

Material Safety Data Sheet



Revision Number: 001.1

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1. PRODUCT AND COMPANY IDENTIFICATION

Product name:	3173 POLYURETHANE RESIN/ISOCY. (RESTECH-BIWAX=646R) FEL-PRO	IDH number:	233605
Product type:	Polyurethane resin	Item number:	39985
Company address:		Region:	United States
Henkel Corporation		Contact information:	
211 Franklin Street		Telephone: 716.372.6300	
Olean, New York 14760		Emergency telephone: 860.571.5100	
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2. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

Physical state:	Liquid	HEALTH:	*3
Color:	Brown	FLAMMABILITY:	1
Odor:	Slight, Aromatic	PHYSICAL HAZARD:	1
		Personal Protection:	See MSDS Section 8
WARNING:	HARMFUL IF INHALED. MAY CAUSE ALLERGIC SKIN AND RESPIRATORY REACTION. MAY CAUSE LUNG DAMAGE. CAUSES EYE, SKIN AND RESPIRATORY TRACT IRRITATION.		

Relevant routes of exposure: Skin, Inhalation, Eyes, Ingestion, Aerosols or vapors can be formed during heating, foaming, or spraying.

Potential Health Effects

Inhalation:	Methylene bisphenyl isocyanate (MDI) vapors or mist at concentrations above the TLV can irritate 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 preexisting, nonspecific bronchial hyper-reactivity can respond to concentrations below the TLV with similar symptoms as well as lead to bronchitis, bronchial spasm and pulmonary edema (fluid in lungs). Chronic: As a result of previous repeated overexposures or a single large dose, certain individuals will develop isocyanate sensitization (chemical asthma) which will cause them to react to a later exposure to isocyanate at levels well below the TLV. Chronic overexposure to isocyanates has been reported to cause lung damage. These symptoms, which can include chest tightness, wheezing, cough, shortness of breath or asthma attack, could be immediate or delayed (up to several hours after exposure). Similar to many non-specific asthmatic responses, there are reports that once sensitized an individual can experience these symptoms upon exposure to dust, cold air, or other irritants. This increased lung sensitivity can persist for weeks and in severe cases for several years. Over exposure to isocyanates has also been reported to cause lung damage (including decrease in lung function) which may be permanent. Sensitization can either be temporary or permanent.
Skin contact:	Isocyanates react with skin protein and moisture and can cause irritation which may include the following symptoms: reddening, swelling, rash, scaling or blistering. Cured material is difficult to remove. Chronic: Prolonged contact can cause reddening, swelling, rash, scaling, blistering and in some cases, skin sensitization. Individuals who have skin sensitization can develop these symptoms from contact with liquid or vapor. Animal tests have indicated that respiratory sensitization can result from skin contact with MDI. These data reinforce the need to prevent direct skin contact with MDI.
Eye contact:	Liquid, aerosols or vapor are irritating and can cause tearing, reddening and swelling. If left untreated, corneal damage can occur and injury is slow to heal. These effects are usually reversible. See Section 4 for First Aid measures.
Ingestion:	Irritation and corrosive action can occur in the mouth, stomach tissue and digestive tract if swallowed. Symptoms can include sore throat, abdominal pain, nausea, vomiting and diarrhea.

Existing conditions aggravated by exposure:

Asthma. Other respiratory disorders (bronchitis, emphysema, bronchial hyperreactivity). Skin allergies. Eczema.

This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

See Section 11 for additional toxicological information.

3. COMPOSITION / INFORMATION ON INGREDIENTS

Hazardous components	CAS NUMBER	%
Diphenylmethane-diisocyanate, isomers and homologues	9016-87-9	30 - 60
Methylenebis(phenylisocyanate)	101-68-8	30 - 60
Methylene bisphenyl isocyanate	26447-40-5	10 - 30

4. FIRST AID MEASURES

Inhalation:	Move to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention. Asthmatic-type symptoms may develop and may be immediate or delayed up to several hours.
Skin contact:	Remove contaminated clothing and footwear. Wash with soap and water. Wash clothing before reuse. For severe exposures, get under safety shower after removing clothing, then get medical attention. For lesser exposure, seek medical attention if irritation develops or persists after area is washed.
Eye contact:	Flush with copious amounts of water, preferably, lukewarm water for at least 15 minutes, holding eyelids open all the time. Get medical attention.

Ingestion: Do not induce vomiting. Keep individual calm. Never give anything by mouth to an unconscious person. If individual is conscious, wash out mouth with water. Get immediate medical attention.

Notes to physician: Eyes: Stain for evidence of corneal injury. If cornea is burned, instill antibiotic steroid preparation frequently. Workplace vapors have produced reversible corneal epithelial edema impairing vision. Skin: This compound is a known skin sensitizer. Treat symptomatically as for contact dermatitis or thermal burns. Ingestion: Treat symptomatically. There is no specific antidote. Inducing vomiting is contraindicated because of the irritating nature of this compound. Respiratory: This compound is a known pulmonary sensitizer.

5. FIRE FIGHTING MEASURES

Flash point: 234 °C (453.2 °F) ; Estimated

Autoignition temperature: Not determined

Flammable/Explosive limits - lower: Not determined

Flammable/Explosive limits - upper: Not determined

Extinguishing media: Water spray (fog), foam, dry chemical or carbon dioxide.

Special firefighting procedures: Wear self-contained breathing apparatus and full protective clothing, such as turn-out gear. During a fire, MDI vapors and other irritating, highly toxic gases may be generated by thermal decomposition or combustion. At temperatures above 204.4°C (400°F), polymeric MDI can polymerize and decompose which can cause pressure build-up in closed containers. Explosive rupture is possible. In case of fire, keep containers cool with water spray.

Unusual fire or explosion hazards: Not available

Hazardous combustion products: Hydrogen cyanide. Oxides of carbon. Oxides of nitrogen. Methylene bisphenyl isocyanate.

6. ACCIDENTAL RELEASE MEASURES

Use personal protection recommended in Section 8, isolate the hazard area and deny entry to unnecessary and unprotected personnel.

Environmental precautions: Do not allow product to enter sewer or waterways.

Clean-up methods: Evacuate and ventilate spill area; dike spill to prevent entry into water system; wear full protective equipment during clean-up. If temporary control of isocyanate vapor is required, a blanket of protein foam (available at most fire departments) may be placed over spill. Large quantities may be pumped into closed, but not sealed containers for disposal. For minor spills, absorb isocyanates with sawdust or other absorbent, shovel into suitable unsealed containers, transport to well ventilated area (outside) and treat with neutralizing solution: mixture of 80% water and 20% non-ionic surfactant Tergitol TMN-10; or 90% water, 3-8% concentrated ammonia and 2% detergent. Add about ten parts of neutralizer per part of isocyanate, with mixing. Allow to stand uncovered for 48 hours to let carbon dioxide escape. Decontaminate floor with decontamination solution letting stand for at least 15 minutes.

7. HANDLING AND STORAGE

Handling: Avoid contact with eyes, skin and clothing. Do not breathe gas/fumes/vapor/spray. Exposure to vapors of heated MDI can be extremely dangerous. Wash thoroughly after handling. Protect from moisture. Keep away from heat, spark and flame.

Storage:

Store in tightly closed containers to prevent moisture contamination. Do not reseal if contamination is suspected. MDI reacts slowly with water to form carbon dioxide gas. This gas can cause sealed containers to expand and possibly rupture. If container is exposed to high heat (204.4 °C (400 °F)), it can be pressurized and possibly rupture.

For information on product shelf life contact Henkel Customer Service at 1-716-372-6300.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Employers should complete an assessment of all workplaces to determine the need for, and selection of, proper exposure controls and protective equipment for each task performed.

Hazardous components	ACGIH TLV	OSHA PEL	AIHA WEEL	OTHER
Diphenylmethane-diisocyanate, isomers and homologues	None	None	None	None
Methylenebis(phenylisocyanate)	0.005 ppm TWA	0.02 ppm (0.2 mg/m3) Ceiling	None	None
Methylene bisphenyl isocyanate	None	None	None	None

Engineering controls:

Local exhaust should be used to maintain levels below the TLV whenever MDI is processed, heated or spray applied. Standard reference sources regarding industrial ventilation (i.e., ACGIH Industrial Ventilation) should be consulted for guidance about adequate ventilation. Air monitoring: Monitoring of airborne isocyanates in the breathing zone of individuals should become part of the overall employee exposure characterization program. Isocyanate exposure levels must be monitored. Monitoring techniques have been developed by NIOSH and OSHA. Medical Surveillance: Medical supervision of all employees who handle or come in contact with isocyanates is recommended. Persons with asthmatic-type conditions, chronic bronchitis, other chronic respiratory diseases or recurrent skin eczema or sensitization should be excluded from working with isocyanates. Once a person is diagnosed as sensitized to an isocyanate, no further exposure can be permitted.

Respiratory protection:

Concentrations greater than the TLV can occur when MDI is sprayed, heated or used in a poorly ventilated area. In such cases, or whenever concentrations of MDI exceed the TLV, respiratory protection must be worn. A positive pressure, supplied-air respirator or a self-contained breathing apparatus is recommended. In situations where MDI is not sprayed, heated, or used in a poorly ventilated area, and a supplied-air or self-contained breathing apparatus is unavailable or its use impractical, at least an air-purifying cartridge and particulate pre-filters must be worn. However, this should be permitted only for short periods of time (less than one hour) at relatively low concentrations (at or near the TLV). However, due to the poor warning properties of MDI, proper fit and timely replacement of filter elements must be ensured. Observe OSHA regulations for respiratory use (29 CFR 1910.134).

Eye/face protection:

Safety goggles or safety glasses with side shields. Wear chemical goggles or a full face shield.

Skin protection:

Permeation resistant gloves (butyl rubber, nitrile rubber, polyvinyl alcohol). However, please note that polyvinyl alcohol degrades in water. Cover as much of the exposed skin area as possible with appropriate clothing. If skin creams are used, keep the area covered by the cream to a minimum.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state:	Liquid
Color:	Brown
Odor:	Slight, Aromatic
Odor threshold:	Not available
pH:	Not available
Vapor pressure:	2 mm Hg
Boiling point/range:	> 149 °C (> 300.2 °F)
Melting point/ range:	Not available
Specific gravity:	1.2

Vapor density: 3.8
Flash point: 234 °C (453.2 °F) ; Estimated
Flammable/Explosive limits - lower: Not determined
Flammable/Explosive limits - upper: Not determined
Autoignition temperature: Not determined
Evaporation rate: < 1 (Ether = 1)
Solubility in water: Reacts slowly with water to liberate carbon dioxide gas.
Partition coefficient (n-octanol/water): Not available
VOC content: < 1 %; < 10 g/l Estimated

10. STABILITY AND REACTIVITY

Stability: Stable under normal conditions of storage and use.
Hazardous reactions: Contact with moisture, other materials which can react with isocyanates, or temperatures above 204.4°C (400°F), may cause polymerization.
Hazardous decomposition products: Thermal decomposition can lead to release of irritating gases and vapors. Hydrogen cyanide. Oxides of nitrogen. Oxides of carbon. MDI vapors and aerosols.
Incompatible materials: Water, amines, alkalis and alcohols. Will cause some corrosion of copper alloys and aluminum.
Conditions to avoid: Heat, fumes, sparks and other sources of ignition. Contamination with water. Store away from incompatible materials. See "Handling and Storage" (Section 7) and "Incompatibility" (Section 10).

11. TOXICOLOGICAL INFORMATION

Hazardous components	NTP Carcinogen	IARC Carcinogen	OSHA Carcinogen (Specifically Regulated)
Diphenylmethane-diisocyanate, isomers and homologues	No	No	No
Methylenebis(phenylisocyanate)	No	No	No
Methylene bisphenyl isocyanate	No	No	No

Hazardous components	Health Effects/Target Organs
Diphenylmethane-diisocyanate, isomers and homologues	Allergen, Irritant, Kidney, Liver, Respiratory
Methylenebis(phenylisocyanate)	Irritant, Respiratory, Allergen
Methylene bisphenyl isocyanate	Allergen, Irritant, Mutagen, Respiratory

12. ECOLOGICAL INFORMATION

Ecological information: For both polymeric and monomeric MDI: Aquatic toxicity - LC50 - 24 hour (static): greater than 500 mg/l for Daphnia magna, Limnea stagnalis, and Zebra fish (Brachydanio rerio).

13. DISPOSAL CONSIDERATIONS

Information provided is for unused product only.

Recommended method of disposal: Follow all local, state, federal and provincial regulations for disposal.

Hazardous waste number: Not a RCRA hazardous waste.

14. TRANSPORT INFORMATION

The shipping classifications in this sections are for non-bulk packaging only (unless otherwise specified). Shipping classification may be different for bulk packaging.

U.S. Department of Transportation Ground (49 CFR)

Proper shipping name: Not regulated
Hazard class or division: None
Identification number: None
Packing group: None

International Air Transportation (ICAO/IATA)

Proper shipping name: Not regulated
Hazard class or division: None
Identification number: None
Packing group: None

Water Transportation (IMO/IMDG)

Proper shipping name: Not regulated
Hazard class or division: None
Identification number: None
Packing group: None

15. REGULATORY INFORMATION

United States Regulatory Information

TSCA 8 (b) Inventory Status: All components are listed or are exempt from listing on the Toxic Substances Control Act Inventory.
TSCA 12(b) Export Notification: None above reporting de minimus
CERCLA/SARA Section 302 EHS: None above reporting de minimus
CERCLA/SARA Section 311/312: Immediate Health, Delayed Health
CERCLA/SARA 313: This product contains the following toxic chemicals subject to the reporting requirements of section 313 of the Emergency Planning and Community Right-To-Know Act of 1986 (40 CFR 372). Diphenylmethane-diisocyanate, isomers and homologues (CAS# 9016-87-9). Methylenebis(phenylisocyanate) (CAS# 101-68-8).
CERCLA Reportable quantity: Methylenebis(phenylisocyanate) (CAS# 101-68-8) 5,000 lbs. (2,270 kg)
California Proposition 65: No California Proposition 65 listed chemicals are known to be present.

Canada Regulatory Information

CEPA DSL/NDL Status: All components are listed on or are exempt from listing on the Canadian Domestic Substances List.
WHMIS hazard class: D.1.A, D.2.A, D.2.B

16. OTHER INFORMATION

This material safety data sheet contains changes from the previous version in sections: New Material Safety Data Sheet format.

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