

SAFETY DATA SHEET



DATE ISSUED :	3/18/2021
MSDS REF. No :	Xpoly-nap/HC

1. PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: Cement-Mend Resin
PRODUCT CODE: Xpoly-nap/HC

Supplier/ Manufacturer
SUPERIOR MANUFACTURING
4520 Glenmeade Lane
Auburn Hills, MI 48326
866.523.5677

SUPERIOR MANUFACTURING PHONE: 866.523.5677
EMERGENCY PHONE: 1-800-535-5053
ORIGINAL DATE ISSUED: 12/02/08 **REVISION DATE:** 10/18/13

Recommended End Use: Half of a two component system used for patching

2. HAZARDS IDENTIFICATION

Acute Toxicity, Category 4
Skin Irritation, Category 2
Respiratory Sensitization, Category 1B



SIGNAL WORD: Danger

Hazard-determining components of labeling: Naphthalene

Hazard Statements

H317 May cause an allergic skin reaction
H302 Harmful if swallowed
H335 May cause respiratory irritation
Causes skin irritation
May cause allergy or asthma symptoms or breathing difficulties if inhaled

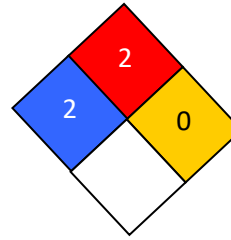
Precautionary Statements

P273 Avoid Release to the Environment
P280 Wear protective gloves/ protective clothing/eye protection/face protection.
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do so. Continue Rinsing.
P310 Immediately Call a POISON CENTER or doctor/physician.
P284 Wear respiratory protection

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HMIS RATING	
Health :	2
Flammability :	2
Reactivity :	0
Personal Protection :	E

NFPA CODES



Potential Health Effects:

SKIN: Repeated skin contact with this product may result in dry, defatted and cracked skin causing increased susceptibility to infection. In addition, irritation that may develop into dermatitis may occur from skin contact. Allergic reactions may occur.

EYES: Liquid aerosols and concentrated vapors of this product may be irritating to the eyes and cause a stinging sensation, tearing, reddening and possibly swelling of the eyes. If left untreated, corneal injury can occur and injury is slow to heal. Damage is usually reversible.

INHALATION: Vapors and mists of this product can be irritating to the mucous membranes and respiratory tract. Symptoms may include sore throat, coughing, shortness of breath, headache and dizziness. At elevated temperatures, the generated vapor or mist of this product may cause irritation and dehydration of the mucous membranes of the respiratory tract.

INGESTION: The product can cause gastrointestinal distress and can result in irritation in digestive tract. Symptoms can include sore throat, abdominal pain, nausea, vomiting and diarrhea. May also cause central nervous system depression with headache, dizziness and drowsiness.

CHRONIC HAZARDS: With repeated or prolonged contact, this product may aggravate an existing dermatitis or other allergic reactions, as well as existing respiratory conditions. Not classified as a carcinogenic substance as defined by IARC, NTP and/or OSHA.

3. COMPOSITION/INFORMATION ON INGREDIENTS

This document is a pursuant to the OSHA Hazard Communication Standard (29 CFR 1910.1200). Where a proprietary ingredient is shown, the identity may be made available as provided in this standard. All components of this product are included in the EPA Toxic Substances Control Act (TSCA) Chemical Substance Inventory.

Chemical Name	PEL	Weight %	CAS Number
Naphthalene	10 ppm	<50%	91-20-3
Petroleum Hydrocarbon	Not Established	<100%	64742-94-5

4. FIRST AID MEASURES

GENERAL ADVICE: Consult a physician. Show this safety data sheet to physician in attendance.

EYES: In case of contact, flush eyes with plenty of clean, lukewarm water for at least 15 minutes. Use fingers to hold eyelids open. Get medical attention if irritation develops or persists.

SKIN: In case of skin contact, wash affected areas with soap and lukewarm water for at least 15 minutes. Immediately remove contaminated clothing and shoes. Get medical attention if irritation develops or persists. Wash clothing and shoes before reuse.

INGESTION: If swallowed, DO NOT INDUCE VOMITING unless directed to do so by medical personnel. Drink one to two cups of water or milk to drink. Do not give anything by mouth to an unconscious or convulsing person. Get medical attention immediately. Should vomiting occur, keep head lower than hip level to prevent aspiration of fluid into the lungs.

INHALATION: Remove to fresh air. If breathing is difficult, give oxygen. If breathing has stopped, administer artificial respiration. Get medical attention.

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5. FIRE FIGHTING MEASURES

SUITABLE EXTINGUISHING MEDIA: Carbon dioxide (CO₂), dry chemical, foam, water spray for large fires.

For safety reasons, unsuitable extinguishing agents: None known

SPECIAL FIRE & UNUSUAL HAZARD: May generate toxic or irritating combustion products. Organic solvent vapors (PMA) / air mixtures are explosive above flash point.

SPECIAL FIREFIGHTING INSTRUCTIONS: Full emergency equipment with self-contained breathing apparatus and full protective clothing should be worn by firefighters. During a fire, irritating and toxic gases and smoke are present from decomposition and combustion. Use cold water spray to cool fire-exposed containers to minimize the risk of rupture.

ADDITIONAL INFORMATION: Remove all ignition sources. Water runoff can cause environmental damage. Dike and collect water used to fight fire. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.

HAZARDOUS COMBUSTION PRODUCTS formed under fire conditions: carbon oxides, nitrogen oxides, toxic or irritating fumes, organic solvent vapors

6. ACCIDENTAL RELEASE MEASURES

Personal precautions: Evacuate all non-essential personnel. Ventilate the area. Equip cleanup crew with appropriate protective equipment.

Environmental precautions:

Dike or impound spilled material and control further spillage if feasible. Do not allow spilled material to get into the sewer systems, ground water supplies, or soil. Notify appropriate authorities if necessary. Cover spill with sawdust, vermiculite, Fuller's earth or other absorbent material. Collect material in open containers. Remove containers to a safe place and cover. Flush spill area with water.

See Section 7 for information on safe handling.

See section 8 for information on personal protection equipment.

See Section 13 for disposal information.

7. HANDLING AND STORAGE

HANDLING: Handle in accordance with good industrial hygiene and safety practices. Wash thoroughly after handling. Keep container closed when not in use. Avoid breathing dust, vapor, or mist. Avoid contact with eyes. Avoid contact with skin or clothing. PMA may form peroxides during prolonged storage. Avoid contact with light and check peroxide content before use. Educate and train employees in the safe handling of this product.

STORAGE: Store between 32°F and 120°F. Keep from freezing. Keep container closed when not in use. Store in a cool, dry, ventilated area away from sources of heat, moisture, and incompatibilities. Store in original or similar containers. Store separate from food products.

8. EXPOSURE CONTROLS\PERSONAL PROTECTION

Ventilation: Thermal processing operations should be ventilated to control gases and fumes given off during processing. Good industrial hygiene practice dictates that worker protection should be achieved through engineering controls such as ventilation. When such controls are not feasible to achieve full protection, the use of respirators and other personal protective equipment is mandated. Exhaust air may be cleaned by scrubbers or filters to reduce environmental contamination. Curing ovens must be ventilated to prevent the buildup of explosive atmospheres and to prevent off gases from entering the workplace.

Personal Protection Equipment:

Respiratory Protection: A respirator that is recommended or approved for use in organic vapor containing environments may be necessary. In spray applications, an organic vapor/particulate respirator or air supplied unit is necessary. Consider type of application and environmental concentrations. Take into account other materials being used concurrently. Observe OSHA regulations for respirator use (29 CFR 1910.134).



Skin Protection: Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact. If skin creams are used, keep the area protected only by the cream to a minimum. Gloves should be tested for chemical resistance before reliable use. (penetration times, rates of diffusion and rate of degradation). Wear long sleeves and pants, exposing as little skin as possible.



Eye Protection: Use chemical safety goggles when working with this material and/or a full face shield where dusting or splashing of solutions is possible. Maintain eye wash fountain and quick-drench facilities in work area. DO NOT WEAR CONTACT LENSES when working with this material!!!

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Other Protection: Safety showers and eyewash stations should be easily accessible to the work area. Educate and train employees in the safe use and handling of this product.

Hygienic Practices: Wash hands before eating. Remove contaminated clothing and wash before reuse. Follow all MSDS/label precautions even after container is emptied because they may retain product residues. Avoid prolonged or repeated contact with skin. Avoid contact with eyes, skin, and clothing.

9. PHYSICAL AND CHEMICAL PROPERTIES

Volatile Organic Content: N/D	Solubility in Water: Miscible
Color: Milky White	Specific Gravity @ 20°C: Ca. 1.00
Odor: Weak	pH @ 100%: Ca. 7.2
Physical Appearance: Cloudy Thixotropic Liquid	Melting/Freezing point: N/A
Boiling Point: N/A	Flashpoint: 245°F Pensky-Marten Closed Cup
Ignition Temperature: N/A	Auto-ignition temperature: Approximately 707°F (similar product)
Explosion Limits: Lower: N/A Upper: N/A	Water solubility: Miscible
	Partition coefficient (n-octanol/water): N/A
	Relative vapor density: N/A
Odor Threshold: N/A	Evaporation rate: N/A
N/A = Not Available N/D = Not Determined Ca. = Approximate	

10. STABILITY AND REACTIVITY

STABILITY: This product is stable under recommended and normal conditions

HAZARDOUS POLYMERIZATION: Will not occur under normal conditions.

INCOMPATIBILITY: Strong oxidizing agents, isocyanates.

HAZARDOUS DECOMPOSITION PRODUCTS: By Fire and Thermal Decomposition: Carbon Dioxide; Carbon Monoxide; oxides of Nitrogen (NO_x), and trace amounts of Hydrogen Cyanide.

CONDITIONS TO AVOID: Open Flame / Sparks / Sources of ignition. Heat. Freezing.

11. TOXICOLOGICAL INFORMATION

Component Toxicological Information:

PRIMARY ROUTE OF ENTRY: Skin Contact Skin Absorption Inhalation Ingestion Eye Contact

Toxicity to Animals:

Naphthalene

Draize test, rabbit, eye: 100 mg Mild;

Inhalation, rat: LC50 = >340 mg/m³/1H;

Oral, mouse: LD50 = 316 mg/kg;

Oral, rat: LD50 = 490 mg/kg;

Skin, rabbit: LD50 = >20 gm/kg;

Skin, rat: LD50 = >2500 mg/kg;

Chronic Effects on Humans: CARCINOGENIC EFFECTS: A4 (Not classifiable for human or animal.) by ACGIH.

DEVELOPMENTAL TOXICITY: Classified Development toxin [POSSIBLE]. The substance is toxic to blood, kidneys, the nervous system, the reproductive system, liver, mucous membranes, gastrointestinal tract, upper respiratory tract, central nervous system (CNS).

Other Toxic Effects on Humans: Very hazardous in case of ingestion. Hazardous in case of inhalation. Slightly hazardous in case of skin contact (irritant, permeator).

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12. ECOLOGICAL INFORMATION

Marine Pollutant/Ecotoxicity: Ecotoxicity in water (LC50): 305.2 ppm 96 hour(s) [Trout].

Environmental Fate:

Products of Biodegradation: Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

Toxicity of the Products of Biodegradation: The products of degradation are more toxic.

13. DISPOSAL CONSIDERATIONS

DISPOSAL METHOD: The generation of waste should be avoided or minimized wherever possible. Do not dispose of with household waste. Do not dispose of in landfill. Do not allow contact with sewers or waterways. Comply with all Federal, State and Local regulations. Incineration is the preferred method. All containers should be disposed of in accordance with governmental regulations in an environmentally safe manner. Under RCRA, it is the responsibility of the product user to determine at the time of disposal, whether a material containing the product or derived from the product should be classified as a hazardous waste. (40 CFR 261.20-24)

14. TRANSPORT INFORMATION

DOT SHIPPING INFORMATION

DOT Proper Shipping Name:

DOT Technical Name: Flammable, Liquid, N.O.S.

DOT Hazard Class: 3

Hazard Subclass: N/A

DOT I.D. Number: UN1993

Packing Group: III

IMDG

Technical Name: Flammable, Liquid, N.O.S.

DOT Hazard Class: 3

Hazard Subclass: N/A

I.D. Number: UN1993

Packing Group: III

INTERNATIONAL REGULATIONS:

CANADIAN WHMIS: This MSDS has been prepared in compliance with the hazard criteria of the Controlled Product Regulations and the MSDS contains the information required by those regulations.



CANADIAN WHMIS CLASS: B

15. REGULATORY INFORMATION

U.S. FEDERAL REGULATIONS AS FOLLOWS-

OSHA Hazard Communication Standard (29 CFR 1910.1200): Hazardous by definition of Hazard Communication Standard.

Flammable. Respiratory Sensitizer.

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CERCLA/ Super Fund (40 CFR 117, 302):

CERCLA - SARA HAZARD CATEGORY:

This product has been reviewed according to the EPA 'Hazard Categories' promulgated under Sections 311 and 312 of the Superfund Amendment and Reauthorization Act of 1986 (SARA Title III) and is considered, under applicable definitions, to meet the following categories:

Immediate Health Hazard (Acute)

SARA Toxic Chemicals (40 CFR 372):

This product contains the following substances subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372: **Naphthalene 91-20-3**

TOXIC SUBSTANCES CONTROL ACT: All chemicals in this compound are listed on the TSCA.

NEW JERSEY RIGHT-TO-KNOW/ PENNSYLVANIA RIGHT-TO-KNOW:

Component Name	CAS Number	Weight Percentage
Naphthalene	91-20-3	<50%

California Proposition 65: Warning! The following ingredient is known to the State of California to cause birth defects or other reproductive harm.

Naphthalene 91-20-3 <50%

16. OTHER INFORMATION

THE INFORMATION HEREIN HAS BEEN COMPILED FROM SOURCES BELIEVED TO BE RELIABLE AND IS ACCURATE TO THE BEST OF OUR KNOWLEDGE. HOWEVER, SUPERIOR MANUFACTURING CANNOT GIVE ANY GUARANTEES REGARDING INFORMATION FROM OTHER SOURCES, AND EXPRESSLY DOES NOT MAKE ANY WARRANTIES, NOR ASSUMES ANY LIABILITY FOR ITS USE.

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DATE PRINTED : 3/18/2021

MSDS REF. No : Xiso-44mdi

1. PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: Cement-Mend Hardener

PRODUCT CODE: Xiso-44mdi

Supplier/ Manufacturer

SUPERIOR MANUFACTURING

4520 Glenmeade Lane

Auburn Hills, MI 48326

866.523.5677

TRI-CHEM CORPORATION PHONE: 866.523.5677

EMERGENCY PHONE: 1-800-535-5053

ORIGINAL DATE ISSUED: 12/02/08 **REVISION DATE:** 10/18/13

Recommended End Use: Half of a two component system used for patching

2. HAZARDS IDENTIFICATION

Acute Oral Toxicity, Category 2

Skin Corrosion, Category 1C

Serious Eye Damage, Category 2A

Aspiration Hazard, Category 1



SIGNAL WORD: Danger

Hazard-determining components of labeling: 4,4'-Diphenylmethane Diisocyanate (MDI)

Hazard Statements

H317 May cause an allergic skin reaction

H304 May be fatal if swallowed and enters airways

H335 May cause respiratory irritation

H314 Causes severe skin burns and eye damage

Precautionary Statements

P273 Avoid Release to the Environment

P280 Wear protective gloves/ protective clothing/eye protection/face protection.

P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do so. Continue Rinsing.

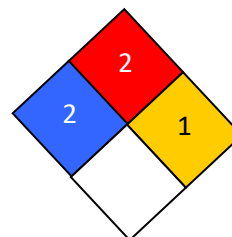
P310 Immediately Call a POISON CENTER or doctor/physician.

HMIS RATING	
Health :	2*
Flammability :	2
Reactivity :	1
Personal Protection :	X

* Chronic Health Hazard

Potential Health Effects:

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SKIN: Acute: Isocyanates react with skin protein and moisture and can cause irritation which may include the following symptoms: reddening, itching, rash, scaling, blistering and swelling. Cured material is difficult to remove. Contact with MDI can cause discoloration.

Chronic: Prolonged contact can cause reddening, swelling, rash, and in some cases, skin sensitization. Animal tests and other research indicate that skin contact with MDI can play a role in causing isocyanate sensitization and respiratory reaction.

EYES: Causes irritation with symptoms of reddening, tearing, stinging, and swelling. If left untreated, corneal damage can occur and injury is slow to heal. Damage is usually reversible. See first aid for treatment.

INHALATION: Acute: MDI vapors or mist at concentrations above the TLV or PEL 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 a preexisting, nonspecific bronchial hyperreactivity can respond to concentrations below the TLV or PEL with similar symptoms as well as asthma attack or asthma-like symptoms. Exposure well above the TLV or PEL 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 (e.g., fever, chills), has also been reported. These symptoms can be delayed up to several hours after exposure.

Chronic: As a result of previous repeated overexposures or a single large dose, certain individuals may develop sensitization to isocyanates (asthma or asthma-like symptoms) that may cause them to react to a later exposure to isocyanates at levels well below the TLV or PEL. 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. Extreme asthmatic reactions can be life threatening. Similar to many nonspecific 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. Sensitization can be permanent. Chronic overexposure to isocyanates has also been reported to cause lung damage (including fibrosis, decrease in lung function) that may be permanent.

INGESTION: May cause irritation and corrosive action in the mouth, stomach tissue and digestive tract. Symptoms may include abdominal pain, nausea, vomiting, and diarrhea. Oral toxicity is presumed to be at a low level.

CHRONIC HAZARDS: No Carcinogenic substances as defined by IARC, NTP and/or OSHA. Medical conditions aggravated by exposure include: skin allergies, eczema, asthma, and respiratory disorders (bronchitis, emphysema, bronchial hyperreactivity).

3. COMPOSITION/INFORMATION ON INGREDIENTS

This document is a pursuant to the OSHA Hazard Communication Standard (29 CFR 1910.1200). Where a proprietary ingredient is shown, the identity may be made available as provided in this standard. All components of this product are included in the EPA Toxic Substances Control Act (TSCA) Chemical Substance Inventory.

Chemical Name	PEL	Weight %	CAS Number
4, 4'-Diphenylmethane Diisocyanate (MDI)	0.005 ppm	<35%	101-68-8
Naphthalene	10 ppm	<50%	91-20-3
Petroleum Hydrocarbon	Not Established	<35%	64742-94-5

4. FIRST AID MEASURES

GENERAL ADVICE: Consult a physician. Show this safety data sheet to physician in attendance.

EYES: In case of contact, flush eyes with plenty of lukewarm water for at least 15 minutes. Use fingers to ensure that eyelids are separated and that the eye is being irrigated. Get medical attention.

SKIN: In case of skin contact, wash affected areas with soap and lukewarm water. Immediately remove contaminated clothing and shoes. Wash contaminated clothing before reuse. For severe exposures, immediately get under safety shower and begin rinsing. Get medical attention if irritation develops. For lesser exposures, seek medical attention if irritation develops or persists after the area is washed.

INHALATION: If inhaled, remove to fresh air, free from further exposure. Get medical attention if irritation develops. Administer oxygen or artificial respiration as needed. Asthmatic-type symptoms may develop and may be immediate or delayed up to several hours. Consult a physician should this occur. Extreme asthmatic reactions can be life threatening.

INGESTION: If swallowed, DO NOT INDUCE VOMITING unless directed to do so by medical personnel. Wash mouth out with water. Do not give anything by mouth to an unconscious person. Get medical attention immediately.

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NOTE TO PHYSICIANS

EYES: Stain for evidence of corneal injury. If cornea is burned, instill antibiotic/steroid preparation as needed. Workplace vapors could produce reversible corneal epithelial edema impairing vision.

SKIN: This compound is a skin sensitizer. Treat symptomatically as for contact dermatitis or thermal burn. If burned, treat as a thermal burn.

INGESTION: Treat symptomatically. MDI has very low oral toxicity. There is no specific antidote. Inducing vomiting is contraindicated because of the irritating nature of the compound.

INHALATION: This compound is a known pulmonary sensitizer. Treatment is essentially symptomatic. An individual having a dermal or pulmonary sensitization reaction to this material should be removed from further exposure to any isocyanate.

5. FIRE FIGHTING MEASURES

SUITABLE EXTINGUISHING MEDIA: Dry chemical, Carbon dioxide (CO₂), Foam, water spray for large fires.

For safety reasons, unsuitable extinguishing agents: N/A

SPECIAL FIRE & UNUSUAL HAZARD: Closed container may forcibly rupture under extreme heat or when contents are contaminated with water (CO₂ formed). Use cold-water spray to cool fire-exposed containers to minimize the risk of rupture. Large fires can be extinguished with large volumes of water applied from a safe distance, since reaction between water and hot diisocyanate can be vigorous.

SPECIAL FIREFIGHTING INSTRUCTIONS: Firefighters should wear NFPA compliant structural firefighting protective equipment including self-contained breathing apparatus and DFPA compliant helmet, hood, boots and gloves. During a fire, MDI vapors and other irritating, highly toxic gases may be generated by thermal decomposition or combustion. At temperatures 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.

ADDITIONAL INFORMATION: None available

HAZARDOUS COMBUSTION PRODUCTS formed under fire conditions: carbon oxides, explosive rupture

6. ACCIDENTAL RELEASE MEASURES

Personal precautions: Evacuate non-emergency personnel. Isolate the area and prevent access. Notify management. Put on protective equipment. Remove ignition sources. Control source of the leak. Ventilate. Contain the spill to prevent spread into drains, sewers, water supplies, or soil. Call 800-535-5053 for assistance and advice.

Environmental precautions:

Major Spill or Leak (Standing liquid): If temporary control of isocyanate vapor is required, a blanket of protein foam may be placed over the spill. Large quantities may be pumped into a closed, but not sealed, container for disposal.

Minor Spill: Absorb isocyanates with sawdust or other absorbent, shovel into suitable unsealed containers, transport to well-ventilated area (outside) and treat with

neutralizing solution:

(1) mixture of water (80%) with non-ionic surfactant Tergitol TMN-10 (20%) or;

(2) water (90%), concentrated ammonia (3-8%) and detergent (2%).

Add about 10 parts of neutralizer per part of isocyanate, with mixing. Allow to stand uncovered for 48 hours to let CO₂ escape.

Clean-up: Decontaminate floor with decontamination solution letting stand for at least 15 minutes.

TRI-CHEM requires INFOTRAC be notified immediately when this product is released unintentionally from its container during its course of distribution, regardless of the amount released. Distribution includes transportation, storage incidental to transportation, loading and unloading. Such notification must be immediate and made by the person having the knowledge of the release.

See Section 7 for information on safe handling.

See section 8 for information on personal protection equipment.

See Section 13 for disposal information.

7. HANDLING AND STORAGE

HANDLING: Do not breathe vapors, mists, or dusts. Warning properties (irritation of the eyes, nose and throat or odor) are not adequate to prevent overexposure from chronic inhalation. This material can produce asthmatic sensitization upon either single inhalation exposure to a relatively high concentration or upon repeated inhalation exposures to lower concentrations. Individuals with lung or breathing problems or prior allergic reactions to isocyanates must not be exposed to vapor or spray mist. Avoid contact with skin and eyes. Wear appropriate eye and skin protection. Wash thoroughly after handling. Do not breathe smoke and gases created by overheating or burning this material. Exposure to vapors of heated MDI can be dangerous. Employee education and training in the safe use and handling of this compound are required under the OSHA Hazard Communication Standard.

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STORAGE: Storage temperatures have not been established for this product. Similar product should be stored between 64°F and 86°F. Store in tightly closed containers to prevent moisture contamination. Do not reseal if contamination is suspected. Store in a cool, dry, ventilated area away from sources of heat, moisture, and incompatibilities. Do not store near food stuffs. Storage period is approximately 6 months at 77°F after receipt of material by customer.

8. EXPOSURE CONTROLS\PERSONAL PROTECTION

Ventilation: Local exhaust should be used to maintain levels below the TLV whenever MDI is heated, sprayed or aerosolized. Standard reference sources regarding industrial ventilation (i.e. ACGIH Industrial Ventilation Manual) should be consulted for guidance about adequate ventilation.

Personal Protection Equipment:



Respiratory Protection: Airborne MDI concentrations greater than the TLV or PEL can occur in inadequately ventilated environments when MDI is sprayed, aerosolized, or heated. In such cases, respiratory protection must be worn. The type of respiratory protection elected must comply with the requirements set forth in OSHA's 29 CFR 1910.134. The type of respiratory protection available includes an atmosphere-supplying respirator such as a self-contained breathing apparatus or a supplied air respirator in the positive pressure or continuous flow mode. See Standard for more information.



Skin Protection: Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact. If skin creams are used, keep the area covered by the cream to a minimum. Gloves should be tested for chemical resistance before reliable use. (penetration times, rates of diffusion and rate of degradation). Wear long sleeves and pants, exposing as little skin as possible.



Eye Protection: Use chemical safety goggles and/or a full face shield where dusting or splashing of solutions is possible. Maintain eye wash fountain and quick-drench facilities in work area. DO NOT WEAR CONTACT LENSES when working with this material!!!

MEDICAL SURVEILLANCE

All applicants who are assigned to an isocyanate work area should undergo a pre-placement medical evaluation. A history of eczema or respiratory allergies such as hay fever, are possible reasons for medical exclusion from isocyanate areas. Applicants who have a history of adult asthma should be restricted from work with isocyanates. Applicants with a history of prior isocyanate sensitization should be excluded from further work with isocyanates. A comprehensive annual medical surveillance program should be instituted for all employees who are potentially exposed to diisocyanates. Once a worker has been diagnosed as sensitized to any isocyanate, no further exposure can be permitted. Refer to the Bayer pamphlet (Medical Surveillance Program for Isocyanate Workers) for additional guidance.

ADDITIONAL PROTECTIVE MEASURES

Emergency showers and eye wash stations should be available. Educate and train employees in the safe use and handling of this product. Follow all label instructions.

Hygienic Practices: Wash hands before eating. Remove contaminated clothing and wash before reuse. Follow all MSDS/label precautions even after container is emptied because they may retain product residues. Avoid prolonged or repeated contact with skin. Avoid contact with eyes, skin, and clothing.

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9. PHYSICAL AND CHEMICAL PROPERTIES

Volatile Organic Content: N/D	Solubility in Water: Insoluble, reacts slowly with water to liberate CO ₂
Color: Brown	Specific Gravity @ 20°C: Ca. 1.0
Odor: Mild aromatic odor	pH @ 100%: N/A
Physical Appearance: Thin Liquid.	Melting/Freezing point: N/A
Boiling Point: N/A	Flashpoint: 245°F
Ignition Temperature: N/A	Auto-ignition temperature: N/A
Explosion Limits: Lower: N/D Upper: N/D	Water solubility: Insoluble, reacts slowly with water to liberate CO ₂
	Partition coefficient (n-octanol/water): N/A
	Relative vapor density: N/A
Odor Threshold: N/A	Evaporation rate: N/A
N/A = Not Available N/D = Not Determined Ca. = Approximate	

10. STABILITY AND REACTIVITY

STABILITY: Stable under recommended and normal conditions of use and storage.

HAZARDOUS POLYMERIZATION: May occur with contact to moisture and other materials which react with isocyanates, or temperatures above 400°F.

INCOMPATIBILITY: Water, amines, strong bases, alcohols, strong oxidizing agents. Will cause some corrosion to copper alloys and aluminum.

HAZARDOUS DECOMPOSITION PRODUCTS: By Fire and Thermal Decomposition: Carbon dioxide (CO₂), Carbon Monoxide (CO), oxides of nitrogen (NO_x), Hydrogen Cyanide, MDI vapors or aerosols.

CONDITIONS TO AVOID: Fire. Heat. Flame. Freezing. Sparks.

11. TOXICOLOGICAL INFORMATION

Component Toxicological Information:

PRIMARY ROUTE OF ENTRY: Skin Contact, Inhalation, Eye Contact.

Toxicity Data for Diphenylmethane Diisocyanate

Route		Species
Oral	LD50> 10000mg/kg	Rat
Dermal	LD50>6200 mg/kg	Rabbit
Inhalation	Monomeric: LC50: 172-187mg/m ³ Polymeric LC50: LC50: 370-490mg/m ³	Rat

Eye Effects: Slight to moderate irritation-Rabbit

Skin effects: Slight to moderate irritation-Rabbit

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 some evidence suggestive of cross-sensitization 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 6 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/m³. 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/m³. The NOEL was 0.2 mg/m³.

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Carcinogenicity: In the study described above, the occurrence of pulmonary adenomas and a single pulmonary adenocarcinoma was considered to be related to MDI. These tumors were observed only in rats exposed to the high concentration of 6.0 mg/m³.

Mutagenicity: Positive (Salmonella microsome test with metabolic activation; cell transformation assay) as well as negative (mouse lymphoma specific locus mutation test with or without metabolic activation) results have been observed "in vitro"/ The use of certain solvents which rapidly hydrolyze MDI is suspected of producing mutagenicity in some of these studies. 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/m³ during days 6-15 of gestation. Maternal toxicity (including mortality) was observed at the highest concentration of 12 mg/m³ accompanied by embryo and fetal toxicity. However, no teratogenic effects were observed even at this lethal concentration.

12. ECOLOGICAL INFORMATION

Ecological Data for Diphenylmethane Diisocyanate (Monomeric and Polymeric)

Environmental Toxicity: LC50-24hour (static): greater than 500mg/liter for Daphnia magna, Limnea Stagnalis, and Zebra Fish (Brachydanio rerio) for both polymeric and monomeric MDI.

Fish Toxicity: LC50: greater than 1000 mg/l; for Brachydanio rerio ; duration of test 96hr.

Inhibition Bacteria: EC50 is greater than 100 mg/l; tested on activated sludge microorganism. Duration test: 3 hours

13. DISPOSAL CONSIDERATIONS

DISPOSAL METHOD: The generation of waste should be avoided or minimized wherever possible. Do not dispose of with household waste. Do not dispose of in landfill. Do not allow contact with sewers or waterways. Comply with all Federal, State and Local environment control laws. Incineration is the preferred method.

If discarded in its purchased form, this product would not be a hazardous waste either by listing or by characteristic. However, under RCRA, it is the responsibility of the product user to determine at the time of disposal, whether a material containing the product or derived from the product should be classified as a hazardous waste. (40 CFR 261.20-24)

14. TRANSPORT INFORMATION

DOT SHIPPING INFORMATION

DOT Proper Shipping Name: Other regulated substances, liquid, N.O.S.

DOT Technical Name: Other regulated substances, liquid, N.O.S. (4,4'-Diphenylmethane Diisocyanate (MDI))

DOT Hazard Class: 9

Hazard Subclass: N/A

DOT I.D. Number: UN3082

Packing Group: III

Additional Transportation Information: When in individual containers of less than the Product RQ, this material ships as non-regulated. RQ: 15625lb

IMDG

Technical Name: OTHER REGULATED SUBSTANCES, LIQUID, N.O.S. (4,4'-Diphenylmethane Diisocyanate (MDI))

Hazard Class: 9

Hazard Subclass: N/A

I.D. Number: UN3082

Packing Group: III

SAFETY DATA SHEET

INTERNATIONAL REGULATIONS:

CANADIAN WHMIS: This MSDS has been prepared in compliance with the hazard criteria of the Controlled Product Regulations and the MSDS contains the information required by those regulations.



CANADIAN WHMIS CLASS: E D2A

15. REGULATORY INFORMATION

U.S. FEDERAL REGULATIONS AS FOLLOWS-

OSHA Hazard Communication Standard (29 CFR 1910.1200): Hazardous by definition of Hazard Communication Standard.

Sensitizer. Corrosive.

CERCLA/ Super Fund (40 CFR 117, 302):

CERCLA (Comprehensive Response, Compensation, and Liability Act); under CERCLA, certain releases to the air, land or water may be reportable to the National Response Center at (800) 424-8802. Circumstances surrounding the release and cleanup determine report ability. This product is subject to CERCLA reporting requirements.

CERCLA - SARA HAZARD CATEGORY:

This product has been reviewed according to the EPA 'Hazard Categories' promulgated under Sections 311 and 312 of the Superfund Amendment and Reauthorization Act of 1986 (SARA Title III) and is considered, under applicable definitions, to meet the following categories:

Immediate Health Hazard (Acute)

Delayed Health Hazard (Chronic)

SARA Toxic Chemicals (40 CFR 372):

This product contains the following substances subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372:

Chemical Name	CAS Number
4,4'-Diphenylmethane Diisocyanate (MDI)	101-68-8
Naphthalene	91-20-3

TOXIC SUBSTANCES CONTROL ACT: All chemicals in this compound are listed on the TSCA

NEW JERSEY RIGHT-TO-KNOW / PENNSYLVANIA RIGHT-TO-KNOW:

Chemical Name	CAS Number	Weight Percent
4,4'-Diphenylmethane Diisocyanate (MDI)	101-68-8	<35%
Naphthalene	91-20-3	<50%

California Proposition 65: To the best of our knowledge, this product does not contain any of the listed chemicals, which the state of California has found to cause cancer, birth defects or other reproductive harm.

16. OTHER INFORMATION

THE INFORMATION HEREIN HAS BEEN COMPILED FROM SOURCES BELIEVED TO BE RELIABLE AND IS ACCURATE TO THE BEST OF OUR KNOWLEDGE. HOWEVER, SUPERIOR MANUFACTURING CANNOT GIVE ANY GUARANTEES REGARDING INFORMATION FROM OTHER SOURCES, AND EXPRESSLY DOES NOT MAKE ANY WARRANTIES, NOR ASSUMES ANY LIABILITY FOR ITS USE.