

**SECTION 1 Product and Company Information**

**PRODUCT NAME:** UTEK PART B      Chemtrec  
**GENERIC NAME:** diphenylmethane-diisocyanate isomers      24 Hour Emergency Number 1-800-424-9300  
 Information Number: 1-800-666-6216

DISTRIBUTOR: LSP Performance Resins  
 124 Speer Road  
 Chestertown, MD 21620

Comments: To the best of our knowledge, this Material Safety Data Sheet conforms to the requirements of US OSHA 29 CFR1910.1200, 91/155/ECC and Canadian Hazardous Products Act

**SECTION 2 Hazards Identification**

<p><b>Emergency Overview</b>  <b>OSHA Hazardous</b>                  Considered Hazardous</p> <p>When the base is mixed with the hardener an exothermic reaction starts (i.e. heat is generated). If the mix is not applied within 20 - 30 minutes some smoking may occur.</p>	<p><b>Potential Health Effects</b>                  Inhalation: Harmful                  Eyes: May cause eye irritation.                  Ingestion: May be harmful if swallowed.                  Skin: May cause irritation and sensitization of the skin</p> <p>Harmful by inhalation. This hazard is most likely to arise when materials are heated, sprayed, used in a confined unventilated space or if correct handling procedures are not followed.</p> <p>Irritating to eyes, respiratory system and skin. In mild cases the affected person may experience slight irritation of the eyes, nose and throat, possibly combined with dryness of the throat. In more severe cases the person may suffer acute bronchial irritation and difficulty in breathing.</p> <p>May cause sensitization by inhalation and skin contact. Repeated and /or prolonged exposure may cause an allergic reaction/sensitization.</p>
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Carcinogenicity: Not listed by NTP Not Listed by IARC Not Listed by OSHA	Not listed Reproductive Effects : Not Available Teratogenic Effects: No evidence of mutagenetic effects	Signs and Symptoms of Overexposure: Bronchial irritation, difficulty breathing. Wheezing, tightness of chest, shortness of breath
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**GHS LABEL ELEMENTS, INCLUDING PRECAUTIONARY STATEMENTS**

	Health	Environmental	Physical
Eye Irritant Skin Irritant, sensitizer Respiratory Irritant	Vapor, aerosol, liquid Moderate, may sensitize May sensitize	Not Classified	Not Classified

Pictogram:



**Eyes Hazardous in case of eye contact (irritant)**

**Skin Hazardous in case of skin contact (irritant, sensitizer). Skin inflammation is characterized by itching, scaling or reddening.**

**Inhalation Hazardous in case of inhalation (lung irritant, lung sensitizer)**

**Ingestion Slightly hazardous in case of ingestion.**

**Medical Conditions aggravated by Overexposure: May cause or aggravate dermatitis and asthma.**

**SECTION 3 Composition / Information on Ingredients**

Chemical Name	CAS	Wt%
diphenylmethane-diisocyanate isomers and homologues	9016-87-9	> 95

**SECTION 4 First Aid Measures**

**First Aid - Eye Contact:** If material gets into eyes, flush with water immediately for 15 minutes. Consult a physician.

**First Aid - Skin Contact:** In case of contact, wash skin immediately with soap and water.

**First Aid - Inhalation:** If inhaled, remove to fresh air. Administer oxygen if necessary. Consult a physician if symptoms persist or exposure was severe.

**First Aid - Ingestion:** If swallowed do not induce vomiting. Seek immediate medical attention.

**SECTION 5 Fire Fighting Measures**

**Flash Point, F:** 425F (218C)  
(Cleveland O.C.)

**Lower Explosive Limit, %:** N/A  
**Upper Explosive Limit, %:** N/A

**Extinguishing Media:** Carbon Dioxide, Dry Chemical, Foam

**Unusual Fire and Explosion Hazards:** Water contamination will produce Carbon Dioxide. Do not reseal contaminated containers as pressure buildup may rupture them.

**Special Firefighting Procedures:** Full emergency equipment with self-contained breathing apparatus and full protective clothing should be worn by firefighters. During a fire, MDI vapors and other irritating, highly toxic gases may be generated by thermal decomposition or combustion. (See stability and reactivity). At temperatures greater than 400F (204C), 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. Evacuate hazard area of unprotected personnel. Use a NIOSH approved self-contained breathing unit and complete body protection. Cool surrounding containers with water in case of fire exposure. Since this product is water reactive, use DRY chemical powder for small fire. Use water spray, fog or foam for large fire. Do NOT use water jet.

**SECTION 6 Accidental Release Measures**

**Steps to Be Taken If Material Is Released or Spilled:** Use personal protective equipment as necessary. Absorb with suitable chemical absorbent. Dispose of material in accordance with all federal, state and local regulations. Evacuate and ventilate spill area; dike spill to prevent entry into water system; wear full protective equipment, including respiratory equipment during cleanup.

**Major Spill:** If temporary control of isocyanate is required, a blanket of protein foam (available at most fire departments) may be placed over the spill. Large quantities may be pumped into 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: mixture of water (80%) with non-ionic surfactant Tergitol TMN-10 (20%), or water (90%), concentrated ammonia (3 - 8%) and detergent (2%). Add about 10 parts 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.

Dispose of in accordance with local, state and federal regulations. Refer to Section 15 for SARA Title III and CERCLA information.

**SECTION 7 Handling and Storage**

Do not get in eyes, on skin, or on clothing. Keep container tightly closed when not in use. Wear personal protection equipment. Do not breathe vapors. Wash thoroughly after handling. Use only in accordance with manufacturer application instructions, container label and Product Data Sheet.

**STORAGE:** Keep away from heat, sparks, open flames and oxidizing agents. Keep containers closed. Store in a cool, dry place with adequate ventilation.

**SECTION 8 Exposure Controls / Personal Protection**

**EXPOSURE GUIDELINES**

Hazardous Component	PEL	STEL	TLV	Other
diphenylmethane-diisocyanate isomers	.20 mg/m <sup>3</sup> ceiling limit		.05 mg/m <sup>3</sup> 8hr/40 hrs/wk	<b>.05 mg/m<sup>3</sup></b> <b>10 hr/40</b> <b>hrs/wk</b>
				<b>NIOSH</b> <b>REL/TWA</b>

**ENGINEERING CONTROLS:** USE EXPLOSION-PROOF VENTILATION WHEN REQUIRED TO KEEP BELOW HEALTH EXPOSURE GUIDELINES AND LOWER EXPLOSION LIMIT (LEL).

**RESPIRATORY PROTECTION:** USE ONLY WITH VENTILATION TO KEEP LEVELS BELOW EXPOSURE GUIDELINES LISTED IN SECTION 2. USER SHOULD TEST AND MONITOR EXPOSURE LEVELS TO ENSURE ALL PERSONNEL ARE BELOW GUIDELINES. IF NOT SURE, OR NOT ABLE TO MONITOR, USE MSHA/NIOSH APPROVED SUPPLIED AIR RESPIRATOR. FOLLOW ALL CURRENT OSHA REQUIREMENTS FOR RESPIRATOR USE. FOR SILICA CONTAINING COATINGS IN A LIQUID STATE, AND/OR IF NO EXPOSURE LIMITS ARE ESTABLISHED IN SECTION 2 ABOVE, SUPPLIED AIR RESPIRATORS ARE GENERALLY NOT REQUIRED.

**SKIN PROTECTION:** RECOMMEND IMPERVIOUS GLOVES AND CLOTHING TO AVOID SKIN CONTACT. IF MATERIAL PENETRATES TO SKIN, CHANGE GLOVES AND CLOTHING. THE USE OF PROTECTIVE CREAMS MAY BE BENEFICIAL TO CERTAIN INDIVIDUALS.

PROTECTIVE CREAMS SHOULD BE APPLIED BEFORE EXPOSURE.

**EYE PROTECTION:** RECOMMEND SAFETY GLASSES WITH SIDE SHIELDS OR CHEMICAL GOGGLES TO AVOID EYE CONTACT.

**OTHER PROTECTIVE EQUIPMENT:** EYE WASH AND SAFETY SHOWERS SHOULD BE READILY AVAILABLE.

**HYGIENIC PRACTICES:** WASH WITH SOAP AND WATER BEFORE EATING, DRINKING, SMOKING, APPLYING COSMETICS, OR USING TOILET FACILITIES. USE OF A HAND CLEANER IS RECOMMENDED. LAUNDRER CONTAMINATED CLOTHING BEFORE REUSE. LEATHER SHOES CAN ABSORB AND ALLOW HAZARDOUS MATERIALS TO PASS THROUGH. CHECK SHOES CAREFULLY AFTER SOAKING BEFORE REUSE.

**SECTION 9 Physical and Chemical Properties**

Appearance	
Form	liquid
Color	brown
pH	N/DA
Melting/Freezing Temperature	N/A
Boiling Point	>550 deg – C decomposes
Ignition Temperature	Higher than 1110 deg C (350deg F) Flash Point
Autoignition Temperature	>600 deg C
Lower explosive limit; na	Upper explosive limit: na
Vapor Pressure	<0.0001 mbar at 70 °F (100Pa = 1 mbar)
Vapor Density (air=1)	.8 (Air =1)
Specific Gravity (water=1 @39.2F)	N/A
Evaporation Rate (Bac=1)	N/P
Odor	Slight musty
Odor threshold	Not available
Percent Volatiles	N/P
Viscosity	45 - 95 mPa's at 80 °F
Water Solubility	Insoluble, reacts to produce carbon dioxide and polyurea solid
Relative Density	1.24 at 70 °F

**SECTION 10 Stability and Reactivity**

**CONDITIONS TO AVOID:** CONTAMINATION WITH WATER. HEAT AND OPEN FLAMES.

**INCOMPATIBILITY:** WATER, AMINES, STRONG BASES, ALCOHOLS. WILL CAUSE CORROSION TO COPPER ALLOYS

**HAZARDOUS DECOMPOSITION PRODUCTS: CARBON MONOXIDE, NITROGEN OXIDES, AND UNIDENTIFIED ORGANIC COMPOUNDS. CONSIDER ALL SMOKE AND FUMES FROM BURNING MATERIAL AS VERY HAZARDOUS. WELDING, CUTTING OR ABRASIVE GRINDING CAN CREATE SMOKE AND FUMES. DO NOT BREATHE ANY FUMES OR SMOKE FROM THESE OPERATIONS.**

**HAZARDOUS POLYMERIZATION: MAY OCCUR; CONTACT WITH MOISTURE, OTHER MATERIALS WHICH REACT WITH ISOCYANATES, OR TEMPERATURES ABOVE 400F (204 C), MAY CAUSE POLYMERIZATION.**

**STABILITY: THIS PRODUCT IS STABLE UNDER NORMAL STORAGE CONDITIONS.**

**SECTION 11 Toxicological Information**

Acute oral toxicity

: LD<sub>50</sub> Oral (rat) : >5,000 mg/kg

Inhalation : LC<sub>50</sub> inhalation (rat) ca. 490 mg as aerosol/m<sup>3</sup>, 4 hrs exposure.  
Concentration of saturated vapour: 0.09 mg/m<sup>3</sup> at 80 °F

Irritation : Over exposure, especially when spraying without the necessary precautions, entails the risk of concentration dependant irritating effects on eyes, nose, throat and respiratory tract.  
In mild cases the affected person may experience slight irritation of the eyes, nose and throat, possibly combined with dryness of the throat. In more severe cases the person may suffer acute bronchial irritation and difficulty in breathing.

Skin : Prolonged contact with the skin may cause tanning and irritant effects.  
LD<sub>50</sub> Dermal (rabbit) > 5,000 mg/kg

Sensitisation : Repeated and /or prolonged exposure, especially at levels above the MEL, may cause an allergic reaction/respiratory sensitisation. Once sensitised, an individual may produce an allergic reaction every time they are in contact with isocyanates. Individuals who have developed sensitivity may experience wheezing, tightness of the chest and shortness of breath. A hyper-reactive response to even minimal concentrations of isocyanate may develop in sensitised persons.

The onset of respiratory symptoms (difficulty in breathing, coughing, asthma) may be delayed for several hours after exposure.

Repeated and/or prolonged skin contact may cause skin sensitisation. Animal studies have shown respiratory sensitisation can be induced by skin contact with known respiratory sensitisers, including isocyanates.

Animal studies have shown that respiratory sensitisation can be induced by skin contact with known respiratory sensitisers including diisocyanates.

Long term toxicity : Animal testing has shown no long term adverse effects at or below the MEL.  
Chronic pulmonary irritation observed at high concentrations. There are reports that chronic exposure by inhalation may result in decreases in lung function.

Carcinogenicity : The classification for diphenylmethane diisocyanate has changed to carcinogenic, category 3, when it is in the form of respirable aerosol e.g. when sprayed.

Mutagenicity : There is no substantial evidence of mutagenic potential.

Reproductive toxicity : No birth defects seen in animal (rat) studies.  
Fetotoxicity was observed at doses that were extremely toxic (including lethal) to the mother.  
Fetotoxicity was not observed at doses that were not maternally toxic.

**SECTION 12 Ecological Information**

**Ecological Information:** Ecological data based on Polymeric MDI Biodegradation: 0%, Exposure time: 28 Days

Bioaccumulation:  
 Rainbow Trout, Exposure time: 112d, <1 BCF Does not Bioaccumulate.

Acute and Prolonged Toxicity to Fish:  
 LC0: >1,000 mg/l (Zebra fish (Brachydanio rerio), 96 hrs.) LC0: > 3,000 mg/l (Killifish (Oryzias latipes), 96h)

Acute toxicity to Aquatic Invertebrates:  
 EC50: > 1,000 mg/l (Water flea (Daphnia magna), 24 hrs.)

Toxicity to aquatic plants:  
 NOEC: 1640 mg/l, End Point: growth (Green algae (Scenedesmus subspicatus), 72 hrs.)

Toxicity to Microorganisms:  
 EC50: > 100 mg/l, (Activated sludge microorganisms, 3 hrs.)

Ecological Data for 4,4'- Diphenylmethane Diisocyanate (MDI) Acute and Prolonged Toxicity to Fish:  
 LC50: > 500 mg/l (Zebra fish (Brachydanio rerio), 24 hrs.)

Acute Toxicity to Aquatic Invertebrates:  
 EC50: > 500 mg/l (Water flea (Daphnia magna), 24 hrs.)

**SECTION 13 Disposal Considerations**

**Waste Disposal**  
 Dispose of in accordance with State, Local, and Federal Environmental regulations. Responsibility for proper waste disposal is with the owner of the waste.

**SECTION 14 Transport Information**

<b>DOT Proper Shipping Name:</b> Not Regulated	<b>Packaging Group:</b> N/A
<b>DOT Hazard Class:</b> None	<b>Hazard Subclass:</b> N/A
<b>DOT UN/NA Number:</b> None	<b>Resp. Guide Page:</b> N/A

**SECTION 15 Regulatory Information**

**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, CHRONIC HEALTH HAZARD, REACTION HAZARD**

**CANADIAN WHMIS CLASS: D1A, D2A, D2B**

**SARA SECTION 313**

THIS PRODUCT CONTAINS THE FOLLOWING SUBSTANCES SUBJECT TO THE REPORTING REQUIREMENTS OF SECTION 313 OF TITLE III OF THE SUPERFUND AMENDMENT AND REAUTHORIZATION ACT OF 1986 AND 40 CFR PART 372:

<u>CHEMICAL NAME</u>	<u>CAS NUMBER</u>
POLYMERIC MDI	9016-87-9
4,4' MDI	101-68-8

**TOXIC SUBSTANCES CONTROL ACT**

ALL COMPONENTS OF THIS PRODUCT ARE LISTED ON THE TSCA INVENTORY.

THIS PRODUCT CONTAINS THE FOLLOWING CHEMICAL SUBSTANCES SUBJECT TO THE REPORTING REQUIREMENTS OF TSCA 12(B) IF EXPORTED FROM THE UNITED STATES:

No TSCA 12(B) SUBSTANCES EXIST IN THIS PRODUCT

**U.S. STATE REGULATIONS AS FOLLOWS: NEW JERSEY RIGHT-TO- KNOW**

THE FOLLOWING MATERIALS ARE NON-HAZARDOUS, BUT ARE AMONG THE TOP FIVE COMPONENTS IN THIS PRODUCT.

**PENNSYLVANIA RIGHT-TO-KNOW**

THE FOLLOWING NON-HAZARDOUS INGREDIENTS ARE PRESENT IN THE PRODUCT AT GREATER THAN 3%.

**CALIFORNIA PROPOSITION 65**

**WARNING: THE FOLLOWING INGREDIENTS PRESENT IN THE PRODUCT ARE KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER:**

No CALIFORNIA PROPOSITION 65 CARCINOGENS EXIST

**WARNING: THE FOLLOWING INGREDIENTS PRESENT IN THE PRODUCT ARE KNOWN TO THE STATE OF CALIFORNIA TO CAUSE BIRTH DEFECTS, OR OTHER REPRODUCTIVE HAZARDS:**

No CALIFORNIA PROPOSITION 65 REPRODUCTIVE TOXINS EXIST  
**INTERNATIONAL REGULATIONS AS FOLLOWS: CANADIAN WHMIS**  
 THIS MSDS HAS BEEN PREPARED IN COMPLIANCE WITH CONTROLLED PRODUCT REGULATIONS EXCEPT FOR THE USE OF THE 16 HEADINGS.

**SECTION 16 Other Information**

**HMIS Ratings**

Health: 3    Flammability: 1    Reactivity: 1    Personal Protection: X

Legend: N.A. - Not Applicable, N.E. - Not Established, N.D. - Not Determined

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