



# Material Safety Data Sheet

## GatorHyde ARC Component A

**MANUFACTURER**  
Elastomer Specialties, Inc.  
2210 South Highway 69  
Wagoner, OK 74467  
(918) 485-2835

Issued: February 2005  
Revised: May 2005  
Revised: November 2005 – new address  
Revised: July 2009

### 1– Chemical Product Identification

Product Code: 1214  
Product Name: GatorHyde ARC **Component A**  
Chemical Name: Diphenylmethane Diisocyanate (MDI) pre-polymer  
Chemical Formula: Not Applicable (Product is a mixture)  
Chemical Family: Aromatic isocyanate pre-polymer mixture  
CAS Number: 39420-98-9

### 2- Hazardous Ingredients

Chemical Name	CAS #	%	OSHA PEL	ACGIH TLV
Diphenylmethane-4,4- diisocyanate <sup>1</sup>	101-68-8	<20	.02 ppm Ceiling .20 Mg/m <sup>3</sup> Ceiling	.005 ppm TWA .051 Mg/m <sup>3</sup> TWA
Diphenylmethane-2,4- diisocyanate <sup>1</sup>	5873-54-1	<10	None estab.	None estab.
Polyurethane Prepolymer	39420-98-9	<60	None estab.	None estab.
Chemical Additive	Proprietary	<10	None estab.	None estab.

<sup>1</sup> Toxic chemical as defined by Sara Title III, Section 313 (40CFR372)

### 3- Hazards Identification

#### Potential Health Effects:

Route (s) of Entry: Skin Contact- from liquid and aerosols (spray applications)  
Inhalation- although MDI is low in volatility, an inhalation hazard can exist from MDI aerosols or vapors formed during heating, foaming or spraying.

#### Human Effects and Symptoms of Over-exposure:

Acute Inhalation: MDI vapors or mist 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 pre-existing nonspecific bronchial hyperactivity can respond to concentrations below the TLV with similar symptoms as well as an asthma attack. Exposure well above the TLV may lead to bronchitis, bronchial spasm and pulmonary edema (fluid in lungs). These effects are usually reversible. Chemical or hypersensitive pneumonitis, with flu-like symptoms can be delayed up to several hours after exposure.

Chronic Inhalation: As a result of previous repeated overexposures or in 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 isocyanate has also been reported to cause lung damage (including decrease in lung function) which may be permanent. Sensitization can either be temporary or permanent.

Acute Skin Contact: 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 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 skin contact with MDI.

**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.

**Chronic Eye Contact:** None Found

**Acute Ingestion:** Can result in irritation and corrosive action in the mouth, stomach tissue and digestive tract. Symptoms can include sore throat, abdominal pain, nausea, vomiting, and diarrhea.

**Chronic Ingestion:** None Found

**Carcinogenicity:** Neither MDI nor polymeric MDI are listed by the NTP, IARC, or regulated by OSHA as carcinogens.

NTP: Not Listed

IARC Not Listed

OSHA Not Listed

Other See Results of two-year inhalation study in toxicological information.

**Medical Conditions Aggravated by Exposure:** Asthma, other respiratory disorders (bronchitis, emphysema, bronchial hyperactivity, skin allergies, and eczema.

#### 4- First Aid measures

**First Aid for Eyes:** Flush with copious amounts of water, preferably lukewarm water for at least 15 minutes, holding eyelids open all the time. Refer individual to a physician or ophthalmologist for immediate follow-up.

**First Aid for Skin:** 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.

**First Aid for Inhalation:** Move to an area free from risk of further exposure. Administer oxygen or artificial respiration if needed. Obtain medical attention. Asthmatic-type symptoms may develop and may be immediate or delayed up to several hours. Consult physician if this should occur.

**First Aid for 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.

#### 5- Fire Fighting Measures

**Flash Point:** >375°F Pensky-Martens closed cup (ASTM D-93)

**Extinguishing Media:** Dry chemical; carbon dioxide; foam; water spray for large fires.

**Special Fire Fighting Procedures:** 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. At temperature greater than 400°F, 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.

#### 6- Accidental Release Measures

**Spill or Leak Procedures:** Evacuate and ventilate spill area; dike spill to prevent entry into water system; wear full protective equipment, including respiratory equipment during clean-up.

**Major Spill:** Large quantities may be pumped into closed, but not sealed containers for disposal. A blanket of protein foam may be required to control isocyanate foam.

**Minor Spill:** Absorb isocyanates with sawdust or other absorbent materials.

#### 7- Handling and Storage

**Storage Temperature (Min/Max):** 60°F to 80°F

**Shelf Life:** Six Months at 77°F

**Special Sensitivity:** If container is exposed to high heat (>400°F), it can be pressurized and possibly rupture. MDI reacts slowly with water to form CO<sub>2</sub> gas. This gas can cause sealed containers to expand and possibly rupture.

**Handling/Storage Precautions:** 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. Employee education and training in the safe use and handling of this compound are required under the OSHA Hazard Communication Standard.

Issue Date: February 2005

Revised Date: May 2005

Revised: July 2009

## 8- Personal Protection

**Eye Protection Requirements:** 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 appropriate clothing. A tyvek suit is preferable to reduce to possible amount of skin contact.

**Ventilation Requirements:** Local exhaust should be used to maintain levels below the TLV whenever MDI is processed, heated or spray applied. Consult the ACGIH Industrial Ventilation guidelines for adequate ventilation.

**Respirator Requirements:** Concentrations greater than the TLV can occur when MDI is sprayed or heated in a poorly ventilated area. A respirator fitted with activated charcoal is always recommended while spray applying this product. In some cases, a supplied air apparatus should be used.

**Monitoring Requirements:** Isocyanate exposure levels must be monitored. Monitoring techniques have become available through NIOSH and OSHA.

## 9- Physical and Chemical Properties

Physical Form:	Liquid	Color:	Straw yellow
Odor:	Slightly musty	Odor Threshold:	Not Established
pH:	Not applicable	Boiling Point:	406°F
Melting/Freezing Point:	Range 50°F (for MDI) to 60°F	Viscosity:	Not applicable
Sol. In Water:	Not soluble (reacts to liberate CO <sub>2</sub> gas)	Specific Gravity:	1.09 @ 77°F
Bulk Density:	9.10 Lb./Gal	% Vol. By Volume:	negligible
Vapor Pressure:	<10-5 mmHG @ 77°F for MDI	Vapor Density:	8.5 (MDI) (air = 1)

## 10- Stability and Reactivity

**Stability:** This is a stable material.

**Hazardous Polymerization:** May occur. Contact with other materials which react with isocyanates or temperature above 400°F.

**Incompatibilities:** Water, amines, strong bases, alcohols. Will cause some corrosion to copper alloys and aluminum.

**Instability Conditions:** Contamination with water.

**Decomposition Products:** By high heat and fire: carbon monoxide, oxides of nitrogen, traces of HCN, MDI vapors or aerosols.

## 11- Toxicological Information

**Toxicity Data For:** Diphenylmethane Diisocyanate (Monomeric and Polymeric)

**Acute Toxicity:** Oral LD50- Greater than 15,800 mg/kg (rat)

Dermal LD50- Greater 5010 but less than 7940 mg/kg (rabbit)

Inhalation LC50- 4 Hour inhalation for polymeric MDI in rats ranges from 370 to 490 mg/m<sup>3</sup>. The LC50 for Monomeric MDI was estimated to be between 172 to 187 mg/m<sup>3</sup>.

**Eye Effects:** Slight to moderate irritation.

**Skin Effects:** Slight to moderate irritation.

**Sensitization:** MDI has been shown to produce dermal sensitization in laboratory animals. Evidence of respiratory sensitization has also been observed in guinea pigs. In addition, there is evidence of cross-sensitization of between different types of diisocyanates.

**Chronic Toxicity:** In a combined chronic inhalation toxicity/oncogenicity study, rats were exposed to an aerosol of polymeric MDI for six hours per day, 5 days per week for one or two years. The exposure concentrations were 0, 0.2, 1.0, and 6.0 mg/m<sup>3</sup>. 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/m<sup>3</sup>. The No Observable Effect Level (NOEL) was 0.2 mg/m<sup>3</sup>.

**Carcinogenicity:** In the study described above (in Chronic Toxicity) the occurrence of pulmonary adenomas and a single pulmonary Aden carcinoma was considered to be related to MDI. These tumors were observed only in rats exposed to the high concentration of 6.0 mg/m<sup>3</sup>.

**Mutagenicity:** Positive (Salmonella microsome test with metabolic activation; cell transformation assay) as well as negative (mouse lymphoma specific locus mutation with or without metabolic activation) results have been observed "in vitro". However, MDI was negative in an "in vivo" (mouse micronucleus) assay.

**Developmental Toxicity:** Rats were exposed to polymeric MDI at air concentrations of 0, 1, 4, and 12 mg/m<sup>3</sup> during days 6-15 of gestation. Maternal Toxicity (including mortality) was observed at the highest concentration of 12 mg/m<sup>3</sup> accompanied by embryo and fetal toxicity.

Issue Date: February 2005

Revised Date: May 2005

Revised: November 2005

Revised: July 2009

**12- Ecological Information**

Ecology Data For: Diphenylmethane Diisocyanate (Monomeric and Polymeric)  
 Aquatic Toxicity: LC-50 (24 hr) (static) >than 500 mg/L for Daphnia Magna, Limnea Stagnalis and Zebra fish (brachydanio rerio) for both polymeric and monomeric MDI.

**13- Disposal Considerations**

Waste Disposal Method: Waste must be disposed of according to federal, state, and local laws. Incineration is the preferred method.  
 Empty Container Precautions: Empty containers must be handled with care due to product residue. Decontaminate container prior to disposal. Empty decontaminated containers should be crushed to prevent reuse. Do not heat or cut empty container with an electric or gas torch. Gases may be highly toxic.

**14- Transportation Information**

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) Non-Regulated (in 55 gallon drums)  
 IMO/IMDG Code (Ocean) Non-Regulated  
 ICAO/IATA (Air) Non-Regulated

**15- Regulatory Information**

OSHA: This product is hazardous under the criteria of the Federal OSHA Hazard Communication Standard 29 CFR 1910.1200.  
 TSCA: On TSCA inventory  
 CERCLA Reportable Inventory: 5000 lbs. 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: 4,4' Diphenylmethane diisocyanate CAS 101-68-8, upper bound 15%  
 RCRA Status: MDI is not listed as a hazardous waste

**16- Other Information**

NFPA 704M Ratings:	Health	Flammability	Reactivity	Other
	3	1	1	

HMIS Ratings:	Health	Flammability	Reactivity
	3*	1	1

\*Indicates a chronic health hazard

Issue Date: February 2005  
 Revised Date: May 2005  
 Revised: November 2005  
 Revised: July 2009