MATERIAL SAFETY DATA SHEET

MSDS No.: N/A

SECTION 1 PRODUCT AND COMPANY IDENTIFICATION

A. Product Name: **MOBIL BRAKE FLUID DOT 3**
Product Description: Glycol Ether
Product Code: 351010603020, 959965-88

B. Recommended Use of Product and Restrictions in Use.
Recommended use of the product: Other lubricants, Brake fluid
Restrictions in Use: This product is not recommended for any industrial, professional or consumer use other than the identified uses above.

C. Manufacturer/Supplier information:
For details contact
Mobil Korea Lube Oil Inc.
Level 22, Seoul Square bd., 416
Hangang-daero, Jung-gu,
Seoul Republic of Korea

Emergency Response Number	00-308-13-2549 / +1-703-527-3887
Supplier General Contact	82-2-750-8700
FAX	82-2-750-8751

SECTION 2 HAZARDS IDENTIFICATION

This material is hazardous according to regulatory guidelines (see (M)SDS Section 15).

A. Hazard Classification:
Acute oral toxicant: Category 5. Eye irritation: Category 2A. Reproductive toxicant (developmental): Category 2. Reproductive toxicant (fertility): Category 2.

B. Label Elements Including Precautionary Statements:

Hazard Pictogram:

Signal Word: Warning

Hazard Statements:

Health: H303: May be harmful if swallowed. H319: Causes serious eye irritation. H361: Suspected of damaging the unborn child. H361: Suspected of damaging fertility.

Precautionary Statements:

General: P101: If medical advice is needed, have product container or label at hand. P102: Keep out of reach of children. P103: Read label before use.
Prevention: P280: Wear protective gloves/protective clothing/eye protection/face protection. P201: Obtain special instructions before use. P202: Do not handle until all safety precautions have been read and understood. P264: Wash skin thoroughly after handling. P280: Wear protective gloves and protective clothing.
Response: P305 + P351 + P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. P308 + P313: IF exposed or concerned: Get medical advice/ attention. P312: Call a POISON CENTER or doctor/physician if you feel unwell. P337 + P313: If eye irritation persists: Get medical advice/attention.
Storage: P405: Store locked up.
Disposal: P501: Dispose of contents and container in accordance with local regulations.

C. Other Hazards Which Are Not Included In The Classification Criteria

Physical / Chemical Hazards

No significant hazards.

Health Hazards

High-pressure injection under skin may cause serious damage. Ingestion may cause serious adverse effects and may be fatal. May cause kidney failure and central nervous system effects. Prolonged exposure to elevated concentrations of mist or liquid may cause irritation of the skin, eyes, and respiratory tract.

Environmental Hazards

No significant hazards.

NFPA Hazard ID:	Health:	2	Flammability:	1	Reactivity:	0
HMIS Hazard ID:	Health:	2*	Flammability:	1	Reactivity:	0

NOTE: This material should not be used for any other purpose than the intended use in Section 1 without expert advice. Health studies have shown that chemical exposure may cause potential human health risks which may vary from person to person.

SECTION 3 COMPOSITION / INFORMATION ON INGREDIENTS

This material is defined as a mixture.

Hazardous Substance(s) or Complex Substance(s) required for disclosure

Name	Other Name	CAS # or Id. No.	Concentration*	GHS Hazard Codes
2-(2-METHOXYETHOXY)-ETHANOL	-	KE-23278	1 - < 3%	H361(D)
ETHANOL, 2,2-OXYBIS-	-	KE-27694	10 - < 20%	H302
ETHANOL, 2-(2-(2-BUTOXYETHOXY)ETHOXY)-	-	KE-04140	20 - < 30%	H318
ETHANOL, 2-(2-BUTOXYETHOXY)-	-	KE-10466	1 - < 3%	H319(2A)
POLY GLYCOL MONO BUTYL ETHER	-	KE-04310	5 - < 10%	H318
TRIS[2-[2-(2-METHOXYETHOXY)ETHOXY]ETHYL] ORTHOBORATE	-	2010-3-4711	10 - < 20%	H361(D), H361(F)

* All concentrations are percent by weight unless material is a gas. Gas concentrations are in percent by volume.

SECTION 4 FIRST AID MEASURES

A. Eye Contact

Flush thoroughly with water for at least 15 minutes. Get medical assistance.

B. Skin Contact

Wash contact areas with soap and water. Remove contaminated clothing. Launder contaminated clothing before reuse. If product is injected into or under the skin, or into any part of the body, regardless of the appearance of the wound or its size, the individual should be evaluated immediately by a physician as a surgical emergency. Even though initial symptoms from high pressure injection may be minimal or absent, early surgical treatment within the first few hours may significantly reduce the ultimate extent of injury.

C. Inhalation

Immediately remove from further exposure. Get immediate medical assistance. For those providing assistance, avoid exposure to yourself or others. Use adequate respiratory protection. Give supplemental oxygen, if available. If breathing has stopped, assist ventilation with a mechanical device.

D. Ingestion

Seek immediate medical attention. Do not induce vomiting.

E. Other note to physician

This product contains ethylene glycol and/or diethylene glycol which, if ingested, are metabolized to toxic metabolites by the enzyme alcohol dehydrogenase, for which ethanol and 4-methylpyrazole W{U.S. drug name Fomepizole, trade name AntizolW} are antagonists. Administration of oral or

intravenous ethanol or intravenous 4-methylpyrazole may arrest further metabolism of this material and thereby ameliorate the toxicity. Use of ethanol or 4-methylpyrazole does not affect toxic metabolites that are already present and is not a substitute for hemodialysis.

Acute and Delayed Symptoms/Effects

See Toxicological Section

Pre-existing Medical Conditions Which May Be Aggravated By Exposure

None.

SECTION 5 FIRE FIGHTING MEASURES

Flammability Properties

Flash Point [Method]: 125° C (257° F) [ASTM D-93]
Autoignition Temperature: >300° C (572° F)
Flammable Limits (Approximate volume % in air): LEL: N/D UEL: N/D

A. Suitable (and Unsuitable) Extinguishing Media

Appropriate Extinguishing Media: Use water fog, alcohol-resistant foam, dry chemical or carbon dioxide (CO2) to extinguish flames.

Inappropriate Extinguishing Media: Straight Streams of Water or Regular Foam

B. Specific Hazards arising from the Chemical

Unusual Fire Hazards: Hazardous material. Firefighters should consider protective equipment indicated in Section 8.

Hazardous Combustion Products: Incomplete combustion products, Oxides of carbon, Smoke, Fume

C. Special Protective Equipment and Precautions for Fire-fighters

Evacuate area. Prevent runoff from fire control or dilution from entering streams, sewers, or drinking water supply. Firefighters should use standard protective equipment and in enclosed spaces, self-contained breathing apparatus (SCBA). Use water spray to cool fire exposed surfaces and to protect personnel.

SECTION 6 ACCIDENTAL RELEASE MEASURES

A. Personal Precautions and Protective Equipment

Avoid contact with spilled material. Warn or evacuate occupants in surrounding and downwind areas if required due to toxicity or flammability of the material. See Section 5 for fire fighting information. See the Hazard Identification Section for Significant Hazards. See Section 4 for First Aid Advice. See Section 8 for advice on the minimum requirements for personal protective equipment. Additional protective measures may be necessary, depending on the specific circumstances

and/or the expert judgment of the emergency responders.

B. Environmental Precautions and Protective Procedure

In the event of a spill or accidental release, notify relevant authorities in accordance with all applicable regulations.
Large Spills: Dike far ahead of liquid spill for later recovery and disposal. Prevent entry into waterways, sewers, basements or confined areas.

C. Methods and Materials for Containment and Cleaning Up

Land Spill: Stop leak if you can do it without risk. Recover by pumping or with suitable absorbent.

Water Spill: Stop leak if you can do it without risk. Warn other shipping. This product emulsifies, disperses or is miscible in water. Remove material, as much as possible, using mechanical equipment.

Water spill and land spill recommendations are based on the most likely spill scenario for this material; however, geographic conditions, wind, temperature, (and in the case of a water spill) wave and current direction and speed may greatly influence the appropriate action to be taken. For this reason, local experts should be consulted. Note: Local regulations may prescribe or limit action to be taken.

SECTION 7 HANDLING AND STORAGE

A. Precautions for Safe Handling

Avoid all personal contact. Prevent small spills and leakage to avoid slip hazard.

Static Accumulator: This material is not a static accumulator.

B. Conditions for Safe Storage

Do not allow to dry out during storage. Do not store in open or unlabelled containers. Keep container tightly closed and dry.

SECTION 8 EXPOSURE CONTROLS AND PERSONAL PROTECTION

A. Exposure Limit Values, Biological Limit Values

Exposure limits/standards (Note: Exposure limits are not additive)

Substance Name	Form	Limit / Standard			Note	Source	Year
ETHANOL, 2,2-OXYBIS-		TWA	10 mg/m3			OARS WEEL	2018
ETHANOL, 2-(2-BUTOXYETHOXY)-		TWA	10 ppm			Korea OELs	2020
ETHANOL, 2-(2-BUTOXYETHOXY)-	Inhalable	TWA	10 ppm			ACGIH	2020

	fraction and vapor						

No biological limits allocated.

B. Appropriate Engineering Controls

The level of protection and types of controls necessary will vary depending upon potential exposure conditions. Control measures to consider:
Adequate ventilation should be provided so that exposure limits are not exceeded.

C. Personal Protective Equipment

Personal protective equipment selections vary based on potential exposure conditions such as applications, handling practices, concentration and ventilation. Information on the selection of protective equipment for use with this material, as provided below, is based upon intended, normal usage.

Respiratory Protection: If engineering controls do not maintain airborne contaminant concentrations at a level which is adequate to protect worker health, an approved respirator may be appropriate. Respirator selection, use, and maintenance must be in accordance with regulatory requirements, if applicable. Types of respirators to be considered for this material include:
No protection is ordinarily required under normal conditions of use and with adequate ventilation.

For high airborne concentrations, use an approved supplied-air respirator, operated in positive pressure mode. Supplied air respirators with an escape bottle may be appropriate when oxygen levels are inadequate, gas/vapor warning properties are poor, or if air purifying filter capacity/rating may be exceeded.

Eye Protection: Chemical goggles are recommended.

Hand Protection: Any specific glove information provided is based on published literature and glove manufacturer data. Glove suitability and breakthrough time will differ depending on the specific use conditions. Contact the glove manufacturer for specific advice on glove selection and breakthrough times for your use conditions. Inspect and replace worn or damaged gloves. The types of gloves to be considered for this material include:
Chemical resistant gloves are recommended. Nitrile,Viton

Skin and Body Protection: Any specific clothing information provided is based on published literature or manufacturer data. The types of clothing to be considered for this material include:
Chemical/oil resistant clothing is recommended.

Specific Hygiene Measures: Always observe good personal hygiene measures, such as washing after

handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Discard contaminated clothing and footwear that cannot be cleaned. Practice good housekeeping.

Environmental Controls

Comply with applicable environmental regulations limiting discharge to air, water and soil. Protect the environment by applying appropriate control measures to prevent or limit emissions.

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

Note: Physical and chemical properties are provided for safety, health and environmental considerations only and may not fully represent product specifications. Contact the Supplier for additional information.

A. Appearance
Physical State: Liquid
Color: Yellow
B. Odor: Characteristic
C. Odor Threshold: N/D
D. pH: 7 - 10
E. Melting Point: -50° C (-58° F)
Freezing Point: N/D
F. Initial Boiling Point / Range: > 230° C (446° F)
G. Flash Point [Method]: 125° C (257° F) [ASTM D-93]
H. Evaporation Rate (n-butyl acetate = 1): N/D
I. Flammability (Solid, Gas): N/A
J. Flammable Limits (Approximate volume % in air): LEL: N/D UEL: N/D
K. Vapor Pressure: < 0.2 kPa (1.5 mm Hg) at 20 ° C
L. Solubility in Water: Complete
M. Vapor Density (Air = 1): N/D
N. Relative Density (at 20 ° C): 1.01 - 1.07
O. Log Pow (n-Octanol/Water Partition Coefficient): < 2
P. Autoignition Temperature: >300° C (572° F)
Q. Decomposition Temperature: N/D
R. Viscosity: [N/D at 40 ° C] |
S. Molecular Weight: N/D

SECTION 10 STABILITY AND REACTIVITY

A. Chemical Stability and Possibility of Hazard Reactions
Chemical Stability: Material is stable under normal conditions.
Possibility of Hazardous Reactions: Hazardous polymerization will not occur.

B. Conditions to Avoid: Excessive heat.

C. Incompatible Materials: Strong oxidizers

D. Hazardous Decomposition Products: Material does not decompose at ambient temperatures.

SECTION 11 TOXICOLOGICAL INFORMATION

A. Information on Likely Routes of Exposure

No data available

B. Information on Health Hazards

Acute Toxicity (Inhalation):

Product

No end point data for material. Minimally Toxic. Based on assessment of the components.

Inhalation Irritation: No end point data for material. Negligible hazard at ambient/normal handling temperatures.

Acute Toxicity (Ingestion):

Product

No end point data for material. Minimally Toxic. Based on assessment of the components.

Acute Toxicity (Dermal)

Product

No end point data for material. Minimally Toxic. Based on assessment of the components.

Skin corrosion/irritation

Product

No end point data for material. Negligible irritation to skin at ambient temperatures. Based on assessment of the components.

Serious eye damage/irritation

Product

No end point data for material. Irritating and will injure eye tissue. Based on assessment of the components.

Respiratory sensitization

Product

No end point data for material. Not expected to be a respiratory sensitizer.

Skin sensitization

Product

No end point data for material. Not expected to be a skin sensitizer. Based on assessment of the components.

Carcinogenicity

Product

No end point data for material. Not expected to cause cancer. Based on assessment of the components.

Germ cell mutagenicity

Product

No end point data for material. Not expected to be a germ cell mutagen. Based on assessment of the components.

Reproductive toxicity

Product

No end point data for material. Caused damage to fertility in laboratory animals, but the relevance to humans is uncertain. Caused damage to the fetus in laboratory animals, but the relevance to humans is uncertain. Based on assessment of the components.

Specific target organ toxicity - single exposure

Product

No end point data for material. Not expected to cause organ damage from a single exposure.

Specific target organ toxicity - repeat exposure

Product

No end point data for material. Not expected to cause organ damage from prolonged or repeated exposure. Based on assessment of the components.

Aspiration hazard

Product

No end point data for material. Not expected to be an aspiration hazard. Based on physico-chemical properties of the material.

Other Information

Contains:

DIETHYLENE GLYCOL (DEG): Orally, DEG is more toxic to humans than animal test data indicate. Probable lethal dose for an adult is about 50 ml (2 oz.), or 2 -3 swallows. Smaller amounts may cause kidney degeneration and failure. Benign urinary bladder tumors were observed in rats, no tumors were observed in mice.

DIETHYLENE GLYCOL MONOMETHYL ETHER: Oral maternal exposure of animals resulted in teratogenicity. Dermal maternal exposure of animals resulted in slight toxicity to the fetus.

GLYCOL ETHERS: Some glycol ethers cause adverse effects in animals that include the reproductive system, offspring, blood, kidney and liver.

MONO- AND DI-ETHYLENE GLYCOLS: Oral exposure may produce kidney damage.

IARC Classification:

The following ingredients are cited on the lists below: None.

--REGULATORY LISTS SEARCHED--

1 = IARC 1 2 = IARC 2A 3 = IARC 2B

SECTION 12 ECOLOGICAL INFORMATION

The information given is based on data for the material, components of the material, or for similar materials, through the application of bridging principals.

A. Ecotoxicity

Material -- Not expected to be harmful to aquatic organisms.

B. Persistence and Degradability

Biodegradation:

Majority of components -- Expected to be inherently biodegradable

C. Bioaccumulation

Majority of components -- Potential to bioaccumulate is low.

D. Mobility

Majority of components -- Expected to remain in water or migrate through soil.

E. Other adverse effects: Not applicable

SECTION 13 DISPOSAL CONSIDERATIONS

A. Disposal methods

Disposal recommendations based on material as supplied. Disposal must be in accordance with current applicable laws and regulations, and material characteristics at time of disposal.

B. Disposal precautions

Product is suitable for burning in an enclosed controlled burner for fuel value or disposal by supervised incineration at very high temperatures to prevent formation of undesirable combustion products. Dispose of empty container as normal refuse.

Empty Container Warning Empty Container Warning (where applicable): Empty containers may contain residue and can be dangerous. Do not attempt to refill or clean containers without proper instructions. Empty drums should be completely drained and safely stored until appropriately reconditioned or disposed. Empty containers should be taken for recycling, recovery, or disposal through suitably qualified or licensed contractor and in accordance with governmental regulations. DO NOT PRESSURISE, CUT, WELD, BRAZE, SOLDER, DRILL, GRIND, OR EXPOSE SUCH CONTAINERS TO HEAT, FLAME, SPARKS, STATIC ELECTRICITY, OR OTHER SOURCES OF IGNITION. THEY MAY EXPLODE AND CAUSE INJURY OR DEATH.

SECTION 14 TRANSPORT INFORMATION

REGULATION ON SHIP-TRANSPORTATION AND STORAGE OF DANGEROUS SUBSTANCES (SEA (IMDG)) Not Regulated for Sea Transport according to IMDG-Code

A. UN Number: Not applicable
B. Proper Shipping Name: Not applicable
C. Hazard Class & Division: Not applicable
D. Packing Group: Not applicable
E. Marine Pollutant: Not applicable
F. Special Precautions which a user needs to be aware of, or needs to comply with, in connection with transport or conveyance: Not applicable

LAND (ADR/RID) Not Regulated for Land Transport

A. UN Number: Not applicable
B. Proper Shipping Name: Not applicable
C. Hazard Class & Division: Not applicable
D. Packing Group: Not applicable
E. Marine pollutants: Only applicable for sea transport
F. Special Precautions which a user needs to be aware of, or needs to comply with, in connection with transport or conveyance: Not applicable

AIR (IATA) Not Regulated for Air Transport

A. UN Number: Not applicable
B. Proper Shipping Name: Not applicable
C. Hazard Class & Division: Not applicable
D. Packing Group: Not applicable
E. Marine pollutants: Only applicable for sea transport
F. Special Precautions which a user needs to be aware of, or needs to comply with, in connection with transport or conveyance: Not applicable

SECTION 15 REGULATORY INFORMATION

This material is considered hazardous according to Korean GHS classification criteria.

Regulatory Status and Applicable Laws and Regulations

A. Industrial Safety & Health Act : Prohibited, Subject to an Approval for Manufacturing and Controlled Hazardous Substances: None.

B. Chemicals Control Act : Toxic, Banned and Restricted Toxic Chemicals, Authorization substances, Accidental Release Prevention Substances and Priority Existing Chemicals to Registration

CAS # or Id. No.	Chemical Name	Referenced List	Regulated Threshold Limit	Concentration
KE-23278	2-(2-METHOXYETHOXY)-ETHANOL	PEC	0%wt	2.9%wt
KE-10466	ETHANOL, 2-(2-BUTOXYETHOXY)-	PEC	0%wt	2.9%wt

C. ACT ON THE SAFETY CONTROL OF HAZARDOUS SUBSTANCES: Category 4. Class 3 petroleum chemicals-water insoluble liquids

D. Waste Control Act: Waste Oil is a designated waste.

E. Other requirements in domestic and other countries

Listed or exempt from listing/notification on the following chemical inventories : AIIC, DSL, ENCS, IECSC, KECI, PICCS, TCSI, TSCA

SECTION 16 OTHER INFORMATION

A. Information sources and references: Sources of information used in preparing this SDS included one or more of the following: results from in house or supplier toxicology studies, CONCAWE Product Dossiers, publications from other trade associations, such as the EU Hydrocarbon Solvents REACH Consortium, U.S. HPV Program Robust Summaries, the EU IUCLID Data Base, U.S. NTP publications, and other sources, as appropriate.

B. The first Issuing date: 20Sep2006

C. Revision number and latest revision date
Revision Number:2
Revision Date: 14 Dec 2022

D. Others

N/D = Not determined, N/A = Not applicable

KEY TO THE H-CODES CONTAINED IN SECTION 3 OF THIS DOCUMENT (for information only):

H302: Harmful if swallowed; Acute Tox Oral, Cat 4
H318: Causes serious eye damage; Serious Eye Damage/Irr, Cat 1
H319(2A): Causes serious eye irritation; Serious Eye Damage/Irr, Cat 2A
H361(D): Suspected of damaging the unborn child; Repro Tox, Cat 2 (Develop)
H361(F): Suspected of damaging fertility; Repro Tox, Cat 2 (Fertility)

THIS SAFETY DATA SHEET CONTAINS THE FOLLOWING REVISIONS:MSDS reformatted and Implementation of new GHS adoption according to regulation requirements.

for the user's consideration and examination. It is the user's responsibility to satisfy itself that the product is suitable for the intended use. If buyer repackages this product, it is the user's responsibility to insure proper health, safety and other necessary information is included with and/or on the container. Appropriate warnings and safe-handling procedures should be provided to handlers and users. Alteration of this document is strictly prohibited. Except to the extent required by law, re-publication or retransmission of this document, in whole or in part, is not permitted. The term, "ExxonMobil" is used for convenience, and may include any one or more of ExxonMobil Chemical Company, Exxon Mobil Corporation, or any affiliates in which they directly or indirectly hold any interest.

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