



WARCO PREMIUM LUBRICANTS MATERIAL SAFETY DATA SHEET WARCO DOT 3 BRAKE FLUID

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Diethylene glycol monoethyl ether CAS No.: 111-90-0 RTECS No.: KK8750000	3.00 - 6.00	None Established	None Established	LD50: 5500 mg/kg oral/rat
Ethylene glycol CAS No.: 107-21-1 RTECS No.: KW2975000	0.00 - 4.00	100 mg/m ³ (C)	50 ppm (ceiling)	L50: 4700 mg/kg oral/rat

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

Non-flammable amber liquid with mild odor which may cause severe eye irritation and possible damage. Inhalation and ingestion may affect the central nervous system (CNS) and damage the kidneys. Skin contact may cause irritation. Inhalation is not expected due to low volatility; however, airborne mists or fumes are toxic if inhaled. Avoid skin and eye contact.

POTENTIAL HEALTH EFFECTS

EYE: Contact may cause severe irritation, conjunctivitis, and diminished sensation. Diethylene glycol monobutyl ether may damage the cornea.

SKIN: Skin contact may cause irritation. Brake fluid may be slowly absorbed through the skin. Excessive exposure for extended periods of time involving large areas of skin would be necessary for absorption of harmful amounts.

INGESTION: Product contains approximately 2% ethylene glycol which is toxic via ingestion. Ingestion of substantial quantities may adversely affect the central nervous system (CNS), lungs, liver and kidneys. Lethal kidney damage has followed ingestion of ethylene glycol. Hepatotoxicity is common following ingestion of diethylene glycol.

INHALATION: Inhalation is not expected due to the relatively low volatility of this product. Inhalation of fumes or mists caused by heating or agitating may cause respiratory irritation. High concentrations may cause CNS depression or kidney damage.

SIGNS AND SYMPTOMS: Eye contact can cause irritation, redness, swelling, and tear formation. Information concerning overexposure to glycol ethers is generally from substantial ingestion in adults. Symptoms of overexposure may be delayed and can include nausea, vomiting, diarrhea, CNS stimulation followed by depression, hyperventilation, and metabolic acidosis.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: Overexposure may aggravate pre-existing eye and skin conditions.

CHRONIC EFFECTS: Repeated inhalation, ingestion or skin absorption of glycol ethers over time may result in toxicity symptoms and may adversely affect the liver and kidneys. Chronic glycol ether inhalation has resulted in tremor, lethargy, headache, blurred vision, personality changes and coma.

Medical Surveillance: If overexposure is suspected, kidney function tests and nervous system examination may be advisable.

CARCINOGENICITY: NTP: No IARC: No OSHA: No

4. FIRST AID MEASURES

EYE CONTACT: Remove contact lenses at once, flush eyes with water for 15 minutes. Seek medical attention.

SKIN CONTACT: Wash thoroughly with soap and water and remove contaminated clothing. If irritation persists, seek medical attention.

INHALATION: If overcome by mists or fumes, remove to fresh air. If breathing is difficult administer oxygen. If breathing has stopped,



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give artificial respiration. Seek medical attention.

OTHER: Ingestion of small amounts should not be harmful. If substantial quantities are ingested, seek medical attention immediately.

5. FIRE FIGHTING MEASURES

FLAMMABLE PROPERTIES

FLASH POINT: > 210 °F

NFPA HAZARD CLASSIFICATION:

HEALTH: 1

FLAMMABILITY: 1

REACTIVITY: 0

FLAMMABLE LIMITS:

LEL: No Data

UEL: No Data

EXTINGUISHING MEDIA: Non-flammable. Vapors may be flammable when exposed to heat, sparks or flames. Apply water spray and/or foam gently to surface of liquid to avoid frothing from water turning to steam below the liquid surface. Frothing may be violent. Do not use direct stream.

FIRE FIGHTING EQUIPMENT: Firefighters should wear a NIOSH/MSHA approved full-facepiece, self-contained breathing apparatus operated in positive pressure mode and full turnout gear.

6. ACCIDENTAL RELEASE MEASURES

Absorb small spills with suitable sorbent material and place in tightly closed containers for later disposal. For large spills, isolate hazard area and deny entry to unauthorized or unprotected personnel. Dike well ahead of spill with suitable sorbent material. Clean-up personnel should wear personal protective equipment appropriate for the magnitude of exposure

7. HANDLING AND STORAGE

Store in cool, well ventilated area away from oxidizers and ignition sources. Do not eat, drink or smoke in areas where this product is being used or stored. Avoid skin contact. Do not let brake fluid get in the eyes. Wash hands thoroughly after handling and before breaks and meals.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

RESPIRATORY PROTECTION: Under normal working conditions at or below the PEL, none is required. Respiratory protection is dependent upon the magnitude of exposure and should be selected in accordance with 29 CFR Part 1910.134. For concentrations of ethylene glycol to 500 ppm, a NIOSH-MSHA-approved dust-mist respirator with organic vapor cartridge should be worn.

SKIN PROTECTION: Appropriate gloves, apron, etc., as necessary to prevent contact.

EYE PROTECTION: Splash proof goggles should be worn when the possibility of contact exists

PERSONNEL SAMPLING PROCEDURE:

Air sampling for total particulates: Pre-weighed polyvinyl chloride filter, 5.0 µm pore size (NIOSH 0500)



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Air sampling for ethylene glycol: Glass fiber filter and XAD-7 tube (NIOSH 5523)

ENGINEERING CONTROLS: General ventilation. Local exhaust when product is heated or agitated.

9. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE:	Clear, light amber liquid
ODOR:	Mild
BOILING POINT:	450 °F or greater
VAPOR PRESSURE:	No Data
VAPOR DENSITY:	No Data
SOLUBILITY IN WATER:	Soluble
SPECIFIC GRAVITY:	1.028-1.036
FREEZING POINT:	No Data
pH:	9.5-10.5
% VOLATILE:	No Data
VAPOR DENSITY:	No Data

10. STABILITY AND REACTIVITY

STABILITY: Avoid heat. Some polyethylene glycols have a solvent action on certain plastics.

INCOMPATIBILITY: Explosive hydrogen gas is released when diethylene glycol is mixed with sodium hydroxide at high temperatures. Diethylene glycol ethers and ethylene glycol may react with oxidizing materials such as permanganates and dichromates when exposed to heat or flames.

HAZARDOUS DECOMPOSITION PRODUCTS: No Data

HAZARDOUS POLYMERIZATION: Will not occur.

11. TOXICOLOGICAL INFORMATION

INGESTION: Lethal doses (LDLo) of 398 mg/kg to 16 g/kg have been reported for ethylene glycol in man. It has been estimated that the single oral dose of diethylene glycols resulting in lethality in humans is approximately 1 ml/kg. Deaths in animals from ingestion of diethylene glycol monomethyl ether and diethylene glycol monopentyl ether occurred at high dosages and were caused by renal injury or CNS depression.

SKIN: Experimental data in animals show mild to severe skin irritation associated with exposure to glycol ethers.

EYE: Limited data was available. Eye effects for various ingredients were described as mild to severe without further qualification. Triethylene glycol monobutyl ether may damage the eyes.

INHALATION: A TCLo of 10000 mg/m³ was reported for human inhalation of ethylene glycol. Cyanosis, excitement and general anesthetic behavior were exhibited. An LCLo of 130 mg/m³/2H was reported for mouse inhalation of diethylene glycol.



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CHRONIC: Long-term exposure to diethylene glycol has resulted in tumors in laboratory animals, (oral/rat).

SUB-CHRONIC: Rats in an inhalation experiment with diethylene glycol mono-n-butyl ether (5 mg/m³/24H/17 W-C) exhibited changes in the brain and coverings and blood. Mice orally dosed with ethylene glycol (546 gm/kg/13 W-C) exhibited adverse effects of the liver, kidney, ureter, and bladder as well as weight loss or decreased weight gain. Rabbit inhalation of ethylene glycol (12 mg/m³/8H/90-D-I) resulted in various effects including corneal damage and death in the multiple dose data field.

12. ECOLOGICAL INFORMATION

ENVIRONMENTAL FATE: Ethers generally do not absorb light in the UV spectrum and are resistant to hydrolysis. Direct photolysis in the atmosphere and hydrolysis in water and soil are probably not significant degradative processes for the ethers in this product. Environmental fate data for glycols present in this product was unavailable. It is indicated that important fate processes for diethylene glycol mono-butyl ether may include biodegradation in soil and water and reactions with photochemically produced hydroxyl radicals in the atmosphere.

13. DISPOSAL CONSIDERATIONS

Recycle, reclaim and dispose of in accordance with applicable local, state and federal regulations. Dispose per 40 CFR Part 261 and 262.

14. TRANSPORT INFORMATION

TRANSPORTATION AND HAZARDOUS MATERIALS DESCRIPTION

DOT: Not classified.

15. REGULATORY INFORMATION

OSHA HAZARD COMMUNICATION RULE. 29 CFR 1910.1200:

This product is considered hazardous under the criteria of this rule.

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: Immediate Health Hazard

CERCLA/SUPERFUND, 40 CFR 117, 302:

This product contains glycol ethers and ethylene glycol, Reportable Quantity (RQ) Substances and if 1+ pounds are released, notification to the National Response Center in Wash., D.C.: (1-800-424-8802) is required.

SARA 313 INFORMATION:

This product contains the following substances 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
ethylene glycol	107-21-1



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glycol ethers ¹ Not Applicable

¹ Includes mono- and di-ethers of ethylene glycol, diethylene glycol and triethylene glycol. Polymers are excluded from the glycol ether category.

SARA 302 (EHS): None

CALIFORNIA PROPOSITION 65: This product does not contain ingredients known to the State of California to cause cancer or reproductive toxicity.

CANADIAN WHMIS: D2B

16. OTHER INFORMATION

ACGIH	American Conference of Governmental Industrial Hygienists
CAS:	Chemical Abstracts Service
(C):	Ceiling Limit
DOT:	Department of Transportation
IARC:	International Agency for Research on Cancer
MSHA:	Mine Safety and Health Administration
NFPA:	National Fire Protection Association
NIOSH:	National Institute for Occupational Safety and Health
NTP:	National Toxicology Program
OSHA:	Occupational Safety and Health Administration
PEL:	Permissible Exposure Limit

DISCLAIMER

The information in this MATERIAL SAFETY DATA SHEET should be provided to all who will use, handle, store, transport, or otherwise be exposed to this material. This information has been prepared for the guidance of plant engineering, operations and management, and for persons working with or handling this material. The manufacturer believes this information to be reliable and up-to-date as of the date of publication, but makes no warranty that it is.

PNOC:	Particulate Not Otherwise Classified
PNOR:	Particulate Not Otherwise Regulated
SARA:	Superfund Amendment and Reauthorization Act
TLV:	Threshold Limit Value
Revision Date 6/2/98	New product formulation