



SAFETY DATA SHEET

according to Regulation 1907/2006/EC [REACH]

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1. Identification of the Substance / Mixture and of the Company

Trade Name: TYFOCOR[®] LS ready-to-use, frost protection down to -28 °C

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

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

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

2. Hazards Identification

Label elements according to Regulation (EC) No 1272/2008 [CLP]:

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

Label elements 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.

Classification of the substance or mixture:

Acc. Regulation (EC) No. 1272/2008 [CLP]: No need for classification acc. GHS criteria for this product.
According to Directive 67/548/EEC / 1999/45/EC: Possible hazards: No particular hazards known.

Other Hazards:

Assessment PBT / vPvB: According to 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/very toxic) criteria.

3. Composition / Information on Ingredients

Chemical nature: Aqueous solution of propylene glycol with corrosion inhibitors.

Hazardous ingredients (GHS) acc. Regulation (EC) No. 1272/2008 / Directive 1999/45/EC, resp.

Substance	Reg. No. (EC) 1272/2008	Dir. 1999/45/EC
1,1'-Iminodipropane-2-ol		
Content (w/w): > 1 % - < 3 %	Eye dam./irr.: Cat. 2	Hazard symbol: Xi
CAS Number: 110-97-4	H319	R-phrases: 36
EC Number: 203-820-9		
REACH registration number:		
01-2119475444-34		
INDEX Number: 603-083-00-7		

The wording of the hazard symbols and R-phrases is specified in chapter 16 if dangerous ingredients are mentioned.

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.

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.

4. First-Aid Measures - Continuation

Most important symptoms and effects, both acute and delayed:

Symptoms: The most important known symptoms and effects are described in the labelling (see section 2) and/or in section 11. Further important symptoms 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.

5. Fire-fighting Measures

Extinguishing media:

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

Specific hazards:

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

Special hazards arising from the substance or mixture:

Advice for fire-fighters: Special protective equipment: In case of fire, 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.

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.

7. Handling and Storage

Precautions for safe handling:

No special precautions necessary.

Protection against fire and 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 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

8. Exposure Controls / Personal Protection

Control parameters:

Components with workplace control parameters:

No occupational exposure limits known.

Personal protective equipment:

Respiratory Protection: Respiratory protection in case of vapour/aerosol release. Particle filter with medium efficiency for solid and liquid particles (e. g. EN 143 or 149, Type P2 or FFP2).

Hand protection: Chemical resistant protective gloves (EN 374). Recommended: Nitrile rubber, protective index 6. Manufacturers directions for use should be observed because of great diversity of types.

Eye protection: Safety glasses with side-shields (frame goggles, EN 166).

General safety and hygiene measures: Handle in accordance with good industrial hygiene and safety practice. Wearing of closed work clothing is recommended.

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:	ca. -25 °C.	(ASTM D 1177)
Frost protection:	ca. -28 °C.	
Solidification point:	ca. -31 °C.	(DIN 51583)
Boiling point:	>100 °C.	(ASTM D 1120)
Flash point:	Not applicable.	(DIN EN 22719, ISO 2719)
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):	ca. 20 hPa.	
Density (20 °C):	ca. 1.034 g/cm ³ .	(DIN 51757)
Solubility (qualitative) solvents:	Polar solvents: Soluble.	
Viscosity (kinematic, 20 °C):	ca. 5.0 mm ² /s.	(DIN 51562)
Explosion hazard:	Not explosive.	
Other information:		
Solubility in water:	Unlimited.	

10. Stability and Reactivity

Reactivity:

Corrosion to metals: No corrosive effect on metals.

Chemical stability:

The product is stable if stored and handled as prescribed/indicated.

Peroxides: 0 %. The product does not contain peroxides.

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.

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 eyes damages/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.

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. Aquatic plants: EC50 (72 h): >100 mg/l. Microorganisms/effect on activated sludge: 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:	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 phase is not expected.
Results of PBT and vPvB assessment:	According to Annex XIII of Regulation (EC) Nr.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/very toxic) criteria. Information on 1,1'-Iminodipropene-2-ol: According to Annex XIII of Regulation (EC) No.1907/2006 (REACH): 1. Not fulfilling PBT (persistent/ bioaccumulative/toxic) criteria. Self classification. 2. Not fulfilling vPBV (very persistent/very bioaccumulative/very toxic) criteria. Self classification.
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.

13. Disposal considerations

Water treatment methods:	The product must be disposed or incinerated in accordance with local legislations.
Contaminated packaging:	Uncontaminated packs can be re-used. Packs that cannot be cleaned should be disposed of in the same way as the contents.

14. Transport Information

Land transport - ADR, RID:	Not classified as a dangerous good under transport regulations.
Inland waterway transp.- ADNR:	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.

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.

16. Other Information

| Full text of hazard symbols and R-phrases if mentioned as hazardous components in chapter 3 -
No classification of the product !

Xi: Irritant.

R36: Irritating to eyes.

| 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.

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