



SAFETY DATA SHEET

according to Regulation 1907/2006/EC [REACH]

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SECTION 1: Identification of the Substance / Mixture and of the Company

Product identifier: TYFOCOR® LS

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

Relevant identified uses: Heat transfer fluid for solar thermal systems.

Details of the supplier of the safety data sheet

Identification of the company: TYFOROP Chemie GmbH, Anton-Rée-Weg 7, D - 20537 Hamburg
Tel.: +49 (0)40 -20 94 97-0, Fax: -20 94 97-20, e-mail: info@tyfo.de

Information about the product: E-mail (competent person): msds@tyfo.de

Emergency information: Tel.: +49 (0)40 -20 94 97-0

SECTION 2: Hazards Identification

Classification of the substance or mixture

According to Regulation (EC) No. 1272/2008 [CLP]

No need for classification according to GHS criteria for this product.

According to Directive 67/548/EEC or 1999/45/EC

Possible hazards: No particular hazards known.

Label elements

According to Regulation (EC) No. 1272/2008 [CLP] / Globally Harmonized System, EU (GHS)

The product does not require a hazard warning label in accordance with GHS criteria.

According to Directive 67/548/EEC or 1999/45/EC ('Preparation Directive')

The product does not require a hazard warning label in accordance with EC Directives.

Other hazards

According to Regulation (EC) No. 1272/2008 [CLP]

No other hazards known.

SECTION 3. Composition / Information on Ingredients

Chemical nature: Aqueous solution of propane-1,2-diol (propylene glycol) with corrosion inhibitors.

Hazardous ingredients according to Regulation 1272/2008/EC and Directive 1999/45/EC

Substance	Reg. 1272/2008/EC [CLP/GHS]	Dir. 1999/45/EC
1,1'-Iminodipropylene-2-ol		
Content (w/w): > 1 % - < 3 %	Eye Dam./Irrit. 2	Hazard symbol: Xi
CAS Number: 110-97-4	H319	R-phrases: 36
EC Number: 203-820-9		
INDEX Number: 603-083-00-7		
REACH Reg. No: 01-2119475444-34		

For the classifications not written out in full in this section, including the indication of danger, the hazard symbols, the R-phrases, and the hazard statements, the full text is listed in section 16.

SECTION 4. First-Aid Measures

Description of first aid measures

General advice: Remove contaminated clothing.

If inhaled: If difficulties occur after vapour/aerosol has been inhaled, remove to fresh air and seek medical attention.

On skin contact: Wash thoroughly with soap and water.

SECTION 4. First-Aid Measures - Continuation

On contact with eyes: Wash affected eyes for at least 15 minutes under running water with eyelids held open.

On ingestion: Rinse mouth and then drink plenty of water.

Most important symptoms and effects, both acute and delayed

Symptoms: The most important known symptoms and effects are described in the labelling of the product (see section 2) and/or in section 11. Further important symptoms and effects are so far not known.

Indication of any immediate medical attention and special treatment needed

Treatment: Symptomatic treatment (decontamination, vital functions), no known specific antidote.

SECTION 5. Fire-Fighting Measures

Extinguishing media

Suitable extinguishing media: The product is non-flammable. Water spray, dry powder, and alcohol-resistant foam are suitable for extinguishing environmental fire.

Special hazards arising from the substance or mixture

Harmful vapours. Evolution of fumes/fog. The substances/groups of substances mentioned can be released in case of fire.

Advice for fire-fighters

Special protective equipment: Wear a self-contained breathing apparatus.

Further information: The degree of risk is governed by the burning substance and the fire conditions. Contaminated extinguishing water must be disposed of in accordance with official regulations.

SECTION 6. Accidental Release Measures

Personal precautions, protective equipment and emergency procedures

Use personal protective clothing.

Environmental precautions

Contain contaminated water/firefighting water. Do not discharge into drains/surface waters/groundwater.

Methods and material for containment and cleaning up

For large amounts: Pump off product. For residues: Pick up with suitable absorbent material. Dispose of absorbed material in accordance with regulations.

Reference to other sections

Information regarding exposure controls/personal protection and disposal considerations can be found in section 8 and 13.

SECTION 7. Handling and Storage

Precautions for safe handling

Advice on safe handling: No special precautions necessary.

Advice on protection against fire/explosion: No special precautions necessary.

Conditions for safe storage, including any incompatibilities

Further information on storage conditions: Containers should be stored tightly sealed in a dry, cool place. Storage in galvanized containers is not recommended.

Specific end uses

For the relevant identified uses listed in section 1 the advice mentioned in this section 7 is to be observed.

SECTION 8. Exposure Control / Personal Protection

Control parameters

Components with occupational exposure limits: -

SECTION 8. Exposure Control / Personal Protection - Continuation

Exposure controls

Personal protective equipment

Respiratory protection:	Suitable respiratory protection for higher concentrations or long-term effect: Gas filter for gases/vapours of organic compounds (boiling point >65 °C, e.g. EN 14387 type A).
Hand protection:	Chemical resistant protective gloves (EN 374). Suitable materials short-term contact and/or splashes (recommended: At least protective index 2, corresp. > 30 minutes of permeation time according to EN 374) butyl rubber (butyl) - 0.7 mm coating thickness, nitrile rubber (NBR) - 0.4 mm coating thickness. Supplementary note: The specifications are based on tests, literature data and information of glove manufacturers or are derived from similar substances by analogy. Due to many conditions (e.g. temperature) it must be considered that the practical usage of a chemical-protective glove in practice may be much shorter than the permeation time determined through testing. Manufacturers directions for use should be observed because of great diversity of types.
Eye protection:	Safety glasses with side-shields (frame goggles) (e.g. EN 166).
General safety and hygiene measures:	Handle in accordance with good industrial hygiene and safety practice. Wearing of closed work clothing is recommended.

SECTION 9. Physical and Chemical Properties

Information on basic physical and chemical properties

Form:	liquid.	
Colour:	red fluorescent.	
Odour:	product specific.	
pH value (20 °C):	9.0 - 10.5.	(ASTM D 1287)
Freezing point:	approx. -25 °C.	(ASTM D 1177)
Frost protection:	approx. -28 °C.	
Solidification point:	approx. -31 °C.	(DIN 51583)
Boiling point:	>100 °C.	(ASTM D 1120)
Flash point:	not applicable.	(DIN EN 22719, ISO 2719)
Flammability:	not flammable.	
Lower explosion limit:	2.6 % vol.	(Propylene glycol)
Upper explosion limit:	12.6 % vol.	(Propylene glycol)
Ignition temperature:	not applicable.	(DIN 51794)
Vapour pressure (20°C)	approx. 20 hPa.	
Density (20 °C):	approx. 1.034 g/cm ³ .	(DIN 51757)
Solubility (qualitative) solvents:	polar solvents: soluble.	
Self ignition:	not self igniting.	
Viscosity (kinematic, 20 °C):	approx. 5.0 mm ² /s.	(DIN 51562)
Explosion hazard:	not explosive.	
Fire promoting properties:	not fire-propagating.	
Other Information:		
Miscibility with water:	miscible in all proportions.	

SECTION 10. Stability and Reactivity

Reactivity:	No hazardous reactions if stored and handled as prescribed/indicated. Corrosion to metals: No corrosive effect on metals.
Chemical stability:	The product is stable if stored and handled as prescribed/indicated.
Possibility of hazardous reactions:	No hazardous reactions if stored and handled as prescribed/indicated.
Conditions to avoid:	No conditions to avoid anticipated.
Incompatible materials:	Substances to avoid: strong oxidising agents.
Hazardous decomposition products:	No hazardous decomposition products if stored and handled as prescribed/indicated.

SECTION 11. Toxicological Information

Information on toxicological effects

Acute toxicity:	Experimental/calculated data: LD50 rat (oral): >2000 mg/kg. LD50 rabbit (dermal): >2000 mg/kg. Literature data.
Irritation:	Experimental/calculated data: Skin corrosion/irritation rabbit: non-irritant. (OECD Guideline 404). Serious eye damage/irritation rabbit: non-irritant (OECD Guideline 405).
Other relevant toxicity information:	The product has not been tested. The statement has been derived from the properties of the individual components.

SECTION 12. Ecological Information

Toxicity:	Toxicity to fish: LC50 (96 h): >100 mg/l, <i>Leuciscus idus</i> . Aquatic invertebrates: EC50 (48 h): >100 mg/l, daphnia. Aquatic plants: EC50 (72 h): >100 mg/l, algae. Microorganisms/effect on activated sludge: >1000 mg/l (DEV-L2). Inhibition of degradation activity in activated sludge is not to be anticipated during correct introduction of low concentrations.
Persistence and degradability:	Elimination information: >70 % DOC reduction (28d) (OECD 301 A, new version). Evaluation: Readily biodegradable.
Bioaccumulative potential:	Assessment bioaccumulation potential: Accumulation in organisms is not to be expected.
Mobility in soil (and other compartments if available):	Assessment transport between environmental compartments: The substance will not evaporate into the atmosphere from the water surface. Adsorption to solid soil phase is not expected.
Results of PBT and vPvB assessment:	According Annex XIII of Regulation (EC) No.1907/2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH): The product does not contain a substance fulfilling the PBT (persistent/bioaccumulative/toxic) criteria or the vPvB (very persistent/very bioaccumulative) criteria.
Other adverse effects:	The product does not contain substances that are listed in Annex I of Regulation (EC) 2037/2000 on substances that deplete the ozone layer.
Additional information:	Other ecotoxicological advice: Do not release untreated into natural waters. The product has not been tested. The statements on ecotoxicology have been derived from the properties of the individual components.

SECTION 13. Disposal Considerations

Waste treatment methods

Recommendations for the product:	The product must be disposed of or incinerated in accordance with local regulations.
Recommendations for the packaging:	Uncontaminated packs can be re-used. Packaging that cannot be cleaned should be disposed of in the same manner as the product.

SECTION 14. Transport Information

Land transport - ADR/RID:	Not classified as a dangerous good under transport regulations.
Inland waterway transp. - ADN:	Not classified as a dangerous good under transport regulations.
Sea transport - IMDG:	Not classified as a dangerous good under transport regulations.
Air transport - ICAO/IATA:	Not classified as a dangerous good under transport regulations.
Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code: Not evaluated.	

SECTION 15. Regulatory Information

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

Chemical Safety Assessment

Chemical Safety Assessment not yet performed due to registration timelines.

SECTION 16. Other Information

Full text of the classifications, including the indication of danger, the hazard symbols, the R-phrases, and the hazard statements, if mentioned in section 2 or 3 - No classification of the product!

Xi	Irritant.
R36	Irritating to eyes.
Eye Dam./Irrit.	Serious eye damage/eye irritation.
H319	Causes serious eye irritation.

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

This safety data sheet is intended to provide information and recommendations as to: 1. how to handle chemical substances and preparations in accordance with the essential requirements of safety precautions and physical, toxicological, and ecological data. 2. how to handle, store, use, and transport them safely.

No liability for damage occurred in connection with the use of this information or with the use, application, adaption, or processing of the products here described will be accepted. No liability will be accepted for damage indirectly incurred.

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