LPA ISOCYANATE

1. Substance/Preparation and Company Identification

Company
Lapolla Industries, Inc.
15402 Vantage Parkway East #322
Houston, Texas 77032
(281) 219 – 4100

Chemical Family: Aromatic Isocyanate
Chemical Name: Diphenylmethane Diisocyanate
Synonyms: MDI, PMDI, Polymeric MDI, ISO, Isocyanate, A – Side, A - Component

24 Hour Emergency Response Information
CHEMTREC: (800) 424 – 9300

2. Composition/Information on Ingredients

<table>
<thead>
<tr>
<th>CAS Number</th>
<th>Content (W/W)</th>
<th>Chemical name</th>
</tr>
</thead>
<tbody>
<tr>
<td>101 – 68 – 8</td>
<td>38.00 %</td>
<td>Diphenylmethane – 4, 4’diisocyanate</td>
</tr>
<tr>
<td>26447 – 40 – 5</td>
<td>&lt; 10.00 %</td>
<td>MDI Mixed Isomers</td>
</tr>
<tr>
<td>9016 – 87 – 9</td>
<td>&lt; 55.00 %</td>
<td>Polymeric MDI</td>
</tr>
</tbody>
</table>

3. Hazard Identification

Emergency Overview

CAUTION
Contains diphenylmethane diisocyanate (CAS# 101 – 68 – 8). 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. Overexposure to isocyanates may cause sensitization in some individuals, resulting in allergic respiratory reactions including wheezing, shortness of breath, and difficult breathing.

Potential Health Effects

Primary Routes of Exposure
Routes of entry for solids and liquids include eye and skin contact, ingestion and inhalation. Routes of entry for gases include inhalation and eye contact. Skin contact may be a route of entry for liquefied gases.
Acute Toxicity
Information on MDI: 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. Airborne overexposure well above the PEL may result additionally in eye irritation, headache, chemical bronchitis, asthma-like findings or pulmonary edema. Isocyanates have also been reported to cause hypersensitivity pneumonitis, which is characterized by flu-like symptoms, the onset of which may be delayed. Gastrointestinal symptoms include nausea, vomiting and abdominal pains.

Irritation
Information on Diisocyanates: Eye contact with isocyanates may result in conjunctival irritation and mild corneal opacity. Skin contact may result in dermatitis, either irritative or allergic.

Repeated Dose Toxicity
Information on MDI
Results from a lifetime inhalation study in rats indicate that MDI aerosol was carcinogenic at 6 mg/m³, the highest dose tested. This is well above the recommended TLV of 5 ppb (0.05 mg/m³). Only irritation was noted at the lower concentration of 0.2 and 1 mg/m³. No birth defects or teratogenic effects were reported in a teratology study with rats exposed to 1, 4, and 12 mg/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.

Information on Isocyanates
As a result of previous repeated overexposures of a single large dose, certain individuals will develop isocyanates 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. 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. Chronic overexposure to isocyanates has also been reported to cause lung damage, including a decrease in lung function, which may be permanent. Sensitization may either be temporary or permanent. Prolonged contact can cause reddening, swelling, rash, scaling, or blistering. In those who have developed a skin sensitization, these symptoms can develop as a result of contact with very small amounts of liquid material, or even as a result of vapor-only exposure.

Medical Conditions Aggravated by Overexposure
The isocyanates component is a respiratory sensitizer. It may cause allergic reaction leading to asthma-like spasms of the bronchial tubes and difficulty in breathing. Medical supervision of all employees who handle or come into contact with isocyanates is recommended. Contact may aggravate pulmonary disorders.

Persons with history of respiratory disease or hypersensitivity should not be exposed to this product.

Pre-employment and periodic medical examinations with respiratory function tests (FEV, FVC as a minimum) are suggested

An animal study indicated that MDI may induce respiratory hypersensitivity following dermal exposure.

Persons with asthmatic conditions, chronic bronchitis, other chronic respiratory diseases, recurrent eczema, or pulmonary sensitization should be excluded from working with isocyanates.

Once a person is diagnosed as having pulmonary sensitization (allergic asthma) to isocyanates, further exposure is not recommended.
MSDS – LPA ISOCYANATE

4. First-Aid Measures

General Advice
Remove contaminated clothing.

If Inhaled
Remove the affected individual into fresh air and keep the person calm. Assist in breathing if necessary. Immediate medical attention required.

If on Skin
Wash affected areas thoroughly with soap and water. If irritation develops, seek medical attention.

If in Eyes
In case of contact with the eyes, rinse immediately for at least 15 minutes with plenty of water. Immediate medical attention required.

If Swallowed
Rinse mouth and then drink plenty of water. Induce vomiting. Never induce vomiting or give anything by mouth if the victim is unconscious or having convulsions. Immediate medical attention required.

Note to Physician
Hazards
Symptoms can appear later.
Antidote
Treatment should be supportive and based on the judgment of the physician.
Treatment
Treatment should be supportive and based on the judgment of the physician in response to the reaction of the patient.

5. Fire-Fighting Measures

Flash Point (Open Cup): 220 °C
Auto-Ignition: No data available.

Suitable Extinguishing Media
Water, dry extinguishing media, carbon dioxide, or foam.

Hazards during Fire-Fighting
Nitrous gases, fumes/smoke, isocyanates, vapor.

Protective Equipment for Fire-Fighting:
Firefighters should be equipped with self-contained breathing apparatus and turn-out gear.

6. Accidental Release Measures

Clean-Up
Dike spillage
For Small Amounts
Absorb isocyanates with suitable absorbent material (see §40 CFS, section 260, 264, and 265 for further information). Shovel into open container. Do not make container pressure tight. Move container to a well-ventilated area (outside). Spill area can be decontaminated with the following recommended decontamination solution: mixture of 90% water, 8% concentrated ammonia, 2% detergent. Add at a 10:1 ratio. Allow to stand for at least 48 hours to allow escape of evolved carbon dioxide.

For Large Amount
If temporary control of isocyanates vapor is required, a blanket of protein foam or other suitable foam (available from most fire departments) may be placed over a spill. Transfer as much liquid as possible via pump or vacuum device into closed but not sealed containers for disposal.

For Residues
The following measures should be taken for final clean-up: wash down spill area with decontamination solution. Allow solution to stand for at least 10 minutes.
7. Handling and Storage

Handling

General Advice
If bulging of drum occurs, transfer to well ventilated area, puncture to relieve pressure, open vent, and let stand for 48 hours before resealing.

Protection against Fire and Explosion
No explosion proofing necessary.

Storage

General Advice
Formation of carbon dioxide and buildup of pressure are possible. Keep container tightly closed and in a well-ventilated place. Outage of containers should be filled with dry inert gas at atmospheric pressure to avoid reaction with moisture.

Storage Incompatibility

General
Segregate from bases.

Storage Stability

Storage temperature: 60 – 80 °F.
Protect against moisture.

8. Exposure Controls and Personal Protection

Components with Workplace Control Parameters

<table>
<thead>
<tr>
<th>Component</th>
<th>OSHA</th>
<th>ACGIH</th>
<th>TWA value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diphenylmethane – 4, 4’-</td>
<td>CLV – 0.02 ppm, 0.2 mg/m³</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diisocyanate (MDI)</td>
<td></td>
<td></td>
<td>– 0.005 ppm</td>
</tr>
</tbody>
</table>

Advice on System Design

Provide local exhaust ventilation to control recommended PEL.

Personal Protective Equipment

Respiratory Protection

For situations where the airborne concentrations may exceed the level for which an air purifying respirator is effective, or where the levels are unknown or Immediately Dangerous to Life or Healthy (IDLH), use NIOSH-certified full-face piece pressure demand self-contained breathing apparatus (SCBA) or a full-face piece pressure demand supplied-air respirator (SAR) with escape provisions. When atmospheric levels may exceed the occupational exposure limit (PEL or TLV) NIOSH-certified air-purifying respirators equipped with an organic vapor sorbent and particulate filter can be used as long as appropriate precautions and change out schedules are in place.

Hand Protection

Chemical resistant protective gloves, suitable materials, chloroprene rubber (Neoprene), nitrile rubber (Buna N), chlorinated polyethylene, polyvinylchloride (Pylox), butyl rubber, fluoroelastomer (Viton).

Eye Protection

Tightly fitting safety goggles (chemical goggles). If splashing hazard exists, wear face shield.

Body Protection

Suitable materials, saran-coated material.

General Safety and Hygiene Measures

Wear protective clothing as necessary to prevent contact. Eyewash fountains and safety showers must be easily accessible. Observe the appropriate PEL value. Wash soiled clothing immediately. Contaminated equipment or clothing should be cleaned after each use or dispose of.
### 9. Physical and Chemical Properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Form</td>
<td>Liquid</td>
</tr>
<tr>
<td>Odor</td>
<td>Faint Odor, Aromatic</td>
</tr>
<tr>
<td>Color</td>
<td>Dark Brown</td>
</tr>
<tr>
<td>pH Value</td>
<td>No data available</td>
</tr>
<tr>
<td>Freezing Point</td>
<td>3 °C (1 ATM)</td>
</tr>
<tr>
<td>Boiling Point</td>
<td>200 °C (5 mmHg)</td>
</tr>
<tr>
<td>Vapor Pressure</td>
<td>&lt; 0.00001 mmHg (20 °C)</td>
</tr>
<tr>
<td>Relative Density</td>
<td>1.22 (25 °C)</td>
</tr>
<tr>
<td>Viscosity, Dynamic</td>
<td>200 mPa.s (20 °C)</td>
</tr>
<tr>
<td>Miscibility with Water</td>
<td>Reactive with Water</td>
</tr>
</tbody>
</table>

### 10. Stability and Reactivity

**Conditions to Avoid**
- Avoid moisture.

**Substances to Avoid**
- Water, alcohols, strong bases, substances/products that react with isocyanates.

**Decomposition Products**

**Corrosion to Metals**
- No corrosive effect on metal.

**Hazardous Reactions**

**Thermal Decomposition**
- > 260 °C

### 11. Toxicological Information

**Acute Toxicity**
- Oral
  - LD₅₀/Rat: 10,000 mg/Kg
    - Practically non-toxic
- Inhalation
  - LD₅₀/Rat: 2.240 mg/L/1 h
    - Moderately toxic

### 12. Ecological Information

**Environmental Toxicity**
- Acute and Prolonged Toxicity to Fish
  - Static
    - Zebra Fish/LD₅₀ (24 h): > 500 mg/L
      - Practically non-toxic
- Acute Toxicity to Aquatic Invertebrates
  - Daphnia Magna/EC₅₀ (24 h): > 500 mg/L
    - Practically non-toxic
13. Disposal Considerations

Waste Disposal of Substance
Incinerate in a licensed facility. Dispose of in a licensed facility. Do not discharge substance or product into sewer system.

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. Refer to 40 CFR § 261.7 (residues of hazardous waste in empty containers). Check with reconditioner to determine if decontamination is required. Decontaminate containers prior to disposal. Recommend crushing, puncturing or other means to prevent unauthorized use of used containers.

14. Transport Information

<table>
<thead>
<tr>
<th>Land Transport (USDOT)</th>
<th>Sea Transport (IMDG)</th>
<th>Air Transport (ICAO/IATA)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not classified as a dangerous good under transport regulations.</td>
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</tbody>
</table>

15. Regulatory information

Federal Regulations

<table>
<thead>
<tr>
<th>Registration Status</th>
<th>TSCA, US</th>
<th>TSCA 12B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Listed</td>
<td>Listed</td>
<td></td>
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</tbody>
</table>

OSHA Hazard Category
ACGIH TLV established. Highly toxic – inhalation. Chronic target organ effects reported. Skin and/or eye irritant. Acute target organ effects reported. Sensitizer. OSHA PEL established.

SARA Hazard 311 & 312
Acute, chronic.

SARA Hazard 313

<table>
<thead>
<tr>
<th>CAS Number</th>
<th>Chemical Name (W/W)</th>
<th>Disocyanates Compound Category</th>
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<td>101 – 68 – 8</td>
<td>Diphenylmethane – 4, 4’-diisocyanate (MDI)</td>
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State Regulations

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<th>CAS Number</th>
<th>Content (W/W)</th>
<th>State</th>
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<tr>
<td>101 – 68 – 8</td>
<td>Diphenylmethane – 4, 4’-diisocyanate (MDI)</td>
<td>MA, NJ, PA</td>
</tr>
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</table>
16. Other Information

HMIS III rating

Health: 2a    Flammability: 1    Physical hazard: 1

HMIS uses a numbering scale ranging from 0 to 4 to indicate the degree of hazard. A value of zero means that the substance possesses essentially no hazard; a rating of four indicates high hazard.

IMPORTANT: While the descriptions, designs, data, and information contained herein are guidance only because many factors may affect processing or application/use. We recommend that you make tests to determine the suitability of a product for your particular purpose prior to use. No warranties of any kind, either expressed or implied, including warranties of merchantability or fitness for a particular purpose, are made regarding products described or designs, data or information set forth, or that the products, designs, data, or information may be used without infringing the intellectual property rights of others. In no case shall the descriptions, information, data, or designs provided by consider a part of our terms and conditions of sale. Further, you expressly understand and agree that the descriptions, designs, data, and information furnished by Lapolla Industries, Inc. Hereunder are given gratis and Lapolla Industries, Inc. assumes no obligation or liability for the description, designs, data, and information given or results obtained. All such being given and accepted at your own risk. End of data sheet.