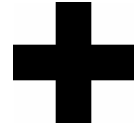




# THE DOW CHEMICAL COMPANY MATERIAL SAFETY DATA SHEET



**Product Name:** TERGITOL(TM) NP-4 SURFACTANT  
**MSDS#:** 1918

**Effective Date:** 02/10/2003  
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Dow (hereinafter, and for purposes of this MSDS only, refers to The Dow Chemical Company and to Dow Chemical Canada Inc.) encourages and expects you to read and understand the entire MSDS, as there is important information throughout the document. Dow expects you to follow the precautions identified in this document unless your use conditions would necessitate other appropriate methods or actions.

## 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

### 1.1 IDENTIFICATION

**Product Name**      TERGITOL(TM) NP-4 SURFACTANT

### 1.2 COMPANY IDENTIFICATION

The Dow Chemical Company  
Midland, MI 48674

### 1.3 EMERGENCY TELEPHONE NUMBER

**24-HOUR EMERGENCY TELEPHONE NUMBER: (989)636-4400.**  
Customer Information Number: 1-800-258-2436.

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## **2. COMPOSITION INFORMATION**

<b>Component</b>	<b>CAS #</b>	<b>Amount (%W/W )</b>
Poly(oxy-1,2-ethanediyl), alpha-(4-nonylphenyl)-omega-hydroxy-, branched	127087-87-0	> 97 %
Dinonylphenyl polyoxyethylene	9014-93-1	< 3%
Polyethylene glycol	25322-68-3	< 3%

## **3. HAZARDS IDENTIFICATION**

### **3.1 EMERGENCY OVERVIEW**

<b>Appearance</b>	Transparent colorless
<b>Physical State</b>	Liquid
<b>Odor</b>	Mild
<b>Hazards of product</b>	DANGER! CAUSES EYE BURNS. CAUSES SKIN IRRITATION.  ASPIRATION MAY CAUSE LUNG DAMAGE.

### **3.2 POTENTIAL HEALTH EFFECTS**

#### **Effects of Single Acute Overexposure**

**Inhalation** Mist may cause irritation of the respiratory tract, experienced as nasal discomfort and discharge, with chest pain and coughing.

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**Eye Contact** Causes severe irritation, experienced as discomfort or pain, excess blinking and tear production, marked excess redness and swelling of the conjunctiva, and chemical burns of the eye.

**Skin Contact** Brief contact is not irritating. Prolonged or repeated contact may cause discomfort and local redness.

**Skin Absorption** Prolonged or widespread contact may result in the absorption of potentially harmful amounts of material.

**Swallowing** May cause abdominal discomfort, nausea, vomiting and diarrhea. Aspiration into the lungs may occur during ingestion or vomiting, resulting in lung injury.

## Chronic, Prolonged or Repeated Overexposure

**Effects of Repeated Overexposure** Repeated skin contact may cause a dermatitis.

**Other Effects of Overexposure** None currently known.

## Medical Conditions Aggravated by Exposure

A knowledge of the available toxicology information and of the physical and chemical properties of the material suggests that overexposure is unlikely to aggravate existing medical conditions.

See Section 11 for toxicological information and additional information about potential health effects.

## **3.3 POTENTIAL ENVIRONMENTAL EFFECTS**

Toxic to aquatic organisms.

## **4. FIRST AID PROCEDURES**

### **4.1 INHALATION**

Remove to fresh air. Obtain medical attention if symptoms persist.

### **4.2 EYE CONTACT**

Immediately flush eyes with water and continue washing for at least 15 minutes. DO NOT remove contact lenses, if worn. Obtain medical attention without delay, preferably from an ophthalmologist.

### **4.3 SKIN CONTACT**

Remove contaminated clothing. Wash skin with soap and water. Obtain medical attention if irritation persists. Wash clothing before reuse.

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## **4.4 SWALLOWING**

If patient is fully conscious, give two glasses of water. DO NOT INDUCE VOMITING. Obtain medical attention.

## **4.5 NOTES TO PHYSICIAN**

There is no specific antidote. Treatment of overexposure should be directed at the control of symptoms and the clinical condition of the patient. Any material aspirated during vomiting may cause lung injury. Therefore, emesis should not be induced mechanically or pharmacologically. If it is considered necessary to evacuate the stomach contents, this should be done by means least likely to cause aspiration (e.g. gastric lavage after endotracheal intubation).

## **5. FIRE FIGHTING MEASURES**

### **5.1 FLAMMABLE PROPERTIES - REFER TO SECTION 9, PHYSICAL AND CHEMICAL PROPERTIES**

### **5.2 EXTINGUISHING MEDIA**

Extinguish fires with water spray or apply alcohol-type or all-purpose-type foam by manufacturer's recommended techniques for large fires. Use carbon dioxide or dry chemical media for small fires.

### **5.3 FIRE FIGHTING PROCEDURES**

Do not direct a solid stream of water or foam into hot, burning pools; this may cause frothing and increase fire intensity.

### **5.4 SPECIAL PROTECTIVE EQUIPMENT FOR FIREFIGHTERS**

Use self-contained breathing apparatus and protective clothing.

### **5.5 UNUSUAL FIRE AND EXPLOSION HAZARDS**

Avoid accumulation of water. Product may be carried across water surface spreading fire or contacting an ignition source.

### **5.6 HAZARDOUS COMBUSTION PRODUCTS**

Burning can produce the following products: Carbon monoxide and/or carbon dioxide. Carbon monoxide is highly toxic if inhaled; carbon dioxide in sufficient concentrations can act as an asphyxiant.

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## **6. ACCIDENTAL RELEASE MEASURES**

### **Steps to be Taken if Material is Released or Spilled:**

Contain spills immediately with inert materials (e.g., sand, earth). Transfer liquids and solid diking material to suitable containers for recovery or disposal. To avoid gelling and foaming problems, do not use water to flush away spills.

**Personal Precautions:** Wear suitable protective equipment. Floor may be slippery. Use care to avoid falling. See Section 8.2 - Personal Protection.

**Environmental Precautions:** Avoid discharge to natural waters.

## **7. HANDLING AND STORAGE**

### **7.1 HANDLING**

#### **General Handling**

Do not get in eyes.  
Avoid contact with skin and clothing.  
Do not swallow.  
Keep container closed.  
Use with adequate ventilation.  
Wash thoroughly after handling.

FOR INDUSTRY USE ONLY.

#### **Ventilation**

Provide general and/or local exhaust ventilation to control airborne levels below the exposure guidelines.

#### **Other Precautions**

Surfactants can cause foaming problems in biological wastewater treatment plants and other high shear operations.

### **7.2 STORAGE**

Store in accordance with good industrial practices. Storage information may be obtained from product-specific Storage and Handling Guides, or by calling Dow's Customer Information Group at 1-800-258-2436 (U.S.) or 1-800-331-6451 (Canada).

## **8. EXPOSURE CONTROLS AND PERSONAL PROTECTION**

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## 8.1 EXPOSURE LIMITS

<b>Component</b>	<b>Exposure Limits</b>	<b>Skin Form</b>
Polyethylene glycol	10 mg/m3 TWA8 AIHA WEEL	Aerosol

*In the Exposure Limits Chart above, if there is no specific qualifier (i.e., Aerosol) listed in the Form Column for a particular limit, the listed limit includes all airborne forms of the substance that can be inhaled.*

*A "Yes" in the Skin Column indicates a potential significant contribution to overall exposure by the cutaneous (skin) route, including mucous membranes and the eyes, either by contact with vapors or by direct skin contact with the substance. A "Blank" in the Skin Column indicates that exposure by the cutaneous (skin) route is not a potential significant contributor to overall exposure.*

## 8.2 PERSONAL PROTECTION

<b>Respiratory Protection:</b>	Atmospheric levels should be maintained below the exposure guideline. When airborne exposure guidelines and/or comfort levels may be exceeded, use an approved air-purifying respirator. For emergency response or for situations where the atmospheric level is unknown, use an approved positive-pressure self-contained breathing apparatus or positive-pressure airline with auxiliary self-contained air supply.
<b>Ventilation:</b>	Provide general and/or local exhaust ventilation to control airborne levels below the exposure guidelines.
<b>Eye Protection:</b>	Monogoggles
<b>Protective Gloves:</b>	Polyvinyl chloride coated
<b>Other Protective Equipment:</b>	Eye Bath, Safety Shower

||

## 9. PHYSICAL AND CHEMICAL PROPERTIES

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**Physical State:** Liquid

**Appearance:** Transparent colorless

**Odor:** Mild

**Flash Point - Closed Cup:** 218 °C 425 °F *Pensky-Martens Closed Cup ASTM D 93*

**Flash Point - Open Cup:** 263 °C 505 °F *Cleveland Open Cup ASTM D 92*

**Flammable Limits In Air:**

Lower *Not determined.*  
Upper *Not determined.*

**Autoignition Temperature:** *Not currently available.*

**Vapor Pressure:** < 0.01 mmHg 20 °C

**Boiling Point (760 mmHg):** > 200 °C > 392 °F

**Vapor Density (air = 1):** > 10

**Specific Gravity (H<sub>2</sub>O = 1):** 1.029 20 °C / 20 °C

**Freezing Point:** *Pour point* -33 °C -27 °F

**Melting Point:** Not applicable.

**Solubility in Water (by weight):** < 0.5 % With slight haze

**pH:** *Not currently available.*

**Molecular Weight:** 396 g/mol (Average)

**Evaporation Rate (Butyl Acetate = 1):** < 0.01

**Percent Volatiles:** 0.19 Wt%

## 10. STABILITY AND REACTIVITY

10.1 STABILITY/INSTABILITY Stable

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**Conditions to Avoid:** Prolonged excessive heat may cause product decomposition.

**Incompatible Materials:** Normally unreactive; however, avoid strong bases at high temperatures, strong acids, strong oxidizing agents and materials reactive with hydroxyl compounds.

**10.2 HAZARDOUS POLYMERIZATION** Will not occur.

## **11. TOXICOLOGICAL INFORMATION**

### **ACUTE TOXICITY**

#### **Peroral**

Rat; male; LD50 = 4.29 (3.07 - 5.98) ml/kg; slope not available

**Major Signs:** lethargy, slow breathing, tremors, narcosis, prostration

#### **Percutaneous**

Rabbit; male; LD50 = 2.52 (0.96 - 6.59) ml/kg; slope not available; 24 hr occluded contact.

**Irritation:** erythema, necrosis

**Gross Pathology:** hemorrhages, congestion of lungs

**Gross Pathology - Decedents:** mottling of liver

#### **Inhalation**

Aerosol Studies Rat; male; 8 hour; LC50 = 0.0213 ml/l; 1% dispersion in water

**Mortality:** 0/6

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## IRRITATION

**Skin:** Rabbit; unoccluded contact; 0.01

**Results:** minimal capillary dilatation at 24 hr

**Eye:** Rabbit; 0.005 ml; undiluted

**Results:** severe corneal injury (chemical burns) within 24 hr, healing by 7 days

**Eye:** Rabbit; 0.5 ml; 15% in water

**Results:** moderate corneal injury (chemical burns)

**Eye:** Rabbit; 0.5 ml; 40% in water

**Results:** severe corneal injury (chemical burns) within 24 hr, healing by 7 days

## SIGNIFICANT DATA WITH POSSIBLE RELEVANCE TO HUMANS

In two-year feeding studies, the 4-mole ethoxylate of nonylphenol (NPE4) at doses of 200 mg/kg/day or 40 mg/kg/day in rats and dogs, respectively, produced no significant effects. The 9-mole ethoxylate (NPE9) at doses of 140 or 30 mg/kg/day in the diet of rats or dogs, respectively, produced no adverse effects. Parameters evaluated included body and organ weights and histopathology of 28 tissues. A dose of 1000 mg/kg/day of NPE9 resulted in reduced body weights and enlarged livers in rats and reduced weight, emesis, and minimal blood changes in dogs. A dose of 88 mg/kg/day NPE9 produced increased liver to body weight ratios in dogs which was attributed to decreased food consumption. Rats fed dietary concentrations of a related alkylphenol ethoxylate, the 40-mole ethoxylate of octylphenol (OPE40), up to 14000 ppm (700 mg/kg/day) for two years showed no adverse effects on growth or survival, feed consumption, hematologic values, urine measurements, organ weights or histopathologic lesions.

**Alkylphenol Ethoxylate Toxicity:** In studies with rabbits, sustained occluded skin contact of some undiluted surfactants caused inflammatory changes in the lung. This material can cause lung injury if deposited as a liquid directly into the lung. Some deaths have occurred in rats exposed to high aerosol concentrations of this material for 4 hours. However, there were no histopathological findings in the lungs of rats that died, suggesting that the deaths were not caused by chemical toxicity, but likely related to some non-specific physical cause such as suffocation. Developmental effects including extra ribs and other skeletal variations were observed in the fetuses of rats treated with maternally toxic levels of a 9-mole ethoxylate of octylphenol, or a 4-mole or 9-mole ethoxylate of nonylphenol. The significance of these findings to humans is unclear as several human studies did not show any association of congenital effects in children and maternal exposure to spermicides containing octyl or nonylphenol ethoxylates. **Alkylphenol Toxicity:** Several studies with nonylphenol have resulted in slightly increased kidney weights in male rats continuously exposed to dietary concentrations of 200 ppm or greater (approximately >10 mg/kg/body weight/day). No histological lesions of the kidney were observed in one study but histopathological lesions, primarily tubule mineralization, were observed at 2000 ppm in one study and in a dose-related manner at concentrations >=200 ppm in a third study. These results indicate that continuous exposure to high concentrations of nonylphenol may be toxic to the kidney. While nonylphenol has been shown to bind to the estrogen receptor and to have weak estrogen mimetic activity in several in vitro and in vivo screening assays, treatment of rats at dietary concentrations of nonylphenol up to 2000 ppm in

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their diet for 90 days did not result in alterations in estrous cycles, sperm measurements, or endocrine organ weights or histopathology. In addition, a three generation (F0 through F3 weaning) study conducted by the NIEHS indicated that nonylphenol did not affect reproductive parameters at dietary concentrations up to 2000 ppm in any generation. Effects in juvenile females consistent with those seen in screening assays (e.g., premature vaginal opening) were observed following high level exposure post-weaning (F1, F2, and F3) at 650 and 2000 ppm. Sperm counts were reduced at 650 and 2000 ppm in the F2 adults compared to controls from the same generation. These results and other inconsistent or potentially body weight related findings are considered of questionable significance. The No Observed Adverse Effect Level (NOAEL) for reproduction was 2000 ppm and for all effects was 200 ppm (except as noted for kidneys above). Considering the high doses (e.g., 100-350 mg/kg/day for females in the 2000 ppm group; the higher doses occurring post-weaning), the lack of permanent/prolonged effects is considered significant. Based on the results of these studies, exposure to low doses of nonylphenol, such as from workplace or environmental exposure, would not be expected to result in effects on mammalian reproduction. In a 2-generation reproduction study with octylphenol at dietary concentrations of 0.2 to 2000 ppm, treatment-related effects in adult F0, F1, and F2 animals were limited to reduced body weights and feed consumption at 2000 ppm. No effects on any reproductive parameters were observed in either generation. No effects on sperm measurements, estrous cyclicity, or reproductive organs were observed in adult animals. Pup body weights during lactation were reduced at 2000 ppm. The NOAEL for systemic and postnatal toxicity was 200 ppm (approximately 15 mg/kg/day) and for reproductive toxicity was >2000 ppm (approximately 150 mg/kg/day). Although octylphenol has weak estrogen mimetic activity in some screening assays, no estrogenic or reproductive effects occurred from dietary exposure to rats for two generations over a 10,000 fold dose range.

## 12. ECOLOGICAL INFORMATION

### 12.1 ENVIRONMENTAL FATE

#### BOD (% Oxygen consumption)

	Day 5	Day 10	Day 15	Day 20	Day 28/30
Acclimated	4 %	28 %		31 %	

#### BOD (% Oxygen consumption)

	Day 5	Day 10	Day 15	Day 20	Day 28/30
	< 1 %	1 %	2 %	4 %	

#### Modified Sturm Test (OECD 301B)(% CO2 evolved)

	Day 5	Day 10	Day 15	Day 28
				12.4 %

#### Modified Sturm Test (OECD 301B)(% CO2 evolved)

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	<b>Day 5</b>	<b>Day 10</b>	<b>Day 15</b>	<b>Day 28</b>
		15.9 %		55 %

## 12.2 ECOTOXICITY

### **Toxicity to Micro-organisms**

Bacterial/NA; 16 h; NOEC

**Result value:** 625 mg/l

### **Toxicity to Micro-organisms**

Bacterial/NA; 16 h; IC50

**Result value:** 2400 mg/l

### **Toxicity to Aquatic Invertebrates**

Daphnia; 48 h; NOEC

**Result value:** 0.75 mg/l

### **Toxicity to Aquatic Invertebrates**

Daphnia; 48 h; EC50

**Result value:** 1.6 (1.5 - 1.8) mg/l

### **Toxicity to Fish**

Fathead Minnow; 96 h; NOEC

**Result value:** 0.6 mg/l

### **Toxicity to Fish**

Fathead Minnow; 96 h; LC50

**Result value:** 1.2 (1.1 - 1.3) mg/l

## 12.3 FURTHER INFORMATION

Appropriate treatment of effluents will reduce levels of nonylphenol ethoxylate (NPE) residues to concentrations that should pose no harm to the environment, including protection for weak estrogen-mimetic activity observed for some degradation intermediates.

Chemical Oxygen Demand (COD) - measured: 2.5 mg/mg

Chemical Oxygen Demand (COD) - calculated: 2.45 mg/mg

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## **13. DISPOSAL CONSIDERATIONS**

### **13.1 DISPOSAL**

DO NOT DUMP INTO ANY SEWERS, ON THE GROUND, OR INTO ANY BODY OF WATER. All disposal practices 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. DOW 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: incinerator or other thermal destruction device. waste water treatment system. 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 Group at 1-800-258-2436 or 1-989-832-1556 (U.S.), or 1-800-331-6451 (Canada) for further details .

## **14. TRANSPORT INFORMATION**

### **14.1 U.S. D.O.T.**

#### **NON-BULK**

**Proper Shipping Name :** NOT REGULATED

#### **BULK**

**Proper Shipping Name :** ENVIRONMENTALLY HAZARDOUS SUBSTANCES LIQUID, NOS

**Technical Name :** CONTAINS ALCOHOL C13-C15 POLY(1-6) ETHOXYLATE

**Hazard Class :** 9

**ID Number :** UN3082

**Packing Group :** PG III

**Other Information :** MARINE POLLUTANT (ALCOHOL C13-C15 POLY (1-6) ETHOXYLATE)

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*This information is not intended to convey all specific regulatory or operational requirements/information relating to this product. Additional transportation system information can be obtained through an authorized sales or customer service representative. It is the responsibility of the transporting organization to follow all applicable laws, regulations and rules relating to the transportation of the material.*

## **15. REGULATORY INFORMATION**

### **15.1 FEDERAL/NATIONAL**

#### **COMPREHENSIVE ENVIRONMENTAL RESPONSE, COMPENSATION, AND LIABILITY ACT OF 1980 (CERCLA) SECTION 103**

This product contains the following substances subject to CERCLA Section 103 reporting requirements and are listed in 40 CFR Part 302.4.

<b>Component</b>	<b>CAS #</b>	<b>Amount</b>
Glycol Ethers	Not available	<= 35.8000%
Ethylene oxide	75-21-8	<= 0.0020%
1,4-Dioxane	123-91-1	<= 0.0015%
Acetaldehyde	75-07-0	<= 0.0006%
Formaldehyde	50-00-0	<= 0.0004%

#### **SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF 1986 TITLE III (EMERGENCY PLANNING AND COMMUNITY RIGHT TO KNOW ACT) SECTION 302**

This product contains the following substances subject to SARA Section 302 reporting requirements and are listed in 40 CFR Part 302.4.

None.

#### **SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF 1986 TITLE III (EMERGENCY PLANNING AND COMMUNITY RIGHT TO KNOW ACT) SECTION 313**

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

<b>Component</b>	<b>CAS #</b>	<b>Amount</b>
Glycol Ethers	Not available	<= 35.8000%

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## SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF 1986 TITLE III (EMERGENCY PLANNING AND COMMUNITY RIGHT TO KNOW ACT) SECTIONS 311 AND 312

**Delayed (Chronic) Health Hazard :** Yes  
**Fire Hazard :** No  
**Immediate (Acute) Health Hazard :** Yes  
**Reactive Hazard :** No  
**Sudden Release of Pressure Hazard :** No

## TOXIC SUBSTANCES CONTROL ACT (TSCA)

All components of this product are on the TSCA Inventory or are exempt from TSCA Inventory requirements.

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## EUROPEAN INVENTORY OF EXISTING COMMERCIAL CHEMICAL SUBSTANCES (EINECS)

All components in this product are in compliance with EINECS.

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## CEPA - DOMESTIC SUBSTANCES LIST (DSL)

All substances contained in this product are listed on the Canadian Domestic Substances List (DSL) or are not required to be listed.

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## 15.2 STATE/LOCAL

### PENNSYLVANIA (WORKER AND COMMUNITY RIGHT-TO-KNOW ACT)

The following product components are cited in the Pennsylvania Hazardous Substances List, the Pennsylvania Special Hazardous Substance List, and/or the Pennsylvania Environmental Hazardous Substance list, and are present at levels which require reporting.

<b>Component</b>	<b>CAS #</b>	<b>Amount</b>
Glycol Ethers	Not available	<= 35.8000%

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### MASSACHUSETTS (HAZARDOUS SUBSTANCES DISCLOSURE BY EMPLOYERS)

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The following components of this product appear on the Massachusetts Substance List and are present at levels which could require identification in the MSDS:

<b>Component</b>	<b>CAS #</b>	<b>Amount</b>
Ethylene oxide	75-21-8	<= 0.0020%
1,4-Dioxane	123-91-1	<= 0.0015%
Acetaldehyde	75-07-0	<= 0.0006%
Formaldehyde	50-00-0	<= 0.0004%

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## CALIFORNIA PROPOSITION 65 (SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT OF 1986)

This product contains the following chemical(s) known to the State of California to cause cancer:

<b>Component</b>	<b>CAS #</b>	<b>Amount</b>
1,4-Dioxane	123-91-1	<= 0.0015%
Acetaldehyde	75-07-0	<= 0.0006%
Formaldehyde	50-00-0	<= 0.0004%

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## CALIFORNIA PROPOSITION 65 (SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT OF 1986)

This product contains the following chemical(s) known to the State of California to cause cancer and birth defects or other reproductive harm.

<b>Component</b>	<b>CAS #</b>	<b>Amount</b>
Ethylene oxide	75-21-8	<= 0.0020%

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## CALIFORNIA SCAQMD RULE 443.1 (SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT RULE 443.1, LABELING OF MATERIALS CONTAINING ORGANIC SOLVENTS)

**VOC:** Vapor pressure <0.01 mmHg at 20°C

|| 0 g/L

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*This section provides selected regulatory information on this product including its components. This is not intended to include all regulations. It is the responsibility of the user to know and comply with all applicable rules, regulations and laws relating to the product being used.*

## **16. OTHER INFORMATION**

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## 16.1 ADDITIONAL INFORMATION

ADDITIONAL INFORMATION: Additional product safety information on this product may be obtained by calling Dow's Customer Information Group at 1-800-258-2436 (U.S.) or 1-800-331-6451 (Canada).

## 16.2 HAZARD RATING SYSTEM

**NFPA ratings for this product are: H - 2      F - 1      R - 0**

*These ratings are part of a specific hazard communication program and should be disregarded where individuals are not trained in the use of this hazard rating system. You should be familiar with the hazard communication programs applicable to your workplace.*

## 16.3 RECOMMENDED USES AND RESTRICTIONS

FOR INDUSTRY USE ONLY

## 16.4 REVISION

Version: 5.0

Revision: 02/10/2003

Most recent revision(s) are noted by the bold, double bars in left-hand margin throughout this document.

## 16.5 LEGEND

Bacterial/NA	Non Acclimated Bacteria
F	Fire
H	Health
IHG	Industrial Hygiene Guideline
N/A	Not available
NFPA	National Fire Protection Association
O	Oxidizer
R	Reactivity
TS	Trade secret
VOL/VOL	Volume/Volume
W	Water Reactive
W/W	Weight/Weight

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*NOTICE: Dow urges each customer or recipient of this MSDS to study it carefully and consult appropriate expertise, as necessary or appropriate, to become aware of and understand the data contained in this MSDS and any hazards associated with the product. The information herein is provided in good faith and believed to be accurate as of the effective date shown above. However, no warranty, express or implied, is given., Regulatory requirements are subject to change and may differ between various locations. It is the buyer's/user's responsibility to ensure that its activities comply with all federal, state, provincial or local laws. The information presented here pertains only to the product as shipped. Since conditions for use of the product are not under the control of Dow, it is the buyer's/user's duty to determine the conditions necessary for the safe use of this product., Due to the proliferation of sources for information such as manufacturer-specific MSDSs, Dow is not and cannot be responsible for MSDSs obtained from any source other than Dow. If you have obtained a Dow MSDS from a non-Dow source or if you are not sure that a Dow MSDS is current, please contact Dow for the most current version.*