

MATERIAL SAFETY DATA SHEET

SECTION 1 - MATERIAL IDENTIFICATION

PRODUCT NAME VERSATHANE[®] A-9 URETHANE PREPOLYMER

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MSDS REVISION NUMBER 9

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REVISION DATE NOVEMBER 2000

EMERGENCY OVERVIEW

HMIS/NFPA HEALTH 2 FLAMMABILITY 1 REACTIVITY 1

PHYSICAL FORM waxy solid
 at processing temperature Liquid

COLOR White
 at processing temperature Straw yellow / Amber

ODOR Pungent

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

EXTINGUISHING MEDIA Ignition will give rise to a Class B fire. In case of fire use: Water streams.

C.A.S. CHEMICAL NAME ETHYLENE ADIPATE POLYMER WITH 1,3-DIISOCYANTOMETHYLBENZ

SYNONYMS None

CHEMICAL FAMILY Polyurethane Resin

FORMULA No Data

INTENDED USE Cast Elastomer
REVISION NOTES None

SECTION 2 - INGREDIENTS

Num	%	CAS Number and Chemical Name
1.	99.40	9019-92-5 ETHYLENE ADIPATE POLYMER WITH 1,3-DIISOCYANTOMETHYLBENZ
2.	0.40	91-08-7 2,6-TOLUENEDIISOCYANATE
3.	0.20	584-84-9 2,4-TOLUENEDIISOCYANATE

OSHA (ACGIH) EXPOSURE LIMITS

	TWA		STEL		CEILING	
	ppm	mg/m3	ppm	mg/m3	ppm	mg/m3
1.	OSHA N/E	N/E	N/E	N/E	N/E	N/E
	ACGIH N/E	N/E	N/E	N/E	N/E	N/E
2.	OSHA N/E	N/E	N/E	N/E	N/E	N/E
	ACGIH N/E	N/E	N/E	N/E	N/E	N/E
3.	OSHA 0.0050	0.0400	0.0200	0.1500	N/E	N/E
	ACGIH 0.0050	0.0050	0.0200	0.1400	N/E	0.0200

N/E = Not Established.

SECTION 3 - HEALTH HAZARDS

ROUTES OF EXPOSURE

Eye Contact
Skin Contact
Ingestion

EXPOSURE STANDARDS

See Section 2 for exposure standards on ingredients. Maintain air contaminant concentrations in the workplace at the lowest feasible levels.

HEALTH HAZARDS

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

TARGET ORGANS

Eye
Skin

Respiratory system

SIGNS AND SYMPTOMS OF EXPOSURE (Acute effects)

Contact with eyes causes severe irritation and pain. Contact with skin causes irritation, redness and discomfort which is transient. Inhalation of vapors may cause irritation in the respiratory tract.

SIGNS AND SYMPTOMS OF EXPOSURE (Possible Longer Term Effects)

Repeated and/or prolonged exposures may result in: adverse respiratory effects (such as cough, tightness of chest or shortness of breath), adverse eye effects (such as conjunctivitis or corneal damage), adverse skin effects (such as rash, irritation or corrosion).

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE

Asthma
Chronic respiratory disease (e.g. Bronchitis, Emphysema)
Eye disease
Skin disorders and Allergies

CARCINOGENS UNDER OSHA, ACGIH, NTP, IARC, OTHER

2,4-TOLUENEDIISOCYANATE (IARC, NTP)

SECTION 4 - FIRST AID

EYE CONTACT

Hold eyelids apart and immediately flush eyes with plenty of water for at least 15 minutes. Seek medical advice.

SKIN CONTACT

Remove product and immediately flush affected area with water for at least 15 minutes. Remove contaminated clothing and shoes. Seek medical advice.

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. Prevent aspiration of vomit. Turn victim's head to the side. Seek medical advice.

INGESTION

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

SECTION 5 - FIRE AND EXPLOSION DATA

FLASH POINT (closed cup)

>160.00 C (>320.00 F)

UPPER EXPLOSION LIMIT (UEL) No Data
LOWER EXPLOSION LIMIT (LEL) No Data

AUTOIGNITION TEMPERATURE No Data
FIRE HAZARD CLASSIFICATION (OSHA/NFPA)
 Combustible Solid

EXTINGUISHING MEDIA

Ignition will give rise to a Class B fire. Do not add water or other liquids to this product. In case of fire use: Water streams.

SPECIAL FIRE FIGHTING PROCEDURES

Firefighters should wear butyl rubber boots, gloves, and body suit and a self-contained breathing apparatus.
Retain expended liquids from fire fighting for later disposal.

UNUSUAL FIRE AND EXPLOSION HAZARDS

May generate toxic or irritating combustion products.
Sudden reaction and fire may result if product is mixed with an oxidizing agent.
May generate carbon monoxide gas.
May generate hydrogen cyanide gas.
Personnel in vicinity and downwind should be evacuated.

SECTION 6 - ACCIDENTAL RELEASE MEASURES

CONTAINMENT TECHNIQUES (Removal of ignition sources, diking etc)
Stop the leak, if possible. Shut off or remove all ignition sources.

CLEAN-UP PROCEDURES

Shovel spilled chemical product into empty, dry container for later disposal or recovery. Place in metal containers for recovery or disposal. Clean-up personnel must be equipped with self contained breathing apparatus and butyl rubber protective clothing. 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. Insulated gloves such as thermal lined rubber when handling hot material.

OTHER EMERGENCY ADVICE

Wear protective clothing, boots, gloves, and eye protection.

SECTION 7 - HANDLING AND STORAGE

STORAGE

Keep away from: oxidizers, moisture. Keep in cool, dry, ventilated storage and in closed containers. Store under inert atmosphere. Store under a nitrogen atmosphere.

HANDLING

Avoid contact with skin or eyes. Avoid breathing of vapors. Handle in well ventilated work space. Handle under inert gas atmosphere in dry equipment. Maintain a nitrogen atmosphere in the head space of the drum. Do not use air pressure to remove contents. When handling, do not eat, drink, or smoke. 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 inch bung, positioning on a drum tilter, tilting and pouring out the required amount.

OTHER PRECAUTIONS

Emergency showers and eye wash stations should be readily accessible. Adhere to work practice rules established by government regulations (e.g. OSHA).

SECTION 8 - PERSONAL PROTECTION / EXPOSURE CONTROLS

EYE PROTECTION

Splash-proof eye goggles. In emergency situations, use eye goggles with a full face shield. Full face shield with goggles underneath when molten material is being handled.

HAND PROTECTION

Impermeable gloves. Insulated gloves such as thermal lined rubber when handling hot material.

RESPIRATORY PROTECTION

Not required under normal conditions in a well-ventilated workplace. Under the following conditions a respirator may be required: when product vapor concentration exceeds the limits listed in section 2, during repair and cleaning of equipment, during transfer or discharge of the product, sampling, spray applications. Types of respirators that may be used include the following: Chemical Cartridge Respirator with face piece to protect against the organic vapor, Supplied air respirator with full face piece, Self-contained breathing apparatus in pressure demand mode. In emergency conditions use a self-contained breathing apparatus in pressure demand mode.

PROTECTIVE CLOTHING

Long sleeved clothing.

ENGINEERING CONTROLS

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 and safety showers. Wash at the end of each workshift and before eating, smoking or using the toilet.

SECTION 9 - TYPICAL PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL FORM	waxy solid
COLOR	White
ODOR	Pungent
pH	No Data
VAPOR PRESSURE (mm Hg at 21C (70F))	<0.50376
VAPOR DENSITY (Air = 1)	No Data
BOILING POINT	>250.00 C (>482.00 F)
MELTING POINT	>40.00 C (>104.00F)
SOLUBILITY IN WATER	Reacts slightly with water
SPECIFIC GRAVITY (Water = 1)	1.17
MOLECULAR WEIGHT	No Data

SECTION 10 - STABILITY AND REACTIVITY

CHEMICAL STABILITY

Stable.

CONDITIONS TO AVOID (if unstable)

Not applicable

INCOMPATIBILITY (Materials to Avoid)

Oxidizing Agents (i.e. perchlorates, nitrates etc.). Sodium or Calcium Hypochlorite. Alcohols. Reaction with peroxides may result in violent decomposition of peroxide possibly creating an explosion. 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.

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

Carbon Monoxide in a fire. Carbon Dioxide in a fire. Irritating and toxic fumes at elevated temperatures. Phosgene. nitriles. cyanic acid. isocyanates. cyanogens. amides. carbamates. toxic cyanates.

HAZARDOUS POLYMERIZATION

Will not occur

CONDITIONS TO AVOID (if polymerization may occur)

Not applicable

SECTION 11 - TOXICOLOGICAL PROPERTIES

ACUTE ORAL TOXICITY (LD50, RAT)

>5000.00 mg/kg (No deaths) (Estimate)

ACUTE DERMAL TOXICITY (LD50, RABBIT)

>5000.00 mg/kg (No deaths)

ACUTE INHALATION TOXICITY (LC50, RAT)

No Data

OTHER DATA

Data available on components only.

OTHER ACUTE EFFECTS

No Data

IRRITATION EFFECTS DATA

Severe irritant to the eyes of a rabbit. Moderate irritant to the skin of a rabbit.

CHRONIC/SUBCHRONIC DATA

In recent National Toxicology Program toxicity studies, toluene diisocyanate (TDI), when given orally by stomach tube as a concentrated mixture in corn oil, produced tumors in male and female rats and female mice but not male mice. A lifetime inhalation study of TDI in male and female rats and mice produced no tumors. Based on the oral study cited above, NTP has included TDI in its 1986 carcinogen list. NTP has not considered the inhalation study as evidence that it is not a carcinogen. The International Agency for Research on Cancer (IARC) has concluded that "there is inadequate evidence for the carcinogenicity of toluene diisocyanate to humans, but sufficient evidence for its carcinogenicity to experimental animals."

SECTION 12 - ECOLOGICAL INFORMATION

No Data

SECTION 13 - DISPOSAL CONSIDERATIONS

WASTE DISPOSAL

Comply with all Federal, State and Local Regulations.

SECTION 14 - TRANSPORT INFORMATION

DOT NON-BULK SHIPPING NAME RESIN COMPOUND - Not DOT Regulated

DOT BULK SHIPPING NAME Refer to Bill of Lading.

IMO SHIPPING DATA Refer to Bill of Lading.

ICAO/IATA SHIPPING DATA RESIN COMPOUND - Not IATA Regulated

SECTION 15 - REGULATORY INFORMATION

US 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)
Irritant.

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

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

2,4-TOLUENEDIISOCYANATE

2,6-TOLUENEDIISOCYANATE

STATE REGULATIONS

PROPOSITION 65 SUBSTANCES (component(s) known to the State of California to cause cancer and/or reproductive toxicity and subject to warning and discharge requirements under the "Safe Drinking Water and Toxic Enforcement Act of 1986")

2,4-TOLUENEDIISOCYANATE

2,6-TOLUENEDIISOCYANATE

NEW JERSEY TRADE SECRET REGISTRY NUMBER(S)

None

SECTION 16 - INTERNATIONAL REGULATIONS

CANADA

DSL

Included on Inventory.

WHMIS HAZARD CLASSIFICATION

Class D Division 2B,

2,4-TOLUENEDIISOCYANATE

2,6-TOLUENEDIISOCYANATE

WHMIS SYMBOLS

Stylized T,

EUROPEAN ECONOMIC COMMUNITY (EEC)

EINECS/ELINCS MASTER INVENTORY

Included on EINECS inventory or polymer substance, monomers included on EINECS inventory or no longer polymer.

EEC SYMBOL

HARMFUL (Xn)

EEC RISK (R) PHRASES

May cause sensitization by inhalation (R42). Harmful by inhalation (R20).

EEC SAFETY PHRASES

Do not breathe vapors (S23V). Wear suitable protective clothing and gloves (S36/37). In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible) (S45).

EEC SPECIAL PHRASES

Contains Isocyanates. See information supplied by the manufacturer.

AUSTRALIA

AICS

Included on Inventory.

JAPAN MITI

Included on Inventory.

PHILIPPINES PICCS

Not on Inventory.

KOREA ECL

Included on Inventory.

CHINA SEPA

Included on Inventory.

PRODUCT CODE

CPA9

END OF DOCUMENT