

# Safety Data Sheet

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## Section 1. Product and Company Identification

Product Name: **TMC Reference Oil**

**TMC Reference Oil** represents fully-formulated research engine and gear oils that are shipped to calibrate test apparatus in blind format. The following products are covered with this SDS. Re-blends are designated with a '-' and are covered under the initial blend designation. For more specific information please contact the TMC.

Other means of identification: Fully Formulated Reference Research Engine and Gear Oil  
Recommended use: Engine and Gear oil for use in research testing only

Restriction on Use: This material should not be used for any other purpose than that recommended without expert advice.

Manufacturer or supplier's detail:

Test Monitoring Center (TMC)  
203 Armstrong Drive  
Freeport, PA 16229 USA  
412-365-1000

Email address for further information: [GHS-sds@astmtmc.org](mailto:GHS-sds@astmtmc.org)  
USA emergency telephone number: 1-800-424-9300 Ext. 3905  
International emergency telephone number: +1 202-366-4488

## Section 2. Hazards Identification

**GHS Classification:** Eye irritation: Category 2A

**GHS Label elements, including precautionary statements:**

GHS Pictogram:



Signal Word: Warning

### Hazard Statements

H319 Causes serious eye irritation.

### Precautionary Statements

### Prevention

P264: Wash skin thoroughly after handling.

P280: Wear protective gloves/eye protection/face protection.

### Response

P305 + P351 + P338: If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue to rinse. P 337 + P313: If eye irritation persists: Get medical advice/attention.

### **Other hazards which do not result in classification**

This mixture contains no substance considered to be persistent, bioaccumulating and toxic (PBT).

This mixture contains no substance considered to be very persistent and very bioaccumulating (vPvB).

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Warning: If this material is overheated, especially in the presence of water, hydrogen sulfide may be released; this can cause rapid respiratory collapse, coma, and death without necessarily any warning odor being sensed.

HMIS Classification<sup>1</sup>:

Health: 2  
Flammability: 1  
Physical hazards: 0

NFPA Classification<sup>1</sup>:

Health: 2  
Flammability: 1  
Instability: 0

<sup>1</sup> Hazard Rating: least=0, slight=1, moderate=2, high=3, extreme=4

## Section 3. Composition/Information on Ingredients

Name	CAS Number	Percent by Weight
Highly Refined Mineral Oil	Not Determined	90 – 100%
Additive Components	Not Determined, Confidential Business Information	10 - 0%

The mineral oil contained may be described by one or more of the following:

CAS 8042-47-5, White mineral oil (petroleum);  
CAS 64741-88-4, Distillates (petroleum), solvent-refined heavy;  
CAS 64742-01-4, Residual oils (petroleum), solvent- refined;  
CAS 64742-53-6, Distillates (petroleum), hydrotreated light naphthenic;  
CAS 64742-54-7, Distillates (petroleum), hydrotreated heavy paraffinic;  
CAS 64742-65-0, Distillates (petroleum), solvent-dewaxed heavy paraffinic;  
CAS 64742-55-8, Distillates (petroleum), hydrotreated light paraffinic;  
CAS 64742-56-9, Distillates (petroleum), solvent-dewaxed light paraffinic;  
CAS 72623-86-0, Lubricating oils (petroleum), C15-30, hydrotreated;  
CAS 72623-87-1, Lubricating oils (petroleum), C20-50, hydrotreated.  
CAS 68649-42-3, Zinc alkyl dithiophosphate

Additive ingredients are either not hazardous or are below the regulatory disclosure limit.

As per paragraph (i) of 29 CFR1910.1200, additive components are considered trade secrets and are available to health professional, employees, or designated representatives in accordance with applicable provisions of paragraph (i).

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## Section 4. First Aid Measures

**Inhalation:** Remove exposed person to fresh air if adverse effects are observed and seek medical advice.

**Ingestion:** Clean mouth with water and spit. Treat symptomatically. Get medical attention.

**Skin Contact:** Take off contaminated clothing and shoes immediately. Wash contact areas with soap and plenty of water. If skin irritation occurs, get medical attention. Get medical attention if symptoms occur. If product is injected under the skin, or into any part of the body, the person is to be evaluated by a physician immediately.

**Eye Contact:** Flush thoroughly with water and seek medical advice. Keep eye wide open while rinsing. If irritation occurs, get medical attention. Remove contact lenses, if present and easy to do. Continue rinsing.

## Section 5. Fire Fighting Measures

**General Fire Hazards:** Standard procedures for chemical fires.

**Suitable Extinguishing Media:** CO<sub>2</sub>, dry chemical, or foam.

**Unsuitable Extinguishing Media:** Straight streams of water, as this will spread fire.

**Fire Fighting:** Evacuate area. Prevent runoff from fire control or dilution from entering streams, sewers or drinking supply.

**Flammable properties:** See Section 9 for information on flammability.

Firefighters should use standard protective equipment and self-contained breathing apparatus. Use water spray to cool fire exposed surfaces and to protect personnel.

**Hazardous Combustion Products:** Hydrogen sulphide, sulphur oxides and phosphorous oxides, zinc oxides, carbon monoxide, carbon dioxide and unburned hydrocarbons.

## Section 6. Accidental Release Measures

**Land Spill:** Dike far ahead of larger spill for later recovery and disposal. Prevent entry into waterways, sewers, basements, or confined areas. Pick up free liquid for recycle and/or disposal. Residual material can be absorbed with inert material.

**Water Spill:** Stop leak if no risk is apparent. Confine the spill immediately with containment booms. Warn other shipping. Remove from surface by skimming or with suitable absorbents. Seek the advice of a specialist before using dispersants.

Water spill and land spill recommendations are based on the most likely 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

Observe good industrial hygiene practices. Provide adequate ventilation. Wear appropriate personal protective equipment. Smoking, eating, and drinking should be prohibited in application area. Avoid contact with skin and eyes. Prevent small spills and leakage to avoid slip hazard.

Incompatible materials and coatings: No data available.

Storage temperature:  $\leq 40^{\circ}\text{C}$  ( $104^{\circ}\text{F}$ )

Do not reheat above  $60^{\circ}\text{C}$  ( $140^{\circ}\text{F}$ )

Keep container closed in dry and well-ventilated area.

No decomposition if stored and applied as directed.

Keep away from incompatible materials.

Storage: The container choice, for example storage vessel, may affect static accumulation and dissipation. Do not store in open or unlabeled containers.

Some reference oils can accumulate static charges which may cause electrical spark (ignition source). When material is handled in bulk, an electrical spark could ignite any flammable vapors from liquids or residues that may be present (e.g., during switch-loading operations). Use proper bonding and/or ground procedures. However, bonding and grounds may not eliminate the hazard from static accumulation. Consult local applicable standards for guidance. Additional references include American Petroleum Institute 2003 (Protection Against Ignitions Arising out of Static, Lightning and Stray Currents) or CENELEC CLC/TR 50404 (Electrostatics – Code of practice for the avoidance of hazards due to static electricity).

Several reference oils contain Zinc Dialkyl DithioPhosphate (ZDDP), a thermally sensitive substance. Odorous and toxic fumes may form from decomposition if stored above  $113^{\circ}\text{F}$  ( $45^{\circ}\text{C}$ ) for extended periods of time or if heat sources in excess of  $250^{\circ}\text{F}$  ( $121^{\circ}\text{C}$ ).

## Section 8. Exposure Controls/Personnel Protection

Exposure Limit Values:

Exposure limits for materials that can be formed when handling the product: When mists/aerosols can occur, the following are recommended:  $5\text{mg}/\text{m}^3$  – AGGIH TLV (inhalable fraction),  $5\text{mg}/\text{m}^3$  – U.S. OSHA PEL

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

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

Eye Protection: Safety glasses with side shields. If contact is likely, wear tightly fitted safety goggles.

Skin Protection: In accordance with good industrial hygiene practices, precautions should be taken to avoid skin contact. Observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves.

Hygiene Measures: Always observe good occupational hygiene measures, such as washing after handling material 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.

Aspiration: Under normal use conditions, a respirator is not usually required. Use appropriate respiratory protection if exposure to dust particles, mist, or confined space, for other poorly ventilated areas and for large spill clean-up sites.

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## 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 specifications. Contact supplier for additional information.

Physical State: Liquid  
Form: Liquid  
Color: Colorless to Dark Amber  
Odor: Hydrocarbon  
Odor Threshold: Not Determined

Relative Estimated Density (@15°C): 0.8 – 0.9 g/cm<sup>3</sup> ASTM D4052  
Flash Point: > 100°C (212°F) ASTM D93 Pensky-Martens Closed Cup  
Auto Ignition Temperature: Not Determined  
Flammable Limits (approximate volume % in air): LEL 0.9 UEL 7.0  
Explosive Limits: Not Determined  
Boiling Point/Range: Estimated >300°C (600°F)  
Vapor Density: Not Determined  
Vapor Pressure: Estimated <0.1 kPa @ 20°C  
Evaporation Rate: Not Determined  
Decomposition Temperature: Not Determined  
Solubility In Water: Negligible  
Pour Point: Not Determined  
Melting/Freezing Point: Not Determined  
DMSO Extract by IP346: <3.0 wt% (mineral oil component)  
Viscosity, kinematic: Estimated >22 mm<sup>2</sup>/s @ 40°C (104°F)  
pH: Not Applicable

## Section 10. Stability and Reactivity

Stability: Material is stable under normal conditions.

Conditions to Avoid: Excessive heat. High energy sources of ignition.

Reactivity: No dangerous reaction known under conditions of normal use.

Possibility of Hazardous Reactions: No hazardous to be specifically mentioned.

Incompatible Materials: Strong oxidizing agents.

Hazardous Decomposition: No decomposition if used as directed.

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## Section 11. Toxicological Information

Information on likely routes of exposure:

Route of Exposure	
Acute oral toxicity	No data available
Acute inhalation toxicity	No data available
Acute dermal toxicity	No data available
Eye Contact	No data available
Skin Corrosion/Irritation	May cause mild skin irritation
Germ cell mutagenicity	No data available
Genotoxicity in vitro	No data available
Genotoxicity in vivo	No data available
Reproductive toxicity	No data available
Specific Target Organ Toxicity – single exposure	No data available
Specific Target Organ Toxicity – repeated exposure	No data available
Aspiration toxicity	No data available

### Chronic/Other Effects

Severely refined new mineral oils are not considered carcinogenic.

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

1= NTP CARC      3= IAR 1      5= IARC 2B  
2= NTP SUS      4= IARC 2A      6= OSHA CRAC

## Section 12. Ecological Information

The following toxicity information is to be used as a guideline for the products listed in Section 1. For specific product information contact the supplier.

### Ecotoxicity

#### Fish

Mineral Oil      LC 50 (Fathead Minnow, 4 days): > 100mg/L  
Phosphoric acid esters/amine salt      LC 50 (Rainbow Trout, 4 days): 24mg/L

#### Aquatic Invertebrates

Mineral Oil      LC 50 (Water Flea (Daphnia magna), 2 days): >10,000 mg/L  
LC 50 (Water Flea (Daphnia magna), 21 days): >10 mg/L  
NOEC (Water Flea (Daphnia magna), 21 days): >10 mg/L

#### Toxicity to Aquatic Plants

Mineral Oil      EC 50 (Green Algae (Scenedesmus quadricauda), 3 Days): > 100 mg/L

#### Toxicity to Soil Dwelling Organisms

No data available.

#### Sediment Toxicity

No data available.

#### Toxicity to Terrestrial Plants

No data available.

#### Toxicity to Above-Ground Organisms

No data available.

#### Toxicity to Microorganisms

No data available.

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## Persistence and Degradability

### Biodegradation

Mineral Oil            Not readily degradable.

### Mobility

Mineral Oil            Low solubility and floats and is expected to migrate from water to the land. Expected to partition to sediment and wastewater solids.

## **Section 13. Disposal Considerations**

Disposal Instructions: Treatment, storage, transportation, and disposal must be in accordance with applicable Federal, State/Provincial, and Local regulations. Emptied containers retain product residue, follow labels warnings even after container is emptied.

Contaminated Packaging: Container packaging may exhibit hazards. Empty containers should be taken for recycling, recovery, or disposal through suitably qualified or licensed contractor and in accordance with governmental regulations.

## **Section 14. Transport Information**

Land (DOT): Not Regulated for Land Transport.

Land (TDG): Not Regulated for Land Transport.

Sea (IMDG): Not Regulated for Sea Transport.

Air (IATA): Not Regulated for Air Transport.

Shipping descriptions may vary based on mode of transport, quantities, temperature of the material, package size, and/or origin and destination. It is the responsibility of the transporting organization to follow all applicable laws, regulations and rules relating to the transportation of the material. Review classification requirements before shipping materials at elevated temperatures.

## **Section 15. Regulatory Information**

Complies with the following national/regional chemical inventory requirements:

Canada (DSL)

Philippines (PICCS)

Taiwan (TSCA)

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories: None

SARA 302 Extremely Hazardous Substance

SARA 304 Emergency Release Notification

SARA 311/312 Hazardous Chemical

SARA 313 (TRI Reporting)

This product may contain chemical(s) regulated under the Superfund Amendments Reauthorization Act. For additional information contact the supplier.

The following ingredients may be contained in products listed in Section 1. For specific ingredients by product contact the supplier.

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Chemical Name	CAS Number	List Citations
DIPHENYLAMINE	122-39-4	12, 16, 17, 18
ZINC ALKYLDITHIOPHOSPHATE	68649-42-3	13, 15, 19
ZINC DITHIOPHOSPHATE	68649-42-3	13, 15, 19
HIGHLY REFINED MINERAL OIL	64742-54-7	17, 18
HIGHLY REFINED MINERAL OIL	64742-65-0	17, 18
TRACE METALS	Confidential Business Information	10

Regulatory Lists Searched			
1 = ACGIH ALL	6 = TSCA 5a2	11 = CA P65 Reproductive	16 = MN RTK
2 = ACGIH A1	7 = TSCA 5e	12 = CA RTK	17 = NJ RTK
3 = ACGIH A2	8 = TSCA 6	13 = IL RTK	18 = PA RTK
4 = OSHA Z	9 = TSCA 12b	14 = LA RTK	19 = RI RTK
5 = TSCA 4	10 = CA P65 Carcinogen	15 = MI 293	

## Section 16. Other Information

This Safety Data Sheet contains the following revisions: None

The information contained in this document is based upon data believed to be reliable at the time of going to press and relates to the matters specifically mentioned in this document. This information is offered to cover the Test Monitoring Center's inventory of reference oils. Although the Test Monitoring Center has used information provided by their suppliers in the preparation of this information, in the absence of any overriding obligations arising under a specific contract, no representation, warranty (express or implied), or guarantee is made to the suitability, accuracy, reliability or completeness of the information; nothing in this document shall reduce the user's responsibility to satisfy itself as to the suitability, accuracy, reliability and completeness of such information for its particular use; there is no warranty against intellectual property infringement; and the Test Monitoring Center shall not be liable for any loss, damage or injury that may occur from the use of this information other than death or personal injury caused by its negligence. No statement shall be construed as an endorsement of any product or process. For greater certainty, before use of the information contained in this document, particularly if the product is used for the purpose or under conditions which are abnormal or not reasonably foreseeable, this information must be reviewed with the supplier of this information.