

**MATERIAL SAFETY DATA SHEET****1) PRODUCT AND COMPANY IDENTIFICATION**

THE DOW CHEMICAL COMPANY
Midland Michigan 48674
USA

24-Hour Emergency Phone Number: 989-636-4400

Customer Service: 800-366-4740

PRODUCT NAME : VORAMER* MB 3022 Polyol

MATERIAL TYPE : Polyol blend

ISSUE DATE : 02/20/2008

REVISION DATE : 5/15/09

2) COMPOSITION/INFORMATION ON INGREDIENTS

Ingredient	CAS Number	%
Polyols	Mixture	60-100%
Tetrahydroxypropylenediamine	102-60-3	5-10%
Triethanolamine	102-71-6	1-5, 5-10%
Diethanolamine	111-42-2	1-5%
Ethylenediamine	107-15-3	1-5%

3) HAZARDS IDENTIFICATION**EMERGENCY OVERVIEW**

Causes eye damage. Harmful if swallowed. May cause allergic skin reaction and irritation. Mist or vapors produced at high temperatures may cause respiratory irritation, headaches, drowsiness and nausea.

EYE

May cause severe eye irritation. May cause moderate corneal injury. May cause permanent impairment of vision, even blindness. Elevated temperatures may generate vapor levels sufficient to cause eye irritation.

SKIN

May cause allergic skin reaction and irritation.

INGESTION

May cause moderate harm if swallowed.

INHALATION

At room temperatures, vapors are minimal due to physical properties; a single exposure is not likely to be hazardous. If material is heated or mist is produced, concentrations may be attained that are sufficient to cause respiratory irritation.

Inhalation of ethyleneamines may cause sensitization of the respiratory tract and the development of an asthmatic reaction on further exposure. Prolonged or repeated inhalation exposures to ethylenediamine may lead to kidney, liver and respiratory system injury.

4) FIRST-AID MEASURES**EYE**

Irrigate eyes immediately with water for at least 30 minutes. Remove contacts after the first five minutes and then continue washing. Obtain medical treatment immediately.

SKIN

Remove material from skin immediately by washing with soap and plenty of water. Remove contaminated clothing and shoes while washing. Seek medical attention if irritation

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persists.

INGESTION

If swallowed, seek medical attention. Do not induce vomiting unless directed to do so by medical personnel.

INHALATION

Remove to fresh air if effects occur. Consult a Physician.

NOTE TO PHYSICIAN

No specific antidote. Supportive care. Treatment based on judgment of the physician in response to reactions of the patient.

5) FIRE-FIGHTING MEASURES**FLAMMABLE PROPERTIES**

Flash point: >212 deg. F (100 deg. C)

HAZARDOUS COMBUSTION PRODUCTS

Toxic levels of carbon monoxide, carbon dioxide, nitrogen oxide, hydrogen cyanide, ammonia, acids, aldehydes and ketones may be formed on burning.

OTHER FLAMMABILITY INFORMATION

SPECIFIC FIRE OR EXPLOSION HAZARDS: Will support combustion.

EXTINGUISHING MEDIA

Use carbon dioxide, dry chemical, foam, water fog or fine spray. Alcohol resistant foams (ATC type) are preferred if available. General purpose synthetic foams (including AFFF) or protein foams may function, but much less effective. Do not use direct water stream which can spread fire.

FIRE FIGHTING INSTRUCTIONS

Keep people away. Isolate fire area and deny unnecessary entry. Stay upwind. Keep out of low areas where gases (fumes) can accumulate. Water is not recommended but may be applied in very large quantities as a fine spray when other extinguishing agents are not available. Contain fire water run-off if possible. Do not use direct water stream. May spread fire. Fight fire from protected location or safe distance. Consider use of unmanned hose holder or monitor nozzles. Use water spray to cool fire exposed containers and fire affected zone until fire is out. Immediately withdraw all personnel from area in case of rising sound from venting safety devices or discoloration of the containers. Move containers from fire area if this is possible without hazard.

PROTECTIVE EQUIPMENT - FIRE FIGHTERS

Wear positive-pressure self-contained breathing apparatus (SCBA) and protective fire fighting clothing (includes fire fighting helmet, coat, pants, boots, and gloves). If protective equipment is not available or not used, fight fire from a protected location or safe distance.

6) ACCIDENTAL RELEASE MEASURES**PROTECT PEOPLE**

Isolate area. May be a slipping hazard. Wear adequate personal protective equipment

PROTECT THE ENVIRONMENT

Contain material to prevent contamination of ground and surface water. Spills should be collected to prevent contamination of waterways. Recover if possible, or dispose of according to applicable regulations.

CLEAN-UP

Spills should be contained by, and covered with large quantities of sand, earth or any other readily available absorbent material, which is then brushed in vigorously to assist absorption. The mixture can then be collected into drums and removed for

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disposal. Wash residues from area with soap and water and rinse down. Contaminated water should be retained, not being allowed to flow into ground or surface water.

7) HANDLING AND STORAGE**HANDLING**

Since polyols are handled together with diisocyanates, proper distinction between these two kinds of products is essential in order to avoid undesired mixing resulting in uncontrolled polymerization.

STORAGE

Keep container tightly closed; product is hygroscopic.

- Storage Temperature: 60-90F (15.6-32.2C)

8) EXPOSURE CONTROL/PERSONAL PROTECTION**ENGINEERING CONTROLS**

Use only with adequate ventilation. Local exhaust ventilation may be necessary for some operations.

EYE/FACE PROTECTION

Use chemical goggles. If vapor exposure causes eye discomfort, use a full-face respirator. Eye wash fountain should be located in immediate work area.

SKIN PROTECTION

Use gloves impervious to this material. Wear clean, long-sleeved, body covering clothing. After work and before eating, drinking or smoking wash and clean yourself carefully with soap and water. Contaminated clothing should be washed and/or dry cleaned before re-use.

RESPIRATORY PROTECTION

Airborn concentrations should be kept to lowest levels possible. If vapor, mist or dust is generated, use appropriate NIOS or MSHA approved air purifying or air supplied respirator as needed.

EXPOSURE GUIDELINES(S)

ACGIH TLV for triethanolamine is 5.000 mg/m³ - TWA.

ACGIH 8 hour exposure limit (TLV-TWA) for diethanolamine is 2 mg/m³.

Ethylenediamine ACGIH 8 hour TWA is 10 ppm (25 mg/m³) with significant contribution to exposure via dermal (skin, mucous membranes and eye) contact with liquid or vapors.

9) PHYSICAL AND CHEMICAL PROPERTIES**APPEARANCE/PHYSICAL STATE**

liquid

ODOR

Amine

BOILING POINT

> 115 deg C

SPECIFIC GRAVITY

1.02

10) STABILITY AND REACTIVITY**CHEMICAL STABILITY**

Stable under recommended storage conditions.

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CONDITIONS TO AVOID

Product can oxidize or decompose at elevated temperatures.

INCOMPATIBILITY WITH OTHER MATERIALS

Avoid contact with oxidizing materials and strong acids. Avoid unintended contact with isocyanates. The reaction of polyols and isocyanates generates heat.

HAZARDOUS DECOMPOSITION PRODUCTS

None under normal conditions of storage and use.

HAZARDOUS POLYMERIZATION

Will not occur by itself.

11) TOXICOLOGICAL INFORMATION**TOXICOLOGICAL INFORMATION**

Assesments may be based on studies of the individual components or on families of chemicals.

ACUTE

Ethylenediamine vapor inhalation studies in rats, 8 hour, at 4000 ppm had a mortality rate of 6/6. At 2000 ppm, the mortality rate was 0/6.

Ethylenediamine eye irritation studies in rabbits at concentrations of 0.005 ml and 0.5 ml with 5% water dilution both resulted in moderate to severe corneal injury.

SKIN

Polyol: LD50 in rabbits is >2000 mg/kg.

Dermal LD50 for triethanolamine is >20.00 g/lkg (rabbit).

Tetrahydroxypropylethylenediamine dermal LD50 in rabbits > 2 g/kg.

Ethylenediamine skin LD50 in rabbits: 0.630 ml/kg; 24 h occluded. Mild to moderate reaction in guinea pig sensitization studies.

INGESTION

Polyol: LD50 in rats is >2000 mg/kg.

Oral LD50 of Triethanolamine is 9.00 g/kg (rat).

Tetrahydroxypropylethylenediamine oral LD50 in rats = 3.28 g/kg.

Ethylenediamine oral LD50 in rats: 1.12 ml/kg

12) ECOLOGICAL INFORMATION**MOVEMENT & PARTITIONING**

No bioconcentration of the polyol is expected.

DEGRADATION & PERSISTENCE

Based on the stringent test guidelines, the polyol cannot be considered as readily biodegradable; however, these results do not necessarily mean that the material is not biodegradable under environmental conditions.

ECOTOXICITY

The polyol is practically non-toxic to aquatic organisms on an acute basis (LC50 greater than 100 mg/L in most sensitive species).

13) DISPOSAL CONSIDERATIONS**DISPOSAL**

DO NOT DUMP INTO ANY SEWERS, ON THE GROUND, OR INTO ANY BODY OF WATER. All disposal methods must be in compliance with all Federal, State/Provincial and local laws and regulations.

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Regulations may vary in different locations. Waste characterizations and compliance with applicable laws are the responsibility solely of the waste generator. THE DOW CHEMICAL COMPANY HAS NO CONTROL OVER THE MANAGEMENT PRACTICES OR MANUFACTURING PROCESSES OF PARTIES HANDLING OR USING THIS MATERIAL. THE INFORMATION PRESENTED HERE PERTAINS ONLY TO THE PRODUCT AS SHIPPED IN ITS INTENDED CONDITION AS DESCRIBED IN MSDS SECTION 2 (Composition/Information On Ingredients).

FOR UNUSED & UNCONTAMINATED PRODUCT, the preferred options include sending to a licensed, permitted: recycler, reclaimer, incinerator or other thermal destruction device.

As a service to its customers, Dow can provide names of information resources to help identify waste management companies and other facilities which recycle, reprocess or manage chemicals or plastics, and that manage used drums. Telephone Dow's Customer Information Center at 800-258-2436 or 989-832-1556 for further details.

14) TRANSPORT INFORMATION

US D.O.T.

For D.O.T. regulatory information, if required, consult transportation regulations, product shipping papers, or your Dow representative.

CANADIAN TDG

For TDG regulatory information, if required, consult transportation regulations, product shipping papers, or your Dow representative.

15) REGULATORY INFORMATION

NOTICE

The information herein is presented in good faith and believed to be accurate as of the effective date shown above. However, no warranty, expressed or implied is given. Regulatory requirements are subject to change and may differ from one location to another; it is the buyer's responsibility to ensure that its activities comply with federal, state or provincial, and local laws. The following specific information is made for the purpose of complying with numerous federal, state or provincial, and local laws and regulations. See other sections for health and safety information.

REGULATORY INFORMATION

U.S. REGULATIONS

SARA 313 INFORMATION: This product contains the following subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372:

CHEMICAL NAME	CAS NUMBER

Diethanolamine	111-42-2

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:

An immediate health hazard

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A delayed health hazard

A fire hazard

TOXIC SUBSTANCES CONTROL ACT (TSCA):

All ingredients are on the TSCA inventory.

OSHA HAZARD COMMUNICATION STANDARD:

This product a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

COMPREHENSIVE ENVIRONMENTAL RESPONSE COMPENSATION AND LIABILITY ACT (CERCLA, or SUPERFUND):

This product contains the following substance(s) listed as "Hazardous Substances" under CERCLA which may require reporting of releases:

Category:

Chemical Name	CAS#	RQ
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Diethanolamine	111-42-2	100 lbs

CALIFORNIA PROPOSITION 65: This product is not known to contain any substances known to the state of California to cause birth defects and/or reproductive harm.

PENNSYLVANIA STATE RIGHT TO KNOW Hazardous Substance list:

Ethanol, 2,2',2''-Nitrolotris-	102-71-6
Ethanol, 2,2'iminobis	111-42-2
Ethylenediamine	107-15-3

CANADIAN REGULATIONS

WHMIS INFORMATION: The Canadian Workplace Hazardous Materials Information System (WHMIS) Classification for this product is:

D2B - eye or skin irritant

Refer elsewhere in the MSDS for specific warnings and safe handling information. Refer to the employer's workplace education program.

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CPR STATEMENT: This product has been classified in accordance with the hazard criteria of the Canadian Controlled Products Regulations (CPR) and the MSDS contains all the information required by the CPR.

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HAZARDOUS PRODUCTS ACT INFORMATION: This product contains the following ingredients which are Controlled Products and/or on the Ingredient Disclosure List (Canadian HPA section 13 and 14):

COMPONENTS:	CAS #
Triethanolamine	102-71-6

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Diethanolamine	111-42-2
Ethylenediamine	107-15-3

CANADIAN ENVIRONMENTAL PROTECTION ACT (CEPA):

All substances in this product are listed on the Canadian Domestic Substances List (DSL).

16) OTHER INFORMATION**OTHER INFORMATION**

No other information.

(TM), *, or (R) Indicates a trademark of The Dow Chemical Company.