

**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 : VORACOR\* CY 3019 S/GST Polyol

GMID : 00243731

COLLECTIVE ID : 34

MATERIAL TYPE : Polyol blend

ISSUE DATE : 06/16/2005

REVISION DATE : 1089753549

**2) COMPOSITION/INFORMATION ON INGREDIENTS**

Ingredient	CAS Number	%
Polyols	Mixture	30-60%
Amine polyol	340020-79-3	15-40, 30-60%
1,1,1,3,3-Pentafluoropropane	460-73-1	3-7, 5-10%
Tertiary Amines	Mixture	1-5%
Diamine	9046-10-0	1-5%
Diethylene Glycol	111-46-6	1-5%

**3) HAZARDS IDENTIFICATION****EMERGENCY OVERVIEW**

CAUTION! Contents under pressure.

Vapors reduce oxygen available for breathing and are heavier than air.

May cause severe eye burns and skin irritation.

**EYE**

Causes eye irritation and pain, experienced as chemical burns, extreme redness and swelling. Severe eye damage may cause blindness.

Tertiary amines can cause lacrimation, conjunctivitis and corneal edema when absorbed into the tissue of the eye from the atmosphere. Corneal edema may give rise to a perception of "blue haze" or "fog" around lights. The effect is transient and has no known residual effects.

**SKIN**

Causes severe irritation with pain, redness and swelling. May cause chemical burn with blister formation and possible tissue destruction. Repeated skin contact may cause persistent irritation or dermatitis.

**INGESTION**

Causes burning of mouth, throat and stomach with abdominal and chest pain, nausea, vomiting, diarrhea, thirst, weakness, and collapse. Aspiration may occur during swallowing or vomiting, resulting in lung damage.

**INHALATION**

Vapors or mists, as those generated from heating the material or as from exposure in poorly ventilated areas, are irritating and cause nasal discharge, coughing and discomfort of nose and throat. Prolonged or repeated exposure may cause lung damage. Overexposure may aggravate existing respiratory conditions, such as asthma, bronchitis,

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and inflammatory or fibrotic respiratory disease.

### SYSTEMIC EFFECTS

Tertiary amines can be reproductive toxins.

Excessive exposure to fluorocarbons may effect the central nervous system and produce anesthetic and narcotic-like symptoms.

## 4) FIRST-AID MEASURES

### EYE

Irrigate with flowing water immediately and continuously for 15 minutes. Remove contacts after first five minutes and continue washing. Consult medical personnel.

### 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 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

Due to irritant properties, swallowing poly(oxypropylene) diamine may result in burns/ulcerations of the mouth, stomach and lower GI tract with subsequent stricture. Aspiration of vomitus may cause lung injury. Suggest endotracheal/esophageal control if lavage is done. If burn is present, treat as any thermal burn, after decontamination. No specific antidote. Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient.

## 5) FIRE-FIGHTING MEASURES

### FLAMMABLE PROPERTIES

Flash point: > 175 deg C.

### HAZARDOUS COMBUSTION PRODUCTS

Incomplete combustion may lead to the build-up of toxic pyrolysis products. Complete combustion will result in: Carbon oxides, Nitrogen oxides, Water, Ammonia and trace amounts of Hydrogen Cyanide.

Additional combustion products may include hydrogen fluoride, hydrogen chloride and chlorine.

### OTHER FLAMMABILITY INFORMATION

Violent steam generation or eruption may occur upon application of direct water stream to hot liquids. Spills of these organic liquids on hot fibrous insulations may lead to lowering of the autoignition temperatures possibly resulting in spontaneous combustion. Burning liquids may be extinguished by dilution with water. Do not use direct water stream, it may spread fire.

### 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

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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 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

CAUTION: Contents under pressure. Avoid open flames. Do not puncture or incinerate.

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

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carefully with soap and water. Contaminated clothing should be washed and/or dry cleaned before re-use.

### RESPIRATORY PROTECTION

For most conditions, no respiratory protection is needed; however, if handling at elevated temperature without sufficient ventilation or in presence of aerosols, use an approved air-purifying respirator. Atmospheric levels should be maintained below the exposure guideline.

### EXPOSURE GUIDELINES(S)

1,1,1,3,3 pentafluoropropane: 300 ppm TWA set by manufacturer.

Diethylene glycol: 10 mg/m<sup>3</sup> TWA8 AIHA WEEL and Interim IHG (aerosol)

50 ppm TWA8 Interim IHG (aerosol and vapor)

## 9) PHYSICAL AND CHEMICAL PROPERTIES

### APPEARANCE/PHYSICAL STATE

Brown liquid.

Viscosity: 800 mPa @ 25 deg C.

### SPECIFIC GRAVITY

1.14 @ 25/25 deg C.

## 10) STABILITY AND REACTIVITY

### CHEMICAL STABILITY

Stable under recommended storage conditions.

### 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

Inhalation LD50 for diethylene glycol is >4.4 mg/l for 4 hours (rat).

1,1,1,3,3-pentafluoropropane: acute inhalation LC50 in rats >200,000 ppm (4 hours). No lethality at 200,000 ppm. Evidence of transient anesthetic effect. Acute inhalation in mice >100,000 ppm (4 hours). No lethality at 100,000 ppm; evidence of transient underactivity during exposure.

### SKIN

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

Polyoxypropylenediamine LD50: 2.09 g/kg (rabbit) practically non-toxic,

Draize estimation of skin irritation for polyoxypropylene diamine is believed to be >6.5-8.0/8.0 (rabbit) corrosive.

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LD50 for diethylene glycol is 12510 mg/kg (rabbit).

1,1,1,3,3-pentafluoropropane Dermal LD50 in rabbits >2000 mg/kg.

### INGESTION

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

Polyoxypropylenediamine Oral LD50: 480 mg/kg (rat) toxic.

LD50 for diethylene glycol is 25244 mg/kg (rat).

Human lethal dose of diethylene glycol is approx. 2 ounces (65 ml) (1/4 cup).

## 12) ECOLOGICAL INFORMATION

### MOVEMENT & PARTITIONING

Log octanol/water partition coefficient (low Pow) is estimated to be low.

### 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

Not expected to be acutely toxic.

## 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.

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.

This product is not regulated when pressures are less than 40 psi. When greater than 40 psi, the classification is: Compressed Gases, N.O.S. (Pentafluoropropane), 2.2 UN1956.

### CANADIAN TDG

This product is not regulated when pressures are less than 40 psi. When greater than 40 psi, the classification is: Compressed Gases, N.O.S. (Pentafluoropropane), 2.2 UN1956.

## 15) REGULATORY INFORMATION

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### 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

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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
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NONE

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, acute health hazard

A delayed, chronic health hazard

#### TOXIC SUBSTANCES CONTROL ACT (TSCA):

All ingredients are on the TSCA inventory.

#### OSHA HAZARD COMMUNICATION STANDARD:

This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200. Tertiary amines are a reproductive toxin.

#### 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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NONE

CALIFORNIA Proposition 65: This product contains the following chemicals known to the State of California to cause birth defects or other reproductive harm:

1,4, dioxane CAS # 123-91-1 amount: <0.50 ppm in diethylene glycol

Ethylene glycol monomethyl ether CAS # 109-86-4 amount: <0.050 ppm in diethylene glycol

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PENNSYLVANIA STATE RIGHT TO KNOW Hazardous or Environmental Hazardous Substance:

Diethylene glycol CAS: 111-46-6 Amount: 1-10%

Residual Ethylene glycol monomethyl ether CAS # 109-86-4 amount: <0.050 ppm in diethylene glycol

### CANADIAN REGULATIONS

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

D2B - eye or skin irritant

D2A - reproductive toxin

E - corrosive

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 #

NONE

### CANADIAN ENVIRONMENTAL PROTECTION ACT (CEPA):

Not all components in this product are listed on the Canadian Domestic Substance List (DSL).

## 16) OTHER INFORMATION

### OTHER INFORMATION

EPA intends to promulgate a SNUR (Significant New Use Rule) restricting the use of 1,1,1,3,3 pentafluoropropane. Use as a blowing agent is one of the approved uses.

The Canadian EPA has imposed Managerial Condition 12088 upon the use of 1,1,1,3,3 pentafluoropropane. These conditions must be met before the product can be ordered and used in Canada.

No other information.

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