

Therminol® VP1 Heat Transfer Fluid

Version 1.2 PRD Revision Date: 12/04/2018 SDS Number: 150000093459 Date of last issue: 04/20/2017
SDSUS / Z8 / 0001 Date of first issue: 09/06/2016

SECTION 1. IDENTIFICATION

Product name : Therminol® VP1 Heat Transfer Fluid
Product code : 34152-00, P3415203, P3415202, P3415200, E3415201

Manufacturer or supplier's details

Company name of supplier : Eastman Chemical Company
Address : 200 South Wilcox Drive
Kingsport TN 37660-5280
Telephone : (423) 229-2000
Emergency telephone : CHEMTREC: +1-800-424-9300, +1-703-527-3887 CCN7321
For emergency transportation information, in the United States: call CHEMTREC at 800-424-9300 or call 423-229-2000.

Recommended use of the chemical and restrictions on use

Recommended use : Heat transfer fluids
Restrictions on use : None known.

SECTION 2. HAZARDS IDENTIFICATION

GHS classification in accordance with 29 CFR 1910.1200

Acute toxicity (Inhalation) : Category 4
Skin irritation : Category 2
Specific target organ systemic toxicity - single exposure : Category 3 (Respiratory system)

GHS label elements

Hazard pictograms :



Signal Word : Warning
Hazard Statements : H315 Causes skin irritation.
H332 Harmful if inhaled.
H335 May cause respiratory irritation.
Precautionary Statements : **Prevention:**

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P261 Avoid breathing dust/ fume/ gas/ mist/ vapors/ spray.
 P264 Wash skin thoroughly after handling.
 P271 Use only outdoors or in a well-ventilated area.
 P280 Wear protective gloves.

Response:

P302 + P352 IF ON SKIN: Wash with plenty of soap and water.
 P304 + P340 + P312 IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER/doctor if you feel unwell.
 P332 + P313 If skin irritation occurs: Get medical advice/ attention.
 P362 Take off contaminated clothing and wash before reuse.

Storage:

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

Disposal:

P501 Dispose of contents/ container to an approved waste disposal plant.

Other hazards

None known.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS**Ingredients**

Chemical name	CAS-No.	Concentration (% w/w)
diphenyl oxide	101-84-8	73.5
Biphenyl; diphenyl	92-52-4	26.5

SECTION 4. FIRST AID MEASURES

If inhaled : Remove person to fresh air and keep comfortable for breathing.
 If breathing is difficult, give oxygen.
 Consult a physician if necessary.

In case of skin contact : Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes.
 If skin irritation occurs: Get medical advice/ attention.
 Wash contaminated clothing before reuse.

In case of eye contact : In case of contact, immediately flush eyes with plenty of water for at least 15 minutes.
 Get medical attention if symptoms occur.

If swallowed : IF SWALLOWED: Immediately call a POISON CENTER/doctor.
 Do NOT induce vomiting.
 Rinse mouth.

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Never give anything by mouth to an unconscious person.

Most important symptoms and effects, both acute and delayed : Causes skin irritation.
Harmful if inhaled.
May cause respiratory irritation.

SECTION 5. FIRE-FIGHTING MEASURES

Suitable extinguishing media : Water spray
Carbon dioxide (CO₂)
Dry chemical
Foam

Unsuitable extinguishing media : Do not use a solid water stream as it may scatter and spread fire.

Hazardous combustion products : Hazardous decomposition products due to incomplete combustion
Carbon oxides

Further information : Use a water spray to cool fully closed containers.
Do not allow run-off from fire fighting to enter drains or water courses.

This product is not classified as a fire-resistant heat transfer fluid. Precautions to avoid sources of ignitions should be taken.

Special protective equipment for fire-fighters : Wear an approved positive pressure self-contained breathing apparatus in addition to standard fire fighting gear.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures : Ventilate the area.
Avoid breathing dust/ fume/ gas/ mist/ vapors/ spray.
Avoid contact with skin and eyes.
Material can create slippery conditions.
Wear appropriate personal protective equipment.
Local authorities should be advised if significant spillages cannot be contained.

Environmental precautions : Clear up spills immediately and dispose of waste safely.
Avoid release to the environment.
Collect spillage.

Methods and materials for containment and cleaning up : Contain spillage, soak up with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and transfer to a container for disposal according to local / national regulations (see section 13).
Prevent runoff from entering drains, sewers, or streams.

SECTION 7. HANDLING AND STORAGE

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- Advice on safe handling : Do not breathe vapors or spray mist.
 Handle product only in closed system or provide appropriate exhaust ventilation at machinery.
 In case of insufficient ventilation, wear suitable respiratory equipment.
 Keep away from flames and sparks.
 Wear appropriate personal protective equipment.
 Avoid contact with skin, eyes and clothing.
 Wash thoroughly after handling.
 Wash contaminated clothing before reuse.
 Drain or remove substance from equipment prior to break-in or maintenance.
 Handle in accordance with good industrial hygiene and safety practice.
- Conditions for safe storage : Store locked up.
 Keep container tightly closed in a dry and well-ventilated place.
 Keep in a cool place away from oxidizing agents.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Ingredients with workplace control parameters

Ingredients	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
diphenyl oxide	101-84-8	TWA (Vapor)	1 ppm	ACGIH
		STEL (Vapor)	2 ppm	ACGIH
		TWA (Vapor)	1 ppm 7 mg/m ³	NIOSH REL
		TWA (Vapor)	1 ppm 7 mg/m ³	OSHA Z-1
Biphenyl; diphenyl	92-52-4	TWA	0.2 ppm	ACGIH
		TWA	0.2 ppm 1 mg/m ³	NIOSH REL
		TWA	0.2 ppm 1 mg/m ³	OSHA Z-1
		TWA	0.2 ppm 1 mg/m ³	OSHA P0

- Engineering measures** : 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.

Personal protective equipment

- Respiratory protection : Use a properly fitted, particulate filter respirator complying with an approved standard if a risk assessment indicates this

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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.

Hand protection

Remarks : Wear suitable gloves. When handling hot material, use heat resistant gloves.

Eye protection : Wear safety glasses with side shields (or goggles).

Skin and body protection : Wear suitable protective clothing.

Protective measures : Ensure that eye flushing systems and safety showers are located close to the working place.

Hygiene measures : Handle in accordance with good industrial hygiene and safety practice.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance : liquid

Color : colorless

Odor : characteristic

Odor Threshold : not determined

pH : not determined

Melting point/range : 54 °F / 12 °C

Boiling point/boiling range : 495 °F / 257 °C
(1,013 hPa)

Flash point : 230 °F / 110 °C

Method: Pensky-Martens closed cup
255 °F / 124 °C

Method: Cleveland open cup

Evaporation rate : not determined

Self-ignition : 1150 °F / 621 °C
Method: ASTM D2155

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Vapor pressure	:	not determined
Relative vapor density	:	not determined
Relative density	:	1.06 (77 °F / 25 °C)
Density	:	1,060 kg/m ³ (77 °F / 25 °C)
Solubility(ies)		
Water solubility	:	0.025 g/l
Partition coefficient: n-octanol/water	:	Not applicable
Autoignition temperature	:	not determined
Decomposition temperature	:	not determined
Viscosity		
Viscosity, dynamic	:	not determined
Viscosity, kinematic	:	2.48 mm ² /s (104 °F / 40 °C)
		0.99 mm ² /s (212 °F / 100 °C)
Explosive properties	:	Not classified
Oxidizing properties	:	Not classified

SECTION 10. STABILITY AND REACTIVITY

Reactivity	:	None reasonably foreseeable.
Chemical stability	:	Stable under normal conditions.
Possibility of hazardous reactions	:	None known.
Conditions to avoid	:	Heating in air. Keep away from flames and sparks.
Incompatible materials	:	Strong oxidizing agents
Hazardous decomposition products	:	Emits acrid smoke and fumes when heated to decomposition.

SECTION 11. TOXICOLOGICAL INFORMATION**Acute toxicity**

Harmful if inhaled.

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Acute oral toxicity : LD50 Oral (Rat): 2,050 mg/kg
Assessment: May be harmful if swallowed.

Acute inhalation toxicity : LC50 (Rat, Male and Female): 2.66 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist
Assessment: Harmful if inhaled.

Acute dermal toxicity : LD50 Dermal (Rabbit): > 5,010 mg/kg
Assessment: Not classified

Ingredients:**diphenyl oxide:**

Acute oral toxicity : LD50 Oral (Rat, female): 2,830 mg/kg

Acute inhalation toxicity : LC50: Remarks: No data available

Acute dermal toxicity : LD50 Dermal (Rabbit, Male and Female): > 7,940 mg/kg

Biphenyl; diphenyl:

Acute oral toxicity : LD50 Oral (Rat, male): > 2,180 mg/kg
Assessment: The component/mixture is minimally toxic after single ingestion.

Acute inhalation toxicity : LC50 (Rat, male and female): > 3.47 mg/l
Exposure time: 1 h
Assessment: The substance or mixture has no acute inhalation toxicity

Skin corrosion/irritation

Causes skin irritation.

Product:

Species : Rabbit

Exposure time : 24 h

Assessment : Causes skin irritation.

Result : slight

Ingredients:**diphenyl oxide:**

Species : Rabbit

Exposure time : 4 h

Result : none

Biphenyl; diphenyl:

Species : Rabbit

Result : slight

Species : Humans

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Assessment : Irritating to skin.
Result : strong

Serious eye damage/eye irritation

Not classified based on available information.

Product:

Species : Rabbit
Result : No eye irritation
Exposure time : 24 h
Assessment : Not classified

Ingredients:**diphenyl oxide:**

Species : Rabbit
Result : corneal opacity
Exposure time : 4 h
Assessment : irritating

Result : slight to moderate

Biphenyl; diphenyl:

Species : Rabbit
Result : slight irritation

Species : Humans
Result : strong
Assessment : Irritating to eyes.

Respiratory or skin sensitization**Skin sensitization**

Not classified based on available information.

Respiratory sensitization

Not classified based on available information.

Product:

Remarks : No data available

Ingredients:**diphenyl oxide:**

Test Type : Skin Sensitization
Species : Guinea pig
Assessment : Not classified
Method : OECD 406: Guinea pig sensitization
Result : non-sensitizing

Test Type : Human experience
Species : Humans

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Assessment : Not classified
 Method : Human Repeat Insult Patch Test
 Result : non-sensitizing

Biphenyl; diphenyl:

Test Type : OECD 406: Guinea pig sensitization
 Species : Guinea pig
 Assessment : Not classified
 Result : Does not cause skin sensitization.

Germ cell mutagenicity

Not classified based on available information.

Product:

Genotoxicity in vitro : Test Type: Salmonella typhimurium assay (Ames test)
 Metabolic activation: +/- activation
 Method: Bacterial Reverse Mutation Assay
 Result: negative

Test Type: Chromosome aberration test in vitro
 Metabolic activation: +/- activation
 Method: In vitro Mammalian Chromosome Aberration Test
 Result: negative

Genotoxicity in vivo : Test Type: Mammalian Erythrocyte Micronucleus Test
 Species: Mouse
 Method: Mammalian Erythrocyte Micronucleus Test
 Result: negative

Ingredients:**diphenyl oxide:**

Genotoxicity in vitro : Test Type: Salmonella typhimurium assay (Ames test)
 Metabolic activation: +/- activation
 Method: Bacterial Reverse Mutation Assay
 Result: negative

Test Type: Mutagenicity - Mammalian
 Metabolic activation: +/- activation
 Method: In vitro Mammalian Cell Gene Mutation Test
 Result: negative

Test Type: Mutagenicity - Mammalian
 Metabolic activation: +/- activation
 Method: In vitro Mammalian Chromosome Aberration Test
 Result: negative

Test Type: Mutagenicity - Mammalian
 Metabolic activation: +/- activation
 Method: OECD Guideline 482
 Result: negative

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Biphenyl; diphenyl:

Genotoxicity in vitro : Test Type: Salmonella typhimurium assay (Ames test)
 Metabolic activation: +/- activation
 Method: Bacterial Reverse Mutation Assay
 Result: negative

Test Type: Mutagenicity - Mammalian
 Metabolic activation: + activation
 Method: In vitro Mammalian Cell Gene Mutation Test
 Result: positive

Test Type: Chromosome aberration test in vitro
 Metabolic activation: +/- activation
 Method: In vitro Mammalian Chromosome Aberration Test
 Result: negative

Test Type: Mutagenicity - Mammalian
 Method: OECD Guideline 482
 Result: negative

Genotoxicity in vivo : Species: Mouse (Male and Female)
 Method: Mammalian Erythrocyte Micronucleus Test
 Result: negative

Species: Rat (male)
 Method: Mammalian Bone Marrow Chromosome Aberration Test
 Result: negative

Carcinogenicity

Not classified based on available information.

Ingredients:**Biphenyl; diphenyl:**

Species : Rat, male and female
 Application Route : Ingestion
 Method : OECD Test No. 453: Combined Chronic Toxicity/Carcinogenicity Studies
 Remarks : Expert judgment
 Not classified

IARC No ingredient of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

OSHA No component of this product present at levels greater than or equal to 0.1% is on OSHA's list of regulated carcinogens.

NTP No ingredient of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

Reproductive toxicity

Not classified based on available information.

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Product:

Effects on fertility : Remarks: No data available

Ingredients:**diphenyl oxide:**

Reproductive toxicity - Assessment : Based on available data the classification criteria are not met. Not classified as hazardous.

Biphenyl; diphenyl:

Reproductive toxicity - Assessment : Based on available data the classification criteria are not met. Not classified as hazardous.

STOT-single exposure

May cause respiratory irritation.

Product:

Routes of exposure : Inhalation
Assessment : Irritating to respiratory system.

Ingredients:**diphenyl oxide:**

Routes of exposure : Inhalation
Assessment : Based on available data, the classification criteria are not met.

Biphenyl; diphenyl:

Routes of exposure : Inhalation
Target Organs : Respiratory system
Assessment : The substance or mixture is classified as specific target organ toxicant, single exposure, category 3 with respiratory tract irritation.

STOT-repeated exposure

Not classified based on available information.

Product:

Routes of exposure : Oral
Assessment : Not classified

Ingredients:**diphenyl oxide:**

Assessment : Based on available data, the classification criteria are not met.

Biphenyl; diphenyl:

Target Organs : Kidney, Liver, Urinary bladder
Assessment : The substance or mixture is not classified as specific target organ toxicant, repeated exposure.

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Repeated dose toxicity**Product:**

Species	:	Rat, Male and Female
	:	0.051 mg/l
Application Route	:	Inhalation study:
Exposure time	:	90 days
Species	:	Rat
LOAEL	:	500 mg/l
Application Route	:	by gavage

Ingredients:**diphenyl oxide:**

Species	:	Rat, male and female
NOAEL	:	301 mg/kg
Application Route	:	Oral Study
Exposure time	:	90 days
Remarks	:	(highest dose tested)
Species	:	Rat, male and female
NOAEL	:	1000 mg/kg
Application Route	:	Dermal Study
Exposure time	:	90 days
Remarks	:	(highest dose tested)
Species	:	Rat, male and female
NOAEL	:	139 mg/m ³
Application Route	:	inhalation (vapor)
Exposure time	:	28 days
Remarks	:	(highest dose tested)

Biphenyl; diphenyl:

Species	:	Rat, male and female
NOAEL	:	39 mg/kg
Application Route	:	in feed
Exposure time	:	2 year
Method	:	OECD Test No. 453: Combined Chronic Toxicity/Carcinogenicity Studies
Target Organs	:	Blood, Kidney, Liver
Species	:	Rabbit
NOAEL	:	> 2,000 mg/kg
Application Route	:	Dermal
Exposure time	:	28 days
Remarks	:	No significant adverse effects were reported

Aspiration toxicity

Not classified based on available information.

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Product:

Not classified

Information on likely routes of exposure**Product:**

Inhalation	:	Remarks: Harmful if inhaled. May cause respiratory irritation.
Skin contact	:	Remarks: Causes skin irritation.
Eye contact	:	Remarks: None known.
Ingestion	:	Remarks: May be harmful if swallowed.

SECTION 12. ECOLOGICAL INFORMATION**Ecotoxicity****Product:**

Toxicity to fish	:	LC50 (Oncorhynchus mykiss (rainbow trout)): 7.6 mg/l Exposure time: 96 h
Toxicity to daphnia and other aquatic invertebrates	:	LC50 (Daphnia magna (Water flea)): 2.4 mg/l Exposure time: 48 h
Toxicity to algae	:	EC50 (Selenastrum capricornutum (green algae)): 1.3 mg/l Exposure time: 72 h

Ingredients:**diphenyl oxide:**

Toxicity to fish	:	LC50 (Oncorhynchus mykiss (rainbow trout)): 4.2 mg/l Exposure time: 96 h
Toxicity to daphnia and other aquatic invertebrates	:	LC50 (Daphnia magna (Water flea)): 1.7 mg/l Exposure time: 48 h
Toxicity to algae	:	EC50 (Pseudokirchneriella subcapitata (algae)): 2.5 mg/l Exposure time: 72 h

Biphenyl; diphenyl:

Toxicity to fish	:	EC50 (Pimephales promelas (fathead minnow)): 3 mg/l Exposure time: 96 h
Toxicity to daphnia and other aquatic invertebrates	:	EC50 (Daphnia magna (Water flea)): 0.36 mg/l Exposure time: 48 h
Toxicity to algae	:	EC50 (Chlorella pyrenoidosa): 1.3 mg/l Exposure time: 72 h

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NOEC (Chlorella pyrenoidosa): 0.66 mg/l
Exposure time: 72 h

M-Factor (Acute aquatic toxicity) : 1

Toxicity to fish (Chronic toxicity) : NOEC (Oncorhynchus mykiss (rainbow trout)): 0.229 mg/l
Exposure time: 96 d

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC (Daphnia magna (Water flea)): 0.17 mg/l
Exposure time: 21 d

M-Factor (Chronic aquatic toxicity) : 1

Persistence and degradability**Product:**

Biodegradability : Result: Inherently biodegradable.
Method: Inherent Biodegradability: Modified SCAS Test

Biochemical Oxygen Demand (BOD) : Remarks: No data available

Chemical Oxygen Demand (COD) : Remarks: No data available

BOD/COD : Remarks: No data available

Ingredients:**diphenyl oxide:**

Biodegradability : Result: Readily biodegradable.
Method: Ready Biodegradability: Modified MITI Test (I)

Biochemical Oxygen Demand (BOD) : Remarks: No data available

Chemical Oxygen Demand (COD) : Remarks: No data available

Biphenyl; diphenyl:

Biodegradability : Result: Readily biodegradable.
Method: Ready Biodegradability: Modified MITI Test (I)

Bioaccumulative potential**Ingredients:****diphenyl oxide:**

Bioaccumulation : Species: Cyprinus carpio (Carp)

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Bioconcentration factor (BCF): 49 - 594
Method: OECD Test Guideline 305

Species: Oncorhynchus mykiss (rainbow trout)
Bioconcentration factor (BCF): 196

Biphenyl; diphenyl:

Bioaccumulation : Bioconcentration factor (BCF): 1,900

Mobility in soil**Ingredients:****diphenyl oxide:**

Distribution among environmental compartments : Koc: 1960, log Koc: 3.3

Biphenyl; diphenyl:

Distribution among environmental compartments : Medium: Soil
Koc: 1546, log Koc: 3.19
Method: OECD Test No. 106: Adsorption - Desorption Using a Batch Equilibrium Method

Other adverse effects

No data available

SECTION 13. DISPOSAL CONSIDERATIONS**Disposal methods**

Waste from residues : Dispose of in accordance with local regulations.

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.

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SECTION 14. TRANSPORT INFORMATION**International Regulations****IATA-DGR**

UN/ID No. : UN 3082
Proper shipping name : Environmentally hazardous substance, liquid, n.o.s.
(Diphenyl Ether, biphenyl)
Class : 9
Packing group : III
Labels : Miscellaneous
Packing instruction (cargo : 964
aircraft)
Packing instruction (passen- : 964
ger aircraft)

IMDG-Code

UN number : UN 3082
Proper shipping name : ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID,
N.O.S.
(Diphenyl Ether, biphenyl, diphenyl)
Class : 9
Packing group : III
Labels : 9
EmS Code : F-A, S-F
Marine pollutant : yes

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable for product as supplied.

Domestic regulation**49 CFR**

UN/ID/NA number : UN 3082
Proper shipping name : Environmentally hazardous substance, liquid, n.o.s.
(biphenyl)
Class : 9
Packing group : III
Labels : Class 9 - Miscellaneous Dangerous Goods
ERG Code : 171
Marine pollutant : yes(diphenyl)
Remarks : Shipping in package sizes of less than 5 L (liquids) or 5 KG
(solids) may lead to a non-regulated classification.

Special precautions for user

The transport classification(s) provided herein are for informational purposes only, and solely based upon the properties of the unpackaged material as it is described within this Safety Data Sheet. Transportation classifications may vary by mode of transportation, package sizes, and variations in regional or country regulations.

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SECTION 15. REGULATORY INFORMATION

EPCRA - Emergency Planning and Community Right-to-Know

CERCLA Reportable Quantity

Ingredients	CAS-No.	Component RQ (lbs)	Calculated product RQ (lbs)
Biphenyl; diphenyl	92-52-4	100	377.36

SARA 304 Extremely Hazardous Substances Reportable Quantity

This material does not contain any components with a section 304 EHS RQ.

SARA 302 Extremely Hazardous Substances Threshold Planning Quantity

Ingredients	CAS-No.	Component TPQ (lbs)
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SARA 311/312 Hazards : Acute Health Hazard

SARA 313 : The following components are subject to reporting levels established by SARA Title III, Section 313:

Biphenyl; diphenyl 92-52-4

California Prop. 65

This product does not contain any chemicals known to the State of California to cause cancer, birth, or any other reproductive defects.

The ingredients of this product are reported in the following inventories:

DSL : On the inventory, or in compliance with the inventory

AICS : On the inventory, or in compliance with the inventory

ENCS : On the inventory, or in compliance with the inventory

ISHL : On the inventory, or in compliance with the inventory

KECI : On the inventory, or in compliance with the inventory

PICCS : On the inventory, or in compliance with the inventory

IECSC : On the inventory, or in compliance with the inventory

TSCA : On the inventory, or in compliance with the inventory

TSCA list

No substances are subject to a Significant New Use Rule.

No substances are subject to TSCA 12(b) export notification requirements.

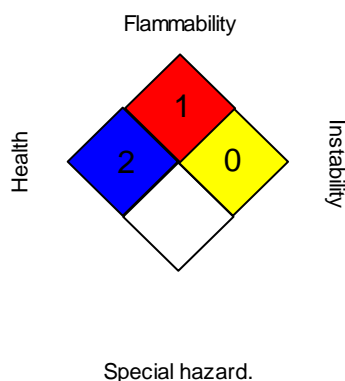
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SECTION 16. OTHER INFORMATION

Further information

NFPA 704:



HMIS® IV:

HEALTH	/	2
FLAMMABILITY		1
PHYSICAL HAZARD		0

HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. The "*" represents a chronic hazard, while the "/" represents the absence of a chronic hazard.

Full text of other abbreviations

ACGIH	:	USA. ACGIH Threshold Limit Values (TLV)
NIOSH REL	:	USA. NIOSH Recommended Exposure Limits
OSHA P0	:	USA. OSHA - TABLE Z-1 Limits for Air Contaminants - 1910.1000
OSHA Z-1	:	USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants
ACGIH / TWA	:	8-hour, time-weighted average
ACGIH / STEL	:	Short-term exposure limit
NIOSH REL / TWA	:	Time-weighted average concentration for up to a 10-hour workday during a 40-hour workweek
OSHA P0 / TWA	:	8-hour time weighted average
OSHA Z-1 / TWA	:	8-hour time weighted average

AICS - Australian Inventory of Chemical Substances; ASTM - American Society for the Testing of Materials; bw - Body weight; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DOT - Department of Transportation; DSL - Domestic Substances List (Canada); ECx - Concentration associated with x% response; EHS - Extremely Hazardous Substance; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; ERG - Emergency Response Guide; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; HMIS - Hazardous Materials Identification System; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; MSHA - Mine Safety and Health Administration; n.o.s. - Not Oth-

Therminol® VP1 Heat Transfer Fluid

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erwise Specified; NFPA - National Fire Protection Association; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NTP - National Toxicology Program; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; RCRA - Resource Conservation and Recovery Act; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RQ - Reportable Quantity; SADT - Self-Accelerating Decomposition Temperature; SARA - Superfund Amendments and Reauthorization Act; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance Inventory; TSCA - Toxic Substances Control Act (United States); UN - United Nations; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bioaccumulative

Sources of key data used to : www.therminol.com/products/
compile the Material Safety
Data Sheet

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The information provided in this Material Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

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