

SAFETY DATA SHEET

SECTION 1: Identification of the substance/mixture and of the company/undertaking

Product identifier

Product name: Therminol® VLT Heat Transfer Fluid

Product No.: P3415101

Relevant identified uses of the substance or mixture and uses advised against

Identified uses: Heat transfer fluids

Uses advised against: None known.

Details of the supplier of the safety data sheet

Manufacturer / Supplier

Eastman Chemical Company
200 South Wilcox Drive
Kingsport, TN 37660-5280 US
+14232292000

Visit our website at www.EASTMAN.com or email emnmsds@eastman.com

Emergency telephone number:

For emergency health, safety, and environmental information, call 1-423-229-4511 or 1-423-229-2000.

For emergency transportation information, in the United States: call CHEMTREC at 800-424-9300 or call 423-229-2000.

SECTION 2: Hazards identification

Hazard Classification:

Physical Hazards

Flammable liquids Category 2

Health Hazards

Aspiration Hazard Category 1

Skin Corrosion/Irritation Category 2

Specific Target Organ Toxicity -
Single Exposure Category 3

OSHA Specified Hazards: not applicable

Warning label items including precautionary statement:

Pictogram:



Signal Words: Danger

Hazard Statement(s): H225: Highly flammable liquid and vapor.
H304: May be fatal if swallowed and enters airways.
H315: Causes skin irritation.
H336: May cause drowsiness or dizziness.

Precautionary Statement:

Prevention: P210: Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P233: Keep container tightly closed.
P240: Ground/bond container and receiving equipment.
P241: Use explosion-proof electrical/ventilating/lighting/equipment.
P242: Use only non-sparking tools.
P243: Take precautionary measures against static discharge.
P261: Avoid breathing dust/fume/gas/mist/vapors/spray.
P264: Wash hands thoroughly after handling.
P280: Wear protective gloves/protective clothing/eye protection/face protection.

Response: P301+P310: IF SWALLOWED: Immediately call a POISON CENTER/doctor.
P331: Do NOT induce vomiting.
P303+P361+P353: IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
P332+P313: If skin irritation occurs: Get medical advice/attention.
P362: Take off contaminated clothing.
P304+P340: IF INHALED: Remove person to fresh air and keep comfortable for breathing.

Storage: P403+P233: Store in a well-ventilated place. Keep container tightly closed.
P235: Keep cool.
P405: Store locked up.

Disposal: P501: Dispose of contents/container to an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal.

Hazard(s) not otherwise classified (HNOC):

Thermal burn hazard - contact with hot material may cause thermal burns.

SECTION 3: Composition/information on ingredients

Substances / Mixtures

General information:

Chemical name	Concentration	Additional identification	Notes
methylcyclohexane	70 - 75%	CAS-No.: 108-87-2	#
2,2,4-Trimethylpentane	25 - 30%	CAS-No.: 540-84-1	#

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

This substance has workplace exposure limit(s).

SECTION 4: First aid measures**General:**

Get medical attention if symptoms occur. Show this safety data sheet to the doctor in attendance. If breathing is difficult, give oxygen. If not breathing, give artificial respiration. Place unconscious person on the side in the recovery position and ensure breathing can take place. Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

Description of first aid measures**Inhalation:**

Move into fresh air and keep at rest. For breathing difficulties, oxygen may be necessary. Consult a physician for specific advice. Persons who have inhaled vapours or smoke fumes have to be put under medical observation for at least 48 hours, due to the delayed appearance of poisoning.

Eye contact:

Immediately flush with plenty of water for at least 15 minutes. If easy to do, remove contact lenses. Get medical attention if symptoms occur.

Skin contact:

Immediately flush with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention if irritation develops and persists. Wash contaminated clothing before reuse. Destroy or thoroughly clean contaminated shoes.

Ingestion:

Call a physician or poison control center immediately. Do NOT induce vomiting. Never give liquid to an unconscious person. Provide fresh air, warmth and rest, preferably in comfortable upright sitting position. Loosen tight clothing such as a collar, tie, belt or waistband. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs.

Most important symptoms and effects, both acute and delayed:

Risk of chemical pneumonia after aspiration. The liquid may irritate the skin. Vapors may cause headache, fatigue, dizziness and nausea. Frequent or prolonged contact may defat and dry the skin, leading to discomfort and dermatitis. Contact with hot material can cause thermal burns which may result in permanent damage.

Indication of any immediate medical attention and special treatment needed**Hazards:**

Ingestion may result in vomiting; aspiration (breathing) of vomitus into lungs must be avoided as even small quantities may result in aspiration pneumonitis. In high concentrations, vapors are narcotic and may cause headache, fatigue, dizziness and nausea.

Treatment: If swallowed: Do not induce vomiting. If vomiting occurs, the head should be kept low so that stomach vomit doesn't enter the lungs. Persons who have inhaled vapours or smoke fumes have to be put under medical observation for at least 48 hours, due to the delayed appearance of poisoning.

SECTION 5: Firefighting measures

General Fire Hazards: Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. Keep upwind. In case of fire and/or explosion do not breathe fumes. This product is not classified as a fire-resistant heat transfer fluid. Precautions to avoid sources of ignitions should be taken.

Extinguishing media

Suitable extinguishing media: Water spray, foam, dry powder or carbon dioxide.

Unsuitable extinguishing media: Avoid water in straight hose stream; will scatter and spread fire.

Special hazards arising from the substance or mixture: May ignite at high temperature. During fire, gases hazardous to health may be formed. Risk of chemical pneumonia after aspiration. Hazardous Combustion Products : carbon dioxide, carbon monoxide , soot .

Advice for firefighters

Special fire fighting procedures: In case of fire: Evacuate area. Move container from fire area if it can be done without risk. Use water spray to keep fire-exposed containers cool. Prevent runoff from fire control or dilution from entering streams, sewers, or drinking water supply. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.

Special protective equipment for fire-fighters: Self-contained breathing apparatus and full protective clothing must be worn in case of fire.

SECTION 6: Accidental release measures

Personal precautions, protective equipment and emergency procedures: No action shall be taken involving any personal risk or without suitable training. Keep unauthorized personnel away. ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area). Prevent entry into waterways, sewer, basements or confined areas. Ventilate closed spaces before entering them. Avoid inhalation of vapors and spray mists. Wear appropriate personal protective equipment. See Section 8 of the SDS for Personal Protective Equipment. Caution: Contaminated surfaces may be slippery. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.

Environmental Precautions: Prevent further leakage or spillage if safe to do so. Clear up spills immediately and dispose of waste safely. Do not contaminate water sources or sewer.

Methods and material for containment and cleaning up:

Small Liquid Spills: Use a non-combustible material like vermiculite, sand or earth to soak up the product and place into a container for later disposal.
Large Spillages: Dike for later disposal. Collect spillage in containers, seal securely and deliver for disposal according to local regulations. Otherwise, absorb spill with vermiculite or other inert material, then place in a container for chemical waste. Clean surface thoroughly to remove residual contamination. Prevent runoff from entering drains, sewers, or streams. For waste disposal, see section 13 of the SDS.

Notification Procedures:

In the event of a spill or accidental release, notify relevant authorities in accordance with all applicable regulations.

SECTION 7: Handling and storage:**Precautions for safe handling:**

Do not handle until all safety precautions have been read and understood. Handle product only in closed system or provide appropriate exhaust ventilation at machinery. Do not smoke, use open fire or other sources of ignition. To reduce potential for static discharge, use proper bonding and grounding procedures. Keep product and empty container away from heat and sources of ignition. No smoking. An eye wash bottle must be available at the work site. Wear appropriate personal protective equipment. See Section 8 of the SDS for Personal Protective Equipment. Do not taste or swallow. Do not breathe mist or vapor from heated material. In case of inadequate ventilation, use respiratory protection. Do not get in eyes and avoid contact with skin and clothing. Wash promptly with soap and water if skin becomes contaminated. Remove contaminated clothing and wash it before reuse. Destroy or thoroughly clean contaminated shoes. Drain or remove substance from equipment prior to break-in or maintenance. Handle in accordance with good industrial hygiene and safety practice. See also Section 8 for additional information on hygiene measures.

Conditions for safe storage, including any incompatibilities:

Store in a cool, dry place out of direct sunlight. Keep container tightly closed and in a well-ventilated place. Keep upright. Keep in original container. Store locked up. Store away from incompatible materials. Keep away from food, drink and animal feeding stuffs. Store in accordance with local/regional/national/international regulations.

Specific end use(s):

www.therminol.com/products/

SECTION 8: Exposure controls/personal protection**Control Parameters****Occupational Exposure Limits**

Country specific exposure limits have not been established or are not applicable unless listed below.

Exposure controls

Appropriate engineering controls: Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level.

Individual protection measures, such as personal protective equipment

General information: An eye wash bottle must be available at the work site. Provide access to washing facilities including soap, skin cleanser and fatty cream.

Eye/face protection: Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. Recommendations: Wear safety glasses with side shields (or goggles). Use safety goggles and face shield in case of splash risk.

Skin protection Hand Protection:

It is a good industrial hygiene practice to minimize skin contact. If prolonged or repeated contact is likely, chemical resistant gloves are recommended. If contact with forearms is likely, wear gauntlet style gloves. Contact the glove manufacturer for specific advice on glove selection and breakthrough times for your use conditions. After contamination with product change the gloves immediately and dispose of them according to relevant national and local regulations. When material is heated, wear gloves to protect against thermal burns.

Other: 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. Recommendations: Apron or other light protective clothing and boots. If prolonged or repeated contact is likely, chemical resistant clothing is recommended. Promptly remove non-impervious clothing that becomes wet or contaminated.

Respiratory Protection: Use a properly fitted, particulate filter respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection, use, and maintenance must be in accordance with regulatory requirements, if applicable. If engineering controls do not maintain airborne concentrations below recommended exposure limits (where applicable) or to an acceptable level (in countries where exposure limits have not been established), an approved respirator must be worn. In the United States of America, if respirators are used, a program should be instituted to assure compliance with OSHA Standard 63 FR 1152, January 8, 1998. Respirator type: Air-purifying respirator with an appropriate, government approved (where applicable), air-purifying filter, cartridge or canister. Contact health and safety professional or manufacturer for specific information.

Hygiene measures: Handle in accordance with good industrial hygiene and safety practice. Do not eat, drink or smoke when using the product. Wash at the end of each work shift and before eating, smoking and using the toilet. Contaminated work clothing should not be allowed out of the workplace. Wash contaminated clothing before reuse. Keep away from food, drink and animal feeding stuffs.

Environmental 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. Do not contaminate water sources or sewer.

SECTION 9: Physical and chemical properties

Information on basic physical and chemical properties

Appearance

Physical state:	liquid
Form:	Clear Liquid
Color:	Colorless
Odor:	hydrocarbon
Odor Threshold:	No data available.
pH:	No data available.
Freezing Point:	-135 °C
Boiling Point:	99.2 °C
Flash Point:	-7 °C (Tagliabue Closed Cup) -7 °C (Tag closed cup)
Evaporation Rate:	No data available.
Flammability (solid, gas):	not applicable
Flammability Limit - Upper (%)-:	No data available.
Flammability Limit - Lower (%)-:	No data available.
Vapor pressure:	59.3 hPa (22.2 °C)
Vapor density (air=1):	0.2845
Specific Gravity:	approx. 0.753 (15 °C)
Solubility(ies)	
Solubility in Water:	No data available.
Solubility (other):	No data available.
Partition coefficient (n-octanol/water):	not applicable ; Mixture
Autoignition Temperature:	264 °C (ASTM E659) 294 °C (DIN 51794)
Decomposition Temperature:	No data available.
Dynamic viscosity:	0.88 mPa.s (0 °C) 0.52 mPa.s (40 °C) 0.28 mPa.s (100 °C)
Kinematic viscosity:	1.14 mm ² /s (0 °C) 0.71 mm ² /s (40 °C) 0.41 mm ² /s (100 °C)
Explosive properties:	Not classified.
Oxidizing properties:	Not classified.

SECTION 10: Stability and reactivity

Reactivity: Material is stable under normal conditions.

Chemical Stability: Material is stable under normal conditions.

Possibility of Hazardous Reactions:	None under normal conditions.
Conditions to Avoid:	Heating in air.
Incompatible Materials:	Strong oxidizing agents.
Hazardous Decomposition Products:	Emits acrid smoke and fumes when heated to decomposition.

SECTION 11: Toxicological information

Information on likely routes of exposure

Inhalation:	May cause drowsiness or dizziness.
Ingestion:	May be fatal if swallowed and enters airways.
Skin contact:	Causes skin irritation.
Eye contact:	None known.

Information on toxicological effects

Oral

Product:	No data available.
Specified substance(s): methylcyclohexane	Oral LD-50: (Rat): > 5,000 mg/kg Not classified. Read-across from a similar material

Dermal

Product:	No data available.
Specified substance(s): methylcyclohexane	Dermal LD-50: (Rabbit): > 2,000 mg/kg Not classified. Read-across from a similar material

Inhalation

Product:	No data available.
Specified substance(s): methylcyclohexane	Vapour: LC50 (Rat, 4 h): > 23.3 mg/l Not classified. Read-across from a similar material

Repeated dose toxicity

Product:	No data available.
Specified substance(s): methylcyclohexane	NOEL (Rabbit, Inhalation - vapor, 70 d): 1160 ppm

Skin Corrosion/Irritation

Product:	No data available.
Specified substance(s): methylcyclohexane	Slightly irritating.

Serious Eye Damage/Eye Irritation

Product:	No data available.
Specified substance(s):	

methylcyclohexane Slightly irritating.

Respiratory or Skin Sensitization

Product: No data available.

Specified substance(s):
methylcyclohexane Skin Sensitization: Not a skin sensitizer.

Carcinogenicity

Product: This product does not contain any carcinogens or potential carcinogens as listed by OSHA, IARC or NTP.

Toxicity to reproduction

Product: No data available.

Developmental toxicity

Product: No data available.

Germ Cell Mutagenicity

In vitro
Product: Mutagenicity: None Reported

In vivo
Product: Mutagenicity: No data available.

Specific Target Organ Toxicity - Single Exposure

Product: Inhalation - vapor: May cause drowsiness or dizziness.

Specific Target Organ Toxicity - Repeated Exposure

Product: Not classified. Not classified.

Aspiration Hazard

Product: May be fatal if swallowed and enters airways.

Other effects: No data available.

SECTION 12: Ecological information**Ecotoxicity:****Acute hazards to the aquatic environment:**

Fish
Product: No data available.

Specified substance(s):

methylcyclohexane LC-50 (Fish, 96 h): 72 mg/l

Aquatic Invertebrates

Product: EC-50 : No data available.

Chronic hazards to the aquatic environment:**Fish**

Product: No data available.

Aquatic Invertebrates

Product: NOEC : No data available.

Toxicity to Aquatic Plants

Product: EC-50 : No data available.

Persistence and Degradability**Biodegradation**

Product: No data available.

Specified substance(s):

methylcyclohexane

The product is expected to be biodegradable.

BOD/COD Ratio

Product: No data available.

Bioaccumulative Potential**Bioconcentration Factor (BCF)**

Product: not applicable ; Mixture

Partition Coefficient n-octanol / water (log Kow)

Product: Log Kow: not applicable ; Mixture

Mobility in Soil: No data available.

Other Adverse Effects: No data available.

SECTION 13: Disposal considerations**Waste treatment methods****General information:**

The generation of waste should be avoided or minimized wherever possible. Dispose of waste and residues in accordance with local authority requirements.

Disposal methods:

This material when discarded may be a hazardous waste as that term is defined by the Resource Conservation and Recovery Act (RCRA), 40 CFR 261.24, due to its toxicity characteristic. This material should be analyzed in accordance with Method 1311 for the compound D018 BENZENE. Consult 40 CFR 268.40 or appropriate local regulations for concentration based standards. This product meets the criteria for a synthetic used oil under the U.S. EPA Standards for the Management of Used Oil (40 CFR 279). Those standards govern recycling and disposal in lieu of 40 CFR 260 -272 of the Federal hazardous waste program in states that have adopted these used oil regulations. Consult your attorney or appropriate regulatory official to be sure these standards have been adopted in your state. Recycle or burn in accordance with the applicable standards. Eastman Chemical Company operates a used fluid return program for certain fluids under these used oil standards. Contact your Sales Representative for details.
Do not allow to enter drains, sewers or watercourses.

Since emptied containers retain product residue, follow label warnings even after container is emptied. Empty containers should be taken to an approved waste handling site for recycling or disposal.

SECTION 14: Transport information

DOT

- A. UN Number: UN 1993
- B. Proper Shipping Name: Flammable liquids, n.o.s.(methylcyclohexane, 2,2,4-trimethylpentane)
- C. Hazard class: 3
Subsidiary class(es) —
- D. Packing group (if applicable): II
- E. Marine Pollutant: Not regulated.
- F. Special precautions, which a user needs to be aware of, or needs for transportation and transport methods: —

IMDG

- A. UN Number: UN 1993
- B. Proper Shipping Name: FLAMMABLE LIQUID, N.O.S.(methylcyclohexane, 2,2,4-trimethylpentane)
- C. Hazard class: 3
Subsidiary class(es) —
- D. Packing group (if applicable): II
EmS No.: F-E, S-E
- E. Marine Pollutant: Not regulated.
- F. Special precautions, which a user needs to be aware of, or needs for transportation and transport methods: —

IATA

A. UN Number:	UN 1993
B. Proper Shipping Name:	Flammable liquid, n.o.s.(methylcyclohexane, 2,2,4-trimethylpentane)
C. Hazard class:	3
Subsidiary class(es)	—
D. Packing Group:	II
F.Special precautions, which a user needs to be aware of, or needs for transportation and transport methods:	—

SECTION 15: Regulatory information

Safety, health and environmental regulations/legislation specific for the substance or mixture.:

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

WHMIS (Canada) Status: controlled

WHMIS (Canada) Hazard Classification: D/2/B

SARA 311-312 Hazard Classification(s):

immediate (acute) health hazard

US EPCRA (SARA Title III) Section 313 - Toxic Chemical List

NONE

OSHA: hazardous

TSCA (US Toxic Substances Control Act): All components of this product are listed on the TSCA inventory. Any impurities present in this product are exempt from listing.

DSL (Canadian Domestic Substances List) and CEPA (Canadian Environmental Protection Act): All components of this product are listed on the DSL. Any impurities present in this product are exempt from listing.

AICS / NICNAS (Australian Inventory of Chemical Substances and National Industrial Chemicals Notification and Assessment Scheme): All components of this product are listed on AICS or otherwise comply with NICNAS.

MITI (Japanese Handbook of Existing and New Chemical Substances): All components of this product are listed in the Handbook or have been approved in Japan by new substance notification.

ECL (Korean Toxic Substances Control Act): All components of this product are listed on the Korean inventory or otherwise comply with the Korean Toxic Substances Control Act.

Philippines Inventory (PICCS) : All components of this product are listed on the Philippine inventory or otherwise comply with PICCS.

Inventory of Existing Chemical Substances in China: All intentional components of this product are listed on the Inventory of Existing Chemical Substances in China (IECSC).

SECTION 16: Other information

HMIS® Hazard Ratings: Health - 2, Flammability - 3, Chemical Reactivity - 0

HMIS® rating involves data interpretations that may vary from company to company. They are intended only for rapid, general identification of the magnitude of the specific hazard. To deal adequately with the safe handling of this material, all the information contained in this MSDS must be considered.

Revision Information: Not relevant.

Key literature references and sources for data: www.therminol.com/products/

Training information: No data available.

Issue Date: 01/21/2016

SDS No.:

Disclaimer: This information is provided without warranty. The information is believed to be correct. This information should be used to make an independent determination of the methods to safeguard workers and the environment.