

1. GENERAL INFORMATION

Product name: TK-HYDRO SEAL™
Product Use: Urethane Injection Crack Repair
Emergency Contact #: 1-800-424-9300
Manufacturer: TK PRODUCTS
11400 W. 47th St
Minnetonka, MN 55343
Revision Date: 12/27/2012

2. HAZARDS IDENTIFICATION

Route of Entry: Inhalation, skin contact, eye contact, ingestion.

Immediate Concerns: Irritating to eyes, respiratory system, and skin. Inhalation at levels above the occupational exposure limit could cause respiratory sensitization and risk of serious damage to respiratory system. The onset of the respiratory symptoms may be delayed for several hours after exposure. A hyper-reactive response to even minimal concentrations of diisocyanates may develop in sensitized persons.

Potential Health Effects

Eyes: Liquids, vapors, or mists are irritating to the eyes and can cause stinging, burning, lachrymation or tearing.

Skin: Moderate irritant. Repeated and/or prolonged contact may cause skin sensitization.

Ingestion: Ingestion may cause irritation of the gastrointestinal tract and gastrointestinal discomfort with any or all of the following symptoms: nausea, vomiting, lethargy, or diarrhea.

Inhalation: Inhalation of vapors or mist at concentrations above the TLV can cause respiratory tract irritation. (Nose, throat, lungs.) Chronic inhalation can result in sensitization.

Signs and Symptoms of Overexposure

Eyes: Contact may cause moderate irritation consisting of transient redness, swelling, and mucous membrane discharge to the conjunctiva. Prolonged contact with the eyes may cause reversible corneal opacity to occur, with no visual impairment expected.

Skin: Contact may cause minor irritation consisting of transient redness and/or swelling. Individuals with skin sensitization can develop these symptoms from contact with a small amount of liquid or vapors.

Ingestion: Ingestion may cause irritation of the gastrointestinal tract and gastrointestinal discomfort with any or all of the following symptoms: nausea, vomiting, lethargy or diarrhea.

Inhalation: Vapors or mist, especially as generated from heating the material or as from exposure in poorly ventilated areas or confined spaces, are irritating and cause nasal discharge, coughing, discomfort in nose and throat, and breathing obstruction. Individuals with respiratory sensitization may experience allergic respiratory reactions when exposed to amounts below the exposure guidelines.

Medical Conditions Aggravated: Asthma, other respiratory disorders (bronchitis, emphysema, bronchia hyperreactivity), skin allergies, eczema.

Sensitization: Any individual with isocyanate sensitization should not be exposed to this product. These individuals can react to exposure well below the TLV. Symptoms can occur immediately or several hours after exposure.

3. COMPOSITION/INGREDIENT INFORMATION**Wt. % CAS#**

Diphenylmethane Diisocyanate Mixed Isomers <= 10 26447-40-5

Methylene Bisphenyl Isocyanate (MDI) <= 10 101-68-8

MDI Prepolymer 15 – 35 Not disclosed

Polymeric Diphenylmethane Diisocyanate 10 – 30 9016-87-9

2,2-dimethyl-1-(methylethyl)-1,3-propanediyl bis(2-methylpropanoate) 10 – 30 6846-50-0

Polyalkyleneoxidemethylsiloxane Copolymer < 2 67762-85-0

4. FIRST AID MEASURES

Inhalation:	Remove patient from exposure, keep warm and at rest. Obtain immediate medical attention. Treatment is symptomatic for primary irritation or bronchospasm. If breathing is labored, oxygen should be administered by qualified personnel. Apply artificial respiration if breathing has ceased or shows signs of failing. Asthmatic-type symptoms may develop and may be immediate or delayed up to several hours.
Skin Contact:	Remove contaminated clothing. Wash affected areas thoroughly with soap and water. Wash clothing thoroughly before reuse. For severe exposure, seek medical attention immediately. For lesser exposure, seek medical attention if swelling or redness occurs, or if irritation persists after being washed.
Eye Contact:	Immediately flush eyes with plenty of water for at least 15 minutes, lifting upper and lower eyelids occasionally. Get immediate medical attention.
Ingestion:	Do not induce vomiting. Never give anything by mouth to a drowsy or unconscious person. If the individual is conscious, rinse mouth with water. Give 1 to 2 cups of water to drink. Seek immediate medical attention.

NOTES TO PHYSICIAN: Symptomatic and supportive therapy as needed. Following severe exposure, medical follow-up should be monitored for at least 48 hours. May cause respiratory sensitization or asthma-like symptoms. Respiratory symptoms, including pulmonary edema, may be delayed.

5. FIRE FIGHTING MEASURES

Flash Point:	> 200°F
Flash Point Method:	Closed Cup
Extinguishing Media:	Dry chemical, Carbon Dioxide, Chemical Foam, Water fog or spray.
Hazardous Combustion Products:	Carbon Monoxide, Carbon Dioxide, Nitrous Oxide or HCN.
Explosion Hazards:	Closed containers could rupture explosively at elevated temperatures generated under fire conditions. During a fire, gases of a highly toxic nature may be generated by thermal decomposition or combustion. Use water to cool fire-exposed containers.
Fire Fighting Procedures:	Isolate fuel supply from fire. Use water spray to cool fire-exposed surfaces and containers. Fire fighters should wear self-contained breathing apparatus in addition to emergency fire fighting protective clothing.

6. ACCIDENTAL RELEASE MEASURES

Small Spills: Clean up spills wearing proper personal protective equipment. (See Section VIII) Absorb with dry chemical absorbent, earth, sand, or any other inert material. Place in a chemical waste container. Move to outside well-ventilated area. Treat with 10 parts decontamination solution to 1 part isocyanate. Mix well. Allow to stand uncovered 48 hours before disposal.

Large Spills: Eliminate all ignition sources. Evacuate and ventilate the area. Create a dike or trench to contain materials. Prevent entry into waterways, sewers, basements or confined areas. Clean-up personnel should wear appropriate personal protection equipment (see Section VIII). Absorb with dry chemical absorbent, earth, sand, or any other inert material. Do not use combustible material such as sawdust. Place in a chemical waste container. Move to outside well-ventilated area. Treat with 10 parts decontamination solution to 1 part isocyanate. Mix well. Allow to stand uncovered 48 hours before disposal. Clean spill area with decontamination solution and allow to stand for 15 minutes before removal. Test atmosphere for MDI.

Decontamination solution: concentrated ammonia (5%), detergent (2%), and water (93%).

Release Notes: Spills and releases may have to be reported to Federal and/or local authorities. See section XV regarding reporting requirements.

7. HANDLING AND STORAGE

Precautions: Keep containers tightly sealed. Keep containers away from heat source and/or open flames. Do not store containers in open sunlight. Store in cool, well-ventilated area.

Handling: Wear proper personal protective equipment. Use in a well ventilated area. Avoid smoking, bare lights, or ignition sources. Keep containers securely sealed when not in use. Avoid physical damage to containers.

Storage: Containers can rupture if exposed to high heat. Protect from atmospheric moisture. Keep containers sealed in order to avoid contamination. Do not reseal if contaminated. After container has been opened, blanket with nitrogen before resealing. Store indoors in a cool, well-ventilated area.

Storage Temperature: (55°F) minimum to (120°F) maximum

Shelf Life: 1 year

Special Sensitivity: Material is hygroscopic and reacts with water. It will form cured particles or a film when exposed to atmospheric moisture. Blanket containers with nitrogen before resealing.

Comments: Reacts slowly with water to produce carbon dioxide which may rupture closed containers. This reaction accelerates at higher temperatures. See Section X for more information on precautions concerning storage and handling of this material.

8. EXPOSURE CONTROL AND PERSONAL PROTECTION

Exposure Guidelines: OSHA Hazardous Components (29 CFR 1910.1200)

Exposure Limits

OSHA PEL ACGIH TLV

ppm mg/m3 ppm mg/m3

Diphenylmethane Diisocyanate Mixed Isomers **TWA** NE NE NE NE

Methylene Bisphenyl Isocyanate (MDI) **TWA** 0.20* 0.05

MDI Prepolymer **TWA** NE NE NE NE

Polymeric Diphenylmethane Diisocyanate **TWA** 0.20* 0.05

2,2-dimethyl-1-(methylethyl)-1,3-propanediyl bis(2-methylpropanoate) **TWA** NE NE NE NE

Polyalkyleneoxidemethylsiloxane Copolymer **TWA** NE NE NE NE

OSHA Table Comments: NE = Not Established * = Ceiling

Engineering Controls: Use process enclosures, local exhaust ventilation, or other engineering controls to control airborne levels below recommended exposure limits.

Personal Protective Equipment

Eyes and Face: Wear safety glasses with side shields (or goggles) and a face shield.

Skin: The following protective materials are recommended: Gloves – neoprene, nitrile rubber, butyl rubber. Thin latex disposable gloves should be avoided for repeated or long-term use. Protective clothing should be selected and used in accordance with ‘Guidelines for the Selection of Chemical Protective Clothing’ published by ACGIH.

Respiratory: During application, if exposure of product can exceed the PEL/TLV, use appropriate respiratory protection to protect from overexposure. Appropriate respiratory protection includes approved supplied-air respirators (SAR) operated in a positive pressure mode or, in non-IDLH (immediately dangerous to life and health) atmospheres, NIOSH approved air purifying respirators (APR), provided an appropriate cartridge change-out schedule is implemented. [29 CFR 1910.134 (d)(3)(iii)] All respirators used should follow the OSHA Respiratory Standard 29 CFR 1910.134.

Protective Clothing: Where contact is likely, wear chemical resistant gloves, a chemical suit, rubber boots, and chemical safety goggles plus a face shield.

Work Hygienic Practices: Follow good normal hygiene practices. Avoid contact with skin. Avoid eating, drinking, or smoking while using this product. Wash hands thoroughly after use.

Other Use Precautions: Medical supervision of all employees who handle or come in contact with respiratory sensitizers is recommended. Persons with respiratory problems including asthmatic-type conditions, chronic bronchitis, or other chronic respiratory diseases or recurrent skin eczema or skin allergies should be evaluated for their suitability of working with this product. Once a person is diagnosed as sensitized, no further exposure of the material that caused the sensitization should be permitted. The Occupational Exposure limits do not apply to previously sensitized individuals.

Other Protective Equipment: Safety showers and eye wash stations.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State: Liquid	Odor: Slightly musty
Color: Clear to light yellow	Boiling Point: Not Determined
Freezing Point: Not Determined	Solubility in Water: Insoluble
Specific Gravity: 1.060 to 1.080 (water=1) at (77°F)	Viscosity: 500 to 700 cps at (77°F)

10. STABILITY AND REACTIVITY

Conditions to Avoid: Temperature extremes. Container contamination. Moisture.

Stability: Stable under recommended storage conditions

Polymerization: Polymerization may occur at elevated temperatures in the presence of alkalies, tertiary amines, and metal compounds.

Hazardous Decomposition Products: Carbon Monoxide, Carbon Dioxide, Nitrous Oxide, and HCN.

Incompatible materials: This product will react with any materials containing active hydrogens such as water, alcohol, amines, bases and acids. The reaction with water is very slow under 122°F, but is accelerated at higher temperatures.

11. TOXICOLOGICAL INFORMATION

Ingredients Oral LD50 (rat) Dermal LD50 (rabbit) Inhalation LC50 (rat)
Methylene Bisphenyl Isocyanate (MDI) > 5000 mg/kg > 10000 mg/kg 369 mg/m³/4h
(respirable aerosol)
Polymeric Diphenylmethane > 5000 mg/kg > 5000 mg/kg 490 mg/m³/4h
Diisocyanate (respirable aerosol)
2,2-dimethyl-1-(methylethyl)-1,3- > 3200 mg/kg > 18840 mg/kg (rat) > 5.3 mg/L
propanediyl bis(2-methylpropanoate)
Polyalkylloxidemethylsiloxane Copolymer > 2000 mg/kg > 2000 mg/kg No data

Eye Effects: The vapor, aerosol, and liquid are irritant.

Skin Effects: Moderate Irritant. Repeated and/or prolonged contact may cause skin sensitization.

There is limited evidence from animal studies that skin contact may play a role in respiratory sensitization. These results emphasize the need for protective clothing including gloves to be worn at all times when handling these chemicals or in maintenance work.

Sensitization: This material is a respiratory sensitizer and irritant. Repeated and/or prolonged contact may cause skin sensitization and irritation.

Carcinogenicity: Not classified as a carcinogen by IARC, NTP, OSHA or ACGIH.

Mutagenicity: There is no substantial evidence of mutagenic potential.

Reproductive Effects: No adverse reproductive effects are anticipated.

General Comments: A study was conducted where groups of rats were exposed for 6 hours/day, 5 days/week for a lifetime to atmospheres of respirable polymeric MDI aerosol at concentrations of 0, 0.2, 1, or 6 mg/m³. No adverse effects were observed at 0.2 mg/m³. At the 1 mg/m³ concentration, minimal nasal and lung irritant effects were seen. Only at the top concentration (6.0 mg/m³) was there an increased incidence of a benign tumor of the lungs (adenoma). One malignant pulmonary tumor (adenocarcinoma) was seen in the 6.0 mg/m³ group. MDI administration to rats in this study did not change the distribution and incidence of tumors from those seen in control animals. The increased incidence of lung tumors is associated with prolonged respiratory irritation and the concurrent accumulation of yellow material in the lung. 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. There are reports that chronic exposure to diisocyanates by inhalation may result in permanent decreases in lung function.

12. ECOLOGICAL INFORMATION

Ecotoxicological Information: Polymeric MDI: LC50 (Zebra Fish) >1000 mg/L. EC50 (Daphnia magna) (24 hour) >1000 mg/L. EC50 (E. Coli) >100 mg/L.

Chemical Fate Information: Immiscible with water, but will react with water to produce inert and nonbiodegradable solids.

General Comments: No testing for product as a whole.

13. DISPOSAL CONSIDERATIONS

Disposal Method: Disposal should be in accordance with local, state, provincial or national regulations.

Empty Container: Empty containers should be decontaminated and either passed to an approved drum recycler or destroyed.

RCRA Hazard Class: This material is not a hazardous waste under RCRA 40 CFR 261. The treated waste is not a hazardous material under RCRA 40 CFR 261.

General Comments: The generation of waste should be avoided or minimized whenever possible. Chemical waste, even small quantities, should never be poured down drains, sewers or waterways.

14. TRANSPORT INFORMATION

DOT (Department of Transportation) Proper Shipping Name: Not restricted when shipped below RQ.

Technical Name: Compound Resin

Other Shipping Information: Single containers with 5,000 lbs or more of 4,4'-Methylene Diphenyl Diisocyanate are regulated as: Other Regulated Substances, Liquid, N.O.S. (Methylene Diphenyl Diisocyanate), 9, NA3082, PGIII, RQ.

AIR (ICAO/IATA) - Proper Shipping Name: Not restricted

Vessel (IMO/IMDG) - Proper Shipping Name: Not restricted

15. REGULATORY INFORMATION

United States SARA Title III (Superfund Amendments and Reauthorization Act):

311/312 Hazard Categories: Toxic, irritating substance, sensitizing substance

313 Reportable Ingredients: Diisocyanate compounds

CERCLA (Comprehensive Response, Compensation, and Liability Act)

CERCLA RQ: 4,4'-Methylene Diphenyl Diisocyanate (CAS 101-68-8) has a 5,000 lb RQ (reportable quantity). Any spill or release above the RQ must be reported to the National Response Center (800-424-8802).

TSCA (Toxic Substance Control Act): TSCA Regulatory: All ingredients are on TSCA inventory.

RCRA Status: Not hazardous if discarded in its purchased form. 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).

OSHA Hazard Comm. Rule: This material is classified as a hazardous material under the criteria outlined in the OSHA Hazard Communication Standard (29 CFR 1910.1200).

16. OTHER INFORMATION

HMIS Rating: Health – *2 Flammability – 1 Physical Hazard: 1

HMIS Rating Notes: If present, the asterisk signifies a chronic health hazard.

Rating System: 0 = low hazard to 4 = high hazard

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Key Legend Information:

ACGIH: American Conference of Governmental Industrial Hygienists

EPA: Environmental Protection Agency

IARC: International Agency for Research on Cancer

NTP: National Toxicology Program

OEL: Occupational Exposure Limit

OSHA: Occupational Safety and Health Administration

PEL: Permissible Exposure Limit

STEL: Short Term Exposure Limit

TLV: Threshold Limit Value

TWA: Time Weighted Average

17. DISCLAIMER

The information contained herein is, to the best of our knowledge and belief, accurate and current as of the date of this MSDS. However, since the conditions of handling and use are beyond our control, we make no guarantee of results and assume no liability for damages incurred by use of this material. All chemicals may present unknown health hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards which exist. Final determination of suitability of the chemical is the sole responsibility of the user. No representation or warranties, either expressed or implied, as to its correctness or completeness, or as of merchantability, fitness for a particular purpose, or any other nature are made hereunder with respect to the information contained herein or the chemical to which the information refers or as to the results or reliance of this product. It is the responsibility of the user to comply with all applicable federal, state and local laws and regulations.