (tanks, drums, etc.) may rupture from gases generated during the fire situation. Violent steam generation may occur upon direct application of a water stream to the hot liquids. Burning product produces dense smoke.

FIRE AND EXPLOSIVE HAZARDS:

Never use welding or cutting torch on or near drum (even empty) because product (even just residue) can ignite explosively.

EXTINGUISHING MEDIA:

Dry chemical; Carbon Dioxide; Foam; Water spray for large fires.

SPECIAL FIRE FIGHTING PROCEDURES:

Water or foam may cause frothing which can be violent and possibly endanger the life of the firefighter. Full emergency equipment with self-contained 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 Stability and Reactivity). At temperatures greater than 400 F (204 ^{0}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 6 - ACCIDENTAL RELEASE MEASURES

SPILL OR LEAK PROCEDURES:

Evacuate and ventilate the spill area; dike spill to prevent entry into water system; wear full protective equipment, including respiratory equipment during clean-up. (See Employee Protection Recommendations).

MAJOR SPILL: If temporary control of isocyanate 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, container for 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.

SECTION 7 - HANDLING AND STORAGE

STORAGE TEMPERATURE (MIN/MAX): 20^0C / 25^0C

SHELF LIFE: 6 Months

SPECIAL SENSITIVITY:

If container is exposed to high heat, 400^0F (204^0C) it can be pressurized and possibly rupture. MDI reacts slowly with water to form CO_2 gas. This gas can cause sealed containers to expand and possibly rupture.

HANDLING/STORAGE PRECAUTIONS:

Containers of this material may be hazardous when emptied. Since emptied containers retain product residues (vapor, liquid, and/or solid), all hazard precautions given in the data sheet must be observed. 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 a single inhalation exposure to relatively high concentrations or repeated exposures to low concentrations. Exposure to vapors of heated MDI can be extremely dangerous.

SECTION 8 - PERSONAL PROTECTION

EYE PROTECTION REQUIREMENT:

Liquid chemical goggles. 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 REQUIREMENTS:

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.

VENTILATION REQUIREMENTS:

Local exhaust should be used to maintain levels below the TLV whenever MDI is processed, heated or spray applied. Standard reference sources regarding industrial ventilation (i.e., ACGIH Industrial Ventilation) should be consulted for guidance about adequate ventilation.

RESPIRATOR REQUIREMENTS:

Concentrations greater than the TLV can occur when MDI is sprayed, heated or used in poorly ventilated area. In such cases, or whenever concentrations of MDI exceed the TLV or are not known, respiratory protection must be worn. A supplied air respirator (either positive pressure or continuous flow type) is required. In an emergency situation, a self contained breathing apparatus may be used.

MDI has poor warning properties, since the concentration at which MDI can be smelled is substantially higher than the maximum exposure limit. Observe OSHA regulations for respirator use (29 CFR 1910.134).

MONITORING:

Isocyanate exposure levels must be monitored. Monitoring of airborne isocyanates in the breathing zone of individuals should become part of the overall employee exposure characterization program. Monitoring techniques have been developed by NIOSH, and OSHA.

MEDICAL SURVEILLANCE:

Medical supervision of all employees who handle or come in contact with isocyanates is recommended. These should include pre-employment and periodic medical examinations with pulmonary function tests (FEV, FVC as a minimum). Persons with asthmatic-type recurrent skin eczema or sensitization should be excluded from working with isocyanates. Once a person is diagnosed as sensitized to an isocyanate, no further exposure can be permitted.

ADDITIONAL PROTECTIVE MEASURES:

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

SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL FORM:	Liquid
COLOR:	Dark Brown Viscous Liquid
ODOR:	Musty
VISCOSITY:	200±50 mPas
SOLUBILITY IN WATER:	Not soluble. Reacts slowly with water to liberate CO_2 gas.
SPECIFIC GRAVITY:	1.25 @ 77^0F. (25^0C.)
NCO% Wt	30.5-32.0
VAPOR PRESSURE(:	10^{-4} MAX mm Hg/40^0 C
Acid content(HCL):	max 0.05%

SECTION 10 - STABILITY AND REACTIVITY

STABILITY: This is a stable material under recommended storage conditions.

HAZARDOUS POLYMERIZATION: May occur: Contact with moisture, other materials will react with isocyanates, or temperatures above 400^0F. (204^0C.) may cause polymerization.

INCOMPATIBILITIES: Water, amines, strong bases, alcohols and polyols will react with MDI generating heat and possible off-gasses (carbon dioxide, in the case of water). If allowed to continue, these reactions may become increasingly exothermic and cause closed-container rupture. Avoid contact with metals such as copper alloys, tin, zinc and aluminum: corrosion may result.

INSTABILITY CONDITIONS: Contamination with water and high temperatures (greater than 400^0F. (204^0C)

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

SECTION 11 - TOXICOLOGICAL INFORMATION

LD50-LC50 Mixture: LD50 RAT ORAL 10,000 mG/KG

SECTION 12 - ECOLOGICAL INFORMATION

No Data

SECTION 13 - DISPOSAL CONSIDERATIONS

WASTE DISPOSAL METHOD:

Waste must be disposed of in accordance with federal, state, and local environmental control regulations. Incineration is the preferred method.

EMPTY CONTAINER PRECAUTIONS:

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 Fire Fighting Measures and Stability and Reactivity). Gases may be highly toxic.

SECTION 14 - TRANSPORTATION INFORMATION

DOT Non-Bulk
Not Regulated

Land Transportation (DOT):
Proper Shipping Name: Other regulated substances, liquid, n.o.s. (contains 4,4'-diphenylmethane diisocyanate (MDI))
Hazard Class or division : 9
UN/NA Number: NA3082
Packaging Group: III
Hazard Label (s): Class 9

IMDG
Proper Shipping Name: Environmentally Hazardous Substances, Liquid, NOS
Technical Name: MDI
Hazard Class: 9 **ID number:** UN3082 **Packing Group:** PG III
EMS Number: F-A, S-F
Marine pollutant: No

ICAO/IATA
Not Regulated

Additional Information
Reportable Quantity: 5,000 lb

SECTION 15 - REGULATORY INFORMATION

OSHA STATUS:

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

TSCA STATUS:

TSCA (United States) The intentional ingredients of this product are listed.

SARA TITLE III:

SECTION 302 EXTREMELY HAZARDOUS SUBSTANCES: NONE

SECTION 311/312 HAZARD CATEGORIES:

Acute Health Hazard; Chronic Health Hazard

SECTION 313 TOXIC CHEMICALS:

Polymeric Diphenylmethane Diisocyanate, CAS# 9016-87-9, 100% Contained in this polymeric MDI product is 4,4- Diphenylmethane Diisocyanate, CAS# 101-68-8; Upper Bound 45%

EPA ACCIDENTAL RELEASE PREVENTION 40 CFR 68:

None Listed

STATE RIGHT-TO-KNOW INFORMATION:

Massachusetts, New Jersey or Pennsylvania Right-to-Know Substance Lists:

Weight %	Components	CAS-No.
40-55%	Polymeric Diphenylmethane Diisocyanate (Polymeric MDI	9016-87-9
35-45%	4,4’ -Diphenylmethane Diisocyanate (MDI)	101-68-8
1-15%	Diphenlylmethane Diisocyanate (MDI)	26447-40-5

INTERNATIONAL REGULATIONS INVENTORY STATUS:

DSL (Canada) The intentional ingredients of this product are listed.

SECTION 16 - COMMENTS

WHILE SPRAY FOAM POLYMERS BELIEVES THE DATA SET FORTH HEREIN ARE ACCURATE AS OF THE DATE HEREOF, SPRAY FOAM POLYMERS MAKES NO WARRANTY WITH RESPECT THERETO AND EXPRESSLY DISCLAIMS ALL LIABILITY FOR RELIANCE THEREON. SUCH DATA ARE OFFERED SOLELY FOR YOUR CONSIDERATION, INVESTIGATION, AND VERIFICATION.