#### MATERIAL SAFETY DATA SHEET

SECTION 1 - MATERIAL IDENTIFICATION

PRODUCT NAME CYANAPRENEX D-55 URETHANE PREPOLYMER

\*CYANAPRENE is a registered trademark of American Cyanamid Company.

PRODUCT CODE

CPD55

MSDS REVISION NUMBER: 4668-02

MANUFACTURER

Air Products and Chemicals, Inc.

7201 Hamilton Blvd., Allentown, PA 18195-1501

EMERGENCY TELEPHONE NUMBER(S) 800-523-9374 (Continental U.S.)

215-481-7711 (Outside Continental U.S.)

800-322-9092 (Pennsylvania only)

DATE PREPARED SEPTEMBER 1992 REVISION NOTES: New MSDS Format

C.A.S. CHEMICAL NAMEHexanedioic acid, polymer with

1,3-diisocyanatomethylbenzene and 1,2 ethanediol

SYNONYMS

None

CHEMICAL FAMILY:

Polyurethane Resin

EMPIRICAL FORMULA

(C9H6N2O2\*C6H10O4\*C2H6O2)x

INTENDED USE

Cast Elastomer

#### SECTION 2 - INGREDIENTS

ACGIH OSHA CAS Number and Chemical Name % PEL/TLV-TWA STEL-TWA ppm mg/m3 ppm mg/m3

9019-92-5 TDI-POLY(ETHYLENE ADIPATE) 99.4 N/E N/E

COPOLYMER 584-84-9 2,4-TOLUENEDIISOCYANATE 0.2 0.005 0.036 0.02 0.14

91-08-7 2.6 TOLUENEDIISOCYANATE N/E 0.4 N/E

N/E = Not Established T/S = Trade Secret -S = Skin

#### SECTION 3 - HEALTH HAZARDS

EMERGENCY OVERVIEW

HMIS HEALTH RATING 3 FLAMMABILITY 1 REACTIVITY 1

White waxy solid at room temperature. Straw yellow to Amber liquid at processing temperature. Slight pungent odor.

Severe eye irritant, Moderate skin irritant, Severe respiratory tract irritant.

Sensitizer of skin; Sensitizer of respiratory tract.

Tamitian will give rise to a Class B fire.



In case of fire use, Carbon Dioxide (CO2), Dry Chemical, Alcohol Foam.

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#### ROUTES OF EXPOSURE

Eye Contact
Skin Contact
Ingestion
Inhalation

#### EXPOSURE STANDARDS

No standards established for the product. See Section 2 for exposure standards on ingredients.

#### **HEALTH HAZARDS:**

Severe eye irritant, Moderate skin irritant, Severe respiratory tract irritant. Sensitizer of skin. Sensitizer of respiratory tract. 584-84-9 2,4-TOLUENEDIISOCYANATE is listed as a carcinogen by NTP.

#### TARGET ORGANS

Respiratory system, Skin, Eye.

#### SIGNS AND SYMPTOMS OF EXPOSURE (Acute effects)

Contact with eyes causes severe irritation and pain. Inhalation of vapors causes irritation of the respiratory tract and may cause adverse systemic effects.

Contact with skin causes irritation, redness and discomfort which is transient.

May cause sensitization by inhalation and skin contact.

SIGNS AND SYMPTOMS OF EXPOSURE (Possible Longer Term Effects)
Repeated and/or prolonged contact with the skin may cause allergic
reaction/sensitization. Repeated and/or prolonged exposure to vapors
may cause allergic respiratory reaction/sensitization. Repeated
and/or prolonged exposure to vapors may cause allergic respiratory
reaction/sensitization.

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE
Asthma, Chronic respiratory disease (e.g. Bronchitis, Emphysema),
Skin disorders and Allergies.

#### IRRITATION EFFECTS DATA

Severe irritant to the eyes of a rabbit.

#### ACUTE TOXICITY EFFECTS DATA

Oral LD50 (rat) >5000 (EST) mg/kg Dermal LD50 (rabbit) >2000 (EST) mg/kg Inhalation LC50 (rat) No Data

### OTHER ACUTE EFFECTS

No Data

## CHRONIC/SUBCHRONIC DATA

No Data

#### SECTION 4 - FIRST AID

#### EYE CONTACT

Immediately flush eyes with water for at least 15 minutes. Call a physician.

#### SKIN CONTACT

Wash affected area with soap and water. Remove contaminated clothing and shoes. Wash before reuse. Call a physician.

#### INHALATION

Move patient to fresh air. If breathing has stopped or is labored give assisted respiration (e.g. mouth-to-mouth). Supplemental oxygen may be indicated. Call a physician.

#### INGESTION

If swallowed, call a physician immediately. Induce vomiting or remove stomach contents by gastric suction only as directed by medical personnel. Never give anything by mouth to an unconscious person.

#### SECTION 5 - FIRE AND EXPLOSION DATA

#### CHARACTERISTICS:

Flash Point 320+F

Upper Explosion Limit (UEL)

Lower Explosion Limit (LEL)

Autoignition Temperature

Flash Point Method(s)

Not applicable

Not applicable

Closed cup

Flash Point Method(s) Closed cup
Fire Hazard Classification Combustible Solid

(OSHA/NFPA)

#### EXTINGUISHING MEDIA

Ignition will give rise to a Class B fire.

In case of fire use, Carbon Dioxide (CO2), Dry Chemical, Alcohol Foam.

#### SPECIAL FIRE FIGHTING PROCEDURES

Use flooding amounts of water in early stages of fire. If water pollution occurs, notify appropriate authorities. Wear NIOSH approved self-contained breathing apparatus with independent air supply. Contain runoff water in dikes. Prevent stream contamination. Keep containers cool with water spray. Avoid skin contact.

#### UNUSUAL FIRE AND EXPLOSION HAZARDS

May generate toxic or irritating combustion products. May generate carbon monoxide gas. May generate toxic nitrogen oxide gases.

#### SECTION 6 - REACTIVITY HAZARD DATA

# PRODUCTS 2

#### CHEMICAL STABILITY Stable

#### CONDITIONS TO AVOID (if unstable)

Product reacts slowly with water which results in the liberation of carbon dioxide. Reaction with water or contaminants or excessive heat may result in sufficient pressure to burst container.

#### INCOMPATABILITY (Materials to Avoid)

Water, steam, Amines, Alcohols, Mineral acids (i.e. sulfuric, phosphoric, etc.), Organic acids (i.e. acetic acid, citric acid etc.), Oxidizing Agents (i.e. perchlorates, nitrates etc.).

HAZARDOUS DECOMPOSITION PRODUCTS (from burning, heating, or reaction with other materials)

Carbon Monoxide in a fire, Carbon Dioxide in a fire, Nitrogen Oxides in a fire, Irritating and toxic fumes at elevated temperatures.

## HAZARDOUS POLYMERIZATION Will not occur

CONDITIONS TO AVOID (if may occur)
None known.

NFPA Reactivity Rating 1

#### SECTION 7 - SPILL, LEAK AND WASTE DISPOSAL INFORMATION

CONTAINMENT TECHNIQUES (Removal of ignition sources, diking etc)
Stop the leak, if possible. Ventilate the space involved. Construct a dike to prevent spreading.

#### CLEAN-UP PROCEDURES

If recovery is not feasible, admix with dry soil, sand or non-reactive absorbent and place in a container or dumpster pending disposal.

Prepare a decontamination solution of 0.2-5% liquid detergent and 3-8% concentrated ammonium hydroxide in water. Treat spill area with decontamination solution, using about 10 parts of the solution for each part of the spill and allow it to react for at least 10 minutes for trace amounts and 48 hours for large spills. Neutralize the waste. Carbon dioxide will evolve, leaving insoluble polyureas.

#### OTHER EMERGENCY ADVICE

Avoid skin contact. Wear protective clothing. Open enclosed spaces to outside atmosphere. Prevent spilled product from entering streams or drinking water supplies.

#### WASTE DISPOSAL:

As manufactured, product is not a hazardous waste under USEPA regulation (40 CFR Part 261). Comply with all Federal, State and Local Regulations.

Stir the isocyanate waste into the decontamination solution as above. Neither the liquid nor the solid is a hazardous waste. Fill waste drum with above solution and let sit unsealed for 48 hours. Rinse container three times and puncture or otherwise destroy before disposal.

#### ENVIRONMENTAL EFFECTS

No Data

#### SECTION 8 - PERSONAL PROTECTION/EXPOSURE CONTROLS

#### EYE PROTECTION:

Splash-proof eye goggles. In emergency situations, use eye goggles with a full face shield.

#### HAND PROTECTION:

Impermeable gloves. In emergency situations, wear impermeable gloves with cuffs to prevent spread of material to area above the wrists.

#### RESPIRATORY PROTECTION

Not required under normal conditions. For emergency situations use self-contained breathing apparatus with pressure demand mode.

#### PROTECTIVE CLOTHING

Impervious clothing. Long sleeved clothing. Rubber apron. Rubber boots.

#### ENGINEERING CONTROLS

In case of insufficient ventilation, wear suitable respiratory equipment.

Adequate general and local exhaust. Maintain air concentrations in work spaces in accord with standards outlined in Sections 2 and 3.

#### WORK AND HYGIENIC PRACTICES

Provide readily accessible eye wash stations. Safety shower. Wash at the end of each workshift and before eating, smoking or using the toilet. Change work clothing daily before leaving the work place. Promptly remove clothing that becomes contaminated. Wash promptly if skin becomes contaminated. Discard contaminated leather articles.

#### SECTION 9 - STORAGE AND HANDLING

#### STORAGE

Keep in cool, dry, ventilated storage and in closed containers. Keep away from oxidizers, heat or flames.

#### HANDLING

Avoid contact with skin or eyes. Avoid breathing of vapors. Handle in well ventilated work space.

To prepare for unloading, the drum with bung vent inserted should be placed in a warm room, drum warmer or meltdown oven for period of time sufficient to melt the desired amount of prepolymer. Liquid



prepolymer can then be removed from the drum by inserting a drum spigot or ball valve in the 2" bung, positioning on a drum tilter, tilting and pouring out the required amount. Maintain a nitrogen atmosphere in the head space of the drum. Do not use air pressure to remove contents.

#### OTHER PRECAUTIONS

Carefully read instructions before handling this material. Be sure that all engineering and personal protective equipment is in working order. Work areas must be well ventilated to maintain vapor concentration below a level which is irritating. Emergency showers and eye wash stations should be readily accessible.

#### SECTION 10 - PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL FORM

Semi-solid, White waxy solid at room temperature.

Straw yellow to Amber liquid at processing

temperature.

COLOR

White, Straw vellow to Amber

ODOR Slight Pungent

TYPICAL PHYSICAL DATA

pH VAPOR PRESSURE (mm Hg) VAPOR DENSITY (Air = 1) BOILING POINT

FREEZING/MELTING POINT

SOLUBILITY IN WATER

SPECIFIC GRAVITY (Water = 1)
EVAPORATION RATE (Butylacetate = 1)

VISCOSITY (CPS):

Not applicable

Not available Not available

104-124 F.(40-60 C).

Reacts slightly with water

1.17 @ 100C Not available 2800 @ 70C

500 a 85C

MOLECULAR WEIGHT

1600

#### SECTION 11 - TRANSPORTATION INFORMATION

UN No.

DOT SHIPPING NAME

(Nonbulk) Chemicals N.O.I.

(Tanktruck) RQ Hazardous Substance, solid, N.O.S.

(Toluene Diisocyanate) ORM-E; NA9188

IMO SHIPPING NAME

Chemicals N.O.I.

IATA SHIPPING NAME

Other regulated substances (Toluene

Diisocyanate), Class 9, ID8027

#### SECTION 12 - U.S. FEDERAL REGULATIONS

TOXIC SUBSTANCES CONTROL ACT (TSCA)-

All components are included in the EPA Toxic Substances Control

Act (TSCA) Chemical Substance Inventory

OSHA Hazard Communication Standard (29CFR1910.1200) hazard class(es) Carcinogen, Irritant

EPA SARA Title III Section 312 (40CFR370) hazard class Immediate Health Hazard, Delayed Health Hazard

EPA SARA Title III Section 313 (40CFR372) toxic chemicals above "de minimis" level are

584-84-9 2,4-TOLUENEDIISOCYANATE at no more than 0.2% 91-08-7 2,6 TOLUENEDIISOCYANATE at no more than 0.4%

#### SECTION 13 - STATE REGULATIONS

Proposition 65 substance(s) listed by the state of California under the "Safe Drinking Water and Toxic Enforcement Act of 1986"

584-84-9 2,4-TOLUENEDIISOCYANATE 91-08-7 2,6 TOLUENEDIISOCYANATE

New Jersey Trade Secret Registry Number(s)
None

#### SECTION 14 - INTERNATIONAL REGULATIONS

CANADA

REGULATORY

DSL

Included on Inventory

WHMIS Hazard Classification Class D Division 2A, Class D Division 2B

WHMIS Trade Secret Registry Number(s) None

WHMIS HAZARDOUS INGREDIENTS Included in Section 2

LABELING

WHMIS Symbol Stylized T, Skull and Crossbones

EUROPEAN ECONOMIC COMMUNITY (EEC)

REGULATORY

EINICS Master Inventory Included on Inventory

LABELING

EEC SYMBOL Irritant, Harmful

EEC Council Directives relating to the classification, packaging and labeling of dangerous substances and preparations Risk (R) and Safety (S) phrases

Irritating to eyes, respiratory system and skin. Harmful by inhalation. May cause sensitization by inhalation. Avoid contact with skin and eyes. In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. Wear suitable protective clothing, gloves and eye/face protection.