

SAFETY DATA SHEET

ULTRA-FLEX FR Part A

This SDS complies with 29 CFR 1910.1200 (OSHA Hazard Communication Standard)

Section 1. PRODUCT AND COMPANY IDENTIFICATION

Product Identity: ULTRA-FLEX FR Part A

Intended Use: Asphalt urethane Prepolymer. This product is one part of a 2 part product. Read and understand the hazard information on the SDS for Part B before using this product.

Manufacturer: Lava-Liner, Ltd.
1550 G Tiburon Blvd. Suite 418
Tiburon, CA 94920

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Fax: (415) 829-9203

Internet: www.lava-liner.com

Emergency Phone: Chemtrec 800-424-9300

SDS Date of Preparation: 10/14/2014

Section 2. HAZARDS IDENTIFICATION

GHS / HAZCOM 2012 Classification:

Health	Physical
Eye Damage Category 1 Carcinogen Category 2	Not Hazardous

Label Elements



DANGER! Contains 2-Ethyl-1,3-hexanediol

Causes serious eye damage.

Suspected of causing cancer

Prevention:

Obtain special instructions before use.

Do not handle until all safety precautions have been read and understood.

Wear protective gloves, protective clothing, and eye protection.

Response:

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

Immediately call a doctor.

IF exposed or concerned: Get medical advice.

Storage:

Store locked up.

Disposal:

Dispose of contents and container in accordance with local and national regulations.

Section 3. COMPOSITION/INFORMATION ON INGREDIENTS

Component	CAS#	Percentage
Asphalt	8052-42-4	20-65
Proprietary Component A	Proprietary	0-15
Proprietary Component B	Proprietary	0-15
2-Ethyl-1,3-hexanediol	94-96-2	5-10
Carbon Black	1333-86-4	1-3
Aliphatic Hydrocarbons	8052-41-3	0-2

Section 4. FIRST AID MEASURES

Eye: Immediately flush eyes with large quantities of water for at least 20 minutes, holding the eyelids apart. Get medical attention if irritation persists. Seek immediate medical attention for burns from contact with hot material.

Skin: Wipe material from skin then wash skin with plenty of soap and water. Remove contaminated clothing and shoes. Get medical attention if irritation develops and persists. Launder clothing before re-use. If contact with hot material occurs, immediately cool skin with cold water. Remove contaminated clothing if easy to do but do not attempt to remove asphalt or clothing adhering to the skin. Seek immediate medical attention.

Ingestion: DO NOT induce vomiting. Rinse mouth out with water. Never give anything by mouth to an unconscious or convulsing person. Get medical attention.

Inhalation: Remove victim to fresh air. Get medical attention if symptoms persist. If not breathing, give artificial respiration. If breathing is difficult, have qualified person give oxygen. Get immediate medical attention.

Most important symptoms and effects, acute and delayed:

May cause eye damage. May cause skin and respiratory irritation. Heated material will cause thermal burns. Breathing high concentrations of vapor as a result of spraying or atomizing may cause CNS effects to include dizziness, drowsiness, disorientation, vertigo, memory loss, visual disturbances, and difficulty with breathing. Carbon black is suspected of causing cancer.

Indication of immediate medical attention and special treatment needed, if necessary:

Seek immediate medical attention if in eyes, or for thermal burns from contact with hot material.

Section 5. FIRE FIGHTING MEASURES

Suitable (and Unsuitable) Extinguishing Media: Use foam, dry chemical, carbon dioxide, or Halon to extinguish fire. Use water to cool fire exposed containers and structures.

Specific Hazards Arising from the Chemical: Material at ambient temperature is not considered flammable but product will burn under fire conditions. Heat from fire can generate flammable vapor.

Special Protective Equipment and Precautions for Fire-fighters: Firefighters should wear positive pressure self-contained breathing apparatus and full protective clothing. This product flows freely when hot and should be treated as oil when exposed in a fire. Cool fire exposed containers with water.

Section 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, Protective equipment, and Emergency procedures: Wear appropriate protective clothing as described in Section 8.

Methods and Materials for Containment and Cleaning up: If solid, scoop up or sweep up and place into an appropriate container for disposal. Wash spill site with soap and water if needed. If liquid, contain with an inert material such as soil or clay. Allow to solidify and handle as a solid spill. Prevent spill from entering sewers and water courses. Report releases as required by local, state and federal authorities. Avoid generating dust.

Section 7. HANDLING AND STORAGE

Precautions for Safe Handling: Avoid contact with the eyes, skin and clothing. Do not breathe aerosols and vapors. Wear protective clothing and equipment as described in Section 8. Use only with adequate ventilation. Wash thoroughly with soap and water after handling. Keep containers closed when not in use.

Do not reuse containers. Empty containers retain product residues can be hazardous. Follow all SDS precautions when handling empty containers. Do not cut, drill, weld, braze, etc. on or near containers, even empty containers.

Conditions for Safe Storage, Including any Incompatibilities: Store in a cool, well-ventilated area. Protect containers from physical damage. Store away from strong oxidizers.

Section 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Guidelines:

Component	Exposure Limit
Asphalt	0.5 mg/m ³ (Inhalable) TWA as benzene-soluble aerosol ACGIH TLV
Proprietary Component A (as Antimony compounds)	0.5 mg/m ³ TWA OSHA PEL 0.5 mg/m ³ TWA ACGIH TLV
Proprietary Component B (as Aluminum compounds)	15 mg/m ³ TWA OSHA PEL (Total dust) 5 mg/m ³ TWA OSHA PEL (Respirable fraction) 1 mg/m ³ TWA ACGIH TLV (Respirable)

Aliphatic Hydrocarbons	500 ppm TWA OSHA PEL 100 ppm TWA ACGIH TLV
2-Ethyl-1,3-hexanediol	None Established
Carbon Black	3.5 mg/m ³ TWA OSHA PEL 3 mg/m ³ (Inhalable) TWA ACGIH TLV

Appropriate Engineering Controls: Use with adequate general or local exhaust ventilation to maintain exposure levels below applicable limits.

Personal Protective Equipment:

Respiratory Protection: In operations where the occupational exposure limits are exceeded, an approved respirator appropriate for the form and concentration of the contaminants should be used. For asphalt fumes, an organic vapor/particulate respirator or supplied air respirator should be worn. Selection and use of respiratory equipment must be in accordance with OSHA 1910.134 and good industrial hygiene practice. For firefighting, use self-contained breathing apparatus.

Skin Protection: Wear insulated gloves when handling hot material. Impervious gloves recommended for handling ambient temperature solid material.

Eye Protection: Chemical goggles and face shield for handling hot material. Chemical goggles if eye contact is possible.

Other protective equipment or clothing: Wear long sleeved shirt and long pants to avoid skin contact. Wear thermally protective clothing if needed for handling hot material.

Section 9. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE: Dark brown to black, viscous liquid

ODOR: Slight kerosene

ODOR THRESHOLD: Not determined

pH: Not determined

MELTING / FREEZING POINT: Not determined

BOILING POINT / RANGE: Not determined

FLASH POINT: 138°C (280.4°F) COC - ASTM D92

EVAPORATION RATE: Not determined

FLAMMABILITY (Gas, Solid): Not applicable.

FLAMMABILITY LIMITS: LEL: Not determined **UEL:** Not determined

VAPOR PRESSURE: Not determined

VAPOR DENSITY: (Air = 1) Not determined

RELATIVE DENSITY: Not determined

SOLUBILITY IN WATER: Negligible.

OCTANOL/WATER COEFFICIENT: Not determined

AUTOIGNITION TEMPERATURE: Not determined

DECOMPOSITION TEMPERATURE: Not determined

VISCOSITY: 2,800 – 3,500 cps at 25°C

Section 10. STABILITY AND REACTIVITY

Reactivity: Metal salts will coagulate this product. The presence of iron or zinc can cause partial deterioration of this material's fire retardant properties prior to curing.

Chemical Stability: Elevated temperatures and strong alkalis will promote the decomposition of this product. At temperatures below 120°F, decomposition is almost nonexistent.

Possibility of Hazardous Reactions: None known

Conditions to avoid: Keep away from high temperatures, high heat, or flames.

Incompatible Materials: Metal salts. Iron or zinc. Strong alkalis.

Hazardous Decomposition Products: Carbon oxides, and short chains of hydrocarbon. This product at high temperatures produces hydrogen chloride gas. Heat from fire can generate flammable vapor.

Section 11. TOXICOLOGICAL INFORMATION

Potential Health Effects:

Acute Hazards:

Ingestion: Swallowing may cause gastrointestinal irritation and possible intestinal blockage.

Inhalation: Inhalation of vapors and fumes may cause irritation of the nose throat and upper respiratory tract, coughing, and sore throat. Heated material will release toxic hydrogen chloride gas. Breathing high concentrations of vapor may cause CNS effects to include dizziness, drowsiness, disorientation, vertigo, memory loss, visual disturbances, and difficulty with breathing. Exposure to asphalt fumes may increase the risk of sunburn when exposed to sunlight. Inhalation of vapors or fumes from asphalt may cause sensitivity to light.

Eye Contact: Contact with hot material may cause severe burns. Contact with product at ambient temperature may cause serious eye damage.

Skin Contact: Contact with hot material may cause severe burns. Contact with product at ambient temperature may cause irritation. Prolonged or repeated contact may cause moderate dermatitis.

Chronic Effects: Chronic effects of ingestion and subsequent aspiration into the lungs may cause pneumatocele (lung cavity) formation and chronic lung dysfunction.

Carcinogenicity Listing: An increase in skin tumors were observed in a skin painting study with rodents using bitumen. No increase in lung or other tumors were observed in a lifetime inhalation study with rats. A **slight** increase in lung cancer mortality was reported in a European study of paving and mastic asphalt but a follow-up epidemiological study sponsored by IARC concluded that there was no evidence that asphalt exposure causes lung cancer. Carbon black is listed by IARC as Possibly Carcinogenic to Humans (Group 2B). None of the other components greater than 0.1% are listed as a carcinogen by IARC, NTP, OSHA, ACGIH or the EU Substance Directive.

ACUTE TOXICITY VALUES:

No toxicity data available for product.

Asphalt: LD50 Oral Rat: >5000 mg/kg; LD50 Skin Rabbit: >2000 mg/kg

Proprietary Component A: LD50 Oral Rat: >34,600 mg/kg

Proprietary Component B: LD50 Oral Rat: 3654 mg/kg

2-Ethyl-1,3-hexanediol: LD50 Oral Rat: 1400 mg/kg; LD50 Skin Rabbit: 2000 mg/kg

Carbon Black: LD50 Oral Rat: 15400 mg/kg; LD50 Skin Rabbit: >3000 mg/kg

Section 12. ECOLOGICAL INFORMATION

Ecotoxicity:

No data available for product.

Proprietary Component A: LC50: *Lepomis macrochirus* >530 mg/L/ 96 hr; EC50: *Daphnia magna* 423 mg/L/48 hr

Proprietary Component B: LC50 *Caenorhabditis elegans* (Nematode) 1.8 mg/L/96 hr

Persistence and Degradability:

No data available for product.

Bioaccumulative Potential:

No data available for product.

Mobility in Soil:

No data available for product.

Other Adverse Effects: Contains a proprietary substance which is very toxic to aquatic life with long lasting effects. Avoid release to the environment.

Section 13. DISPOSAL CONSIDERATIONS

Dispose in accordance with local, state and federal environmental regulations.

Section 14. TRANSPORT INFORMATION

Hazchem Class:	Not applicable
Emergency action code for this hazard class:	Not applicable
UN Number:	None
Material:	Not regulated for transport
Hazard Class:	Not applicable
Packing Group:	Not applicable
Labels Required:	None

Section 15. REGULATORY INFORMATION

CERCLA/SUPERFUND: Spills of this product over the RQ (reportable quantity) must be reported to the National Response Center. The RQ for this product, based on the RQ for Proprietary Component 1 (7% maximum) of 1,000 lbs, is 14,285 lbs. Many states have more stringent release reporting requirements. Report spills required under federal, state and local regulations.

SARA HAZARD CATEGORY (311/312): Acute Health, Chronic Health, Fire Hazard.

SARA 313 INFORMATION: This product contains the following chemicals subject to Annual Release Reporting Requirements Under SARA Title III, Section 313 (40 CFR 372): Antimony Compound.

EPA TSCA INVENTORY: All of the ingredients in this product are listed on the EPA TSCA Inventory.

CALIFORNIA PROPOSITION 65

This product contains Carbon Black and trace chemical substances which are known to the State of California to cause cancer, birth defects, or other reproductive harm.

16. OTHER INFORMATION

NFPA RATING: Health = 3 Fire = 1 Instability = 1
HMIS RATING: Health = 3* Fire = 1 Physical Hazard = 1

Revision Date:

10/14/2014: Flash Point data updated: Change to sections 2, 5, 7, 9, 10, 14, & 16.

Revision history:

04/16/2014: Formula update: Change to sections 3, 8, & 11. Change to section 14.

04/02/2013: New MSDS

SAFETY DATA SHEET

ULTRA-FLEX Part B

This SDS complies with 29 CFR 1910.1200 (OSHA Hazard Communication Standard)

Section 1. PRODUCT AND COMPANY IDENTIFICATION

Product Identity: ULTRA-FLEX Part B

Intended Use: Cross Linking Catalyst. This product is one part of a 2 part product. Read and understand the hazard information on the SDS for Part A before using this product.

Manufacturer: Lava-Liner, Ltd.
1550 G Tiburon Blvd., Suite 418
Tiburon, CA 94920

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Emergency Phone: Chemtrec 800-424-9300

SDS Date of Preparation: 04/02/2013

Section 2. HAZARDS IDENTIFICATION

GHS / HAZCOM 2012 Classification:

Health	Physical
Acute Toxicity Inhalation Category 4 Eye Irritant Category 2 Respiratory Sensitizer Category 1 Skin Irritant Category 2 Skin Sensitizer Category 1 Specific Target Organ Toxicity – Repeated exposure Category 2 (Lungs) Specific Target Organ Toxicity – Single exposure Category 3 (Respiratory irritation)	Not Hazardous

Label Elements



DANGER! Contains Isocyanates

Causes skin irritation

May cause an allergic skin reaction

Causes serious eye irritation

Harmful if inhaled

May cause allergy or asthma symptoms or breathing difficulties if inhaled

May cause respiratory irritation

May cause damage to lungs through prolonged or repeated exposure.

Prevention:

Obtain special instructions before use.

Do not handle until all safety precautions have been read and understood.

Do not breathe mist, vapours, or spray.

Wash exposed skin thoroughly after handling.

Do not eat, drink or smoke when using this product.

Use only outdoors or in a well-ventilated area.

Contaminated work clothing should not be allowed out of the workplace.

Wear protective gloves, protective clothing, and eye protection.

In cases of inadequate ventilation, wear respiratory protection.

Response:

IF ON SKIN: Wash with plenty of soap and water.

IF INHALED: Remove person to fresh air and keep comfortable for breathing.

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

If exposed or if you feel unwell: Call a POISON CENTER, or a doctor

If skin irritation or rash occurs: Get medical attention.

If eye irritation persists: Get medical attention.

If experiencing respiratory symptoms: Call a POISON CENTER, or a doctor

Take off contaminated clothing.

Wash contaminated clothing before reuse.

Storage:

Store locked up.

Disposal:

Dispose of contents and container in accordance with local and national regulations.

Section 3. COMPOSITION/INFORMATION ON INGREDIENTS

Component	CAS#	Percentage
Polymeric Diphenylmethane Diisocyanate (PDMI)	9016-87-9	< 55
Diphenylmethane-4, 4'-diisocyanate (MDI)	101-68-8	< 40

Diphenylmethane-4, 4'-diisocyanate Mixed Isomers	26447-40-5	< 10
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Section 4. FIRST AID MEASURES

Inhalation: Immediate remove victim to fresh air. If breathing is difficult, have qualified personnel administer oxygen. If breathing has stopped, administer CPR. Get immediate medical attention.

Skin: Wash skin thoroughly with soap and water after handling. Get medical attention if irritation or rash develop. Remove and launder contaminated clothing before reuse.

Eye: Immediately flush victim's eyes with large quantities of water for at least 15 minutes, holding the eyelids apart. Remove contact lenses if present after the first 5 minutes and continue flushing. Get immediate medical attention.

Ingestion: Do not induce vomiting. If the victim is conscious and alert, rinse the mouth with a small amount of water. Get immediate medical advice by calling a poison center or hospital emergency department.

Most important symptoms and effects, acute and delayed:

Harmful if inhaled. Causes eye, skin and respiratory irritation. This product contains isocyanates. May cause allergic skin reaction. May cause allergic or asthmatic symptoms or breathing difficulties if inhaled. Symptoms may include eye irritation, sore throat, nasal discharge, coughing, difficulty breathing and a feeling of tightness in the chest. Fever, chills, headache and fatigue may also occur. Effects may be delayed. Severe exposures may cause inflammation of the lung (chemical pneumonitis), asthmatic symptoms with wheezing and accumulation of fluid in the lungs (pulmonary edema) which can be fatal. Persons who are allergic to isocyanates should avoid contact with this product.

Indication of immediate medical attention and special treatment needed, if necessary:

Immediate medical attention is required for allergic respiratory reactions, and eye contact. May be required for inhalation overexposures, and allergic skin reactions.

Section 5. FIRE FIGHTING MEASURES

Suitable (and Unsuitable) Extinguishing Media: Use carbon dioxide, dry chemical, water spray or foam. Do not use solid water stream.

Specific Hazards Arising from the Chemical: This product is combustible but will not burn readily. This material can burn if strongly heated. Combustions will produce hazardous decomposition products including Oxides of carbon and nitrogen, isocyanate vapors, hydrogen cyanide, and various hydrocarbons.

Special Protective Equipment and Precautions for Fire-fighters: Firefighters should wear positive pressure self-contained breathing apparatus and full protective clothing. Cool fire-exposed containers with water. Do not get water inside containers. Do not breathe combustion products. Do not release water from firefighting to sewers or waterways.

Section 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, Protective equipment, and Emergency procedures: Wear appropriate protective clothing as described in Section 8. Eliminate all ignition sources. Ventilate the area.

Methods and Materials for Containment and Cleaning up: Stop leak if you can do so without risk. Contain spill and absorb with an inert, non-combustible absorbent material (dry earth, sand, commercial absorbent). Decontaminate the collected material and the spill area with a solution of 90% water, 2% detergent and 8% concentrated ammonium. Add at a 10 to 1 ratio. Allow deactivated material to stand at least 48 hours to allow before shoveling into drums. Carefully sweep up or shovel, avoiding creating airborne dust. Place in an appropriate containers for disposal. Do not seal containers as chemical reaction that may generate carbon dioxide may rupture closed containers. Collect washings for proper disposal. Prevent spill from entering sewers and water courses. Report releases as required by local, state and federal authorities.

Section 7. HANDLING AND STORAGE

Precautions for Safe Handling: Avoid contact with the eyes, skin and clothing. Do not breathe aerosols and vapors. Wear protective clothing and equipment as described in Section 8. Use only with adequate ventilation. Wash thoroughly with soap and water after handling. Keep containers closed when not in use. Keep away from excessive heat, flames and other sources of ignition. Persons with asthma or known sensitivity to isocyanates should not be exposed to this product. Keep product away from water and moisture.

Do not reuse containers. Empty containers retain product residues can be hazardous. Follow all SDS precautions when handling empty containers. Do not cut, drill, weld, braze, etc. on or near containers, even empty containers. Residue inside containers may ignite explosively leading to injury or death.

Conditions for Safe Storage, Including any Incompatibilities: Store in a cool, dry, well ventilated area away from heat, direct sunlight, water, moisture and incompatible materials such as alcohol, amines, acids, and bases. Store in accordance with local and federal fire codes. Use proper labeling in accordance with 29CFR1910.1200 regulation. Improper storage or contamination of containerized product with water or other chemicals may result in a hazardous condition and rupture of containers.

Section 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Guidelines:

Component	Exposure Limit
Polymeric Diphenylmethane Diisocyanate (PDMI)	None Established
Diphenylmethane-4, 4'-diisocyanate (MDI)	0.005 ppm TWA ACGIH TLV 0.02 ppm Ceiling OSHA PEL
Diphenylmethane-4, 4'-diisocyanate Mixed Isomers	0.005 ppm TWA ACGIH TLV 0.02 ppm Ceiling OSHA PEL

Appropriate Engineering Controls: Use with adequate ventilation to maintain exposure levels below the occupational exposure limits.

Personal Protective Equipment:

Respiratory Protection: In operations where exposure limits are exceeded or exposure levels are unknown, a NIOSH or other authority approved supplied air respirator appropriate for the form and concentration of the contaminants should be used. Air-purifying respirators may be used under some conditions with a cartridge change schedule that is based on the expected airborne exposure levels. Since MDI is odorless, the odor threshold for MDI cannot be used to detect unsafe conditions. Selection and use

of respiratory equipment must be in accordance with OSHA 1910.134 or other applicable regulations and good industrial hygiene practice.

Skin Protection: Wear impervious gloves such as butyl rubber, neoprene or nitrile rubber to avoid skin contact. Contact your glove supplier for specific recommendations. Wear protective clothing as needed to avoid skin contact and prevent contamination of personal clothing.

Eye Protection: Chemical safety goggles recommended.

Other protective equipment or clothing: Wear protective clothing as needed to avoid skin contact and prevent contamination of personal clothing.

Section 9. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE: Yellow to amber liquid

ODOR: Slight odor.

ODOR THRESHOLD: Not determined

pH: Not determined

MELTING / FREEZING POINT: 3°C (37.4°F)

BOILING POINT / RANGE: 200°C (392°F)

FLASH POINT: 220°C (428°F) Open cup

EVAPORATION RATE: Not determined

FLAMMABILITY (Gas, Solid): Not applicable

FLAMMABILITY LIMITS: LEL: Not determined **UEL:** Not determined

VAPOR PRESSURE: 0.00016 mmHg at 20°C

VAPOR DENSITY: (Air = 1) ~ 8.5

RELATIVE DENSITY: 1.22 at 20°C

SOLUBILITY IN WATER: Reacts with water.

OCTANOL/WATER COEFFICIENT: Not determined

AUTOIGNITION TEMPERATURE: >250°C (>482°F)

DECOMPOSITION TEMPERATURE: >260°C (>500°F)

VISCOSITY: 200 mPa. S at 20°C

Section 10. STABILITY AND REACTIVITY

Reactivity: Will react with materials containing active hydrogen such as water, alcohol, amines, acids, and bases.

Chemical Stability: Stable under recommended storage and handling conditions.

Possibility of Hazardous Reactions: Polymerization may occur at elevated temperatures 232.2°C (450°F) and in the presence of alkalis, tertiary amines, and metal compounds.

Conditions to avoid: High temperatures. Avoid freezing.

Incompatible Materials: Materials containing active hydrogen such as water, alcohol, amines, acids, and bases.

Hazardous Decomposition Products: Thermal decomposition will generate oxides of carbon and nitrogen, isocyanate vapors, hydrogen cyanide, and various hydrocarbons.

Section 11. TOXICOLOGICAL INFORMATION

Potential Health Effects:

Acute Hazards:

Ingestion: Ingestion may cause mouth, throat and gastrointestinal irritation. Based on animal data, this product is not expected to be toxic by ingestion.

Inhalation: Polymeric Diphenylmethane Diisocyanate has an extremely low vapor pressure making inhalation exposure very unlikely unless this product is heated or a mist or aerosol is formed by spraying or surface agitation. Harmful if inhaled. Breathing vapors may cause irritation of the nose, throat and upper respiratory tract. May cause allergic respiratory reaction in individuals who are sensitized to isocyanates. Symptoms may include eye irritation, sore throat, nasal discharge, coughing, difficulty breathing and a feeling of tightness in the chest. Fever, chills, headache and fatigue may also occur. Effects may be delayed. Severe exposures may cause inflammation of the lung (chemical pneumonitis), asthmatic symptoms with wheezing and accumulation of fluid in the lungs (pulmonary edema) which can be fatal.

Eye Contact: Causes irritation of the eyes with redness, pain and tearing. Corneal injury is possible.

Skin Contact: May cause irritation. May cause allergic skin reaction (rash, itching and swelling). Skin contact may also cause an allergic respiratory reaction as described under inhalation.

Chronic Effects: Repeated skin contact or inhalation may cause sensitization with allergic reaction or asthmatic symptoms upon future exposure. Sensitized individuals react to very low concentrations of MDI, below 0.001 ppm. Symptoms can occur immediately following exposures or can be delayed for several hours. Exposure to isocyanates can also cause hypersensitivity pneumonitis (an allergic lung disease) with symptoms of fever, shortness of breath, malaise, cough and chills. Chronic exposure to MDI may also cause impaired lung capacity. Cross sensitivity to other isocyanates may occur.

Carcinogenicity Listing: None of the components is listed as a carcinogen or suspected carcinogen by IARC, NTP or OSHA. In inhalation studies with rats, an increased incidence of benign tumor of the lung (adenoma) and a single malignant tumor of the lung (adenocarcinoma) were observed in the highest MDI exposure group (6 mg/m³, 6 hours/day, 5 days/week for a lifetime). MDI administration did not change the distribution and incidence of tumors from those seen in the controls. The increased incidence of lung tumors is associated with prolonged respiratory irritation. In the absence of prolonged exposure to high concentrations leading to chronic irritation and lung damage, it is highly unlikely that tumor formation will occur.

ACUTE TOXICITY VALUES:

Diphenylmethane-4, 4'-diisocyanate (MDI): LD50 oral rat 9,200 mg/kg; LC50 inhalation rat: 369 mg/m³/4 hr.
Polymeric Diphenylmethane Diisocyanate: LD50 oral rat 49,000 mg/kg; LD50 dermal rabbit >9,400 mg/kg.
LC50 inhalation rat: 490 mg/m³/4 hr.
Diphenylmethane-4, 4'-diisocyanate Mixed Isomers: LD50 oral rat >2000 mg/kg

Section 12. ECOLOGICAL INFORMATION

Ecotoxicity: Polymeric Diphenylmethane Diisocyanate: EC50 Daphnia Magna 1000 mg/L/24 hr. LD50 zebra fish >1000 mg/L

Persistence and Degradability: 4,4'-methylenediphenyl diisocyanate will hydrolyze rapidly in water with an estimated half-life of a few minutes to a few hours

Bioaccumulative Potential: 4,4'-Methylenediphenyl diisocyanate hydrolyzes rapidly in aqueous solution; therefore, bioconcentration will not be an important environmental fate process.

Mobility in Soil: 4,4'-Methylenediphenyl diisocyanate hydrolyzes rapidly in aqueous solution; therefore, leaching and adsorption to moist soil and sediment will not be an important environmental fate process.

Other Adverse Effects: None known

Section 13. DISPOSAL CONSIDERATIONS

Dispose in accordance with local, state and federal environmental regulations.

Section 14. TRANSPORT INFORMATION

Transportation of Dangerous Goods Description:

Proper Shipping Name: Not regulated when packaged in container with 5000 lbs or less.

UN Number: None

Hazard Class/Packing Group: Not applicable

Labels Required: None

Note: Packages containing more than 5000 lbs of product must be shipped under RQ provisions and named: UN3082, Environmentally Hazardous Substance, liquid, n.o.s. (Methylene Diphenyl Diisocyanate), 9, III

Section 15. REGULATORY INFORMATION

CERCLA/SUPERFUND: Spills of this product over the RQ (reportable quantity) must be reported to the National Response Center. The RQ for this product, based on the RQ for Methylene Diphenyl Diisocyanate (100% maximum) of 5,000 lbs, is 5,000 lbs. Many states have more stringent release reporting requirements. Report spills required under federal, state and local regulations.

SARA HAZARD CATEGORY (311/312): Acute Health, Chronic Health

SARA 313 INFORMATION: This product contains the following chemicals subject to Annual Release Reporting Requirements Under SARA Title III, Section 313 (40 CFR 372): Diisocyanate compounds 100%

EPA TSCA INVENTORY: All of the ingredients in this product are listed on the EPA TSCA Inventory.

CALIFORNIA PROPOSITION 65

This product contains the following chemicals known to the State of California to cause cancer or reproductive toxicity: None

16. OTHER INFORMATION

NFPA RATING: Health = 2 Fire = 1 Instability = 1

HMIS RATING: Health = 2* Fire = 1 Physical Hazard = 1

04/02/2013: New SDS