



BioBased® A - Component - Material Safety Data Sheet

1. PRODUCT AND COMPANY IDENTIFICATION

Product Name:	BioBased® A - Component
Synonyms/Generic Names:	Aromatic isocyanate
Product Use:	Polyurethane spray foam component
Manufacturer:	BioBased® Insulation a Division of BioBased Technologies® LLC 1200 Stewart Place, Springdale, AR 72764. (479) 966-4600 (479) 966-4601 (fax) Website: www.biobased.net
In Case Of Emergency Call:	CHEMTREC (800) 424-9300 (24 Hours/Day, 7 Days/Week, US and Canada) or call (collect) at (703) 527-3887 (USA)

2. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW: Dark brown liquid with a musty odor. Avoid contact with liquid, vapors or mists. Liquid and vapors cause irritation to the skin, the eyes and the respiratory tract. Liquid and vapor is harmful via skin contact, inhalation or ingestion. Liquid or vapors may cause allergic respiratory and/or skin reactions, possibly severe in nature. Respiratory reactions may be caused by skin contact alone. If involved in a fire, irritating and toxic vapors can be emitted. Closed Containers may forcibly rupture under extreme heat or when contents have been contaminated with water. Use cold water spray to cool fire-exposed containers to minimize the risk of rupture.

OSHA Hazard Communication Standard:	This product is considered hazardous.
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Potential Health Hazards:

Skin:	Can cause irritation. Symptoms may include reddening, swelling, rash, scaling, or blistering. Can cause allergic skin reactions in individuals sensitized MDI and other isocyanates. Animal tests and only research indicate that skin contact with MDI can play a role in causing isocyanate sensitization and respiratory reaction.
Eyes:	Liquid and mists can cause irritation including tearing, stinging, reddening, and swelling of the eyes. Untreated exposures may cause temporary corneal damage (which may be slow to heal.)
Inhalation:	Exposures to vapors or mists above the permissible exposure levels (PEL) or threshold limit value (TEL) (section 8) may result in irritation of the respiratory tract causing sneezing, shortness of breath, sore throat, coughing, chest discomfort, reduced lung function, and other symptoms associated with respiratory distress. Allergic respiratory reactions can occur to individuals sensitized to isocyanate compounds. Allergic reaction include those mentioned above and may can include asthma-like reactions, which in rare cases can be life threatening. Reactions may be delayed (hours) after actual exposure.
Ingestion:	Harmful if swallowed. Can cause irritation to digestive tract. Exposures may result in pain, nausea, vomiting and diarrhea.
Delayed Effects:	Long term overexposure may result in damage to the eyes (conjunctivitis), and reduced lung function from repeated allergic reactions.

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Ingredients found on one of the three OSHA designated carcinogen lists are listed below.

Ingredient Name	NTP Status	IARC Status	OSHA List
No ingredients listed in this section.	----	----	----

3. COMPOSITION/INFORMATION ON INGREDIENTS

Ingredient Name	CAS Number	Weight %
4,4' diphenylmethane Diisocyanate (MDI)	101-68-8	35 – 45
Polymeric Diphenylamine Diisocyanate (pMDI)	9016-87-9	40 – 60
Diphenylamine Diisocyanate (mixed isomers of MDI)	26447-40-5	1 – 5

Trace impurities and additional material names not listed above may appear in Section 15 of this MSDS. These materials may be listed for local "Right-To-Know" compliance and for other reasons.

4. FIRST AID MEASURES

Skin:	Immediately rinse with soap and water while removing contaminated clothing. Continue washing for at least 15 minutes. Get medical assistance for irritation or any allergic reaction. Launder contaminated clothing before reuse and discard any contaminated leather apparel (shoes, watch band, etc.)
Eyes:	Immediately flush eyes with running water while lifting the eyelids and continue for at least 15 minutes. Lift eyelids to wash out any liquid. Get immediate medical attention.
Inhalation:	Move the exposed person to fresh air. If person has difficulty breathing or is in distress, get immediate medical assistance. Provide oxygen if a trained responder is available. For irritation or any systemic (internal) symptom, get immediate medical assistance. Extreme asthmatic reactions can be life threatening.
Ingestion:	Immediately consult a physician or poison control center. Do not induce vomiting.
Advice to Physician:	Product is an irritant and contains respiratory and dermal sensitizers (isocyanates). For sever cases of respiratory sensitization, anaphylactic shock is rare but possible. For other respiratory exposures, monitor patient for any delayed respiratory involvement (e.g., pulmonary edema). Treat symptomatically.

5. FIRE FIGHTING MEASURES

Flammable Properties

Flash Point (and method)	388.4 °F (198 °C) Pensky-Martins Closed Cup
Autoignition Temperature:	464 °F (240 °C) (basis: MDI)
Upper Flame Limit (volume % in air):	Not determined
Lower Flame Limit (volume % in air):	Not determined
Flame Propagation Rate (solids):	Not applicable
OSHA Flammability Class: (storage)	IIIB

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Extinguishing Media:	Water spray, high expansion foam, dry chemical, carbon dioxide or cold water spray (on sealed containers). Avoid solid stream of water if liquid is heated to ignition. It may spread burning liquid.
Unusual Fire And Explosion Hazards:	Sealed containers can rupture violently when exposed to fire. Unsealed containers exposed to water will generate carbon dioxide vapors. Such reactions may be vigorous and cause containers to violently rupture.
Special Fire Fighting Precautions/Instructions:	Wear self contained breathing apparatus. Avoid skin or eye contact with liquid, vapors or mists.

6. ACCIDENTAL RELEASE MEASURES

In Case Of Spill or Other Release:	<p>(See Section 8 for recommended personal protective equipment.) Avoid contact with skin and eyes. Do not breathe product vapors. Do not let untrained personnel attempt cleanup.</p> <p>Small spills: Soak up with absorbent material such as oil-dry or vermiculite. Shovel into containers but DO NOT seal them. Allow containers to vent for up to 72 hours prior to arranging for disposal.</p> <p>Large spills: Ventilate area during cleanup. Avoid sources of ignition. Dike spill and pump into suitable containers for disposal. Allow containers to vent for up to 72 hours prior to arranging for disposal. Do not allow to enter natural waterways or sewers.</p> <p>Additional Spill Procedures/Neutralization: Neutralization solutions:</p> <ol style="list-style-type: none">1. Colorimetric Laboratories Inc. (CLI) decontamination solution.2. A mixture of 75% water, 20% non-ionic surfactant (e.g. Poly-Tergent SL-62, Tergitol TMN-10) and 5% n-propanol.3. A mixture of 80% water, 20% non-ionic surfactant (e.g. Poly-Tergent SL-62, Tergitol TMN-10)4. A mixture of 90% water, 3-8% ammonium hydroxide or concentrated ammonia and 2% liquid detergent.
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Spills and releases may have to be reported to Federal and/or local authorities. See Section 15 regarding reporting requirements.

7. HANDLING AND STORAGE

Normal Handling:	<p>Avoid contact with skin, eyes and clothing. Do not breathe product vapors or mists. Use adequate ventilation to keep airborne isocyanine levels below the exposure limit. Wear respiratory protection if material is heated, sprayed, used in a confined space, or if the exposure limit is exceeded. Do not allow contact with water or contact with any BioBased® B - Component (until used in the proper application equipment.) (See Section 8 for recommended personal protective equipment.)</p> <p>Move drums by lifting to avoid damage caused by sliding or rolling. Forklifts should be equipped with "parrot beaks" or drum clamps.</p>
Storage Recommendations:	<p>Keep containers closed during storage. Store away from moisture, and oxidizing agents. (See Section 10 for hazards associated with contamination.)</p> <p>Do not contaminate with any material. Contamination with water and/or any BioBased® B - Component may cause a reaction generating pressure that could cause a closed container to explode.</p> <p>Product life is approximately 6 months when stored between 64 & 86 °F (18 & 30 °C).</p>

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8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls:	Provide local exhaust ventilation sufficient to keep vapors below safe exposure limits.
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Personal Protective Equipment

Skin Protection:	Wear chemical resistant glove. Suitable materials include nitrile rubber, butyl rubber, neoprene and PVC. Wearing of an apron and long sleeved shirts to avoid skin contact is recommended. Use of rubber footwear or overshoes is recommended.
Eye Protection:	Wear chemical safety goggles and/or chemical safety goggle with face shield for liquid transfer operations.
Respiratory Protection:	Not required for properly ventilated areas. In areas where vapors and/or mists are present but the concentration is unknown, use of an air supplied respirator is recommended. Use of air purifying respirators can only be used temporarily and where the concentration of vapors or mists is no more than 10 times the allowable exposure value (see below). Use an organic vapor/particulate filter combination cartridge (or cartridges).
Additional Recommendations:	A safety shower and eye wash should be available.

Exposure Guidelines

Ingredient	ACGIH TLV	OSHA PEL	NIOSH REL
4, 4'-Diphenylmethane diisocyanate (MDI)	0.005 ppm TWA	0.02 ppm ceiling	0.005 ppm TWA 0.02 ppm ceiling

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Dark brown liquid		
Physical State:	Liquid		
Odor	Musty odor		
Specific Gravity (water = 1.0):	1.24 @ 77 °F (> 25 °C)		
Solubility In Water (weight %):	Insoluble. Reacts slowly with water to release CO ₂		
pH:	Organic liquid, not determined		
Boiling Point:	406 °F (~ 208 °C), polymerizes at 400 °F (204 °C)		
Viscosity	200 cps @ 77 °F (25 °C)		
Vapor Pressure:	< 0.0001 mm Hg @ 77 °F (25 °C)		
Vapor Density (air = 1.0):	8.6 for MDI		
Evaporation Rate:	Not determined	Compared To:	
% Volatiles:	Not determined		
Flash Point:	388.4 °F (198 °C) Pensky-Martins Closed Cup		

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10. STABILITY AND REACTIVITY

Normally Stable:	Stable under normal storage conditions.
Incompatibilities:	Do not contaminate with any material. Contamination with water or any BioBased® B - Component may cause a reaction generating pressure that could cause a closed container to explode. Product may also react violently with oxidizing agents amines, strong bases and alcohols. Avoid contact with copper based alloys.
Hazardous Decomposition Products:	Carbon monoxide, carbon dioxide, nitrogen oxides and organic residues. Fire conditions may also produce trace quantities of hydrogen cyanide and dense black smoke.
Hazardous Polymerization:	Can occur if in contact with any BioBased® B - Component, incompatible materials (above) or exposed to temperatures above 350 °F (177 °C)

11. TOXICOLOGICAL INFORMATION

Acute Toxicity:	<p>Data for A - Component : LD₅₀ (rat) > 2,000 mg/kg LC₅₀ (rat, 4 hr) 490 mg/m³</p> <p>Data for (4,4'-diphenylmethane diisocyanate – MDI) LD₅₀ (dermal, rabbit) > 10,000 mg/kg LC₅₀ (rat, 4 hr) 369 mg/m³ LC₅₀ (aerosol, rat, 1 hr) >2,240 mg/m³</p>
Eye Irritation:	4,4'-diphenylmethane diisocyanate – MDI: Considered slightly irritating to the eyes (Draize Test)
Skin Contact:	A -Component : (rabbit) slightly irritating 4,4'-diphenylmethane diisocyanate – MDI: Considered a mild irritant (Draize Test) and a sensitizer based on guinea pig maximization test.
Respiratory Contact	4,4'-diphenylmethane diisocyanate – MDI: A sensitizer (guinea pig). May cause sever respiratory allergic reaction in individuals sensitized to isocyanates.
Chronic data:	<p>A - Component : Repeated Dose Toxicity: 90 days, inhalation: NOAEL: 1 mg/m³, (rat, 6 hrs/day, 5 day/week) Irritation to lungs and nasal cavity: 2 years, inhalation: NOAEL: 2 mg/m³ (rat, 6 hrs/day, 5 day/week) – Irritation to lungs and nasal cavity. Mutagenicity: In vitro, bacterial – gene mutation assay: negative (Salmonella typhimurium, with and without metabolic activation) Carcinogenicity: (Inhalation, rat, 6 hrs/day, 5 day/week): Exposure to 6 mg/m³ polymeric MDI was related to the occurrence of lung tumors. This level is significantly over the TLV for MDI. Developmental Toxicity: (rat, female, inhalation, gestation 6-15, 6 hrs/day, NOAEL (teratogenicity): 12 mg/m³, NOAEL: 4 mg/m³</p> <p>4,4'-diphenylmethane diisocyanate - MDI: Repeated Dose Toxicity: 90 days, inhalation: NOAEL: 0.3 mg/m³, (rat, 6 hrs/day, 5 day/week) Irritation to lungs and nasal cavity: Mutagenicity: Ames: (Salmonella typhimurium, test with and without metabolic activation) Positive and negative results were reported. The use of certain solvents which rapidly hydrolyze diisocyanates is suspected of producing the positive mutagenicity results. Micronucleus Assay: (mouse): negative.</p>

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Carcinogenicity: Rat, female, inhalation, 2 years, 5 days/week: negative.
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12. ECOLOGICAL INFORMATION

A - Component:

Biodegradation: 0% (28 days) i.e. not degradable.

Bioaccumulation: Rainbow trout, 112 days < 1 BCFL Does not bioaccumulate.

LC₅₀ > 1000 mg/l (Zebra fish 96 hrs)

LC₅₀ > 3000 mg/l (Killifish 96 hrs)

EC₅₀ > 1000 mg/l (Water flea (Daphnia) 24 hrs)

NOEC: 1,640 mg/l, End Point: growth (Green algae, 72 hrs)

EC₅₀: > 100 mg/l, (Activated sludge microorganisms, 3 hrs.)

4,4'-diphenylmethane diisocyanate - MDI:

LC₅₀: > 500 mg/l (Zebra fish, 24 hrs.)

EC₅₀: > 500 mg/l (Water flea – Daphnia, 24 hrs.)

13. DISPOSAL CONSIDERATIONS

RCRA

Is the unused product a RCRA hazardous waste if discarded?	No
If yes, the RCRA ID number is:	-----

The information offered in Section 13 is for the product as shipped. Use and/or alterations to the product such as mixing with other materials may significantly change the characteristics of the material and alter the RCRA classification and the proper disposal method.

Other Disposal Considerations:	Small quantities can be exposed to atmospheric moisture in an unsealed container to allow the material to cure. This must be done in a properly ventilated area. Large quantities of liquid product should be incinerated in a licensed facility in accordance with local, state and federal regulations. They may also be properly reacted with any BioBased® B - Component to produce non-hazardous foam. Do not discharge to waterways or sewer systems or dispose of on the ground. Under no circumstances should a torch, welder, plasma cutter or similar tool capable of producing an arc be used on an empty container regardless of the whether the container has been rinsed or cleaned. Containers should be punctured with a non-sparking tool and disposed of in a licensed facility or landfill.
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14. TRANSPORT INFORMATION

Shipping Name:	When shipped in bulk quantities: Other regulated substances, liquid, n.o.s. (4,4'-diphenylmethane diisocyanate - MDI) otherwise, not regulated
UN ID Number"	When shipped in bulk quantities, NA3082; otherwise, not regulated
Packing Group	When shipped in bulk quantities, III otherwise, not regulated
US DOT Hazard Class:	When shipped in bulk quantities, Class 9, other regulated materials otherwise, not regulated
Canadian TDG Hazard Class:	Not regulated
IMDG Hazard Class (sea):	Not regulated
IATA Hazard Class (air):	Not regulated

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15. REGULATORY INFORMATION

Toxic Substances Control Act (TSCA)

TSCA Inventory Status:	Listed on TSCA Chemical Inventory
Other TSCA Issues:	None

SARA Title III/CERCLA

"Reportable Quantities" (RQs) and/or "Threshold Planning Quantities" (TPQs) exist for the following ingredients.

Ingredient	SARA/CERCLA RQ (lb)	SARA EHS TPQ (lb)
4,4' diphenylmethane Diisocyanate (MDI)	5,000	

Spills or releases resulting in the loss of any ingredient at or above its RQ require immediate notification to the National Response Center [(800) 424-8802] and to your Local Emergency Planning Committee.

SARA 311 Hazard Class: Immediate, Delayed

SARA 313 Toxic Chemicals:

The following ingredients are SARA 313 "Toxic Chemicals" and may be subject to annual reporting requirements. CAS numbers and weight percents are found in Section 2.

Ingredient (as "diisocyanates")	Comment
4,4' diphenylmethane Diisocyanate (MDI)	Reporting threshold 1% concentration
Polymeric Diphenylamine Diisocyanate (pMDI)	Reporting threshold 1% concentration
Diphenylamine Diisocyanate (mixed isomers of MDI)	Reporting threshold 1% concentration

State Right-To-Know

In addition to the ingredients found in Section 2, the following are listed for state right-to-know purposes.

Ingredient	Weight %	Comment
No ingredients listed in this section.		

Additional Regulatory Information: None

Non-US Regulatory Information.

WHMIS Classification: (Canada)	D2A This product has been classified in accordance with hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations.
Other Chemical Inventory Status:	All ingredients are listed on the Canadian DSL.

16. OTHER INFORMATION

Current Issue Date:	October 20, 2010
Previous Issue Date:	April 27, 2010
Changes from previous Issue Date:	Updated Company logo and name
Other Product Information:	None

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Hazard Ratings

HMIS (III)	NFPA
Health – 2*	Health – 2
Flammability – 1	Flammability – 1
Physical Hazard – 1	Instability – 1

The technical data contained herein is true and accurate to the best of BioBased® Insulation a Division of BioBased Technologies® LLC's knowledge on the date of publication. The technical data is subject to change, however, and the user should contact BioBased® Insulation a Division of BioBased Technologies® LLC to verify that the technical data is current. In addition, the technical data is provided for your guidance only. Because many factors can affect the processing or application of the product and/or its use, it is the user's responsibility to test the product to determine its suitability for the user's intended use. The sale and use of this product is subject to all of the terms and conditions set forth in the BioBased® Insulation a Division of BioBased Technologies® LLC sales order, including the LIMITED WARRANTY, DISCLAIMER OF WARRANTY AND RELEASE, and EXCLUSION OF CONSEQUENTIAL AND OTHER DAMAGES. This technical data does not create an express warranty of any kind. The only warranty applicable to this product is the written, limited express warranty contained in the BioBased® Insulation a Division of BioBased Technologies® LLC sales order, which is extended to the purchaser only.