



Material Safety Data Sheet

The Toro Company
8111 Lyndale Ave S
Bloomington, MN 55420

Revision Date: 19May2005

Issue Date:

Product Identification

Product Name:	Toro Transmission/Hydraulic Oil	Parts Number:
Product type:	Hydraulic fluid	108-1183, 108-1184
MSDS #		
Emergency Contact:	Chemtrec : 1-800-424-9300	
Contact Number:	1-952-888-8801	

Chemical Components

Chemical	CAS #	%	ACGIH TLV	OSHA PEL	Other
ZINC DITHIOPHOSPHATE	68649-42-3	< 2.5%			
mists / aerosols can occur			5 mg/m ³	5 mg/m ³	10 mg/m ³ - ACGIH STEL

Physical and Chemical Properties

Characteristics		Physical Properties		Hazards Description	Physical Dangers
Physical State	Liquid	Vapor pressure	< 0.013 kPa (0.1 mm Hg) at 20°C	HAZARDOUS DECOMPOSITION PRODUCTS: Material does not decompose at ambient temperatures. HAZARDOUS POLYMERIZATION: Will not occur.	STABILITY: Material is stable under normal conditions. CONDITIONS TO AVOID: Excessive heat. High energy sources of ignition. MATERIALS TO AVOID: Strong oxidizers
Color	Amber	pH	N/A		
Odor	characteristic	Boiling point/range:	> 316°C (600°F)		
HMIS Rating		Log Pow (n-Octanol/Water Partition Coefficient):	> 3.5		
Health:	0	Relative density	0.884		
Flammability:	1	Vapor density	> 2 at 101 kPa		
Physical Hazard:	0	Evaporation rate	N/D		
OTHER INFORMATION		Solubility in water	Negligible		
Freezing Point: N/D		Viscosity:	55 cSt (55 mm ² /sec) at 40 °C 9.6 cSt (9.6 mm ² /sec) at 100°C		
Melting Point: N/A		Flash Point	>198°C (389°F) [ASTM D-92]		
Pour Point: -36°C (-33°F)		Flammable limits	LEL: 0.9 UEL: 7.0		
DMSO Extract (mineral oil only), IP-346: < 3 %wt					

Health Hazards

Major Routes of Exposure:		Ingredients Considered Hazardous to Health	Potential Health Effects:
Inhalation	X	This material is not considered to be hazardous according to regulatory guidelines High-pressure injection under skin may cause serious damage.	Inhalation. irritation
Skin	X		Skin contact irritation
Ingestion			Eye contact: irritation
Eye	X		Ingestion:

First Aid Measures	Personal Protection
<p>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.</p> <p>SKIN CONTACT Wash contact areas with soap and water. 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.</p> <p>EYE CONTACT Flush thoroughly with water. If irritation occurs, get medical assistance.</p> <p>INGESTION First aid is normally not required. Seek medical attention if discomfort occurs.</p>	<p>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.</p> <p>PERSONAL PROTECTION 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.</p> <p>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 special requirements under ordinary 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.</p> <p>Hand Protection: Any specific glove information provided is based on published literature and glove manufacturer data. Work conditions can greatly effect glove durability; inspect and replace worn or damaged gloves. The types of gloves to be considered for this material include: No protection is ordinarily required under normal conditions of use.</p> <p>Eye Protection: If contact is likely, safety glasses with side shields are recommended.</p> <p>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: No skin protection is ordinarily required under normal conditions of use. In accordance with good industrial hygiene practices, precautions should be taken to avoid skin contact.</p> <p>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.</p>

Fire and Explosion Hazards

Extinguishing Media	Special Fire Fighting Procedures	Unusual Fire and Explosion Hazards
<p>Appropriate Extinguishing Media: Use water fog, foam, dry chemical or carbon dioxide (CO₂) to extinguish flames.</p> <p>Inappropriate Extinguishing Media: Straight Streams of Water</p>	<p>Fire Fighting Instructions: 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</p>	<p>Unusual Fire Hazards: Pressurized mists may form a flammable mixture.</p> <p>Hazardous Combustion Products: Aldehydes, Incomplete combustion products, Smoke, Fume, Oxides of carbon, Sulfur oxides</p> <p>FLAMMABILITY PROPERTIES</p> <p>Flash Point [Method]: >198°C (389°F) [ASTM D-92]</p> <p>Flammable Limits (Approximate volume % in air): LEL: 0.9 UEL: 7.0</p> <p>Autoignition Temperature: N/D</p>

Handling and Storage

Accidental Release /Spill Measures to Take	Precautions for Storage	Handling
<p>NOTIFICATION PROCEDURES</p> <p>In the event of a spill or accidental release, notify relevant authorities in accordance with all applicable regulations. U.S. regulations require reporting releases of this material to the environment which exceed the reportable quantity or oil spills which could reach any waterway including intermittent dry creeks. The National Response Center can be reached at (800)424-8802.</p> <p>SPILL MANAGEMENT</p> <p>Land Spill: Stop leak if you can do it without risk. Recover by pumping or with suitable absorbent.</p> <p>Water Spill: Confine the spill immediately with booms. Stop leak if you can do it without risk. Warn other shipping. Remove from the surface by skimming or with suitable absorbents. Seek the advice of a specialist before using dispersants.</p> <p>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.</p> <p>ENVIRONMENTAL PRECAUTIONS</p> <p>Large Spills: Dike far ahead of liquid spill for later recovery and disposal. Prevent entry into waterways, sewers, basements or confined areas.</p>	<p>Do not store in open or unlabelled containers.</p> <p>Empty Container Warning</p> <p>PRECAUTIONARY LABEL TEXT: Empty containers may retain residue and can be dangerous. DO NOT PRESSURIZE, 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. Do not attempt to refill or clean container since residue is difficult to remove. Empty drums should be completely drained, properly bunged and promptly returned to a drum reconditioner. All containers should be disposed of in an environmentally safe manner and in accordance with governmental regulations</p>	<p>HANDLING</p> <p>Prevent small spills and leakage to avoid slip hazard.</p> <p>Static Accumulator: This material is a static accumulator.</p>

Disposal/Transportation

Disposal Method	Transportation
<p>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.</p> <p>DISPOSAL RECOMMENDATIONS 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.</p> <p>REGULATORY DISPOSAL INFORMATION RCRA Information: The unused product, in our opinion, is not specifically listed by the EPA as a hazardous waste (40 CFR, Part 261D), nor is it formulated to contain materials which are listed as hazardous wastes. It does not exhibit the hazardous characteristics of ignitability, corrosivity or reactivity and is not formulated with contaminants as determined by the Toxicity Characteristic Leaching Procedure (TCLP). However, used product may be regulated.</p>	<p>LAND (DOT) : Not Regulated for Land Transport LAND (TDG) : Not Regulated for Land Transport SEA (IMDG) : Not Regulated for Sea Transport according to IMDG-Code AIR (IATA) : Not Regulated for Air Transport</p>

Regulations

<p>OSHA HAZARD COMMUNICATION STANDARD: When used for its intended purposes, this material is not classified as hazardous in accordance with OSHA 29 CFR 1910.1200.</p> <p>NATIONAL CHEMICAL INVENTORY LISTING: AICS, DSL, EINECS, ENCS, KECI, PICCS, TSCA</p> <p>EPCRA: This material contains no extremely hazardous substances.</p> <p>SARA (311/312) REPORTABLE HAZARD CATEGORIES: None</p> <p>SARA (313) TOXIC RELEASE INVENTORY:</p> <p>Chemical Name CAS Number Typical Value ZINC DITHIOPHOSPHATE 68649-42-3 < 2.5%</p> <p>The Following Ingredients are Cited on the Lists Below:*</p> <p>Chemical Name CAS Number List Citations PHOSPHORUS 7723-14-0 1, 4 TOLUENE 108-88-3 15 ZINC DITHIOPHOSPHATE 68649-42-3 13, 15, 17 --REGULATORY LISTS SEARCHED-- 1 = ACGIH ALL 6 = TSCA 5a2 11 = CA P65 REPRO 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 CARC 15 = MI 293 Code key: CARC=Carcinogen; REPRO=Reproductive * EPA recently added new chemical substances to its TSCA Section 4 test rules. Please contact the supplier to confirm whether the ingredients in this product currently appear on a TSCA 4 or TSCA 12b list.</p>
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Toxicology Information

<p>ACUTE TOXICITY</p> <p>Route of Exposure Conclusion / Remarks</p> <p>Inhalation Toxicity (Rat): LC50 > 5000 mg/m³ Minimally Toxic. Based on assessment of the components. Irritation: No end point data. Negligible hazard at ambient/normal handling temperatures. Based on assessment of the components.</p> <p>Ingestion Toxicity (Rat): LD50 > 2000 mg/kg Minimally Toxic. Based on test data for structurally similar materials.</p> <p>Skin Toxicity (Rabbit): LD50 > 2000 mg/kg Minimally Toxic. Based on test data for structurally similar materials. Irritation (Rabbit): Data available. Negligible irritation to skin at ambient temperatures. Based on</p>
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assessment of the components.

Eye

Irritation (Rabbit): Data available. May cause mild, short-lasting discomfort to eyes. Based on assessment of the components.

CHRONIC/OTHER EFFECTS

Contains:

Base oil severely refined: Not carcinogenic in animal studies. Representative material passes IP-346, Modified Ames test, and/or other screening tests. Dermal and inhalation studies showed minimal effects; lung nonspecific infiltration of immune cells, oil deposition and minimal granuloma formation. Not sensitizing in test animals.

Additional information is available by request.

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

--REGULATORY LISTS SEARCHED--

1 = NTP CARC 3 = IARC 1 5 = IARC 2B

2 = NTP SUS 4 = IARC 2A 6 = OSHA CARC

Ecological Information

The information given is based on data available for the material, the components of the material, and similar materials.

ECOTOXICITY

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

MOBILITY

Base oil component -- Low solubility and floats and is expected to migrate from water to the land. Expected to partition to sediment and wastewater solids.

PERSISTENCE AND DEGRADABILITY

Biodegradation:

Base oil component -- Expected to be inherently biodegradable

BIOACCUMULATION POTENTIAL

Base oil component -- Has the potential to bioaccumulate, however metabolism or physical properties may reduce the bioconcentration or limit bioavailability.