Safety Data Sheet

According to OSHA HCS 2012 (29 CFR 1910.1200)

MultiTherm OG-1® Heat Transfer Fluid

1. Product and Company Identification

Product Identifier: **MultiTherm OG-1®**
Product Description: Heat Transfer Fluid
Manufacturer: MultiTherm LLC
11 General Warren Blvd., Malvern, PA 19355 USA
Emergency Contact: **Mark Smith**
Emergency Phone: **(484) 433-1787**
Customer Service: **(610) 408-8361**

2. Hazards Identification

OSHA/HCS status: This material is not hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Classification of the Substance or mixture: Not classified.

GHS CLASSIFICATIONS
Signal word: No signal word.
Hazard Statement: No known significant effects or critical hazards.

Precautionary Statements
Prevention: Not applicable.
Response: Not applicable.
Storage: Not applicable.
Disposal: Not applicable.
Supplemental label elements: Avoid contact with skin and clothing. Wash thoroughly after handling.
Hazards not otherwise classified: Prolonged or repeated contact may dry skin and cause irritation.

3. Composition / Information on Ingredients

Substance/Mixtue: Substance.
Chemical name: Mineral oil (petroleum).

Ingredient Name	%	CAS Number
Lubricant Base Oil (petroleum)	>97	Various
Additives	<3	Proprietary

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

4. First Aid Measures

Description of necessary first aid measures

Eyes: Flush eye with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. If Symptoms persist, seek medical attention.

Skin: Immediately wash skin with soap and water or use recognized skin cleanser. Remove contaminated clothing and shoes. If irritation or redness develops and persists, seek medical attention.

Ingestion: Wash out mouth with water. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Do not induce vomiting unless directed to do so by medical personnel. Get medical attention if symptoms occur.

Inhalation: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if symptoms occur.

Most important Symptoms / Effects, acute and delayed

Potential acute health effects

Eyes: No known significant effects or critical hazards.
Inhalation: No known significant effects or critical hazards.
Skin: May cause skin dryness and irritation.
Ingestion: No known significant effects or critical hazards.

Over-exposure signs/symptoms

Eyes: No specific data.
Inhalation: No specific data.
Skin: Adverse symptoms may include irritation, dryness and cracking.
Ingestion: No specific data.

Indication of immediate medical attention and special treatment needed. if necessary

Notes to physician: Acute aspirations of large amounts of oil-laden material may produce a serious aspiration pneumonia. Patients who aspirate these oils should be followed for the development of long-term sequelae. Inhalation exposure to oil mists below current workplace exposure limits is unlikely to cause pulmonary abnormalities.
Specific treatments: No specific treatment.
Protection of first-aiders: No action shall be taken involving any personal risk or without suitable training.

See toxicological information (Section 11)

5. Fire Fighting Measures

Extinguishing media

Suitable extinguishing media: Use dry chemical, CO_2, alcohol-resistant foam or water spray (fog) is recommended. Water or foam may cause frothing of materials heated above 212°F / 100°C. Carbon dioxide can displace oxygen. Use caution when applying carbon dioxide in confined spaces. Simultaneous use of foam and water on the same surface is to be avoided as water destroys the foam.
Unsuitable extinguishing media: Do not use high pressure water jet.

Specific hazard arising from the chemical: In a fire or if heated, a pressure increase will occur and the container may burst. **Unusual Fire & Explosion Hazards:** This material may burn, but will not ignite readily. If container is not properly cooled, it can rupture in the heat of a fire. **Hazardous Combustion Products:** Combustion may yield smoke, carbon monoxide, and other products of incomplete combustion. Oxides of sulfur, nitrogen or phosphorus may also be formed.

Hazardous thermal decomposition products: Decomposition products may include carbon dioxide, carbon monoxide, oxides of sulfur, nitrogen or phosphorus may also be formed.

Special protective actions for Fire-fighters: Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. For fires beyond the initial stage, emergency responders in the immediate hazard area should wear protective clothing. When the potential chemical hazard is unknown, in enclosed or confined spaces, a self contained breathing apparatus should be worn. In addition, wear other appropriate protective equipment as conditions warrant (see Section 8).

Special protective Fire-fighters should wear appropriate protective equipment and self-contained

equipment for fire-fighters: breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

See Section 9 for Flammable Properties including Flash Point and Flammable (Explosive) Limits

6. Accidental Release Measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel: No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Put on appropriate personal protective equipment.

For emergency responders: This material may burn, but will not ignite readily. Keep all sources of ignition away from spill/release. Stay upwind and away from spill/release. Avoid direct contact with material. For large spillages, notify persons down wind of the spill/release, isolate immediate hazard area and keep unauthorized personnel out. Wear appropriate protective equipment, including respiratory protection, as conditions warrant (see Section 8). See Sections 2 and 7 for additional information on hazards and precautionary measures.

Environmental precautions: Stop spill/release if it can be done safely. Prevent spilled material from entering sewers, storm drains, other unauthorized drainage systems, and natural waterways. Use water sparingly to minimize environmental contamination and reduce disposal requirements. If spill occurs on water notify appropriate authorities and advise shipping of any hazard. Spills into or upon navigable waters, the contiguous zone, or adjoining shorelines that cause a sheen or discoloration on the surface of the water, may require notification of the National Response Center (phone number 800-424-8802).

Methods and materials for containment and cleaning up

Small spill: Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

Large spill: Notify relevant authorities in accordance with all applicable regulations. Immediate cleanup of any spill is recommended. Dike far ahead of spill for later recovery or disposal. Absorb spill with inert material such as sand or vermiculite, and place in suitable container for disposal. If spilled on water remove with appropriate methods (e.g. skimming, booms or absorbents). In case of soil contamination, remove contaminated soil for remediation or disposal, in accordance with local regulations.

Recommended measures are based on the most likely spillage scenarios for this material; however local conditions and regulations may influence or limit the choice of appropriate actions to be taken. See Section 13 for information on appropriate disposal.

7. Handling and Storage

General Procedures: Handle in accordance with good industrial hygiene and safety practices.

Precaution for safe handling: Keep away from flames and hot surfaces. Wash thoroughly after handling. Use good personal hygiene practices and wear appropriate personal protective equipment (see section 8). Spills will produce very slippery surfaces. Do not enter confined spaces such as tanks or pits without following proper entry procedures such as ASTM D-4276 and 29CFR 1910.146. Do not wear contaminated clothing or shoes.

Conditions for safe storage: Keep container(s) tightly closed and properly labeled. Use and store this material in cool, dry, well-ventilated area away from heat and all sources of ignition. Store only in approved containers. Keep away from any

incompatible material (see Section 10). Protect container(s) against physical damage.

"Empty" containers retain residue and may be dangerous. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose such containers to heat, flame, sparks, or other sources of ignition. They may explode and cause injury or death. "Empty" drums should be completely drained, properly bunged, and promptly shipped to the supplier or a drum reconditioner. All containers should be disposed of in an environmentally safe manner and in accordance with governmental regulations. Before working on or in tanks which contain or have contained this material, refer to OSHA regulations, ANSI Z49.1, and other references pertaining to cleaning, repairing, welding, or other contemplated operations.

8. Exposure Controls / Personal Protection

Occupational exposure limits

Chemical Name	ACGIH	OSHA	Other
Lubricant Base Oil (petroleum)	TWA: 5 mg/m^3 STEL: 10 mg/m^3 as Oil Mist, if Generated	TWA: 5 mg/m^3 as Oil Mist, if Generated	---

Note: State, local or other agencies or advisory groups may have established more stringent limits. Consult an industrial hygienist or similar professional, or your local agencies, for further information.

Appropriate Engineering controls: Good general ventilation should be sufficient to control worker exposure to airborne contaminants.

Environmental exposure controls: Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

Individual protection measures

Hygiene measures: Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/Face Protection: The use of eye/face protection is not normally required; however, good industrial hygiene practice suggests the use of eye protection that meets or exceeds ANSI Z.87.1 whenever working with chemicals.

Skin/Hand Protection: The use of skin protection is not normally required; however, good industrial hygiene practice suggests the use of gloves or other appropriate skin protection whenever working with chemicals. Suggested protective materials: Nitrile.

Body protection: Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Other skin protection: Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Respiratory Protection: Where there is potential for airborne exposure above the exposure limit a NIOSH certified air purifying respirator equipped with R or P95 filters may be used.

A respiratory protection program that meets or is equivalent to OSHA 29 CFR 1910.134 and ANSI Z88.2 should be followed whenever workplace conditions warrant a respirator's use. Air purifying respirators provide limited protection and cannot be used in atmospheres that exceed the maximum use concentration (as directed by

regulation or the manufacturer's instructions), in oxygen deficient (less than 19.5 percent oxygen) situations, or under conditions that are immediately dangerous to life and health (IDLH).

Suggestions provided in this section for exposure control and specific types of protective equipment are based on readily available information. Users should consult with the specific manufacturer to confirm the performance of their protective equipment. Specific situations may require consultation with industrial hygiene, safety, or engineering professionals.

9. Physical and Chemical Properties

Data represent typical values and are not intended to be specifications. N/A = Not Applicable; N/D = Not Determined

Physical state:	Liquid.
Color:	Clear and bright.
Odor:	Petroleum.
Odor threshold:	Not available.
pH:	Not applicable.
Melting point:	< -42°C (< -44°F)
Pour point:	-15°C (5°F)
Boiling point:	330°C to 800°C (627°F to 1472°F)
Flash point:	Cleveland Closed cup: 235°C (455°F)
Evaporation rate:	Not available.
Flammability (solid, gas):	Not applicable.
Lower/upper explosive limits:	Not available.
Vapor pressure:	**<**0.011 kPa (0.08 mm Hg) [room temperature]
Vapor density (air=1):	>1
Relative density:	0.8624
Solubility:	Insoluble in the following materials: cold water and hot water.
Auto-ignition temperature:	357°C (675°F)
Decomposition temperature:	Not available.
Viscosity:	Kinematic (40°C (104°F)): 0.335 cm2/s (33.5 cSt)
Partition coefficient n-octanol/water:	Not available.

10. Stability and Reactivity

Reactivity:	Stable under normal ambient and anticipated conditions of use.
Chemical stability:	Stable under normal ambient and anticipated conditions of use.
Possibility of hazardous reactions:	Under normal conditions of storage and use, hazardous reactions will not occur.
Conditions to avoid:	Avoid all possible sources of ignition.
Incompatible materials:	Avoid contact with strong oxidizing agents and strong reducing agents.
Hazardous decomposition products:	Under normal conditions of storage and use, hazardous decomposition products should not be produced.

11. Toxicological Information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Dose	Hazard
Lubricant Base Oil (petroleum)	LC50 Inhalation Dusts and mists LD50 Dermal LD50 Oral	>5 mg/l >2000 mg/kg >5000 mg/kg	Unlikely to be harmful Unlikely to be harmful Unlikely to be harmful

Skin Irritation/Corrosion:	Not expected to be irritating. Repeated exposure may cause dryness or cracking.
Sensitization:	No information available on the mixture, however none of the components have been classified for skin sensitization (or are below the concentration threshold for classification).

Mutagenicity: No information available on the mixture, however none of the components have been classified for germ cell mutagenicity (or are below the concentration threshold for classification).

Carcinogenicity: No information available on the mixture, however none of the components have been classified for carcinogenicity (or are below the concentration threshold for classification).

Conclusion/Summary: The classification as a carcinogen need not apply if it can be shown that the substance contains less than 3% DMSO extract as measured by IP 346.

Reproductive toxicity: No information available on the mixture, however none of the components have been classified for reproductive toxicity (or are below the concentration threshold for classification).

Teratogenicity: Not available.

Specific target organ toxicity:

Single Exposure: Not expected to cause organ effects.

Repeated exposure: Not expected to cause organ effects.

Aspiration hazard: Not expected to be an aspiration hazard.

Information on the likely Routes of exposure: Not expected to be an aspiration hazard.

Symptoms of Overexposure: Inhalation of oil mists or vapors generated at elevated temperatures may cause respiratory irritation. Accidental ingestion can result in minor irritation of the digestive tract, nausea and diarrhea.

Potential acute health effects

Eye contact: No known significant effects or critical hazards.

Inhalation: No known significant effects or critical hazards.

Skin contact: May cause skin dryness and irritation.

Ingestion: May be fatal if swallowed and enters airways.

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact: No specific data.

Inhalation: No specific data.

Skin contact: Adverse symptoms may include irritation, dryness and cracking.

Ingestion: No specific data.

Carcinogenicity: The petroleum base oils contained in this product have been highly refined by a variety of processes including severe hydrocracking/hydroprocessing to reduce aromatics and improve performance characteristics. All of the oils meet the IP-346 criteria of less than 3 percent PAH's and are not considered carcinogens by NTP, IARC, or OSHA.

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Potential immediate effects: Not available.

Potential delayed effects: Not available.

Long term exposure

Potential immediate effects: Not available.

Potential delayed effects: Not available.

Potential chronic health effects Not available.

General: Prolonged or repeated contact can lead to irritation, cracking and or dermatitis.

Carcinogenicity: No known significant effects or critical hazards.

Mutagenicity: No known significant effects or critical hazards.

Teratogenicity: No known significant effects or critical hazards.
Developmental effects: No known significant effects or critical hazards.
Fertility effects: No known significant effects or critical hazards.

Numerical measures of toxicity
Acute toxicity estimates: Not available.

12. Ecological Information

GHS Classification: No classified hazards.

Toxicity: All acute aquatic toxicity studies on samples of lubricant base oils show acute toxicity values greater than 100 mg/L for invertebrates, algae and fish. These tests were carried out on water accommodated fractions and the results are consistent with the predicted aquatic toxicity of these substances based on their hydrocarbon compositions.

Persistence and Degradability: The hydrocarbons in this material are not readily biodegradable, but since they can be degraded by microorganisms, they are regarded as inherently biodegradable.

Bioaccumulative Potential: Log Kow values measured for the hydrocarbon components of this material are greater than 5.3, and therefore regarded as having the potential to bioaccumulate. In practice, metabolic processes may reduce bioconcentration.

Mobility in Soil: Volatilization to air is not expected to be a significant fate process due to the low vapor pressure of this material. In water, base oils will float and spread over the surface at a rate dependent upon viscosity. There will be significant removal of hydrocarbons from the water by sediment adsorption. In soil and sediment, hydrocarbon components will show low mobility with adsorption to sediments being the predominant physical process. The main fate process is expected to be slow biodegradation of the hydrocarbon constituents in soil and sediment.

Other adverse effects: None anticipated.

13. Disposal Considerations

DISPOSAL METHOD: Treatment, storage, transportation and disposal must be in accordance with applicable Federal, State/Provincial, and Local regulations.

EMPTY CONTAINER: Clean container thoroughly and dispose to licensed disposal contractor. Do not weld, cut, or braze empty containers, or allow product residue to come in contact with other sources of ignition as they may contain residue which could ignite.

RCRA classification: Not regulated.

This material, if discarded as produced, would not be a federally regulated RCRA "listed" hazardous waste and is not believed to exhibit characteristics of hazardous waste. See Sections 7 and 8 for information on handling, storage and personal protection and Section 9 for physical/chemical properties. It is possible that the material as produced contains constituents which are not required to be listed in the MSDS but could affect the hazardous waste determination. Additionally, use which results in chemical or physical change of this material could subject it to regulation as a hazardous waste.

This material under most intended uses would become "Used Oil" due to contamination by physical or chemical impurities. Whenever possible, Recycle used oil in accordance with applicable federal and state or local regulations. Container contents should be completely used and containers should be emptied prior to discard.

14. Transport information

	DOT Classification	TDG Classification	IMDG	ICAO/IATA
UN number	Not regulated.	Not regulated.	Not regulated.	Not regulated.

Special precaustions for user

Transport within user's premises: Always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Transport in bulk according to Annex II of MARPOL 73/78 And the IBC Code: Not applicable.

15. Regulatory Information

U.S. Federal regulations

TSCA 8(a) CDR Exempt/Partial exemption: This material is listed or exempted
Clean Air Act Section 112 (b) Hazardous Air Pollutants (HAPs): Not listed.
Clean Air Act Section 602 Class I Substances: Not listed.
Clean Air Act Section 602 Class II Substances: Not listed.
DEA List I Chemicals (Precursor Chemicals): Not listed.
DEA List II Chemicals (Essectial Chemicals): Not listed.

SARA 302/304

Composition/information on ingredients: No products were found.
SARA 304 RQ: Not applicable.

CERCLA/SARA - Section 311/312 (Title III Hazard Categories)

Acute Health Hazard: No
Chronic Health Hazard: No
Fire Hazard: No
Pressure Hazard: No
Reactive Hazard: No

CERCLA/SARA - Section 313 and 40 CFR 372:

This material does not contain any chemicals subject to the reporting requirements of SARA 313 and 40 CFR 372.

EPA (CERCLA) Reportable Quantity (in pounds):

This material does not contain any chemicals with CERCLA Reportable Quantities.

Composition/information on ingredients

Name	%	Fire hazard	Sudden release of pressure	Reactive	Immediate (acute) health hazard	Delayed (chronic) health hazard
White mineral oil (petroleum)	100	No.	No.	No.	Yes.	No.

State regulations

Massachusetts: This material is not listed.
New York: This material is not listed.
New Jersey: This material is listed.
Pennsylvania: This material is not listed.

California Proposition 65:

This material does not contain any chemicals which are known to the State of California to cause cancer, birth defects or other reproductive harm at concentrations that trigger the warning requirements of California Proposition 65.

International lists

National Inventory

Austrialia: This material is listed or exempted.
Canada: This material is listed or exempted.
China: This material is listed or exempted.
Europe: This material is listed or exempted.
Japan: This material is listed or exempted.

Malaysia: Not determined.
New Zealand: This material is listed or exempted.
Philippines: This material is listed or exempted.
Republic of Korea: This material is listed or exempted.
Taiwan: This material is listed or exempted.

Canada:
This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the SDS contains all the information required by the Regulations.

WHMIS Hazard Class: none

National Chemical Inventories: All components are either listed on the US TSCA Inventory, or are not regulated under TSCA.
All components are either on the DSL, or are exempt from DSL listing requirements.

U.S. Export Control Classification Number: EAR99

16. Other information

Procedure used to derive the classification

Classification	Justification
Not classified.	

History
Date of issue/Date of revision: 2017 April 14th
Revision: Final

Key to addreviations:
ATE = Acute Toxicity Estimate; ACGIH = American Conference of Governmental Industrial Hygienists; BCF = Bioconcentration Factor; CASRN = Chemical Abstracts Service Registry Number; CEILING = Ceiling Limit (15 minutes); CERCLA = The Comprehensive Environmental Response, Compensation, and Liability Act; EPA = Environmental Protection Agency; GHS = Globally Harmonized System; IARC = International Agency for Research on Cancer; IATA = International Air Transport Association; IBC = Internediate Bulk Container; IMDG = Internatinal Maritime Dangerous Goods; INSHT = National Institute for Health and Safety at Work; IOPC = International Oil Pollution Compensation; LEL = Lower Explosive Limit; LogPow = logarithm of the octanol/water partition coefficient; MARPOL 73/78 = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = Marine polution); NE = Not Established; NFPA = National Fire Protection Association; NTP = National Toxicology Program; OSHA = Occupational Safety and Health Administration; PEL = Permissible Exposure Limit (OSHA); SARA = Superfund Amendments and Reauthorization Act; STEL = Short Term Exposure Limit (15 minutes); TLV = Threshold Limit Value (ACGIH); TWA = Time Weighted Average (8 hours); UEL = Upper Explosive Limit; UN = United Nations; WHMIS = Worker Hazardous Materials Information System (Canada)

Notice to reader
To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

MANUFACTURER DISCLAIMER: The information is based on the data of which we are aware and is believed to be correct as of the data hereof. Since the information contained herein may be applied under conditions beyond our control and with which we may be unfamiliar and since data made available subsequent to the date hereof may suggest modification of the information, we do not assume any responsibility for the result of its use. This information is furnished upon condition that the person receiving it shall make his own determination of the suitability of the material for his particular purpose. No responsibility is assumed for any damage or injury resulting from abnormal use or from any failure to adhere to recommended practices. The information provided above, and the product, are furnished on the condition that the person receiving them shall make their own determination as to the suitability of the product for their particular purpose and on the condition that they assume the risk of their use. In addition, no authorization is given nor implied to practice any patented invention without a license.