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SAFETY DATA SHEET

SECTION 1 - Identification

1.1 Product Identifier

Product Name • LDA-Patch-E
Synonyms • Aromatic Isocyanate

1.2 Relevant Identified Uses of the Substance or Mixture and Uses Advised Against

Recommended Use • Component for polyurethane

1.3 Details of the Supplier of the Safety Data Sheet

Manufacturer • Carpenter Co.
5016 Monument Ave.
Richmond, Virginia 23230
(804) 233-0606

1.4 Emergency Telephone

Chemtrec • (800) 424-9300 (24-hr number)

SECTION 2 - Hazards Identification

2.1 Classification of the Substance or Mixture

Classification in accordance with 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200):

Respiratory Sensitization Category 1 – H334
Skin Sensitization Category 1 – H317
Acute Toxicity Inhalation Category 4 – H333
Eye Irritation Category 2A – H319
Skin Irritation Category 2 – H315
Specific Target Organ Single Exposure 3 (respiratory tract) – H335
Specific Target Organ Toxicity Repeated Exposure 2 (respiratory tract) – H373

2.2 GHS Label Elements

Hazard Pictogram



Signal Word

DANGER

Hazard Statements

H332 – Harmful if inhaled.
H319 – Causes serious eye irritation.

H315 – Causes skin irritation.
H317 – May cause an allergic skin reaction.
H334 – May cause allergy or asthma symptoms or breathing difficulties if inhaled.
H335 – May cause respiratory irritation.
H373 – May cause damage to organs through prolonged or repeated exposure (lungs).

Precautionary Statements

Prevention

P260 - Do not breathe dust, gas, mist, or vapors.
P270 - Do not eat, drink or smoke when using this product.
P271 – Use only outdoors or in a well-ventilated area.
P285 - In case of inadequate ventilation wear respiratory protection.
P280 - Wear protective gloves/protective clothing/eye protection/face protection.
P264 - Wash thoroughly after handling.
P272 Contaminated work clothing should not be allowed out of the workplace.

Response

P308+P311 – IF exposed or concerned: Call a physician.
P312 – Call a physician if you feel unwell.
P305+P351+P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P337+P313 - If eye irritation persists: Get medical attention.
P304+P340 - IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P342+P311 - If experiencing respiratory symptoms: Call a physician.
P302+P352 - IF ON SKIN: Wash with plenty of soap and water.
P332+P313 - If skin irritation occurs: Get medical attention.
P301+P330+P331 - IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P362 + P364 – Take off contaminated clothing and wash before reuse.

Storage/Disposal

P501 - Dispose of content and/or container in accordance with local, regional, national, and/or international regulations.
P405 - Store locked up.
P403+P233 - Store in a well-ventilated place. Keep container tightly closed.

2.3 Hazards not otherwise classified

- Refer to Section 11 toxicological information for additional toxicity information.
- Refer to Section 16 Other Information for HMIS and NFPA Codes.

SECTION 3 - Composition/Information on Ingredients**3.1 Substance**

Material does not meet the criteria of a substance according to United Nations Globally Harmonized System of Classification and Labeling of Chemicals (GHS).

3.2 Mixtures

Name	Identifier	% (weight)
Polymeric MDI	CAS# 9016-87-9	50-75
4,4'- Diphenylmethane Diisocyanate (MDI)	CAS# 101-68-8	25-50
Methylenediphenyl diisocyanate	CAS# 26447-40-5	1-3
1,3-Diazetidone-2,4-dione, 1,3-bis[4-[(4-isocyanatophenyl)methyl]phenyl]-	17589-24-1	1-3
Isocyanic acid, polymethylenepolyphenylene ester, polymer with .alpha.-hydro-.omega.-hydroxypoly(oxy-1,2-ethanediyl)	57636-09-6	1-3

The specific chemical identity and/or exact percentage of component(s) have been withheld as a trade secret.

SECTION 4 - First Aid Measures**4.1 Description of First Aid Measures**

By route of inhalation	<ul style="list-style-type: none">• Remove victim to fresh air. If breathing is difficult, oxygen may be beneficial if administered by trained personnel. Seek medical attention immediately.
By route of dermal contact	<ul style="list-style-type: none">• Remove contaminated clothing and shoes. Wash thoroughly with soap and water. Seek medical attention if irritation develops.
By route of eye contact	<ul style="list-style-type: none">• Flush with plenty of water for at least 15 minutes while holding the eyelid(s) open. Seek medical attention.
By route of ingestion	<ul style="list-style-type: none">• DO NOT INDUCE VOMITING. If victim is conscious, wash out mouth with water. If vomiting occurs naturally, have victim lean forward to reduce risk of aspiration. Seek medical attention immediately.

4.2 Most Important Symptoms and Effects, Acute and Chronic

• Exposure symptoms may include contact dermatitis (redness, itching, rash), respiratory tract irritation, cough, shortness of breath, wheezing, or chest tightness. Onset of symptoms may be delayed.

4.3 Indication of Immediate Medical Attention and Special Treatment If Needed

• Treatment should be supportive and based on the judgement of the physician in response to the reaction of the patient.

SECTION 5 - Firefighting Measures

5.1 Extinguishing Media

- | | |
|--------------------------------|--|
| Suitable Extinguishing Media | • Dry chemical, foam, carbon dioxide, water fog or fine spray. |
| Unsuitable Extinguishing Media | • Do not use direct water spray. May spread fire. |

5.2 Special Hazards Arising From the Substance or Mixture

- May produce oxides of carbon and nitrogen, and traces of HCN on combustion.

5.3 Special Protective Actions for Firefighters

- Responding personnel must wear positive-pressure, self-contained breathing apparatus (SCBA) and protective firefighting clothing.

SECTION 6 - Accidental Release Measures

6.1. Personal Precautions, Protective Equipment, and Emergency Procedures

Avoid any skin contact and avoid breathing vapors, mists or dusts. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Don protective equipment appropriate for the size of the spill. Keep unauthorized personnel away. Stay upwind. Do not walk through spilled material. Spilled material may be slippery. Ensure adequate ventilation and eliminate all ignition sources (no smoking, flares, sparks or flames in immediate area). Stop leak if you can do it without risk.

6.2 Environmental Precautions

- Prevent from entering into soil, ditches, sewers, waterways and/or groundwater.

6.3 Methods and Materials for Containment and Clean Up

- | | |
|-----------|---|
| Methods | <ul style="list-style-type: none">• Stop leak and dam spill.• Cover spill with absorbent and neutralize with decontaminant.• Transfer waste into open-top drums and keep drum lid loose for about 48hrs to allow escape of carbon dioxide.• Clean spill area additionally with decontaminant. Allow solution to stand for at least 10 minutes.• LARGE SPILLS: Dike spillage. A blanket of protein foam may be placed over the spill. Pump or vacuum material into containers. |
| Materials | <ul style="list-style-type: none">• Absorbent, neutralizing agent (90% water, 8% ammonia, 2% liquid detergent), and a drum with lid (to collect waste).• Use appropriate Personal Protective Equipment (PPE). |

6.4 Reference to Other Sections

- Refer to Section 8 for exposure control and personal protective equipment information.
- Refer to Section 12 for ecological information.

SECTION 7: Handling and Storage**7.1 Precautions for Safe Handling**

- Protect against moisture.
- Do not breathe (dust, vapor or spray mist).
- Wear respiratory protection when spraying.
- Ensure thorough ventilation of storage and work areas.
- Avoid generating mist to prevent the release of aerosols.
- Do not eat, drink or smoke when using this product.
- Wear appropriate eye and skin protection.
- Wash thoroughly after handling.

7.2 Conditions for Safe Storage, Including any Incompatibilities

Storage

- Store materials in a cool (60-80°F), well ventilated, dry place. Keep containers tightly closed when not in use. MDI reacts with water producing CO₂ gas, a hazardous build-up of pressure could result if contaminated containers are re-sealed. Closed containers may develop pressure and rupture on prolonged exposure to heat or if contaminated with water.

Incompatibilities

- Keep away from water, amines, strong bases and acids, alcohols, and copper alloys.

SECTION 8: Exposure Controls/ Personal Protection**8.1 Control Parameters**

Exposure Limits/Guidelines

Ingredient	OSHA PEL(ppm)	ACGIH TLV (ppm)
4,4'- Diphenylmethane Diisocyanate (MDI)	0.02 Ceiling	0.005 TWA

8.2 Exposure Controls

Engineering Controls

- Adequate ventilation systems as needed to control concentrations of airborne contaminants below applicable threshold limit values. Good general ventilation should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level.

Eye/Face Protection

- Chemical goggles or depending on the splash risk, chemical goggles with a face shield may be needed.

Respiratory Protection

- In case of insufficient ventilation or symptoms are experienced, wear suitable respiratory equipment. Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149.

Skin Protection

- Wear suitable working clothes.
- Wear chemical resistant gloves appropriate for the intended use. Consult glove manufacturers for assistance in choosing appropriate gloves.

Additional Protection Measures

- Use near eyewash station and safety shower.

SECTION 9: Physical and Chemical Properties**9.1 Information on Physical and Chemical Properties**

Material Description			
Physical Form	• Liquid	Odor	• Faintly aromatic
Appearance/Color	• Dark brown	Odor Threshold	• No data available
General Properties			
Boiling Point	• 200 °C @ 5 mmHg	Melting Point	• No data available
Decomposition Temperature	• No data available	pH	• No data available
Density	• No data available	Water Solubility	• Low
Solvent Solubility	• No data available	Viscosity	• No data available
Explosive Properties	• No data available	Specific Gravity/Relative Density	• 1.22-1.25 (H ₂ O=1)
Volatility			
Vapor Pressure	• 0.0001 @ mmHg 20 °C	Vapor Density	• No data available
Evaporation Rate	• No data available	VOC (Vol.)	• No data available
Volatiles (Vol.)	• No data available		
Flammability			
Flash Point	• >200°F (PMCC)	LEL	• No data available
UEL	• No data available	Flammability (solid, gas)	• No data available
Auto-ignition Temperature	• > 250 °C		
Environmental			
Octanol/Water Partition Coefficient	• No data available		

9.2. Other Information

No additional information available.

SECTION 10: Stability and Reactivity**10.1 Reactivity**

No dangerous reaction known under conditions of normal use. Contact with moisture may cause polymerization.

10.2 Chemical Stability

Stable under normal temperatures and pressures.

10.3 Possibility of Hazardous Reactions

Reacts with water, with formation of carbon dioxide (risk of container bursting). Reacts with alcohols, acids, alkalies, and amines. Risk of exothermic reaction. Risk of polymerization. Contact with certain rubbers and plastics can cause brittleness of the substance/product with subsequent loss in strength.

10.4 Conditions to Avoid

Avoid moisture.

10.5 Incompatible Materials

Acids, amines, alcohols, water, alkalines, strong bases, substances/products that react with isocyanates.

10.6 Hazardous Decomposition Products

Hazardous decomposition products: carbon monoxide, carbon dioxide, nitrogen oxide, hydrogen cyanide, nitrogen oxides, aromatic isocyanates, gases/vapours

SECTION 11: Toxicological Information

11.1 Information on Toxicological Effects

Most likely routes of exposure are skin, eye and inhalation.

Acute Toxicity

Chemical	CAS #	LD ₅₀ oral rat	LD ₅₀ dermal rabbit	LC ₅₀ inhalation rat
Polymeric MDI	9016-87-9	>2,000 mg/kg	> 9,400 mg/kg	0.49 mg/l, 4hr
4,4'- Diphenylmethane Diisocyanate (MDI)	101-68-8	> 7,000 mg/kg	>9,400 mg/kg	0.368 mg/l, 4hr

Skin Corrosion/Irritation

- Skin Irritation Category 2 – Causes skin irritation
- MDI - Species: rabbit. Result: Irritating. Method: Draize test

Serious Eye Damage/Irritation

- Eye Irritation Category 2A – Causes serious eye irritation
- MDI - Species: rabbit. Result: Irritating. Method: Draize test

Respiratory or Skin Sensitization

- Skin Sensitization Category 1 - May cause an allergic skin reaction
- Respiratory Sensitization Category 1 – May cause allergy or asthma symptoms or breathing difficulties if inhaled.
- MDI - Species: guinea pig. Result: sensitizing. Method: Buehler test.

Germ Cell Mutagenicity

- Available studies have not indicated this material to be a mutagen.

Carcinogenicity

- This product does not contain any component that is considered a human carcinogen by IARC, ACGIH,

OSHA, or NTP.

Reproductive Toxicity

- No data available

Specific Target Organ Toxicity (single exposure) (STOT-SE)

- STOT-RE Category 3 (respiratory tract) – May cause respiratory irritation

Specific Target Organ Toxicity (repeated exposure) (STOT-RE)

- STOT-RE Category 2 (respiratory tract) – May cause damage to organs through prolonged or repeated exposure (lungs)

Aspiration Hazard

- No data available

11.2 Potential Health Effects

Inhalation

- | | |
|---------|--|
| Acute | <ul style="list-style-type: none"> • Can irritate the mucous membranes in the respiratory tract causing runny nose, sore throat, coughing, chest discomfort, and shortness of breath. |
| Chronic | <ul style="list-style-type: none"> • Repeated overexposure or a single large dose may cause sensitization (asthma or asthma-like symptoms) that may cause some individuals to react later to diisocyanate exposure at levels well below the TLV or PEL. |

Skin

- | | |
|---------|---|
| Acute | <ul style="list-style-type: none"> • Can cause irritation with symptoms of reddening, itching and swelling. |
| Chronic | <ul style="list-style-type: none"> • Prolonged contact can cause reddening, swelling, rash, and in some cases, skin sensitization. |

Eye

- | | |
|---------|---|
| Acute | <ul style="list-style-type: none"> • Can cause irritation with symptoms of reddening, tearing, stinging, and swelling. |
| Chronic | <ul style="list-style-type: none"> • Prolonged vapor contact may cause conjunctivitis. |

Ingestion

- | | |
|---------|---|
| Acute | <ul style="list-style-type: none"> • May cause gastrointestinal discomfort, including abdominal pain, nausea, vomiting and diarrhea. Corrosion of the mouth, throat, and digestive tract may also occur. |
| Chronic | <ul style="list-style-type: none"> • None known. |

Other Information

- Symptoms of exposure can range from having a cold to a possible asthma attack.
- Sensitized individuals react to very low levels of MDI.
- Skin exposure may aggravate existing dermatitis conditions.
- There are reports that chronic exposure to diisocyanates by inhalation may result in a permanent decrease in lung function.

SECTION 12: Ecological Information

12.1 Ecotoxicity

Toxicity to fish: LC50 (24 h) > 500 mg/l, Brachydanio rerio (static)

Aquatic invertebrates: EC50 (24 h) > 500 mg/l, Daphnia magna

Aquatic plants: EC0 (72 h) 1,640 mg/l (growth rate), Scenedesmus subspicatus (OECD Guideline 201, static)

12.2 Persistence and Degradability

This mixture is not readily biodegradable.

0 % BOD of the ThOD (28 d) (OECD Guideline 302 C) (aerobic, activated sludge)

12.3 Bioaccumulative Potential

Significant accumulation in organisms is not to be expected.

12.4 Mobility in Soil

The substance will not evaporate into the atmosphere from the water surface. Adsorption to solid soil phase is not expected.

12.5 Other Adverse Effects

No data available.

SECTION 13: Disposal Considerations

13.1 Waste Disposal Method

Product Waste

- Do not dump into any sewers, on the ground, or into any body of water.
- All disposal methods must be in compliance with Federal, State/Provincial, and local regulations.
- Store material for disposal as indicated in Section 7 Handling and Storage.

Packaging Waste

- Steel drums must be emptied and can be sent to a licensed drum reconditioner for reuse, a scrap metal dealer or an approved landfill.
- Do not attempt to refill or clean containers since residue is difficult to remove.
- Under no circumstances should empty drums be burned or cut open with gas or electric torch as toxic decomposition products may be liberated.

SECTION 14: Transport Information

US DOT:

Single containers with less than 5,000 lbs of 4,4'-MDI are not regulated.

Single containers with 5,000 lbs or more of 4,4'-MDI are regulated as: UN3082 Environmentally hazardous substances, liquid, n.o.s., 9, III, RQ (Methylene diphenyl diisocyanate).

SECTION 15: Regulatory Information

15.1 Regulatory Status

CERCLA Hazardous Substances (40 CFR 302):

Methylene Diphenyl Diisocyanate (CAS# 101-68-8) RQ = 5,000 lbs

SARA 311/312: Acute health hazard. Chronic health hazard.

SARA 313:

Methylene Diphenyl Diisocyanate (CAS# 101-68-8)
Polymeric MDI (CAS# 9016-87-9)

15.2 US State Regulations

STATE RIGHT-TO-KNOW: To the best of our knowledge, this product does not contain any of the listed chemical known to the State of California to cause cancer, birth defects, or other reproductive harm. (California Health and Safety Code Section 25249.6).

15.3 Canadian Regulations

DSL: All components of this product are listed on, or exempt from the DSL.
WHMIS Information: D2B - Toxic material that causes other toxic effects.

15.4 International Inventories*

United States: All components of this product are listed on the TSCA inventory.

*=Although a chemical may be listed on a country's inventory, it may not indicate a hazard or regulatory control for use.

SECTION 16: Other Information

16.1 HMIS and NFPA RATINGS

HMIS Classification

Health: 2*
Flammability: 1
Reactivity: 1

*= Chronic

NFPA Ratings

Health: 2
Flammability: 1
Instability: 1
Special: None

16.2 EU CLP Relevant Phrases

Available on request

16.3 Preparation By

I.H. Department

16.4 Preparation Date

August 9, 2011

16.5 Last Revision Date

April 2, 2015

16.6 Disclaimer/Statement of Liability

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