

MATERIAL SAFETY DATA SHEET



KOREA KUMHO PETROCHEMICAL CO., LTD.

POLY PROPYLENE GLYCOL

1. CHEMICAL PRODUCT & COMPANY IDENTIFICATION

Product: **PPG-3602[®] POLYOL**

Product Code: 92576

Effective Date: 10/15/2004 Date Printed: 9/6/2004 MSD: 001249

The Korea Kumho Petrochemical Co., Ltd, Ulsan, Seongamdong 45-25

Customer Information Center: 2-6303-3270

24-HOUR EMERGENCY PHONE NUMBER: 52-279-8560

2. COMPOSITION/INFORMATION ON INGREDIENTS

Polyether polyol	99.9%
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3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

Viscous liquid. Poses little or no immediate health hazard. Keep out of water ways.

Extinguish with water fog, foam, CO₂ or dry chemical.

EMERGENCY PHONE: Korea. 52-279-8560

POTENTIAL HEALTH EFFECTS (See Section 11 for toxicological data.)

EYE: May cause slight transient (temporary) eye irritation. Corneal injury is unlikely.

SKIN: Prolonged or repeated exposure may cause slight skin irritation. May cause more severe response if skin is abraded (scratched or cut). A single prolonged exposure is not likely to result in the material being absorbed through skin in harmful amounts.

INGESTION: Single dose oral toxicity is considered to be low. Small amounts swallowed incidental to normal handling operations are not likely to cause injury; swallowing amounts larger than that may cause injury.

INHALATION: At room temperature, vapors are minimal due to physical properties; a single exposure is not likely to be hazardous.

CHRONIC EFFECTS

SYSTEMIC (OTHER TARGET ORGAN) EFFECTS: Based on available data, repeated exposures are not anticipated to cause significant adverse effects.

CANCER INFORMATION: No relevant information found.

TERATOLOGY (BIRTH DEFECTS): No relevant information found.

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REPRODUCTIVE EFFECTS: No relevant information found.

4. FIRST AID

EYES: Flush eyes with plenty of water.

SKIN: Wash off in flowing water or shower.

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: 239°C,

METHOD USED: PMCC, ASTM D93

FLAMMABILITY LIMITS

LFL: Not determined.

UFL: Not determined.

HAZARDOUS COMBUSTION PRODUCTS: Combustion may produce carbon dioxide and water. Unidentified organic compounds may be formed during combustion which may present a greater hazard.

OTHER FLAMMABILITY INFORMATION: Fire water run-off may be toxic.

EXTINGUISHING MEDIA: Water fog, carbon dioxide, dry chemical, and foam. For large scale fires, alcohol resistant foams are preferred if available. General purpose synthetic foams or protein foams may function, but much less effectively. Water may be used to flush spills away from fire exposures and to dilute spills to non-flammable mixtures. If possible, contain fire water run-off. For large scale fires, direct water stream may cause violent frothing, but fine water spray may help control situation.

FIRE FIGHTING INSTRUCTIONS: Keep unnecessary people away; isolate hazard area and deny unnecessary entry. When using water spray, boil-over may occur when the product temperature reaches the boiling point of water (tank-type scenarios, not spills).

PROTECTIVE EQUIPMENT FOR FIRE FIGHTERS: Wear positive-pressure self-contained breathing apparatus and full protective equipment.

6. ACCIDENTAL RELEASE MEASURES (See Section 15 for Regulatory Information)

PROTECT PEOPLE: Isolate and confine spill area. Spills may be a slipping hazard.

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PROTECT THE ENVIRONMENT: Keep out of sewers, storm drains, surface waters and soil. Material is more dense than water and has limited water solubility. It will collect on the lowest surface. CLEANUP: Spills should be collected to prevent contamination of waterways.

7. HANDLING AND STORAGE

HANDLING: Materials not considered hazardous as handled in most industrial operations. Exercise reasonable care and cleanliness. Spills of these organic liquids on hot fibrous insulation may lead to lowering of the auto-ignition temperature possibly resulting in spontaneous combustion.

The reaction of polyols and isocyanates generate heat. Contact of the reacting materials with skin or eyes can cause severe burns and may be difficult to remove from the affected areas. Immediately wash affected areas with plenty of water and seek medical assistance.

STORAGE: Store in sealed containers. Protect from atmospheric moisture. Replace outage with dry, inert atmosphere.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING CONTROLS: Good general ventilation should be sufficient for most operations.

Local exhaust ventilation may be necessary for some operations.

PERSONAL PROTECTIVE EQUIPMENT

EYE/FACE PROTECTION: Use safety glasses.

SKIN PROTECTION: Use gloves impervious to this material when prolonged or frequently repeated contact could occur.

RESPIRATORY PROTECTION: No respiratory protection should be needed.

EXPOSURE GUIDELINES: None established.

9. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE	:	Viscous liquid
ODOR	:	Low odor.
VAPOR. PRESS	:	Nil
VAPOR DENSITY	:	>1.0
BOILING POINT	:	Decomposes at elevated temperatures.
SOL. IN WATER	:	Very slightly soluble.
SP. GRAVITY	:	1.005~1.010 @ 25/25C

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10. STABILITY AND REACTIVITY

CHEMICAL STABILITY: Stable under normal handling and storage conditions.

CONDITIONS TO AVOID: None known

INCOMPATIBILITY WITH OTHER MATERIALS: Strong acids and oxidizing materials.

Also alkali or alkaline earth metals such as copper, zinc or brass.

HAZARDOUS DECOMPOSITION PRODUCTS: Combustion may produce carbon dioxide and toxic carbon monoxide. Unidentified organic compounds may be formed during combustion.

HAZARDOUS POLYMERIZATION: Will not occur.

11. TOXICOLOGICAL INFORMATION (See Section 3 for Potential Health Effects. For detailed toxicological data, write or call the address or non-emergency number shown in Section 1)

ACUTE

INGESTION: The oral LD50 for rats is >4000 mg/kg.

SKIN ABSORPTION: The LD50 for skin absorption in rabbits is expected to be >5000 mg/kg.

MUTAGENICITY (EFFECTS ON GENETIC MATERIAL): No relevant information found.

12. ECOLOGICAL INFORMATION (For detailed Ecological data, write or call the address or non-emergency number shown in Section 1)

ENVIRONMENTAL FATE

BIOACCUMULATION/BIOCONCENTRATION: No data.

MOVEMENT & PARTITIONING: No data.

DEGRADATION & TRANSFORMATION: No data.

ECOTOXICITY: No data.

13. DISPOSAL CONSIDERATIONS(See Section 15 for Regulatory Information)

DISPOSAL: Any disposal practice must be in compliance with all federal, state/provincial, and local laws and regulations. State/provincial and local requirements for waste disposal may be more restrictive or otherwise different from federal laws and regulations.

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Regulations may also vary in different locations. Chemical additions, processing, storage, or otherwise altering this material may make the waste management information presented in this MSDS incomplete, inaccurate or otherwise inappropriate. Waste characterization and disposal compliance are the responsibility solely of the party generating the waste or deciding to discard or dispose of the material. None of these waste management options should be considered "arranging for disposal".

Product as sold is not a RCRA hazardous waste when disposed.

Do not allow into any sewers, on the ground, or into any body of water. The waste management option for unused, uncontaminated, unformulated, or not otherwise altered material is to send to a properly licensed or permitted recycler, reclaimer or incinerator. The same waste management options are recommended for used or contaminated material, although additional evaluation is required.

Refer to 40 CFR Section 261, and/or any other appropriate federal, state, provincial, or local requirements for proper classification information. For additional information see MSDS Regulatory Information (Section 15).

As a service to its customers, Kumho can provide lists of companies which recycle, reprocess, or manage chemicals. Telephone Kumho's Customer Information Center at 2-6303-3270 or in KOREA. for further details.

14. TRANSPORT INFORMATION

This product is not regulated by D.O.T. or T.D.G. when shipped domestically by land.

15. REGULATORY INFORMATION (Not meant to be all-inclusive—selected regulations represented)

NOTICE: The information herein is presented 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 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.

U.S. REGULATIONS

SARA 313 INFORMATION: To the best of our knowledge, this product contains no chemical subject to SARA Title III Section 313 supplier notification requirements.

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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:
Not to have met any hazard category

TOXIC SUBSTANCES CONTROL ACT (TSCA):

All ingredients are on the TSCA inventory or are not required to be listed on the TSCA inventory.

The CAS number(s) for TSCA is(are): CAS# 025322-69-4

STATE RIGHT-TO-KNOW: This product is not known to contain any substances subject to the disclosure requirements of New Jersey Pennsylvania

OSHA HAZARD COMMUNICATION STANDARD:

This product is not a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) RATINGS:

Health	1
Flammability	1
Reactivity	0

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

To the best of our knowledge, this product contains no chemical subject to reporting under CERCLA.

CANADIAN REGULATIONS

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

This product is not a "Controlled Product" under WHMIS.

16. OTHER INFORMATION

REVISION INDICATOR: Converted to 16-section MSDS.

(R) Indicates a Trademark of The Korea Kumho Petrochemical Co., Ltd. The Information Herein Is Given In Good Faith, But No Warranty, Express Or Implied, Is Made. Consult The Korea Kumho Petrochemical Co., Ltd. For Further Information.