



Safety Data Sheet according to Regulation (EC) No. 1907/2006 (REACH)

TYFOCOR® HTL

Print date: 01.04.2024

Revision date: 01.04.2024

Version: 5.0 (en), replaces version 3.3 of 01.05.2022

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

1.1 Product identifier

Trade name/designation: TYFOCOR® HTL
Article number: 2500
Product category: PC-TEC-2 Antifreeze and de-icing products

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

Use of the substance/mixture

Heat transfer fluid for solar thermal systems

1.3 Details of the supplier of the safety data sheet

Supplier

TYFOROP Chemie GmbH, Ausschläger Billdeich 77, D-20539 Hamburg

Telephone: +49 (0)40 20 94 97 0, e-mail: info@tyfo.de

E-mail (competent person): msds@tyfo.de

1.4 Emergency telephone number

Giftinformationszentrum-Nord (GIZ-Nord Poison Center): +49 (0)551 19240

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

The mixture does not comply with the criteria for classification and labeling according to Regulation (EC) No. 1272/2008 (CLP).

2.2 Label elements

Not applicable.

2.3 Other hazards

Other adverse effects

This mixture does not contain any components that exhibit endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated Regulation (EU) 2017/2100 or Commission Delegated Regulation (EU) 2018/605 in quantities of 0.1 % or more by weight.

Results of PBT and vPvB assessment

The mixture does not contain any substances that meet the PBT and/or vPvB criteria according to REACH, Annex XIII.

SECTION 3: Composition / information on ingredients

3.1 Substances

Not applicable.

3.2 Mixtures

Description

Aqueous solution of propane-1,2-diol (propylene glycol) and 2,2'-(ethane-1,2-diylbis(oxy))diethanol (triethylene glycol) with inhibitors

Hazardous ingredients

CAS No.	EC No.	Substance name / REACH No.	Concentration	Classification acc. CLP	SCL / M / ATE
57-55-6	200-338-0	Propane-1,2-diol 01-2119456809-23	30 - 40 %	-	-
112-27-6	203-953-2	Triethylene glycol 01-2119438366-35	10 - 20 %	-	-



SECTION 4: First aid measures

I 4.1 Description of first aid measures

General information

Self-protection of the first aider.

Remove contaminated, saturated clothing immediately.

If symptoms develop or in the event of uncertainty, seek medical attention.

Following inhalation

Remove casualty to fresh air.

In all cases of doubt, or when symptoms persist, seek medical advice.

Following skin contact

After contact with skin, wash immediately with plenty of water and soap.

In all cases of doubt, or when symptoms persist, seek medical advice.

After eye contact

Rinse eyes thoroughly without delay under running water opening wide the eyelids for approx. 15 min.

In case of symptoms consult an eye specialist.

Following ingestion

Do NOT induce vomiting.

Rinse mouth thoroughly with water.

If swallowed seek medical advice immediately and show the doctor packing or label.

I 4.2 Most important symptoms and effects, both acute and delayed

Symptoms

No data available.

I 4.3 Indication of any immediate medical attention and special treatment needed

Notes for the doctor

Treat symptomatically.

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media

Water spray jet. Alcohol resistant foam. Dry extinguishing powder. Carbon dioxide (CO₂).

Unsuitable extinguishing media

None known.

I 5.2 Special hazards arising from the substance or mixture

Hazardous combustion products

In case of fire formation of dangerous gases possible.

Fire gas of organic material has to be classed invariably as respiratory poison.

Carbon monoxide.

Carbon dioxide (CO₂).

Metallic oxides.

I 5.3 Advice for fire-fighters

Special protective equipment for firefighters

In case of fire: Wear self-contained breathing apparatus.

Use personal protection equipment.

Additional information

Co-ordinate fire-fighting measures to the fire surroundings. Use water spray jet to protect personnel and to cool endangered containers. Collect contaminated fire extinguishing water separately. Do not allow entering drains or surface water. Fire residues and contaminated firefighting water must be disposed of in accordance with the local regulations.



SECTION 6: Accidental release measures

I 6.1 Personal precautions, protective equipment and emergency procedures

For non-emergency personnel

Avoid skin and eye contact.

Use personal protection equipment.

For emergency responders

Ensure adequate ventilation.

Personal protection equipment.

Keep away unprotected persons.

I 6.2 Environmental precautions

Discharge into the environment must be avoided.

Prevent further leakage or spilling if this can be done safely.

Prevent spread over a wide area (e.g. by containment or oil barriers).

I 6.3 Methods and material for containment and cleaning up

For containment

If there is a risk of entry into the sewerage system, erect barriers and/or cover the sewerage system.

For cleaning up

Absorb with liquid-binding material (sand, diatomaceous earth, acid- or universal binding agents).

After taking up the material dispose according to regulation.

I 6.4 Reference to other sections

Safe handling: see section 7.

Personal protection equipment: see section 8.

Disposal: see section 13.

SECTION 7: Handling and storage

I 7.1 Precautions for safe handling

Protective measures

Provide for appropriate ventilation/aspiration at the work station. Avoid skin and eye contact.

Avoid breathing mist/vapours/spray. Take the usual precautions when handling with chemicals.

Usual measures for fire prevention.

Advices on general occupational hygiene

Please observe work hygiene regulations.

When using do not eat, drink, smoke.

Wash hands before breaks and after work.

I 7.2 Conditions for safe storage, including any incompatibilities

Requirements for storage rooms and vessels

Keep container tightly closed in a cool, well-ventilated place.

Materials to avoid

Oxidants. Keep away from food, drink and animal feedingstuffs.

I 7.3 Specific end use(s)

Recommendation

See section 1.2.

**SECTION 8: Exposure control / personal protection****8.1 Control parameters****Occupational exposure limit values**

No substances with occupational exposure limit values contained.

DNEL Worker

CAS No.	EC No.	Substance name	DNEL value	DNEL type
57-55-6	200-338-0	Propane-1,2-diol	186 mg/m ³	Long-term inhalative (systemic)
57-55-6	200-338-0	Propane-1,2-diol	10 mg/m ³	Long-term inhalative (local)

DNEL Consumer

CAS No.	EC No.	Substance name	DNEL value	DNEL type
57-55-6	200-338-0	Propane-1,2-diol	50 mg/m ³	Long-term inhalative (systemic)
57-55-6	200-338-0	Propane-1,2-diol	10 mg/m ³	Long-term inhalative (local)

PNEC

CAS No.	EC No.	Substance name	PNEC value	PNEC type
57-55-6	200-338-0	Propane-1,2-diol	260 mg/l	Aquatic, freshwater
57-55-6	200-338-0	Propane-1,2-diol	26 mg/l	Aquatic, marine water
57-55-6	200-338-0	Propane-1,2-diol	183 mg/l	Aquatic, intermittent release
57-55-6	200-338-0	Propane-1,2-diol	50 mg/kg	Soil
57-55-6	200-338-0	Propane-1,2-diol	20000 mg/l	Sewage treatment plant (STP)
57-55-6	200-338-0	Propane-1,2-diol	572 mg/kg	Sediment, freshwater
57-55-6	200-338-0	Propane-1,2-diol	57.2 mg/kg	Sediment, marine water

8.2 Exposure controls**Appropriate engineering controls****Technical measures to prevent exposure**

Sufficient ventilation and exhaustion.

Personal protective equipment**Eye/face protection**

Tightly sealed safety goggles (EN 166).

Hand protection

Glove materials data [type, thickness, breakthrough time/duration of use, permeation rate]: Butyl caoutchouc, 0.7 mm, >30 min, protection index 2. Nitrile caoutchouc, 0.4 mm, >30 min, protection index 2. The protective gloves to be used must comply with the specifications of EC directive 89/686/EEC and the resultant standard EN 374. The selection of a suitable glove depends from manufacturer to manufacturer not only on the material, but also on further quality criteria. The exact breakthrough time of the glove material is to be inquired from the protection glove manufacturer and must be strictly adhered to.

Body protection

Protective clothing shall be choose with respect to the function/activity and the possible exposure.

Respiratory protection

Respiratory protection in the event of insufficient ventilation or prolonged exposure. Respiratory protection in the event of aerosol or mist formation. Recommended respiratory protection: Filter type: Particulate type (P).

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SECTION 9: Physical and chemical properties**I 9.1 Information on basic physical and chemical properties****Physical state**

Liquid.

Colour

Blue-green.

Odour

Almost odourless.

Safety relevant basis data

Parameter	Value	Method	Source / Remark
Odour threshold	not determined		
Melting point/freezing point - Freezing point - Frost protection - Solidifying point	approx. -32 °C approx. -35 °C approx. -38 °C	ASTM D1177 calculated DIN ISO 3016	
Boiling point or initial boiling point and boiling range	>100 °C	ASTM D1120	
Flammability	not determined		
Upper explosion limit	12.6 % vol.		CAS No. 57-55-6 propane-1,2-diol
Lower explosion limit	2.6 % vol.		CAS No. 57-55-6 propane-1,2-diol
Flash point			not applicable
Ignition temperature	not determined		
Decomposition temperature	not determined		
pH value	7.5 - 8.5 (20 °C)	ASTM D1287	
Viscosity (kinematic)	approx. 6.5 mm ² /s (20 °C)	DIN 51562	
Solubility(ies)	Water solubility		soluble
Partition coefficient n-octanol/water (log value)	-1.07 (20.5 °C) -1.98 (25 °C)		CAS No. 57-55-6 propane-1,2-diol CAS No. 112-27-6 triethylene glycol
Vapour pressure	approx. 20 hPa (20 °C)	calculated	
Density and/or relative density	approx. 1.054 g/cm ³ (20 °C)	DIN 51757	
Relative vapour density	not determined		
Particle characteristics			not applicable

9.2 Other information**Other safety characteristics**

Parameter	Value	Method	Source / Remark
Explosive properties			not explosive
Oxidizing properties			non-oxidizing



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SECTION 10: Stability and reactivity

10.1 Reactivity

The product is considered non-reactive under normal conditions of use. Not corrosive to metals.

10.2 Chemical stability

The product is chemically stable under recommended conditions of storage, use and temperature.

10.3 Possibility of hazardous reactions

No hazardous reaction when handled and stored according to provisions.

10.4 Conditions to avoid

None if used as intended.

10.5 Incompatible materials

Oxidants.

10.6 Hazardous decomposition products

No decomposition products will result from proper storage and handling.

SECTION 11: Toxicological information

11.1 Information on hazard classes as defined in Regulation (EC) No. 1272/2008

Acute toxicity

Animal data

Parameter	Ingredient	Effective dose	Method
Acute oral toxicity	CAS No. 57-55-6 propane-1,2-diol	LD50: 22000 mg/kg. Species: Rat.	Equivalent to OECD 401
Acute oral toxicity	CAS No. 112-27-6 triethylene glycol	LD50: 17000 mg/kg. Species: Rat.	
Acute dermal toxicity	CAS No. 57-55-6 propane-1,2-diol	LD50: >2000 mg/kg. Species: Rabbit. Exposure time: 24 h.	Equivalent to OECD 402
Acute dermal toxicity	CAS No. 112-27-6 triethylene glycol	LD50: 22400 mg/kg. Species: Rabbit.	
Acute inhalation toxicity	CAS No. 57-55-6 propane-1,2-diol	LC50: 317042 mg/l. Species: Rabbit. Exposure time: 2 h.	Equivalent to OECD 403

Assessment/classification

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

Skin corrosion/irritation

Assessment/classification

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

Serious eye damage/irritation

Assessment/classification

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

Sensitisation to the respiratory tract

Assessment/classification

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

Skin sensitisation

Assessment/classification

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

**SECTION 11: Toxicological information****Germ cell mutagenicity**

Parameter	Ingredient	Method	Remark
In vitro mutagenicity/ genotoxicity	CAS No. 57-55-6 propane-1,2-diol	OECD 471 (Ames Test)	not mutagenic

Carcinogenicity**Animal data**

Ingredient	Value	Method	Remark
CAS No. 57-55-6 propane-1,2-diol	Oral. Species: Rat. Exposure time: 2 a.		Animal testing did not show any carcinogenic effects

Reproductive toxicity**Animal data**

Ingredient	Value	Method	Result / Evaluation
CAS No. 57-55-6 propane-1,2-diol	Oral. Species: Mouse.	OECD 416	negative

Overall Assessment on CMR properties

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

Specific target organ toxicity - single exposure**STOT SE 1 and 2****Assessment/classification**

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

STOT SE 3**Irritation to respiratory tract****Assessment/classification**

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

Narcotic effects**Assessment/classification**

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

Specific target organ toxicity - repeated exposure**Assessment/classification**

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

Aspiration hazard**Assessment/classification**

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

Symptoms related to the physical, chemical and toxicological characteristics**In case of ingestion**

No data available.

11.2 Information on other hazards**Endocrine disrupting properties**

This mixture does not contain any components that exhibit endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated Regulation (EU) 2017/2100 or Commission Delegated Regulation (EU) 2018/605 in quantities of 0.1 % or more by weight.

Other information

The product is to be handled with the caution usual with chemicals.

**SECTION 12: Ecological information****I 12.1 Toxicity****Aquatic toxicity**

Parameter	Ingredient	Effective dose	Method
Acute (short-term) fish toxicity	CAS No. 57-55-6 propane-1,2-diol	LC50: 51600 mg/l. Species: Oncorhynchus mykiss. Test duration: 96 h.	OECD 203
Acute (short-term) fish toxicity	CAS-No. 112-27-6 triethylene glycol	LC50: >10000 mg/l. Species: Lepomis macrochirus. Test duration: 96 h.	
Chronic (long-term) fish toxicity	CAS No. 57-55-6 propane-1,2-diol	ChV: 2500 mg/l.	ECOSAR
Acute (short-term) toxicity to crustacea	CAS No. 57-55-6 propane-1,2-diol	LC50: 18340 mg/l. Species: Ceriodaphnia dubia. Test duration: 48 h.	EPA 600/4-90-02
Acute (short-term) toxicity to crustacea	CAS No. 57-55-6 propane-1,2-diol	LC50: 18800 mg/l. Species: Americamysis bahia. Test duration: 96 h.	FIFRA 72-3
Acute (short-term) toxicity to crustacea	CAS-No. 112-27-6 triethylene glycol	EC50: >10000 mg/l. Species: Daphnia magna. Test duration: 48 h.	
Chronic (long-term) toxicity to crustacea	CAS No. 57-55-6 propane-1,2-diol	NOEC: 13020 mg/l. Species: Ceriodaphnia sp. Test duration: 7 d.	EPA 600/4-89-001
Acute (short-term) toxicity to algae and other aquatic plants	CAS No. 57-55-6 propane-1,2-diol	EC50: 19000 mg/l. Species: Pseudokirchneriella subcap. Test duration: 96 h.	OECD 201
Acute (short-term) toxicity to algae and other aquatic plants	CAS No. 57-55-6 propane-1,2-diol	EC50: 19100 mg/l. Species: Skeletonema costatum. Test duration: 96 h.	OECD 201
Toxicity to microorganisms	CAS No. 57-55-6 propane-1,2-diol	NOEC: 20000 mg/l. Species: Pseudomonas putida. Test duration: 18 d.	
Toxicity to microorganisms	CAS-No. 112-27-6 triethylene glycol	EC10: >1995 mg/l. Species: Activated sludge. Test duration: 0.5 h.	

Assessment/classification

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

I 12.2 Persistence and degradability

Parameter	Value	Method	Source / Remark
Biodegradation	Degradation rate: 87-92 %. Test duration: 28 d.	OECD 301D	CAS No. 57-55-6 propane-1,2-diol. Readily biodegradable (acc. to OECD criteria).

I 12.3 Bioaccumulative potential

Parameter	Value	Source / Remark
Partition coefficient n-octanol/water (log value)	-1.07 (20.5 °C)	CAS No. 57-55-6 propane-1,2-diol
Partition coefficient n-octanol/water (log value)	-1.98 (20.5 °C)	CAS-No. 112-27-6 triethylene glycol

I 12.4 Mobility in soil**Assessment/classification**

No data available.

I 12.5 Results of PBT and vPvB assessment**Assessment/classification**

The mixture does not contain any substances that meet the PBT and/or vPvB criteria according to REACH, Annex XIII.

I 12.6 Endocrine disrupting properties

See sections 2.3 and 11.2.

**SECTION 12: Ecological information****I 12.7 Other adverse effects****Additional ecotoxicological information****Additional information**

Do not allow uncontrolled discharge of product into the environment.

SECTION 13: Disposal considerations**I 13.1 Waste treatment methods****Waste codes/waste designations according to EWC**

Waste code product	Waste name
16 05 09	Discarded chemicals other than those mentioned in 16 05 06, 16 05 07 or 16 05 08

Appropriate disposal / Product

Dispose of waste according to applicable legislation.

Appropriate disposal / Package

Dispose of waste according to applicable legislation.

Remark

The waste code must be allocated in compliance with the EWC-regulation referring to the specific process and the sector.

SECTION 14: Transport information

Parameter	Land transport (ADR-RID)	Sea transport (IMDG)	Air transport (ICAO/IATA-DGR)
14.1 UN number or ID number	-	-	-
14.2 UN proper shipping name	-	-	-
14.3 Transport hazard class(es)	-	-	-
14.4 Packing group	-	-	-
14.5 Environmental hazards	-	-	-

14.6 Special precautions for user

No data available.

14.7 Maritime transport in bulk according to IMO instruments

Not applicable.

All transport carriers

No dangerous goods as defined by the transport regulations - ADR/RID, IMDG, ICAO/IATA-DGR.

SECTION 15: Regulatory information**I 15.1 Safety, health and environmental regulations / legislation specific for the substance or mixture****EU Regulations****Restrictions on use**

Not applicable.

15.2 Chemical Safety Assessment

A chemical safety assessment was not conducted.



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SECTION 16: Other information

I **Abbreviations and acronyms**

For abbreviations and acronyms, see: ECHA Guidance on information requirements and chemical safety assessment, chapter R.20 (Table of terms and abbreviations).

I **Key literature references and sources for data**

Data sheets of the sub-supplier.

I **Classification for mixtures and used evaluation method according to regulation (EC) No. 1272/2008 [CLP]**

The product is classified according to the classification criteria in Annex I of Regulation (EC) No. 1272/2008, based on the available hazard data of the ingredients.

Classification method: Test data. Calculation.

I **Additional information**

Vertical lines in the left hand margin indicate an amendment from the previous version.

National and local regulations concerning chemicals shall be observed.

The above information describes exclusively the safety requirements of the product and is based on our present-day knowledge. The information is intended to give you advice about the safe handling of the product named in this safety data sheet, for storage, processing, transport and disposal. The information cannot be transferred to other products. In the case of mixing the product with other products or in the case of processing, the information on this safety data sheet is not necessarily valid for the new made-up material.

Please observe the following disclaimer! Our safety data sheets have been compiled according to effective EU directives, WITHOUT taking into account the special national directives concerning the handling of hazardous substances. Each user is responsible for the implementation of the national special regulations.

I **Relevant H- and EUH-phrases (Number and full text)**

Not applicable.
