Revision Number: 002.1 **Issue date:** 11/08/2011

1. PRODUCT AND COMPANY IDENTIFICATION

Product name: **Pipe Repair Kit TAPE**
Product type: Polyurethane adhesive

Company address:
Henkel Corporation
One Henkel Way
Rocky Hill, Connecticut 06067

IDH number: 702198
Item number: 96321_314086
Region: United States

Contact information:
Telephone: 860.571.5100
MEDICAL EMERGENCY Phone: Poison Control Center
1-877-671-4608 (toll free) or 1-303-592-1711
TRANSPORT EMERGENCY Phone: CHEMTREC
1-800-424-9300 (toll free) or 1-703-527-3887
Internet: www.henkelna.com

2. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

HMIS:

Physical state:	Fiberglass cloth coated with viscous white resin	**HEALTH:**	3
Color:	White	**FLAMMABILITY:**	1
Odor:	Odorless	**PHYSICAL HAZARD:**	1
		Personal Protection:	See MSDS Section 8

WARNING: MAY CAUSE ALLERGIC SKIN AND RESPIRATORY REACTION.
MAY CAUSE EYE, SKIN AND RESPIRATORY TRACT IRRITATION.

Relevant routes of exposure: Skin, Eye contact from liquid, aerosols or vapor, Inhalation, Ingestion

Potential Health Effects

Inhalation: Acute: 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). Chemical or hypersensitive pneumonitis with flu-like symptoms (e.g. fever, chills) have 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 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: Acute: 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	%
Glass, oxide, chemicals	65997-17-3	60 - 100
Polypropylene glycol 4,4-diphenylmethane diisocyanate prepolymer	9048-57-1	10 - 30
Methylenebis(phenylisocyanate)	101-68-8	5 - 10
Polymeric diphenylmethane diisocyanate	9016-87-9	1 - 5
Titanium dioxide	13463-67-7	0.1 - 1
2,2'-dimorpholinyldiethyl ether	6425-39-4	0.1 - 1
Benzoyl chloride	98-88-4	0 - 0.1

4. FIRST AID MEASURES

Inhalation: Move to an area free from risk of further exposure. Administer oxygen or artificial respiration as needed. Get medical attention. Asthmatic-type symptoms may develop and may be immediate or delayed up to several hours. Consult a physician should this development occur.

Skin contact:	After contact with skin, wash immediately with plenty of water. Remove contaminated clothing and footwear. 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. Drink 1 or 2 glasses of water. Never give anything by mouth to an unconscious person. Consult a physician if necessary.
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.Treat symptomatically and supportively.

5. FIRE FIGHTING MEASURES

Flash point:	188 °C (370.4 °F) Pensky Martens closed cup
Autoignition temperature:	Not available.
Flammable/Explosive limits - lower:	Not available.
Flammable/Explosive limits - upper:	Not available.
Extinguishing media:	Carbon dioxide. foam Dry chemical. Water spray or fog.
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:	None
Hazardous combustion products:	Oxides of carbon. Oxides of nitrogen. Hydrogen cyanide. Irritating organic vapours.

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:

Prevent contact with eyes, skin and clothing. Do not breathe vapor and mist. Wash thoroughly after handling. Exposure to vapors of heated MDI can be extremely dangerous. Employee education and training in the safe use and handling of this compound are required under the OSHA Hazard Communication Standard.

Storage:

For safe storage, store between 0 °C (32°F) and 40 °C (104°F)
Store in tightly closed containers to prevent moisture contamination. Do not reseal if contamination is suspected. If container is exposed to high heat (204.4 °C (400 °F)), it can be pressurized and possibly rupture. MDI reacts slowly with water to form carbon dioxide gas. This gas can cause sealed containers to expand and possibly rupture.

For information on product shelf life contact Henkel Customer Service at (800) 243-4874.

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
Glass, oxide, chemicals	None	None	None	None
Polypropylene glycol 4,4-diphenylmethane diisocyanate prepolymer	None	None	None	None
Methylenebis(phenylisocyanate)	0.005 ppm TWA	0.02 ppm (0.2 mg/m3) Ceiling	None	None
Polymeric diphenylmethane diisocyanate	0.005 ppm TWA	0.02 ppm (0.2 mg/m3) Ceiling	None	None
Titanium dioxide	10 mg/m3 TWA	15 mg/m3 TWA Total dust.	None	None
2,2'-dimorpholinyldiethyl ether	None	None	None	None
Benzoyl chloride	0.5 ppm Ceiling	None	(SKIN) (as HCl) 5 ppm (7.2 mg/m3) Ceiling (as HCl) (Skin sensitizer.)	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: Isocyanate exposure levels must be monitored. Monitoring of airborne isocyanates in the breathing zone of individuals should become part of the overall employee exposure characterization program. 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. These should include preemployment and periodic medical examinations with pulmonary function tests (FEV, FVC as a minimum). 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:	Wear chemical goggles. Vapor resistant goggles should be worn when contact lenses are in use. 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. Safety showers and eye wash stations should be available. Educate and train employees in safe use of product. Follow all label instructions.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state:	Fiberglass cloth coated with viscous white resin
Color:	White
Odor:	Odorless
Odor threshold:	Not available.
pH:	Not applicable
Vapor pressure:	0.003 mm hg (20 °C (68°F))
Boiling point/range:	648.9 °C (1,200°F)
Melting point/ range:	Not available.
Specific gravity:	1.22
Vapor density:	8.5
Flash point:	188 °C (370.4 °F) Pensky Martens closed cup
Flammable/Explosive limits - lower:	Not available.
Flammable/Explosive limits - upper:	Not available.
Autoignition temperature:	Not available.
Evaporation rate:	Not available.
Solubility in water:	Insoluble
Partition coefficient (n-octanol/water):	Not available.
VOC content:	Not available.

10. STABILITY AND REACTIVITY

Stability:	Stable
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:	None
Incompatible materials:	Will cause some corrosion of copper alloys and aluminum. Water Amines. Strong bases. Alcohols.
Conditions to avoid:	Contamination with water.

11. TOXICOLOGICAL INFORMATION

Product toxicity data:

Toxicity data for monomeric and polymeric methylene bisphenyl isocyanate:, Inhalation LC50: Approximately 370-490 mg/ml for an aerosol of polymeric MDI (Rats 4 hours)., A two hour LC50 of greater than 400 mg/ml was determined on a dust of monomeric MDI (Rats)., Eye effects - slightly irritating. A maximum primary eye irritation score for a polymeric MDI of 12.0/110 (24 hours) was obtained. This score is fairly typical for a number of MDI products., Skin effects - Sight to moderate irritant. Primary dermal irritation scores are typically below 3.4/8.0 (Draize)., Sensitization - MDI has been shown to produce dermal sensitization in several species (guinea pigs, mice, rabbits, and dogs). Intradermal or topical application followed by inhalation challenge have resulted in a respiration sensitization response in guinea pigs. In addition, there is some evidence to suggest that cross-sensitization between different types of diisocyanates may occur., Chronic toxicity - In a chronic inhalation study, rats were exposed to an aerosol of polymeric MDI for six hours per day, five days per week for a period of two years. The exposure concentrations were 0, 0.2, 1.0 and 6.0 mg/m³. The No Observable Effects Level (NOEL) was 0.2 mg/m³., Carcinogenicity - In the same two year study described in "chronic toxicity" above, the occurrence of pulmonary adenomas (benign tumors) and a single pulmonary adenocarcinoma (malignant tumor) was considered to be related to exposure. These tumors were observed only in rats exposed to the high concentration of 6.0 mg/m³., Mutagenicity - Monomeric MDI is positive in the Ames assay (with hepatic microsomal activation). However, it was negative in an invivo-invitro micronucleous assay. MDI has been reported by NIOSH to be mutagenic to salmonella typhemurium bacteria in presence of a mammalian activating system. Recent work done by M. Anderson, at the Danish School of Pharmacy in Denmark and published in the Scandinavian Journal of Work and Environmental Health, also shows a positive result. There is not full agreement in the scientific community on the significance of these Ames test results and their relationship to human safety in the risk of cancer in man., Other toxicity data - No conclusive evidence has been developed to indicate that either MDI or a similar product (a solution of MDI and a polyisocyanate prepolymer based on MDI) is carcinogenic, teratogenic or that it causes reproductive effects in animals or in humans.

Acute oral product toxicity: LD50 (rat) > 15,800 mg/kg

Acute dermal product toxicity: LD50 (rabbit) > 799 mg/kg

Hazardous components	NTP Carcinogen	IARC Carcinogen	OSHA Carcinogen (Specifically Regulated)
Glass, oxide, chemicals	No	No	No
Polypropylene glycol 4,4-diphenylmethane diisocyanate prepolymer	No	No	No
Methylenebis(phenylisocyanate)	No	No	No
Polymeric diphenylmethane diisocyanate	No	No	No
Titanium dioxide	No	Group 2B	No
2,2'-dimorpholinyldiethyl ether	No	No	No
Benzoyl chloride	No	Group 2A	No

Hazardous components	Health Effects/Target Organs
Glass, oxide, chemicals	No Data
Polypropylene glycol 4,4-diphenylmethane diisocyanate prepolymer	No Records
Methylenebis(phenylisocyanate)	Irritant, Respiratory, Allergen
Polymeric diphenylmethane diisocyanate	Allergen, Irritant, Kidney, Liver, Respiratory
Titanium dioxide	Irritant, Respiratory, Some evidence of carcinogenicity
2,2'-dimorpholinyldiethyl ether	No Records
Benzoyl chloride	Central nervous system, Corrosive, Irritant

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

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, Reactive
CERCLA/SARA 313: None above reporting de minimus

California Proposition 65: No California Proposition 65 listed chemicals are known to be present.

Canada Regulatory Information

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

16. OTHER INFORMATION

This material safety data sheet contains changes from the previous version in sections: New information added in Section(s): 1

Prepared by: Gary Pierson, Manager, Regulatory Affairs

DISCLAIMER: The data contained herein are furnished for information only and are believed to be reliable. However, Henkel Corporation and its affiliates (“Henkel”) does not assume responsibility for any results obtained by persons over whose methods Henkel has no control. It is the user’s responsibility to determine the suitability of Henkel’s products or any production methods mentioned herein for a particular purpose, and to adopt such precautions as may be advisable for the protection of property and persons against any hazards that may be involved in the handling and use of any Henkel’s products. In light of the foregoing, Henkel specifically disclaims all warranties, express or implied, including warranties of merchantability and fitness for a particular purpose, arising from sale or use of Henkel’s products. Henkel further disclaims any liability for consequential or incidental damages of any kind, including lost profits.