SAFETY DATA SHEET

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

1.1 Product identifier

Product name: Therminol® 66 Heat Transfer Fluid

Product No.: 34131-00, P3413103, P3413100, P3413101, P3413102, P3413104, P3413105, E3413101

Additional identification

Chemical name:	terphenyl, hydrogenated
REACH Registration No.:	01-2119488183-33-0000
CAS-No.:	61788-32-7

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

Identified uses: Heat transfer fluids
Uses advised against: None known.

1.3 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

National Supplier

Solutia Europe SPRL/BVBA
A subsidiary of Eastman Chemical Company
Corporate Village Aramis Building Leonard Da Vincilaan 1
B-1935 Zaventem
Belgium
Telephone: (+32)2 746 5000
Fax: +32(0)2 746 57 00

1.4 Emergency telephone number:

For emergency health, safety, and environmental information: telephone 800-EASTMAN or 423 229-4511 in the United States; or +44 (0)1235 239 670 in Europe.

For emergency transportation information, call +44(0)1235 239 670; or 800 964214 in England; 01800559700 in Eire; or 423-229-4511 in the United States. Identify the call as a transportation emergency.

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

The product has been classified according to the legislation in force.

Regulation No. 1272/2008.

Environmental Hazards

Chronic hazards to the aquatic environment	Category 4	H413: May cause long lasting harmful effects to aquatic life.

Hazard summary

Physical Hazards: Not classified as hazardous.

Health Hazards

Inhalation: None known.

Eye contact: None known.

Skin contact: None known.

Ingestion: None known.

Other Health Effects: None known.

Environmental hazards: May cause long lasting harmful effects to aquatic life.

Classification according to Directive 67/548/EEC or 1999/45/EC as amended.

R53: May cause long-term adverse effects in the aquatic environment.

2.2 Label Elements

Hazard Statement(s): H413: May cause long lasting harmful effects to aquatic life.

Precautionary Statement

Prevention: P273: Avoid release to the environment.

Response: None.

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.

2.3 Other hazards: Thermal burn hazard - contact with hot material may cause thermal burns.

SECTION 3: Composition/information on ingredients

3.1 Substance

General information:

Chemical name	Concentration	Additional identification	Notes
terphenyl, hydrogenated	100%	CAS-No.: 61788-32-7 EC No.: 262-967-7 REACH Registration No.: 01-2119488183-33-0000	

Explanation for Notes (if applicable):
* 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).
PBT: persistent, bioaccumulative and toxic substance.
vPvB: very persistent and very bioaccumulative substance.

Classification

Chemical name	Classification		Notes
terphenyl, hydrogenated	DSD:	R53	
	CLP:	Aquatic Chronic 4, H413	

DSD: Directive 67/548/EEC.
CLP: Regulation No. 1272/2008.:

The full text for all R-phrases and H-statements is displayed in section 16.

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.

4.1 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: Wash skin with soap and water. Get medical attention if symptoms occur. Wash contaminated clothing before reuse. Destroy or thoroughly clean contaminated shoes. Wash with soap and water. Get medical attention if symptoms occur.

Ingestion: If swallowed, rinse mouth with water (only if the person is conscious). 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.

4.2 Most important symptoms and effects, both acute and delayed: Contact with hot material can cause thermal burns which may result in permanent damage.

4.3 Indication of any immediate medical attention and special treatment needed

Hazards: None known.

Treatment: Treat symptomatically. 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.

5.1 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.

5.2 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 .

5.3 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

6.1 Personal precautions, protective equipment and emergency procedures:	No action shall be taken involving any personal risk or without suitable training. Keep unauthorized personnel away. 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.
6.2 Environmental Precautions:	Prevent further leakage or spillage if safe to do so. Avoid release to the environment. Clear up spills immediately and dispose of waste safely. For waste disposal, see section 13 of the SDS. Do not contaminate water sources or sewer.
6.3 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.
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:

7.1 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. Avoid heat, sparks, open flames and other ignition sources. 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.
7.2 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 away from incompatible materials. Keep away from food, drink and animal feeding stuffs. Store in accordance with local/regional/national/international regulations.
7.3 Specific end use(s):	www.therminol.com/products/

SECTION 8: Exposure controls/personal protection

8.1 Control Parameters

Occupational Exposure Limits

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

DNEL-Values

Critical component	type	Route of Exposure		Remarks
terphenyl, hydrogenated	Workers	systemic, DNEL Human, dermal, long-term (repeated):	46,3 mg/kg bw/day	
terphenyl, hydrogenated		systemic, DNEL Human, inhalation, long-term (repeated):	8,38 mg/m3	
terphenyl, hydrogenated		local, DNEL Human, dermal, long-term (repeated):	0,2 mg/cm2	
terphenyl, hydrogenated		local, DNEL Human, inhalation, long-term (repeated):	83,8 mg/m3	A DNEL for acute toxicity was not derived because this material is not acutely toxic and no potential for high peak exposures exist.
terphenyl, hydrogenated	General population	systemic, DNEL Human, dermal, long-term (repeated):	27,8 mg/kg bw/day	
terphenyl, hydrogenated		systemic, DMEL Human, Oral, Long-Term, Systemic:	0,3	
terphenyl, hydrogenated		systemic, DNEL Human, inhalation, long-term (repeated):	2,5 mg/m3	
terphenyl, hydrogenated		local, DNEL Human, dermal, long-term (repeated):	0,123 mg/cm2	
terphenyl, hydrogenated		local, DNEL Human, inhalation, long-term (repeated):	25 mg/m3	A DNEL for acute toxicity was not derived because this material is not acutely toxic and no potential for high peak exposures exist.

PNEC-Values

Critical component	Environmental compartment		Remarks
terphenyl, hydrogenated	Aquatic (freshwater)	0,1 µg/l	
terphenyl, hydrogenated	Aquatic (marine water)	0,01 µg/l	
terphenyl, hydrogenated	Aquatic (intermit. releases)	0,001 mg/l	
terphenyl, hydrogenated	freshwater sediment	3,16 mg/kg	dry

terphenyl, hydrogenated	Marine sediments	0,316 mg/kg	dry
terphenyl, hydrogenated	Soil	0,631 mg/kg	dry
terphenyl, hydrogenated	Sewage treatment plant	10,3 mg/l	
terphenyl	Fresh water	0,322 µg/l	
terphenyl	marine water	0,032 µg/l	
terphenyl	freshwater sediment	0,377 mg/kg	dry
terphenyl	Marine sediments	0,038 mg/kg	dry
terphenyl	soil	0,631 mg/kg	dry

8.2 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:	If prolonged or repeated contact is likely, chemical resistant gloves are recommended. If contact with forearms is likely, wear gauntlet style gloves. After contamination with product change the gloves immediately and dispose of them according to relevant national and local regulations. Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. Also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion, and the contact time. When material is heated, wear gloves to protect against thermal burns. Recommended gloves: 1) The breakthrough time of the glove material, with regard to the amount and duration of dermal exposure: > 8 hours. 2) The breakthrough time of the glove material, with regard to the amount and duration of dermal exposure: =< 30 minutes. 1) Butyl rubber. Nitrile rubber. Viton rubber (fluor rubber). 2) Chloroprene rubber. Rubber (natural, latex).
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. Personal protection equipment should be chosen according to the CEN standards and in discussion with the supplier of the personal protective equipment.
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

9.1 Information on basic physical and chemical properties

Appearance	
Physical state:	liquid
Form:	Clear Liquid
Color:	colorless, Pale yellow
Odor:	Characteristic
Odor Threshold:	No data available.
pH:	No data available.
Melting Point	< -24 °C
Boiling Point:	342 °C (1.013 hPa)
Flash Point:	170 °C (Pensky-Martens Closed Cup) 184 °C (Cleveland Open Cup)
Evaporation Rate:	Not determined.
Flammability (solid, gas):	No data available.
Flammability Limit - Upper (%)–:	No data available.
Flammability Limit - Lower (%)–:	No data available.
Vapor pressure:	0,00174 hPa (20 °C)
Vapor density (air=1):	Not available.
Specific Gravity:	1,013 (20 °C)
Solubility(ies)	
Solubility in Water:	0,061 mg/l (20 °C)
Solubility (other):	No data available.
Partition coefficient (n-octanol/water):	log Pow: > 6,5
Autoignition Temperature:	374 °C (ASTM E659)
Decomposition Temperature:	No data available.
Dynamic viscosity:	No data available.
Kinematic viscosity:	133 mm2/s (20 °C) | 29,6 mm2/s (40 °C) | 3,8 mm2/s (100 °C)
Explosive properties:	Not classified.
Oxidizing properties:	Not classified.

SECTION 10: Stability and reactivity

10.1 Reactivity:	Material is stable under normal conditions.
10.2 Chemical Stability:	Material is stable under normal conditions.
10.3 Possibility of Hazardous Reactions:	None under normal conditions.
10.4 Conditions to Avoid:	Heating in air. Heat, sparks, flames.
10.5 Incompatible Materials:	Strong oxidizing agents.

10.6 Hazardous Decomposition Products: Emits acrid smoke and fumes when heated to decomposition.

SECTION 11: Toxicological information

Information on likely routes of exposure

Inhalation: None known.

Ingestion: None known.

Skin contact: None known.

Eye contact: None known.

11.1 Information on toxicological effects

Acute toxicity

Oral
Product: Oral LD-50: (Rat): > 10.000 mg/kg

Dermal
Product: Dermal LD-50: (Rabbit): > 2.000 mg/kg

Inhalation
Product: LC50 (Rat, 4 h): > 4,7 mg/l

Repeated dose toxicity
Product: NOAEL (Rat, Oral Study, 90 d): 12 mg/kg LOAEL (Rat, Oral Study, 90 d): 120 mg/kg
NOAEL (Rabbit, Dermal): 2.000 mg/kg

Skin Corrosion/Irritation:
Product: (Rabbit, 24 h): none

Serious Eye Damage/Eye Irritation:
Product: (Rabbit, 24 h): none

Respiratory or Skin Sensitization:
Product: (Human) - Not a skin sensitizer.

Mutagenicity

In vitro

Product: Mutagenicity - Bacterial, Bacterial Reverse Mutation Assay : negative
Chromosomal aberration, In vitro Mammalian Cell Gene Mutation Test : negative
Mutagenicity - Mammalian, : negative

In vivo

Product: Chromosomal aberration (Mammalian Bone Marrow Chromosome Aberration Test) (Rat): negative

Carcinogenicity

Product: No data available.

Reproductive toxicity

Toxicity to reproduction

Product: (Rat); NOAEL: 1.000 mg/kg; Ingestion

Developmental toxicity

Product: Rat; NOAEL: 500 mg/kg; Ingestion; OECD Test No. 414: Prenatal Developmental Toxicity Study

Specific Target Organ Toxicity - Single Exposure

Product: Not classified.

Specific Target Organ Toxicity - Repeated Exposure

Product: Not classified.

Aspiration Hazard

Product: Not classified.

Other Adverse Effects: No data available.

SECTION 12: Ecological information

12.1 Toxicity

Acute toxicity

Fish

Product: LC-50 (Oncorhynchus mykiss, 96 h): > 1.000 mg/l

Aquatic Invertebrates

Product: EC-50 (Daphnia magna, 48 h): > 0,1 mg/l

Chronic Toxicity

Fish

Product: NOEC No data available.

Aquatic Invertebrates
Product: No data available.

Specified substance(s)
terphenyl, hydrogenated — No data available.

Toxicity to Aquatic Plants
Product: EC-50 (Selenastrum capricornutum, 72 h): 56 mg/l

12.2 Persistence and Degradability

Biodegradation
Product: The product is moderately biodegradable.

Biological Oxygen Demand:
Product No data available.

Chemical Oxygen Demand:
Product No data available.

BOD/COD Ratio
Product No data available.

Specified substance(s)
terphenyl, hydrogenated — No data available.

12.3 Bioaccumulative Potential
Product: No data available.

Specified substance(s)
terphenyl, hydrogenated — Bioconcentration Factor (BCF): 700 - 5.200

12.4 Mobility in Soil: log Koc: 5,5

12.5 Results of PBT and vPvB assessment: Not fulfilling PBT (persistent/bioaccumulative/toxic) criteria Not fulfilling vPvB (very persistent, very bioaccumulative) criteria.

12.6 Other Adverse Effects: No data available.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

General information: The generation of waste should be avoided or minimized wherever possible.Comply with requirements of waste disposal legislation and any local authority requirements.The generation of waste should be avoided or minimized wherever possible. Dispose of waste and residues in accordance with local authority requirements.

Disposal methods: Recover and reclaim or recycle, if practical. Dispose of this material and its container to hazardous or special waste collection point. Dispose of waste at an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal. Do not discharge into drains, water courses or onto the ground.

Since emptied containers retain product residue, follow label warnings even after container is emptied. Recycle empty drums at an appropriate facility in accordance with current applicable laws and regulations, and product characteristics at time of disposal. Ensure drums are tightly sealed.

European Waste Codes

Waste codes should be assigned by the user based on the application for which the product was used. According to the European Waste Catalogue, Waste Codes are not product specific, but application specific.

The following Waste Codes are only suggestions. Any waste marked with an asterisk (*) is considered as a hazardous waste pursuant to Directive 91/689/EEC on hazardous waste, and subject to the provisions of that Directive unless Article 1(5) of that Directive applies.

Unused product:	13 03 08*: synthetic insulating and heat transmission oils
Used product:	13 03 08* 13 03 01*: synthetic insulating and heat transmission oils insulating or heat transmission oils containing PCBs
Contaminated Packaging:	15 01 10*: packaging containing residues of or contaminated by dangerous substances

SECTION 14: Transport information

Important Note: Shipping descriptions may vary based on mode of transport, quantities, package size, and/or origin and destination. Consult your company's Hazardous Materials/Dangerous Goods expert for information specific to your situation.

ADR/RID

Class not regulated

IMDG - International Maritime Dangerous Goods Code

Class not regulated

IATA

Class not regulated

SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture.: Directive 96/82/EC (Seveso II): on the control of major accident hazards involving dangerous substances.:

Chemical name	CAS-No.	Concentration
None		

Water Hazard Class (WGK): WGK 1: slightly water-endangering.

15.2 Chemical safety assessment: Yes.

SECTION 16: Other information

Revision Information: Not relevant.

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

Wording of the R-phrases and H-statements in section 2 and 3:

R53 = May cause long-term adverse effects in the aquatic environment.

Aquatic Chronic = Chronic hazards to the aquatic environment
4 = Category 4
H413= May cause long lasting harmful effects to aquatic life.

Training information: No data available.

Issue Date: 14.05.2015

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.