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A-1475 CRU – PART A Material Safety Data Sheet

Date of Preparation: 10/31/01

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| 24 HOUR EMERGENCY ASSISTANCE | |
| CHEMTREC: (800)-424-9300 | |
| HEALTH HAZARD→2 FIRE→1 REACTIVITY→1 SPECIAL→0 | |
| *For acute and chronic health effects refer to the discussion in Section III | |

SECTION I: NAME

PRODUCT NAME: A-1475 PART A
CHEMICAL NAME: Hexane, 1,6-diisocyanato-, homopolymer
SYNONYMS: Hexamethylene diisocyanate trimer; Homopolymer of Hexamethylene diisocyanate; 1,6-Hexamethylene diisocyanate based polyisocyanate
CHEMICAL FAMILY: Aliphatic Isocyanate
EINECS NUMBER: 500-060-2
TYPE OF USE: COATINGS

| <u>INGREDIENTS</u> | <u>CAS #</u> | <u>%</u> |
|---------------------------------------|--------------|----------|
| HEXANE, 1,6-DIISOCYANATE, HOMOPOLYMER | 28182-81-2 | 75-95% |
| 4-CHLOROBENZOTRIFLUORIDE | 98-56-6 | 5-25% |

SECTION II: COMPOSITION/OCCUPATIONAL EXPOSURE LIMITS

| Component Name | CAS # | Source/Date | Value/Units | Type | Skin Notation | Carcinogenic Listing | Concentration by Wt/Mol% | | |
|--|------------|------------------|--------------|------------|---------------|----------------------|--------------------------|------|-------|
| | | | | | | | Avg. | Min. | Max |
| Hexane, 1,6-diisocyanato-, homopolymer | 28182-81-2 | US (OSHA)/1998 | N/L | | | N/L | | 99.0 | 100.0 |
| Hexane, 1,6-diisocyanato- | 822-06-0 | US (ACGIH)/ 2000 | 0.0005 ml/m3 | 8 hrs/ TWA | No | N/L | | | 0.5 |
| | | US (OSHA)/ 2000 | N/L | | | | | | |

SECTION III: HAZARD IDENTIFICATION

Emergency Overview: This material is HAZARDOUS by OSHA Hazard Communication definition

Signal Word: Danger

Hazards: High inhalation hazard – allergic sensitizer. Severe skin irritant; allergic sensitizer. Severe Eye irritant. Moderate ingestion hazard. Irritating to gastrointestinal tract. Mucous membrane irritant. Prolonged exposure may cause allergic sensitization. Prolonged or repeated exposure to vapors may cause lung damage.

Physical State: Liquid

Color: Clear, colorless to slightly yellow.

Odor: Odorless

Odor Threshold: No Data Available. Odor is not an adequate warning of potentially hazardous ambient air concentrations.

Potential Health Effects:

Routes of Exposure: Eye Inhalation Skin

Signs and Symptoms of Acute Exposure: High Health Hazard.

Hexane, 1,6-diisocyanato-Homopolymer High inhalation hazard – allergic sensitizer. Skin sensitizer. Moderate skin irritant.

Hexane, 1,6-diisocyanato- Respiratory sensitizer. Inhalation irritation. Severe skin Irritant; allergic sensitizer. Severe eye irritant.

Skin: This material is a severe skin irritant. Causes irritation seen as local redness and possible swelling. Repeated or prolonged skin contact may cause sensitization and an allergic skin reaction.

Inhalation: Inhalation would be expected to cause irritation of the nose, mouth, throat and lungs. Inhalation may cause asthma-like symptoms, including coughing, wheezing, tightness of chest, shortness of breath, and headache.

Eye: May result in severe irritation and possible damage to the cornea and impairment of vision. The effects of high vapor concentration may vary from slight irritation (with tearing and a burning sensation) to keratitis (Inflammation of the cornea) and impairment of vision.

Ingestion: Ingestion not a likely route of exposure. Ingestion may result in irritation of the mouth and digestive tract. Gastroenteritis may result with any or all of the following symptoms: nausea, vomiting, diarrhea, headache.

Chronic Health Effects: Prolonged or repeated exposure to vapors may cause lung damage. Repeated over exposure to isocyanates and high one time accidental exposures have been associated

with gradual decrease in lung function. Repeated inhalation also may cause allergic sensitization of the respiratory tract, resulting in coughing, wheezing, shortness of breath, chest tightness, and other asthma-like symptoms that may be life-threatening. Repeated skin contact may cause irritation and allergic dermatitis.

Hexane, 1,6-diisocyanato-Homopolymer

Hexane diisocyanate homopolymer is a skin and respiratory allergic sensitizer. Sensitive individuals may exhibit skin rash, wheezing, tightness of the chest, and difficulty breathing that may progress to a life-threatening inability to breathe. Chronic inhalation may cause lung damage.

Hexane, 1,6-diisocyanato-

Hexane diisocyanate (HDI) is a potent skin and respiratory allergic sensitizer. Sensitive individuals may exhibit skin rash, wheezing, tightness of the chest, and difficulty in breathing that may progress to a life-threatening inability to breathe. Chronic inhalation may cause lung damage.

Conditions Aggravated By Exposure: History or presence of allergic disease. Exposure may aggravate one or more of the following medical conditions: Asthma or asthmatic bronchitic medical history.

IV. FIRST AID MEASURES

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|--------------------|--|
| General: | Prolonged observation may be indicated. |
| Inhalation: | If overcome by exposure, remove victim to fresh air immediately. Call a physician. Give oxygen or artificial respiration as needed. |
| Eye: | Immediately flush eyes thoroughly with plenty of water and continue flushing for at least 15 minutes. Seek medical attention if discomfort persists. |
| Skin: | Remove affected clothing and wash all exposed skin area with mild soap and water, followed by warm water rinse. Flush with lukewarm water for 15 minutes. Seek medical attention if ill effect or irritation develops. Wash clothing before wearing again. |
| Ingestion: | Ingestion unlikely. However, if ingested, give lukewarm water (pint or 1/2 litre) if victim is fully conscious and alert. Do not induce vomiting. Obtain emergency medical attention. |

Physician's Detoxification Procedures: Assess extent and severity of tissue injury by appropriate diagnostic studies and procedures. Bronchodilators may be indicated.

SECTION V: FIRE-FIGHTING MEASURES

Flammability Classification: OSHA/NFPA Class IIIB combustible liquid.

| | |
|----------------------------------|-----------------------------|
| Flash Point/Method: | -169°C (336°F) (Closed Cup) |
| Auto-Ignition Temperature | No data available |
| Lower Flammable Limit | No data available |
| Upper Flammable Limit | No data available |

Hazardous Combustion Products: During instances of thermal decomposition or combustion, the liberation of diisocyanate vapors and other irritating, highly toxic gases may be generated and/or released.

Special Conditions to Avoid: Vapors may be heavier than air. May travel long distances along the ground before igniting and flashing back to vapor source. On exposure to high temperature, may decompose, releasing toxic/flammable vapors. Heat from fire can generate flammable vapor. When mixed with air and exposed to ignition source, vapors can burn in open or explode if confined. Fine sprays/mists may be combustible at temperatures below normal flash point.

Extinguishing Agents:

Suitable: Carbon Dioxide. Foam. Dry chemical. Use water spray for large fires. Water to be used only in large quantities due to reactivity. Water or foam may cause frothing. Use water spray/water fog for cooling.

Unsuitable: No additional information available.

Fire Fighting Instructions:

Protective Equipment/Clothing: Use self-contained breathing apparatus and body-covering protective clothing.

Instructions: Fight fire from a safe distance/protected location. Extinguish all ignition sources. Do not enter fire area without proper protection equipment including self-contained breathing apparatus. Under fire conditions, highly hazardous fumes will be present. Blanket with fire fighting foam. Use water with care on closed containers – material will react with water/generate pressure/may explode/spread fire/increase risk of burns/injuries/contact with hazardous material.

SECTION VI: ACCIDENTAL RELEASE MEASURES

Release Response: Reactive. May release toxic materials/contaminate water supplies/create human health hazard. Equip responders with proper protection. Use self-contained breathing apparatus and body-covering protective clothing. Evacuate/limit access. Extinguish ignition sources; stop release; prevent flow to sewers or public waters. Notify fire and environmental authorities. Blanket with fire fighting foam. Avoid water for clean-up or use in large quantities due to reactivity. Impound/recover large land spill; soak a small spill with inert solids. Use suitable disposal containers. Reacts with water. Contain/collect rapidly to minimize dispersion. Disperse residue to reduce aquatic harm.

| <u>Regulation</u> | <u>Component</u> | <u>TPQ</u> | <u>RQ</u> |
|-------------------|--|------------|-----------------|
| EPA/DOT RQ | Hexane, 1,6-diisocyanato-/CAS#822-06-0 | | 45.4KG/100 lbs. |

SECTION VII: HANDLING AND STORAGE

Storage Conditions: All containers should be labeled to warn against exposure. Store in tightly closed/properly vented containers with vents directed to locations removed from potential personnel exposure. Store below 113°F (45°C).

Handling Procedures: Handle with care. Use special care when handling/transporting samples. Handle empty containers with care – residue may be combustible. For industrial use only. Keep container tightly closed when not in use. When cleaning or repairing equipment contaminated with this material, total encapsulating impervious protective suits, gloves, and boots should be worn to prevent any contact. Material sampling procedures should avoid vapor inhalation and skin/eye contact and only be conducted with proper protective equipment. A positive pressure self-contained breathing apparatus and/or a supplied air respirator should be used.

SECTION VIII: EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls: Local exhaust in addition to general room ventilation may be required to meet exposure

limit(s).

Personal Protection:

Inhalation: If exposure can exceed the exposure limit(s), use only supplied air respirator, recommended or approved by appropriate local, state or international agency, operated in a positive pressure mode.

Skin: Wear chemical resistant gloves such as: Nitrile-knit™. Nitrile Butyl rubber. 4H™(PE/EVAL). Or Neoprene. Impervious protective suit with integral or tight-fitting gloves, boots, and full head and face protection must be worn. The equipment must be cleaned thoroughly after each use.

Eye: Eye protection, including both chemical splash goggles and face shield, must be worn when possibility exists for eye contact due to splashing/spraying liquid, airborne particles, or vapor.

Other Hygienic Practices: Selection of appropriate personal protective equipment should be based on an evaluation of the performance characteristics of the protective equipment relative to the task(s) to be performed, conditions present, duration of use, and the hazards and/or potential hazards that may be encountered during use. Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure.

Recommended Work Practices: Use good personal hygiene practices. Wash hands before eating, drinking, smoking, or using toilet facilities. Promptly remove soiled clothing/wash thoroughly before reuse.

SECTION IX: PHYSICAL AND CHEMICAL PROPERTIES

| | |
|---|---|
| SPECIFIC GRAVITY | : -1.1, @ 25°C/77°F |
| VAPOR DENSITY | : No Data Available |
| BOILING PRESSURE | : -194.4°C (382°F) |
| pH | : NOT APPLICABLE |
| APPEARANCE | : CLEAR |
| COLOR | : COLORLESS |
| STATE | : LIQUID |
| ODOR CHARACTERISTIC | : SWEET |
| pH | : NOT APPLICABLE |
| VAPOR PRESSURE | : -0.000075mm Hg @ 20°C/68°F based on polyisocyanate |
| VISCOSITY | : 1,800-13,000 mPa.s, @ 25°C/77°F |
| SOLUBILITY IN WATER | : Reacts |
| OCTANOL/WATER PARTITION COEFFICIENT IN KOW | : Not applicable |
| MELTING/FREEZING POINT | : No Data Available |
| DRY POINT | : No Data Available |
| MOLECULAR WEIGHT | : (Polyisocyanate) 350-500 g/mol |

SECTION X: STABILITY AND REACTIVITY

Chemical Stability: This material is stable when properly handled and stored.

Conditions to Avoid: Heat, sparks, open flame, other ignition sources, and poor ventilation. Contact with

incompatible materials in a closed system – may lead to pressure build-up and possible rupture of container or system.

Incompatibility with: Water, Amines, alcohols. Strong oxidizing agents.

Decomposition Products: during instances of thermal decomposition or combustion, the liberation of diisocyanate vapors and other irritating, highly toxic gases may be generated and/or released.

Hazardous Polymerization: Self-polymerization will occur when exposed to temperatures above 240° C/464° F.

Reactions with Air and Water: Reacts with water, releasing CO₂.

SECTION XI: TOXICOLOGICAL INFORMATION

Product Summary: Repeated skin contact may cause irritation and allergic dermatitis. Repeated inhalation also may cause allergic sensitization or the respiratory tract, resulting in coughing, wheezing, shortness of breath, chest tightness, and other asthma-like symptoms that may be life-threatening. Interaction with other isocyanates may cross react and cause similar sensitization responses.

Component Summary:

Hexane, 1,6-diisocyanato-, homopolymer

| | |
|--------------------------|-----------------------|
| LC50 (Inhl)- rat: | 3124 MG/KG |
| Oral LD50-rat: | >5000 MG/KG |
| Oral LD50-rabbit: | 900 MG/KG |
| Oral LD50-rabbit: | >2000 MG/KG |

Repeated Dose Toxicity: Hexane diisocyanate homopolymer is a skin and respiratory allergic sensitizer. Sensitive individuals may exhibit skin rash, wheezing, tightness of the chest, and difficulty breathing that may progress to a life-threatening inability to breathe. Chronic inhalation may cause lung damage.

Hexane, 1,6-diisocyanato

| | |
|------------------------------|--------------------|
| LC50 (Inhl) -mouse: | 30 MG/M3 |
| LC50 (Oral) – rat: | 745.5 MG/KG |
| LC50 (Oral) – mouse: | 350 MG/KG |
| LD50 (Skin) - rabbit: | 598.5 MG/KG |

Repeated Dose Toxicity: Hexane diisocyanate (HDI) is a potent skin and respiratory allergic sensitizer. Sensitive individuals may exhibit skin rash, wheezing, tightness of the chest, and difficulty breathing that may progress to a life-threatening inability to breathe. Chronic inhalation may cause lung damage.

SECTION XII: ECOLOGICAL INFORMATION

Ecotoxicity: No Data Available

Environmental Fate: No Data Available

Bioaccumulation: No Data Available

Biodegradation: No Date Available

SECTION XIII: DISPOSAL CONSIDERATIONS

Contaminated product, soil, water, container residues and spill cleanup materials may be hazardous wastes. Avoid contact with water. Aqueous wastes may not biograde. Do not treat biologically; may poison/upset plant biomass. Comply with applicable local, state or international regulations concerning solid or hazardous waste disposal and/or container disposal.

SECTION XIV: TRANSPORT INFORMATION

Proper Shipping Name: Environmentally hazardous substances, liquid, n.o.s. (1,6-diisocyanato-hexane)

UN/NA ID: UN 3082
NAER Guidebook: 171
Marine Pollutant: No
Labels: Class 9
DOT Hazard Class: 9., PGIII
IMDG Hazard Class: 9, PGIII
ADR/VLG Hazard Class: Not Regulated
ICAO/IATA Hazard Class: 9, PGIII
ADNR/VBG Hazard Class: Not Regulated
RID/VSG Hazard Class: Not Regulated

SECTION XV: REGULATORY INFORMATION

Regulatory Advisory: This material contains a component(s) with known CAS numbers classified as hazardous substances subject to the reporting of CERCLA (40 CFR 302) and/or to the release reporting requirements of SARA (Section 302) based on reportable quantities (RQs) (SEE SECTION 6)

Regulatory Status: All components of this product are listed or are exempt from listing on the TCA 8(b) inventory. If identified components of this product are listed under the TSCA 12(b) Export Notification rule, they will be listed below.

SARA – Section 313 Emissions Reporting: This material contains the following chemicals with known CAS numbers subject to the reporting requirements of SARA Title III, Section 313 and 40 CFR 372:

| <u>Component Summary</u> | <u>Reporting Threshold</u> |
|--|----------------------------|
| Hexane, 1,6-diisocyanato-/CAS#822-06-0 | 1.0% |

SARA – Section 311/312: Based upon available information, this material and/or components are classified as the following health and/or physical hazards according to Section 311 & 312:

Immediate (Acute) Health Hazard
Delayed (Chronic) Health Hazard
Fire Hazard
Reactive

State Reporting: This material is known to contain chemicals currently listed as carcinogens or reproductive toxins
MSDS A-1475 Part A

under California Proposition 65 at levels which would be subject to the proposition as follows:

| | | |
|---------|---------------|-------|
| Benzene | CAS # 98-56-5 | Trace |
|---------|---------------|-------|

A Volatile Organic Compound (VOC) is any volatile compound of carbon excluding methane, carbon monoxide, carbonic acid, metallic carbides or carbonates, ammonium carbonate, 1,1-trichloromethane, methylene chloride, (FC-23), (CFC-113), (CFC-22), (CFC-114) and (CFC-115). By this definition, this is not a VOC material.

SECTION XVI: OTHER INFORMATION

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