

MATERIAL SAFETY DATA SHEET

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Identification

Product Name: Fleece Membrane Adhesive Part 1
Chemical Name: Polymeric MDI
Chemical Family: POLYMETHYLENE POLYPHENYLISOCYANATE
CAS Number: Mixture

Company Identification

ERSystems- Elastomeric Roofing Systems, Inc.
6900 Bleck Dr
Rockford, MN 55373 USA
1-800-403-7747 (For product information)
1-800-535-5053 Infotrac (For emergencies)

SPECIAL NOTES:

Part A of two part polyurethane system. Polymethylene polyphenylisocyanate.

2. COMPOSITION/INFORMATION ON INGREDIENTS

COMPONENT LISTING:

<u>Chemical Name</u>	<u>Amount</u>	<u>CAS Number</u>
4,4'-DIPHENYLMETHANE DIISOCYANATE	38.0 %	101-68-8
POLYMERIC MDI	< 55.0 %	9016-87-9
MDI MIXED ISOMERS	< 10.0 %	26447-40-5

(See Section 8 for exposure guidelines)

(See Section 15 for regulatory information)

HAZARDS DISCLOSURE

This product contains hazardous materials as defined by the OSHA Hazard Communication Standard 29 CFR 1910.1200.

As defined under Sara 311 and 312, this product contains materials that are acute, chronic, reactive hazards.



3. HAZARDS IDENTIFICATION

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***** EMERGENCY OVERVIEW *****
*
* CAUTION
*
* Contains Diphenylmethane Diisocyanate. Inhalation
* of MDI mists or vapors may cause respiratory
* irritation, breathlessness, chest discomfort and
* reduced pulmonary function. Overexposure well
* above the PEL may result in bronchitis, bronchial
* spasms and pulmonary edema. Long-term exposure to
* isocyanates has been reported to cause lung damage,
* including reduced lung function which may be
* permanent. Acute or chronic overexposure to
* isocyanates may cause sensitization in some
* individuals, resulting in allergic respiratory
* reactions including wheezing, shortness of breath,
* and difficulty breathing.
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HMIS Rating - Health: *2
Flammability: 1
Reactivity: 1

NFPA/HMIS Definitions: (0-Least, 1-Slight, 2-Moderate, 3-High, 4-Extreme). These values are obtained using the guidelines or published evaluations prepared by the National Fire Protection Association (NFPA) or the National Paint and Coating Association (for HMIS ratings).

POTENTIAL HEALTH EFFECTS

EYE:

Contact may cause eye irritation. May result in corneal opacity (clouding of the eye surface).

SKIN:

Causes skin burns, irritation, and possible allergic reaction. In those who have developed skin sensitization, these symptoms can develop as a result of contact with a very small amount of the liquid material.

INHALATION:

Inhalation of MDI vapors may cause irritation of the mucous membranes of the nose, throat or trachea, breathlessness, chest discomfort, difficult breathing and reduced pulmonary function.



(section 3 continued)

INGESTION:

Harmful if swallowed. Can burn mouth, throat, and stomach.
Gastrointestinal symptoms include nausea, vomiting and abdominal pain.

CHRONIC EFFECTS:

As a result of previous repeated overexposures or a single large dose, certain individuals will develop isocyanate sensitization (chemical asthma) which will cause them to react to a later exposure to isocyanate at levels well below the PEL/TLV. These symptoms, which include chest tightness, wheezing, cough, shortness of breath, or asthmatic attack, could be immediate or delayed up to several hours after exposure. Chronic overexposure to isocyanates has also been reported to cause lung damage, including a decrease in lung function, which may be permanent. Sensitization may be either temporary or permanent. Prolonged contact can cause reddening, swelling, rash, scaling, or blistering. In those who have developed skin sensitization, these symptoms can develop as a result of contact with very small amounts of liquid material.

REPRODUCTIVE HAZARDS:

No birth defects or teratogenic effects were reported in a teratology study with rats exposed to 1, 4 and 12mg/m³ polymeric MDI for 6 hr/day on days 6-15 of gestation. Embryotoxicity and fetotoxicity was reported at the top dose in the presence of maternal toxicity.

CARCINOGENICITY INFORMATION:

Lung tumors have been observed in lab animals exposed to respirable aerosol droplets of MDI/polymeric MDI (6 mg/m³) for their lifetime. Tumors occurred concurrently with respiratory irritation and lung injury. Current exposure guidelines are expected to protect against these effects reported for MDI.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE:

Individuals who are sensitized to isocyanates and those with preexisting lung disease or conditions, including non-specific bronchial hyperreactivity or asthma, must avoid all exposure to isocyanates.

4. FIRST AID MEASURES

EYE CONTACT FIRST AID:

After initial flushing, remove any contact lenses and continue flushing for at least 15 minutes. Get immediate medical attention.

SKIN CONTACT FIRST AID:

Remove contaminated clothing and shoes. Wash affected area immediately with large amounts of soap and water. Get medical attention immediately.



(section 4 continued)

INHALATION FIRST AID:

If inhaled, remove to fresh air. If not breathing, give artificial respiration. Get immediate medical attention.

INGESTION FIRST AID:

If swallowed, immediately give 2 glasses of water. Do not induce vomiting. Contact a physician. Never give anything by mouth to an unconscious person. Get immediate medical attention.

NOTES TO PHYSICIAN:

There is no antidote to counteract the effects of MDI. Care should be supportive and treatment should be based on the judgment of the physician in response to the action of the patient.

5. FIRE FIGHTING MEASURES

FLAMMABLE PROPERTIES

TCC Flash Point: > 204 C (> 399.2 F)
Autoignition Temperature: > 600 C (> 1112.0 F)

FLAMMABLE LIMITS IN AIR

LEL: N/A
UEL: N/A

FLAMMABLE PROPERTIES:

Full emergency equipment with self contained breathing apparatus and full protective clothing should be worn. At temperatures greater than 400 F material may polymerize causing pressure build up in closed containers. Explosive rupture is possible. Use cold water to cool containers exposed to fire.

EXTINGUISHING MEDIA:

Water, carbon dioxide, foam or dry powder.

FIRE & EXPLOSION HAZARDS:

Material will burn in a fire.

FIRE FIGHTING INSTRUCTIONS:

As in any fire, wear self-contained breathing apparatus pressure-demand MSHA/NIOSH (approved or equivalent) and full protective gear.

MISCELLANEOUS:

Reacts with water to form carbon dioxide gas, which may create excessive pressure in containers. Reacts exothermically with polyol and alcohols. Reacts exothermically and possibly violently with acids, amines and alkaline solutions.



6. ACCIDENTAL RELEASE MEASURES

SAFEGUARDS (PERSONNEL):

Evacuate non-emergency personnel to a safe area. Avoid breathing vapor. Ventilate spill area. Wear safety goggles. Wear appropriate personal protective equipment.

INITIAL CONTAINMENT:

Contain spilled material. Absorb spills with inert material. Place in closed containers but do not seal.

LARGE SPILLS PROCEDURE:

Absorb spill with inert material (e g, dry sand or earth), then place in a chemical waste container. Place in closed containers but do not seal. Neutralize spill with mixture of 90% water, 3-8% ammonia and 2-7% detergent. Add at a 10 to 1 ratio and let stand for 48 hrs allowing CO2 to escape.

MISCELLANEOUS:

Do not discharge into drains/surface waters/groundwater.

7. HANDLING AND STORAGE

RECOMMENDED STORAGE TEMPERATURE

Minimum: 12.8 C (55.0 F)
Maximum: 29.4 C (84.9 F)

SHELF LIFE: (in original, sealed containers)

18 months @ 29.4 C

HANDLING (PERSONNEL):

Avoid contact with eyes. Avoid prolonged or repeated contact with skin. Wash hands thoroughly after handling. Do not reuse this container.

HANDLING (PHYSICAL ASPECTS):

Provide appropriate ventilation. Close container after each use. Keep container closed to avoid contamination. Keep out of reach of children.

STORAGE PRECAUTIONS:

Avoid extreme temperatures. Keep container closed when not in use. Store in a cool dry place.

SPECIAL SENSITIVITY:

All handling equipment should be electrically grounded.

MISCELLANEOUS:

Protect from moisture.



8. EXPOSURE CONTROLS / PERSONAL PROTECTION

ENGINEERING CONTROLS:

Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use process enclosures, local exhaust ventilation, or other engineering controls to control airborne levels below recommended exposure limits.

EYE / FACE PROTECTION REQUIREMENTS:

Wear safety glasses. A respiratory protection program that meets OSHA's 29 CFR 1910-134 and ANSI Z88-2 requirements must be followed whenever workplace conditions warrant a respirator's use.

SKIN PROTECTION REQUIREMENTS:

Selection of specific items such as gloves, boots, apron or full-body suit will depend on operation.

RESPIRATORY PROTECTION REQUIREMENTS:

When there is potential for airborne exposures in excess of applicable limits, wear NIOSH/MSHA approved respiratory protection.

EXPOSURE GUIDELINES:

No Information Available.

MISCELLANEOUS:

4-4'-methylenediphenyl diisocyanate:

ACGIH TWA 0.005 ppm.

OSHA Table Z-1 Ceiling 0.2 mg/m³ 0.002 ppm.

9. PHYSICAL AND CHEMICAL PROPERTIES

FORM	Liquid
COLOR	Dark Brown
ODOR	Aromatic
BOILING POINT	>300 C @ 5 mm Hg
VAPOR PRESSURE	0.00001 mm Hg @ 20 C
VAPOR DENSITY	8.5 (Air = 1)
SOLUBILITY IN WATER	Reacts with water
SPECIFIC GRAVITY	1.22 (Water = 1)
BULK DENSITY	10.16 lb/USg
MELTING/FREEZING POINT ...	3 C
VISCOSITY	40-150 cps



10. STABILITY AND REACTIVITY

STABILITY:

Stable under recommended storage conditions.

POLYMERIZATION:

May occur.

INCOMPATIBILITY WITH OTHER MATERIALS:

Reacts with water, with formation of carbon dioxide. Risk of bursting. Reacts with alcohols, acids, alkalies, amines. Risk of exothermic reaction. Risk of violent reaction. Contact with certain rubbers and plastics can cause brittleness of the substance with subsequent loss in strength.

DECOMPOSITION:

Hazardous decomposition products: carbon monoxide, hydrogen cyanide, nitrogen oxides, aromatic isocyanates, gases/vapors.

CONDITIONS TO AVOID:

Avoid moisture, acids, alcohols, amines, ammonia, bases, metal compounds, strong oxidizers.

11. TOXICOLOGICAL INFORMATION

EYE EFFECTS:

May cause eye irritation.

SKIN EFFECTS:

Typical for this family of material LD50, rabbit > 2,000 mg/kg. May cause allergic skin reaction.

ACUTE ORAL EFFECTS:

Typical for this family of materials LD50/rat: > 10,000 mg/kg.

ACUTE INHALATION EFFECTS:

LD50, aerosol, rat: 490 mg/m³. May cause allergic respiratory response.

SUBCHRONIC EFFECTS:

Tissue injury in the upper respiratory tract and lungs has been observed in lab animals after repeated excessive exposure to MDI/polymeric MDI aerosols.

REPRODUCTION AND BIRTH EFFECTS:

In lab animals, MDI/polymeid MDI did not cause birth deffects; other fetal effects occurred only at high doses which we toxic to the mother.



12. ECOLOGICAL INFORMATION

ENVIRONMENTAL HAZARDS:

In aquatic and terrestrial environments, movement is expected to be limited by its reaction with water forming predominantly insoluble polyureas.

13. DISPOSAL CONSIDERATIONS

WASTE DISPOSAL:

Treat or dispose of waste material in accordance with all local, state/provincial, and national requirements.

CONTAINER DISPOSAL:

Steel drums must be emptied and can be sent to a licensed drum reconditioner for reuse, a scrap metal dealer, or an approved landfill. Recommend crushing, puncturing or other means to prevent unauthorized use of used containers.

14. TRANSPORTATION INFORMATION

PRODUCT LABEL ...: Fleece Membrane Adhesive Part 1

15. REGULATORY INFORMATION

Canadian Disclosure List

4,4'-DIPHENYLMETHANE DIISOCYANATE (101-68-8)

SARA Title III - Section 313

4,4'-DIPHENYLMETHANE DIISOCYANATE (101-68-8)

Polymeric MDI (9016-87-9)

CERCLA Hazardous Substances

4,4'-DIPHENYLMETHANE DIISOCYANATE (101-68-8) -- RQ 5000 lbs.

Title V

4,4'-DIPHENYLMETHANE DIISOCYANATE (101-68-8)

SC Toxic Air Pollutants List

4,4'-DIPHENYLMETHANE DIISOCYANATE (101-68-8)



16. OTHER INFORMATION

PREPARED BY: Chemist
APPROVED BY: Laura Vollenweider
TITLE: Chemist
APPROVAL DATE: September 13, 2010
SUPERCEDES DATE ...: New
MSDS NUMBER: foam00
RTN NUMBER: 00000212 (Official Copy)

ADDITIONAL INFORMATION:

The data in this Material Safety Data Sheet relates only to the specific material designated herein.

To the best of our knowledge, the information contained in this MSDS is accurate. It is intended to assist the user in his evaluation of the product's hazards, and safety precautions to be taken in its use. The data in this MSDS relate only to the specific material designated herein. We do not assume liability for the use of, or reliance on this information, nor do we guarantee its accuracy or completeness.

END OF MSDS



MATERIAL SAFETY DATA SHEET

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Identification

Product Name: Fleece Membrane Adhesive Part 2
Product Number: Bag- in-a Box, cartridges
Chemical Name: Polyurethane System Resin
Component
CAS Number: Blend

Company Identification

ERSystems
6900 Bleck Drive
Rockford, MN 55373
1-800-403-7747 (For product information)
1-800-535-5053 (For emergencies)

SPECIAL NOTES:

Polyurethane foam system resin component. Part 2 (Part B) of a two part system.

2. COMPOSITION/INFORMATION ON INGREDIENTS

COMPONENT LISTING:

<u>Chemical Name</u>	<u>Amount</u>	<u>CAS Number</u>
PROPRIETARY BLEND OF MATERIALS	< 60.0 %	
DIETHYLENE GLYCOL	< 20.0 %	111-46-6
DIPROPYLENE GLYCOL	< 10.0 %	25265-71-8
POLYETHER POLYOL	< 15.0 %	25322-69-4
PROPANOIC ACID, 2-METHYL-, 2,2-DIMETHYL-1-(1-METH	< 15.0 %	6846-50-0

(See Section 8 for exposure guidelines)

(See Section 15 for regulatory information)

HAZARDS DISCLOSURE

This product contains hazardous materials as defined by the OSHA Hazard Communication Standard 29 CFR 1910.1200.

As defined under Sara 311 and 312, this product contains materials that are acute, chronic hazards.



3. HAZARDS IDENTIFICATION

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***** EMERGENCY OVERVIEW *****
*
* CAUTION
*
* May be harmful if swallowed. May cause skin, eye,
* or respiratory tract irritation.
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*****
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HMIS Rating - Health: 1
Flammability: 1
Reactivity: 0
Personal Protection Index: s

POTENTIAL HEALTH EFFECTS

EYE:

Contact may cause eye irritation and injury.

SKIN:

May be a skin irritant. A single, prolonged exposure is not likely to result in the material being absorbed through skin in harmful amounts.

INHALATION:

Avoid breathing vapors or mists. Prolonged or excessive inhalation may cause respiratory tract irritation.

INGESTION:

Harmful if swallowed.

TARGET ORGAN:

May cause target organ damage, based on animal data. Organs include bladder, respiratory tract, liver, kidney, central nervous system, gastrointestinal tract.

MISCELLANEOUS:

Diethylene Glycol has caused toxicity to the fetus and some birth defects at the maternally toxic, high doses in animals. Other animal studies have not reproduced birth defects even at much higher doses that caused severe maternal toxicity.



4. FIRST AID MEASURES

EYE CONTACT FIRST AID:

After initial flushing, remove any contact lenses and continue flushing for at least 15 minutes. Get medical attention if irritation develops or persists.

SKIN CONTACT FIRST AID:

Immediately wash skin with plenty of soap and water while removing contaminated clothing and shoes. Get medical attention if irritation develops or persists.

INHALATION FIRST AID:

Remove to fresh air if effects occur. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention if cough or other symptoms develop.

INGESTION FIRST AID:

If swallowed get immediate medical attention. Do not induce vomiting. Never give anything by mouth to an unconscious person.

5. FIRE FIGHTING MEASURES

FLAMMABLE PROPERTIES

TCC Flash Point: 190.6 C (375.1 F)
Autoignition Temperature: N/A

FLAMMABLE LIMITS IN AIR

LEL: N/A
UEL: N/A

EXTINGUISHING MEDIA:

Water fog or fine spray, carbon dioxide, alcohol resistant foams are preferred or dry powder. Do not use a direct water stream.

FIRE & EXPLOSION HAZARDS:

Container may rupture from gas generation in fire situation. Violent steam generation or eruption may occur upon application of direct stream to hot liquids.

FIRE FIGHTING INSTRUCTIONS:

Wear positive-pressure self-contained breathing apparatus (SCBA) and protective fire fighting clothing.

COMBUSTION PRODUCTS:

During fire, smoke may contain the original material in addition to unidentified toxic and /or irritating compounds. May include and are not limited to: carbon monoxide, carbon dioxide.



6. ACCIDENTAL RELEASE MEASURES

SAFEGUARDS (PERSONNEL):

Isolate spill area. May be a slipping hazard.

INITIAL CONTAINMENT:

Contain spilled material. Absorb spills with inert material.

LARGE SPILLS PROCEDURE:

Absorb spill with inert material (e g, dry sand or earth), then place in a chemical waste container. Treat or dispose of waste material in accordance with all local, state/provincial, and national requirements.

SMALL SPILLS PROCEDURE:

Absorb spills with inert material. Treat or dispose of waste material in accordance with all local, state/provincial, and national requirements.

7. HANDLING AND STORAGE

RECOMMENDED STORAGE TEMPERATURE

Minimum: 15.6 C (60.1 F)
Maximum: 26.7 C (80.1 F)

SHELF LIFE: (in original, sealed containers)

8 months @ 26.7 C

HANDLING (PERSONNEL):

Avoid contact with eyes, skin, and clothing. Wash hands thoroughly after handling.

HANDLING (PHYSICAL ASPECTS):

Provide appropriate ventilation. Close container after each use. Keep container closed to avoid contamination. Keep out of reach of children.

STORAGE PRECAUTIONS:

Avoid extreme temperatures. Keep container closed when not in use. Store in a cool dry place.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

EYE / FACE PROTECTION REQUIREMENTS:

Wear safety glasses. A respiratory protection program that meets OSHA's 29 CFR 1910-134 and ANSI Z88-2 requirements must be followed whenever workplace conditions warrant a respirator's use.



(section 8 continued)

SKIN PROTECTION REQUIREMENTS:

Selection of specific items such as gloves, boots, apron or full-body suit will depend on operation. Wash hands thoroughly after handling. Product produces slippery conditions.

RESPIRATORY PROTECTION REQUIREMENTS:

When there is potential for airborne exposures in excess of applicable limits, wear NIOSH/MSHA approved respiratory protection.

MISCELLANEOUS:

Wash hands before eating, drinking, smoking and using the toilet. Launder contaminated clothing before re-use.

EXPOSURE GUIDELINES:

No Information Available.

MISCELLANEOUS:

Diethylene Glycol TWA 10mg/cubic meter 8 hours.

9. PHYSICAL AND CHEMICAL PROPERTIES

FORM: Liquid
COLOR: Brown
ODOR: Slight, sweet odor
SOLUBILITY IN WATER ...: Slight
BULK DENSITY: 8.5
VISCOSITY: 250-400 cps

10. STABILITY AND REACTIVITY

STABILITY:

Stable under normal conditions of use. Do not heat.

INCOMPATIBILITY WITH OTHER MATERIALS:

Avoid contact with strong oxidizing agents. Avoid contact with strong acids and bases.

DECOMPOSITION:

Decomposition will not occur if handled and stored properly. Thermal decomposition is highly dependent on conditions. A complex mixture of airborne solids, liquids and gases, including carbon monoxide, carbon dioxide and other organic compounds will be evolved when this material undergoes combustion or thermal or oxidative degradation.

CONDITIONS TO AVOID:

High temperatures.



11. TOXICOLOGICAL INFORMATION

EYE EFFECTS:

Slightly irritating to eyes.

SKIN EFFECTS:

Slightly irritating to skin.

ACUTE ORAL EFFECTS:

Diethylene Glycol:

Ingestion: LD50, rat 12,565 mg/kg approximate, lethal dose, human adult 2 ounces.

Skin Absorption: LD50, rabbit 12,510 mg/kg.

Inhalation: LC50, 4 hours, rat > 4.4 mg/l.

ACUTE INHALATION EFFECTS:

Inhalation of vapours and mists may cause irritation to the respiratory tract.

SUBCHRONIC EFFECTS:

May cause damage to the following organs: kidneys, liver, central nervous system.

REPRODUCTION AND BIRTH EFFECTS:

Did not interfere with reproduction in animal studies.

GENETIC TOXICITY:

Animal genetic toxicity studies were negative.

12. ECOLOGICAL INFORMATION

ENVIRONMENTAL HAZARDS:

Bioconcentration potential is low (BCF less than 100 or log Pow less than 3).

ENVIRONMENTAL FATE:

Based in the stringent test guidelines, some of this material cannot be considered as readily biodegradable; However, these results do not necessarily mean that the material is not biodegradable under environmental conditions.

MISCELLANEOUS:

Materila is practically non-toxic to aquatic organisms on an acute basis (LC50 > 100 mg/l in most sensitive species).



13. DISPOSAL CONSIDERATIONS

WASTE DISPOSAL:

Treat or dispose of waste material in accordance with all local, state/provincial, and national requirements.

14. TRANSPORTATION INFORMATION

PRODUCT LABEL: Fleece Membrane Adhesive Part 2
D.O.T. SHIPPING NAME: N/A
TECHNICAL SHIPPING NAME ...: N/A
D.O.T. HAZARD CLASS: N/A
UN NUMBER: N/A

15. REGULATORY INFORMATION

REGULATORY DISCLOSURES:

SARA 311/312 Diethylene Glycol is an Immediate (acute) and Delayed (chronic) health hazard.

Sara 313: To the best of our knowledge, this product does not contain chemicals at the levels which require reporting under this statute.

MISCELLANEOUS INFORMATION:

This material or all of its components are listed on the Inventory of Existing Chemical Substances under the Toxic Substance Control Act (TSCA).

16. OTHER INFORMATION

PREPARED BY: Chemist
APPROVED BY: Laura Vollenweider
TITLE: Chemist
APPROVAL DATE: September 13, 2010
SUPERCEDES DATE ...: New
RTN NUMBER: 00000211 (Official Copy)

ADDITIONAL INFORMATION:

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END OF MSDS

