

**OTHER PRECAUTIONS:**

WARNING: Hot organic chemical vapors or mists are susceptible to sudden spontaneous combustion when mixed with air. Ignition may occur at temperatures below those published in the literature as "autoignition" or "ignition" temperatures. Ignition temperatures decrease with increasing vapor volume and vapor/air contact time, and are influenced by pressure changes.

Ignition may occur at typical elevated — temperature process conditions, especially in processes operating under vacuum if subjected to sudden ingress of air, or outside process equipment operating under elevated pressure if sudden escape of vapors or mists to the atmosphere occurs.

Any proposed use of this product in elevated — temperature processes should be thoroughly evaluated to assure that safe operating conditions are established and maintained.

**X. REGULATORY INFORMATION****STATUS ON SUBSTANCE LISTS:**

The concentrations shown are maximum or ceiling levels (weight %) to be used for calculations for regulations. Trade Secrets are indicated by "TS".

**FEDERAL EPA**

Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) requires notification of the National Response Center of release of quantities of Hazardous Substances equal to or greater than the reportable quantities (RQs) in 40 CFR 302.4.

Components present in this product at a level which could require reporting under the statute are:

CHEMICAL	CAS NUMBER	UPPER BOUND CONCENTRATION %
Dioxane	123-91-1	.0026
Ethylene Oxide	75-21-8	.0001

**Superfund Amendments and Reauthorization Act of 1986 (SARA) Title III**

requires emergency planning based on Threshold Planning Quantities (TPQs) and release reporting based on Reportable Quantities (RQs) in 40 CFR 355 (used for SARA 302, 304, 311 and 312).

Components present in this product at a level which could require reporting under the statute are:

☆☆NONE☆☆

**Superfund Amendments and Reauthorization Act of 1986 (SARA) Title III**

requires submission of annual reports of release of toxic chemicals that appear in 40 CFR 372 (for SARA 313). This information must be included in all MSDSs that are copied and distributed for this material.

Components present in this product at a level which could require reporting under the statute are:

CHEMICAL	CAS NUMBER	UPPER BOUND CONCENTRATION %
Ethylene Glycol	107-21-1	100.0

**STATE RIGHT-TO-KNOW****CALIFORNIA Proposition 65**

This product contains trace levels of ACETALDEHYDE AND DIOXANE which the State of California has found to cause cancer, birth defects or other reproductive harm.

**MASSACHUSETTS** Right-To-Know, Substance List (MSL) Hazardous Substances and Extraordinarily Hazardous Substances on the MSL must be identified when present in products.

Components present in this product at a level which could require reporting under the statute are:

EXTRAORDINARILY HAZARDOUS SUBSTANCES (= > 0.0001%)

CHEMICAL	CAS NUMBER	UPPER BOUND CONCENTRATION %
Dioxane	123-91-1	.0026
Methanol	67-56-1	.0024

HAZARDOUS SUBSTANCES (= > 1%)

CHEMICAL	CAS NUMBER	UPPER BOUND CONCENTRATION %
Ethylene Glycol	107-21-1	100.0

**PENNSYLVANIA** Right-To-Know, Hazardous Substance List Hazardous Substances and Special Hazardous Substances on the List must be identified when present in products.

Components present in this product at a level which could require reporting under the statute are:

HAZARDOUS SUBSTANCES (= > 1%)

CHEMICAL	CAS NUMBER	UPPER BOUND CONCENTRATION %
Ethylene Glycol	107-21-1	100.0

**Toxic Substances Control Act (TSCA) Status:**

The ingredients of this product are on the TSCA inventory.

**CALIFORNIA SCAQMD RULE 443.1 VOC'S:**

Not presently available

**NOTE----**

The opinions expressed herein are those of qualified experts within Union Carbide Chemicals and Plastics Company. We believe that the information contained herein is current as of the date of this Material Safety Data Sheet. Since the use of this information and of these opinions and the conditions of the use of the product are not within the control of Union Carbide Chemicals and Plastics Company, it is the user's obligation to determine the conditions of safe use of the product.

**REVISED SECTIONS:**

Revisions in this MSDS occurred in the following sections:

Section II: PHYSICAL DATA (Subtitle: Appearance and Odor)

Section V: HEALTH HAZARD DATA (Subtitles:

Medical Conditions Aggravated By Overexposure

Significant Laboratory Data

Emergency and First Aid Procedures — "Swallowing"

Section X: Dioxane level

PC: 35202

F NUMBER: NO1

## UNION CARBIDE CORPORATION

### Specialty Chemicals Division

# MATERIAL SAFETY DATA SHEET

## EFFECTIVE DATE: 05/15/89

Union Carbide urges each customer or recipient of this MSDS to study it carefully to become aware of and understand the hazards associated with the product. The reader should consider consulting reference works or individuals who are experts in ventilation, toxicology, and fire prevention, as necessary or appropriate to use and understand the data contained in this MSDS.

To promote safe handling, each customer or recipient should: (1) notify its employees, agents, contractors and others whom it knows or believes will use this material of the information in this MSDS and any other information regarding hazards or safety; (2) furnish this same information to each of its customers for the product; and (3) request its customers to notify their employees, customers, and other users of the product of this information.

**I. IDENTIFICATION**

**PRODUCT NAME:** PROPYLENE GLYCOL, ALL GRADES

**CHEMICAL NAME:** 1,2-Propanediol

**CHEMICAL FAMILY:** Glycols

**FORMULA:** CH3CH(OH)CH2OH

**MOLECULAR WEIGHT:** 76.1

**SYNONYMS:** 1,2-Dihydroxypropane

**CAS# and** 57-55-6

**CAS NAME:** 1,2-Propanediol

**II. PHYSICAL DATA** (Determined on typical material)

**BOILING POINT, 760 mm Hg:** > 187.3C (> 369.1F)

**FREEZING POINT:** Sets to glass below -60 C (-76 F)

**SPECIFIC GRAVITY (H2O = 1):**

1.038

**VAPOR PRESSURE AT 20°C:**

0.04 mm Hg (0.005kPa)

**VAPOR DENSITY (air = 1)**

2.6

**SOLUBILITY IN WATER by wt:**

100

**EVAPORATION RATE**

(Butyl Acetate = 1): 0.005

**APPEARANCE AND ODOR:** Water-white liquid; mild order.

**PERCENT VOLATILES (BY VOLUME):** 100

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EMERGENCY PHONE NUMBER: 1-800-UCC-HELP (Number available at all times)

**UNION CARBIDE CORPORATION**

Specialty Chemicals Division

39 Old Ridgebury Road, Danbury, CT. 06817-0001

**PRODUCT NAME:** PROPYLENE GLYCOL, ALL GRADES

**III. INGREDIENTS**

MATERIAL	%	TL V (Units)	HAZARD
Propylene Glycol	100	None established	See Section V

**IV. FIRE AND EXPLOSION HAZARD DATA**

**FLASH POINT** 214 F, (101 C). Tag closed cup, ASTM D 56

**(test method(s)):** 225 F, (106 C). Cleveland open cup, ASTM D 92

<b>FLAMMABLE LIMITS IN AIR, % by volume:</b>	<b>LOWER:</b> 2.6 <b>UPPER:</b> 12.5
<b>EXTINGUISHING MEDIA:</b>	Apply alcohol-type or all-purpose-type foam by manufacturer's recommended techniques for large fires. Use CO2 or dry chemical media for small fires.
<b>SPECIAL FIRE FIGHTING PROCEDURES:</b>	Use self-contained breathing apparatus and protective clothing.
<b>UNUSUAL FIRE AND EXPLOSION HAZARDS:</b>	None

#### V. HEALTH HAZARD DATA

<b>TLV AND SOURCE:</b>	None established by OSHA or ACGH.
<b>EFFECTS OF SINGLE OVEREXPOSURE:</b>	
<b>SWALLOWING:</b>	No evidence of adverse effects from available information.
<b>SKIN ABSORPTION:</b>	No evidence of adverse effects from available information.
<b>INHALATION:</b>	No evidence of adverse effects from available information.
<b>SKIN CONTACT:</b>	May cause minimal irritation seen as mild local redness.
<b>EYE CONTACT:</b>	May cause minimal irritation, seen as slight excess redness of the conjunctiva.

<b>EFFECTS OF REPEATED OVEREXPOSURE:</b>	Repeated skin contact may result in the development of an allergic skin reaction in a very small proportion of individuals.
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<b>MEDICAL CONDITIONS AGGRAVATED BY OVEREXPOSURE:</b>	A knowledge of available toxicology information and of the physical and chemical properties of the material suggests that overexposure is unlikely to aggravate existing medical conditions.
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<b>SIGNIFICANT LABORATORY DATA WITH POSSIBLE RELEVANCE TO HUMAN HEALTH HAZARD EVALUATION:</b>	None currently known.
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<b>OTHER EFFECTS OF OVEREXPOSURE:</b>	None currently known.
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<b>EMERGENCY AND FIRST AID PROCEDURES:</b>	
<b>SWALLOWING:</b>	No emergency care anticipated.
<b>SKIN:</b>	Wash with soap and water.
<b>INHALATION:</b>	Remove to fresh air.
<b>EYES:</b>	Flush with water.

<b>NOTES TO PHYSICIAN:</b>	There is no specific antidote. Treatment of overexposure should be directed at the control of symptoms and the clinical condition of the patient.
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#### VI. REACTIVITY DATA

<b>STABILITY:</b>	Stable
<b>CONDITIONS TO AVOID:</b>	None
<b>INCOMPATIBILITY (materials to avoid):</b>	Avoid contamination with strong oxidizing agents.
<b>HAZARDOUS COMBUSTION OR DECOMPOSITION PRODUCTS:</b>	Burning can produce carbon monoxide and/or carbon dioxide.
<b>HAZARDOUS POLYMERIZATION:</b>	Will Not Occur
<b>CONDITIONS TO AVOID:</b>	None

#### VII. SPILL OR LEAK PROCEDURES

<b>STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED:</b>	Small spills should be flushed with large amounts of water. Larger spills should be collected for disposal.
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<b>WASTE DISPOSAL METHOD:</b>	Incinerate in a furnace or otherwise dispose of in accordance with applicable Federal, State, and local requirements. See Section IX.
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#### VIII. SPECIAL PROTECTION INFORMATION

<b>RESPIRATORY PROTECTION (specify type):</b>	None expected to be needed.
<b>VENTILATION:</b>	General (mechanical) room ventilation is expected to be satisfactory.
<b>PROTECTIVE GLOVES:</b>	Polyvinyl chloride-coated

<b>EYE PROTECTION:</b>	Safety glasses
<b>OTHER PROTECTIVE EQUIPMENT:</b>	Eye bath and safety shower.

#### IX. SPECIAL PRECAUTIONS

<b>PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE:</b>	<b>WARNING: MAY CAUSE ALLERGIC SKIN REACTION.</b> Avoid contact with skin and clothing. Wash thoroughly after handling.
	FOR INDUSTRY USE ONLY

<b>OTHER PRECAUTIONS:</b>	DISPOSAL: Laboratory studies indicate that propylene glycol is readily biodegradable in a biological wastewater treatment plant.
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#### X. REGULATORY INFORMATION

##### STATUS ON SUBSTANCE LISTS:

The concentrations shown are maximum or ceiling levels (weight %) to be used for calculations for regulations. Trade Secrets are indicated by "TS".

##### FEDERAL EPA

Comprehensive Environmental Response, Compensation, Liability Act of 1980 (CERCLA) requires notification of the National Response Center of release of quantities of Hazardous Substances equal to or greater than the reportable quantities (ROs) in 40 CFR 302.4.

Components present in this product at a level which could require reporting under the statute are:  
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Components present in this product at a level which could require reporting under the statute are:  
☆☆NONE☆☆

##### STATE RIGHT-TO-KNOW

**California Proposition 65** This product contains no levels of listed substances, which the State of California has found to cause cancer, birth defects or other reproductive harm, which would require a warning under the statute.

**MASSACHUSETTS Right-To-Know, Substance List (MSL) Hazardous Substances and Extraordinarily Hazardous Substances** on the MSL must be identified when present in products.

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**PENNSYLVANIA Right-To-Know, Hazardous Substance List Hazardous Substances and Special Hazardous Substances** on the list must be identified when present in products.

Components present in this product at a level which could require reporting under the statute are:  
HAZARDOUS SUBSTANCES (= > 1%)

CHEMICAL	CAS NUMBER	UPPER BOUND CONCENTRATION %
Propylene Glycol	57-55-6	99.630

**Toxic Substances Control Act(TSCA) Status:**  
The ingredients of this product are on the TSCA inventory.

**CALIFORNIA SCAQMD RULE 443.1 VOC'S:**  
Volatiles = substances with a vapor pressure of = > 5 mmHg at 104 C (210.2 F).  
This product contains:  
1036.16 g/liter VOC  
1036.16 g/liter of Material less Exempted Compounds

**OTHER REGULATORY INFORMATION:**  
EPA Hazard Categories: Immediate Health, Delayed Health

**NOTE---**  
The opinions expressed herein are those of qualified experts within Union Carbide Corporation. We believe that the information contained herein is current as of the date of this Material Safety Data Sheet. Since the use of this information and of these opinions and the conditions of the use of the product are not within the control of Union Carbide Chemicals and Plastics Company, it is the user's obligation to determine the conditions of safe use of the product.

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