

Product Name: MOBIL ANTIFREEZE

Revision Date: 18 Mar 2021

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MATERIAL SAFETY DATA SHEET

MSDS No.: N/A

SECTION 1 PRODUCT AND COMPANY IDENTIFICATION

A. Product Name: MOBIL ANTIFREEZE**Product Description:** Glycol**Product Code:** 300020-89, 351010601030**B. Recommended Use of Product and Restrictions in Use.****Recommended use of the product:** Anti-Freeze and de-icing products**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 4.

B. Label Elements Including Precautionary Statements:**Hazard Pictogram:**

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Signal Word: Warning

Hazard Statements:

Health: H302: Harmful if swallowed.

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: P264: Wash skin thoroughly after handling. P270: Do not eat, drink or smoke when using this product.

Response: P301 + P312: IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell. P330: Rinse mouth.

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.

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| NFPA Hazard ID: | Health: 1 | 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 |
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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 |
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| ETHYLENE GLYCOL | - | KE-13169 | 90 - < 100% | H302, H373 |
|-----------------|---|----------|-------------|------------|

* 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. If irritation occurs, 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

Remove from further exposure. For those providing assistance, avoid exposure to yourself or others. Use adequate respiratory protection. If respiratory irritation, dizziness, nausea, or unconsciousness occurs, seek immediate medical assistance. If breathing has stopped, assist ventilation with a mechanical device or use mouth-to-mouth resuscitation.

D. Ingestion

Seek immediate medical attention.

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

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Flammability Properties

Flash Point [Method]: 123° C (253° F) [ASTM D-92]

Autoignition Temperature: 371° C (700° F)

Flammable Limits (Approximate volume % in air): LEL: 3.2 UEL: 15.3

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: Aldehydes, 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.

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| ACCIDENTAL RELEASE MEASURES |
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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.

Remove debris in path of spill and remove contaminated debris from shoreline and water surface and dispose of according to local 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. Do not touch or walk through spilled material. Small Spills: Absorb with earth, sand or other non-combustible material and transfer to containers for later disposal. Recover by pumping or with suitable absorbent.

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Water Spill: Stop leak if you can do it without risk. Material will sink. 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.

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| SECTION 7 | HANDLING AND STORAGE |
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A. Precautions for Safe Handling

Avoid breathing mists or vapors. 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 store in open or unlabelled containers. Keep away from incompatible materials.

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| SECTION 8 | EXPOSURE CONTROLS AND PERSONAL PROTECTION |
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A. Exposure Limit Values, Biological Limit Values

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

| Substance Name | Form | Limit / Standard | | | Note | Source | Year |
|-----------------|--------------------|------------------|-----------------------|--|------|------------|------|
| ETHYLENE GLYCOL | Vapor and mist. | Ceiling | 100 mg/m ³ | | | Korea OELs | 2018 |
| ETHYLENE GLYCOL | Aerosol, inhalable | STEL | 10 mg/m ³ | | | ACGIH | 2020 |
| ETHYLENE GLYCOL | Vapor fraction | STEL | 50 ppm | | | ACGIH | 2020 |
| ETHYLENE GLYCOL | Vapor fraction | TWA | 25 ppm | | | ACGIH | 2020 |

NOTE: Limits/standards shown for guidance only. Follow applicable regulations.

No biological limits allocated.

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B. Appropriate Engineering Controls

The level of protection and types of controls necessary will vary depending upon potential exposure conditions. Control measures to consider:

No special requirements under ordinary conditions of use and with adequate ventilation.

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. Organic vapor, Particulate

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: If contact is likely, safety glasses with side shields 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

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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: 8.4

E. Melting Point: N/A

Freezing Point: N/D

F. Initial Boiling Point / Range: 167° C (333° F)

G. Flash Point [Method]: 123° C (253° F) [ASTM D-92]

H. Evaporation Rate (n-butyl acetate = 1): N/D

I. Flammability (Solid, Gas): N/A

J. Flammable Limits (Approximate volume % in air): LEL: 3.2 UEL: 15.3

K. Vapor Pressure: < 0.013 kPa (0.1 mm Hg) at 20 ° C

L. Solubility in Water: Complete

M. Vapor Density (Air = 1): N/D

N. Relative Density (at 20 ° C): 1.127

O. Log Pow (n-Octanol/Water Partition Coefficient): < 2

P. Autoignition Temperature: 371° C (700° F)

Q. Decomposition Temperature: N/D

R. Viscosity: 8.4 cSt (8.4 mm²/sec) at 40 ° C | 1.3 cSt (1.3 mm²/sec) at 100° 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. High energy sources of ignition.

C. Incompatible Materials: Strong oxidizers

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

SECTION 11

TOXICOLOGICAL INFORMATION

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A. Information on Likely Routes of Exposure

No data available

B. Information on Health Hazards

Acute Toxicity (Inhalation):

Product

(Rat) LC50 > 5000 mg/m³ Minimally Toxic. Based on test data for structurally similar materials. Test(s) equivalent or similar to OECD Guideline 403
Inhalation Irritation: Data available. Negligible hazard at ambient/normal handling temperatures. Based on test data for structurally similar materials.

Acute Toxicity (Ingestion):

Product

(Rat) LD50 < 5000 ml Moderately toxic. Based on test data for structurally similar materials. Test(s) equivalent or similar to OECD Guideline 401

Acute Toxicity (Dermal)

Product

(Rabbit) LD50 > 2000 mg/kg Minimally Toxic. Based on test data for structurally similar materials. Test(s) equivalent or similar to OECD Guideline 402

Skin corrosion/irritation

Product

(Rabbit) Data available. Negligible irritation to skin at ambient temperatures. Based on test data for structurally similar materials. Test(s) equivalent or similar to OECD Guideline 404

Serious eye damage/irritation

Product

(Rabbit) Data available. May cause mild, short-lasting discomfort to eyes. Based on test data for structurally similar materials. Test(s) equivalent or similar to OECD Guideline 405

Respiratory sensitization

Product

Not expected to be a respiratory sensitizer.

Skin sensitization

Product

Not expected to be a skin sensitizer.

Carcinogenicity

Product

Not expected to cause cancer.

Germ cell mutagenicity

Product

Not expected to be a germ cell mutagen.

Reproductive toxicity

Product

Not expected to be a reproductive toxicant.

Specific target organ toxicity – single exposure

Product

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Not expected to cause organ damage from a single exposure.

Specific target organ toxicity – repeat exposure

Product

Not expected to cause organ damage from prolonged or repeated exposure.

Aspiration hazard

Product

Not expected to be an aspiration hazard. Based on physico-chemical properties of the material.

Other Information

Contains:

ETHYLENE GLYCOL (EG): Repeated high oral exposure has caused kidney damage, neurological effects, degeneration of the liver and changes in blood chemistry and circulating blood cells in laboratory animals. Repeated overexposure has the potential to cause similar toxic effects in humans. EG causes developmental and reproductive effects at high dose levels in laboratory animals. The relevance of these findings to humans is uncertain.

IARC Classification:

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

--REGULATORY LISTS SEARCHED--

1 = IARC 1

2 = IARC 2A

3 = IARC 2B

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| SECTION 12 |
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| ECOLOGICAL INFORMATION |
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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:

Material -- Expected to be readily biodegradable.

Atmospheric Oxidation:

Material -- Expected to degrade rapidly in air

C. Bioaccumulation

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Material -- Potential to bioaccumulate is low.

D. Mobility

Material -- Expected to remain in water or migrate through soil.

E. Other adverse effects: Not applicable

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| SECTION 13 | DISPOSAL CONSIDERATIONS |
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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

Even though this product is biodegradable, it must not be indiscriminately discarded into the environment. 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.

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.

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| SECTION 14 | TRANSPORT INFORMATION |
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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

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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

| CAS # or Id. No. | Chemical Name | Referenced List | Regulated Threshold Limit | Concentration |
|------------------|-----------------|--------------------------------|---------------------------|---------------|
| KE-13169 | ETHYLENE GLYCOL | Controlled Hazardous Substance | >1%weight | 90 - < 100% |

B. Chemicals Control Act : Toxic, Banned and Restricted Toxic Chemicals, Authorization substances, Accidental Release Prevention Substances and Priority Existing Chemicals to Registration: None.

C. ACT ON THE SAFETY CONTROL OF HAZARDOUS SUBSTANCES: Category 4. Class 3 petroleum chemicals-water soluble 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 (May contain substance(s) subject to notification to the EPA Active TSCA inventory prior to import to USA): ENCS, IECSC, KECI, TSCA

SECTION 16**OTHER INFORMATION**

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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: 31Jul2008

C. Revision number and latest revision date

Revision Number:1

Revision Date: 18 Mar 2021

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

H373: May cause damage to organs through prolonged or repeated exposure; Target Organ, Repeated, Cat 2

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

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