

MOUNTING INSTRUCTIONS



Preface

Dear Customer:

First of all, we would like to thank you for having purchased a PHÖNIX solar system. We hereby wish you a warm welcome into the steadily growing worldwide community of committed owners of thermal solar systems.

We are positive that your PHÖNIX system will fulfil all of your expectations regarding the use of solar energy. On the following pages, we will show you how to rapidly get familiar with your new solar system.

Please read through these mounting and operating instructions carefully and keep them close at hand. The brochure includes all of the important instructions that will allow you to exploit the features of your solar system to the max.

Our solar systems are known for their easy mounting, user-friendly operation and the superior quality of their components. This is reflected in the extra long warranty periods for the components, especially for the collectors and the solar storage tank. If you regularly service your solar system, you can count on a lifespan of at least 20 years. PHÖNIX solar systems combine environmental friendliness and efficiency with a trend-setting energy concept.

By purchasing a solar system, you will be playing a role in the global resurgence of interest in renewable energies, since solar energy is good for the environment, it is light on energy resources and it significantly reduces exhaust emissions. And the best part is that solar energy is free. From the very first beam of sunlight, you will save real money.

Please inform us of any problems at delivery by completing the "Reclamation/warranty claim" form that you have received along with the order confirmation (see page 5, "General Information").

PHÖNIX solar systems are made of high-quality materials and components that are covered by our warranty, according to our terms and conditions. However, be advised that the following three documents are required to make a warranty claim: the acceptance certificate, the yearly maintenance report, and the PHÖNIX SonnenWärme AG reclamation form (describing the defects).

To make sure that your solar system has been correctly installed, please fill in the included acceptance certificate on page 7 after you have installed the system. Follow the maintenance guidelines carefully to make sure that your solar system will have a long life.

Please write down the serial numbers of the collectors, the storage tank, the solar controller and the expansion vessel on the acceptance certificate, before installing the system, since afterwards, these numbers are very hard to reach. Please return the acceptance certificate to us as soon as the installation has been completed, otherwise no warranty claims can be made.

State-of-the-art solar technology on your roof is a visible sign of an environment-friendly lifestyle. In our opinion, a solar system should be a common item in every household, like a washing machine, a TV, a radio, or a phone. However, in reality, there is still a long way to go. We are glad that you are among the first people who have understood how important it is to convert our present energy supply to a renewable energy source. This way you can be a model for others and secure your children's future.

And now we would like to wish you much joy when using free solar energy !

Warranty terms and conditions

For our solar systems PHÖNIX Start, PHÖNIX Classic, PHÖNIX Comfort, PHÖNIX Duo, and PHÖNIX Mega, we provide:

- a 5 year warranty on PHÖNIX flat plate collectors
- a 5 year warranty on PHÖNIX wood frame collectors
- a 5 year warranty on PHÖNIX vacuum tube collectors
- a 5 year warranty on PHÖNIX storage tanks
- a 2 year warranty on PHÖNIX controllers, sensors, pumps, and membrane expansion vessels

For collectors, the warranty covers tightness of the solar circuit and water resistance. For storage tanks and membrane expansion vessels, the warranty covers tightness and functionality, and for controllers and pumps, the warranty covers functionality. No warranty will be granted for other parts. PHÖNIX guarantees the tank to be free from defects in materials, under normal use and service. PHÖNIX will repair or replace without charge, and at its discretion, defective solar components in accordance with the terms and conditions of this warranty. Accidental damage, such as storm or lightning damage or failures due to external causes, such as glass breakage, repair or maintenance, are not covered by the warranty. The warranty hereunder does not apply to defects resulting from incorrect or insufficient frost protection. Mixing different types of antifreeze products or using antifreeze products which do not conform to DIN standards will void the warranty.

This warranty is only applicable to systems that have been mounted, installed and put into operation by qualified personnel. The warranty hereunder does not apply to defects resulting from normal wear, failures due to misuse, incorrect installation, excessive pressure, temperature and/or thermal input, inappropriate location or chemical and electrical impacts. The warranty does not cover consumables (e.g. washers), parts made of glass or plastic, or other easily breakable parts and paint damage. Moreover, the warranty becomes void if the acceptance certificate does not prove without a doubt, that the system was properly installed and commissioned, or if there can be no valid proof provided that the installation has been serviced at regular intervals (at least once every 12 months) by a qualified service technician. In case of a warranty claim, the "Reclamation/warranty claim" form must be completed. This form contains the information needed to process the claim and must be signed by the claimant. In addition, the acceptance certificate which you received at the time of delivery must be completed by an authorised company and returned to PHÖNIX SonnenWärme AG within two weeks after completing the installation. The effective date of warranty coverage is the date of delivery.

Problems at delivery

Dear customer,

We make every effort to ensure that the delivered parts are complete, securely packaged and safely transported. However, if something goes wrong, please inform us immediately by completing the included form.

Immediately on delivery, please check the delivered parts with the driver for:

- visible defects (damaged packaging, etc.)
- completeness

Pay special attention to the large parts (such as the collector and the storage tank) for external damage !

Please note any damage or missing parts on the driver's shipping slip and send a copy to us as soon as possible, otherwise the shipper will not acknowledge the claim. Hidden damage, such as under the packaging, must be declared within two days. Later claims are not be acknowledged by the insurance company.

Within the first week, please ensure that:

- the content of the boxes is intact and complete, according to the parts list that you have received along with the order confirmation.

Please be advised that small parts may be packed together with larger parts to save packing space. First check the content of each box. Should any part be missing, please contact us.

For any transportation or delivery problem, please fill in the form on the back and please return it to us by fax or by mail. We will verify your claim and get back to you as soon as possible.

We now wish you much joy when using your environment-friendly solar energy system !

Your PHÖNIX SonnenWärme AG team

Form for transportation and delivery problems

PHÖNIX SonnenWärme AG
Technischer Kundendienst
Am Treptower Park 28 - 30

12435 BERLIN

For transportation or delivery claims, please remove this page from the brochure and immediately mail it to the above address or send it by fax to **+49-30 / 53 00 07 17**

Type of system: _____ Order #: _____

System buyer

Name: _____

Street: _____

Postal code: _____ City: _____

Phone: _____ Fax: _____
(with area code)

Site location (if different)

Street: _____

Postal code: _____ City: _____

Reason for claim: _____

Abbreviation: T=Deadline not met, U=Incomplete delivery, B=Damage, I=Payment problem

Claimed items:

Item: _____ Serial #: _____ Abbreviation: _____

Item: _____ Serial #: _____ Abbreviation: _____

Item: _____ Serial #: _____ Abbreviation: _____

Item: _____ Serial #: _____ Abbreviation: _____

Item: _____ Serial #: _____ Abbreviation: _____

Detailed description of problems, please enclose photographs or drafts, if required:

I/We hereby confirm to have made all my/our claims to the best of my/our knowledge and beliefs. In the event that my/our claim is not covered by the PHÖNIX warranty terms and conditions, I/we will be willing to pay the cost incurred for processing the claim and for sending me/us the replacement parts.

Date

Signature, company stamp (without a valid signature, your claim cannot be processed !)

Warranty claim

PHÖNIX SonnenWärme AG
Technischer Kundendienst
Am Treptower Park 28 - 30

12435 BERLIN

For a warranty claims, please remove this page from the brochure and immediately mail it to the above address or send it by fax to **+49-30 / 53 00 07 17**

Type of system: _____ Order #: _____

Date of purchase: _____

System buyer

Name: _____

Street: _____

Postal code: _____ City: _____

Phone: _____ Fax: _____

Site location (if different)

Street: _____

Postal code: _____ City: _____

Installer

Street: _____

Postal code: _____ City: _____

Claimed items:

Item: _____ Serial #: _____

Item: _____ Serial #: _____

Item: _____ Serial #: _____

Item: _____ Serial #: _____

Item: _____ Serial #: _____

Please do not forget to enclose a copy of the acceptance certificate, otherwise a warranty cannot be granted. Detailed description of problems, please enclose photographs or drafts, if required:

Estimated cost for repair, replacement, etc.: _____

I/We hereby confirm to have made all my/our claims to the best of my/our knowledge and beliefs. In the event that my/our claim is not covered by the PHÖNIX warranty terms and conditions, I/we will be willing to pay the cost incurred for processing the claim and for sending me/us the replacement parts.

Date

Signature, company stamp (without a valid signature, your claim cannot be processed!)

Maintenance

The solar system must be serviced regularly (we recommend once every 12 months). This will ensure smooth operation of the system over its entire lifetime. The warranty will become void if the system is not regularly serviced. We recommend that you have the system serviced annually by an authorized PHÖNIX partner.

The following maintenance should be performed every 12 months:

- **Collectors:** Check the attachments.

Please check if the frame or the threadings are corroded. Moreover, check the connection insulation, the roof lead-through, and the collector sensor cable for damage caused by birds. If you have a slightly sloped roof or if the roof has been dirtied by surrounding trees, the collector glass covers must be cleaned. Also check all of the flat washer threadings at the collector connections and at the roof lead-throughs for leaks or looseness.

- **Solar circuit:** Determine the percentage of antifreeze in the solar fluid and look up the freezing point of the medium. The freezing point should be at least -21 degrees C to make sure that your solar system will not freeze in the winter. If temperatures in your region fall below -21 degrees C at night, increase the percentage of antifreeze in your solar fluid (see table for Tyfocor L in the mounting instructions for Flowcon-F or Flowcon-R or follow the instructions on the antifreeze container). Also check the pH value of the solar fluid. If the value is below 7, replace the fluid. When you have to replace the fluid, verify that the water/antifreeze mixing ratio is correct.

Caution: NEVER add water to Tyfocor LS (ready-to-use fluid for tube collector systems) ! Only fill up or replace with Tyfocor LS ! Do not mix it with other ready-to-use mixtures. Verify as well that the correct system pressure is shown on the pressure gauge.

- **Storage tank:** Clean the inside and inspect visually. Check all the connections and flanges for tightness. Clean the outside of the tank with a damp cloth. If there is a risk of freezing in the room where the storage tank is located, operate in frost protection mode or completely empty the storage tank. Vent the safety valve regularly (once or twice a month), in compliance with the German Industrial Standard DIN 4753. For security reasons, during heating, water must be allowed to drain through the vent. Therefore the vent must never be blocked or restricted in any way. A yearly functional inspection of the magnesium anode in enamelled tanks must be performed. For detailed information, see the mounting instructions for the solar storage tank or in the document "Anode check". However, an in-built impressed current anode has a practically unlimited lifetime. Make sure that the pilot light is working. When the green LED is on, corrosion protection is ensured by the anode. If the red LED is on, there is a problem which must be investigated. Consult the operation guide for the impressed current anode !

The magnesium and the impressed current anode can only function correctly when the storage tank is filled. Fill in the enclosed owner's record. This record is the key to warranty service. The recorded test results must be sent every year to PHÖNIX Sonnwärme AG, otherwise no warranty service can be guaranteed.

- **Regulation:** Check all the major settings and system parameters and check the controller for correct functionality.

- **Membrane expansion vessel (MAG):** Membrane expansion vessels must be serviced yearly. They must be checked for external damage and undergo an inlet pressure test. Set the system inlet pressure and note it on the type plate. For this, the membrane expansion vessel must be depressurized (close cap valve and empty the membrane expansion vessel via the vent valve). Then, open the cap valve and correct the pressure, if required. To set the inlet pressure, take into consideration not only the static height and the vapour pressure of the standstill temperature but also the antifreeze percentage.

- **Water mixing valve:** A regular and periodic check of the mixing valve guarantees its optimum performance. When servicing the valve (at least every 12 months or sooner) verify the following:

- 1) Check the system filters and clean them, if required.
- 2) Check any non-return valves installed upstream of the mixing valve for tightness and cleanliness.
- 3) We recommend that you do not completely remove the mixing valve.

The inner parts can be easily removed, so that lime or other scale can be removed with a descaling fluid. Regular servicing of your system is key to any warranty service. It is particularly important to protect the solar circuit against frost and corrosion, and the storage tank against corrosion. Yearly maintenance reports must be sent to PHÖNIX Sonnwärme AG. If the system is serviced by a specialized company, they must sign the form to confirm that they have serviced the system. The test report (page 8) must be sent to us to ensure trouble-free processing of any warranty claim.

Test Report

according to EN Standard 12977-1

<input type="checkbox"/> Start-up	<input type="checkbox"/> Maintenance	Fill in yellow fields
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Operator			
Street			
Postal code / City		phone	

Material list <small>Mark applicable</small>	Make (Name)	Type (Serial no.)	Other (Dimensions)	Material	for stainless steel tank(s): Is additional corrosion protection necessary? (Follow recommendations of local water works)		
Collector							
Pipe							
Heat exchangers					Yes	No	Anode type
Storage tank 1			Capacity	l	<input type="checkbox"/>	<input type="checkbox"/>	
Storage tank 2			Capacity	l	<input type="checkbox"/>	<input type="checkbox"/>	
Controller							
Expansion vessel			Inhalt	l			

System settings (values)	Type	Maximum temperature	Temperature difference	Hysteresis = Delta t of
Consumer 1 = e.g. domestic water		°C	K	K
Consumer 2 = e.g. 1st storage tank		°C	K	K
Consumer 3 = e.g. 2nd storage tank		°C	K	K
Consumer 4 = e.g. swimming pool		°C	K	K
Collector maximum temperature	°C	Cooling functionality starting		°C
Set temperature for additional heater	°C	Flow rate	Set value: l/min	Ist: l/min
Operating pressure at	°C	bar	Inlet pressure expansion vessel	Set value: bar Ist: bar

Heat transfer fluid					
visual inspection	<input type="checkbox"/> clear <input type="checkbox"/> brown <input type="checkbox"/> black <input type="checkbox"/> cloudy				
Make / Type		Minimum value	SET value	System	<input type="checkbox"/> flushed
Filling quantity	litres	ph-Value	7		<input type="checkbox"/> filtered
Mixing ratio	%	Freeze protection down to	-25°C		<input type="checkbox"/> vented

General checks			
Collector clean	<input type="checkbox"/> ok	Pump functionality checked	<input type="checkbox"/> ok
Collector attachment solid	<input type="checkbox"/> ok	Temperature sensor shows realistic values	<input type="checkbox"/> ok
No condensation on the collector inside	<input type="checkbox"/> ok	System grounded	<input type="checkbox"/> ok
Non-return valves	<input type="checkbox"/> ok	Recharge heat transfer fluid available	<input type="checkbox"/> ok
Mixing valve	<input type="checkbox"/> ok	Anode(s) checked	<input type="checkbox"/> ok

Meter values	Pump 1	h	Pump 2	h	Heat meter	kWh
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Operator has been instructed	<input type="checkbox"/> Yes	<input type="checkbox"/> No	Service contract	<input type="checkbox"/> Yes	<input type="checkbox"/> No
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Inspection interval	<input type="checkbox"/> every 12 months	<input type="checkbox"/> every 24 months, latest on:	
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Stamp of solar firm inspected by: _____ Date: _____	Client's signature
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EEC - SAFETY DATA SHEET

acc. 91/155/EWG

Revised: 01.09.99

1. Substance/preparation, and company name

Trade name: TYFOCOR®L
Company: TYFOROP Chemie GmbH, Hellbrookstraße 5a, 22305 Hamburg
 Tel.: 040-61 21 69 und 61 40 39; Fax: 040-61 52 99; e-mail: info@tyfo.de
Emergency information: 040-61 40 39, between 6 p.m. and 8 a.m.: 0621-43333

2. Composition/information on ingredients

Chemical nature
 1,2 propylene glycol with corrosion inhibitors, CAS-No.: 57-55-6

3. Hazard identification

No particular hazards known

4. First aid measures

General advice: Remove contaminated clothing.
On contact with eyes: Rinse with plenty of water for at least 15 minutes ensuring eyelids are held open.
On skin contact: Wash thoroughly with water and soap.
On ingestion: Rinse mouth and then drink plenty of water.
Note to physician: Symptomatic treatment (decontamination, vital functions), no known specific antidote.

5. Fire-fighting measures

Suitable extinguishing media: Water spray, dry powder, alcohol-resistant foam, carbon dioxide (CO₂).
Specific hazards: Evolution of gases / fumes. Degree of risk depends on burning substances and fire conditions.
Special protective equipment: In case of fire, wear a self-contained breathing apparatus.
Further information: Contaminated extinguishing water must be disposed of in accordance with official regulations.

6. Accidental release measures

- Personal precautions:** No specific measures are necessary.
- Environmental precautions:** Do not discharge into natural waters without pre-treatment (biological treatment plant).
- Methods for cleaning up / taking up:** Contain and recover spilled material using sand or other suitable absorbent material; sweep into a pile to promote absorption. Put into containers or plastic bags for disposal. For small spills: rinse thoroughly with large quantities of water. For larger quantities which might flow into the draining system or waters, contact appropriate authorities.

7. Handling and storage

- Handling:** Good ventilation at workplace, otherwise no specific measures are necessary.
- Protection against fire and explosion:** Avoid electrostatic discharges. Electrical equipment must comply with DIN EN 60079-14 (VDE 0165). Water cool containers that might heat up.
- Storage:** Store in tightly sealed containers in a dry place. Do not store in galvanized containers

8. Exposure controls and personal protection

- Additional instructions for the design of technical equipment:** see 7.
- Personal protection**
- Eye protection:** Safety glasses
- Hand protection:** Rubber or PVC gloves
- General safety and hygiene measures:** The usual precautions for the handling of chemicals must be observed.

9. Physical and chemical properties

- Form:** liquid
- Colour:** colourless
- Odour:** practically odourless
- Freezing point:** <-50degrees C (DIN 51583)
- Boiling point:** >150degrees C (ASTM D 1120)
- Flash point:** >100degrees C (DIN 51758)
- Explosion limits:**
- lower: 2.6 Vol.- %
- upper: 12.6Vol.-%
- Ignition temperature:** >200degrees C (DIN 51794)
- Vapour pressure at 20 degrees C:** 2 mbar
- Density at 20 degrees C:** approx.. 1.055 g/cm³ (DIN 51757)
- Solubility in water:** unlimited
- Solubility in other solvents:** soluble in polar solvents
- pH value (500 g/l, 20 degrees C):** 6.5 - 8.5 (ASTM D 1287)
- Viscosity at 20 degrees C:** approx. 70 mm²/s (DIN 51562)

TYFOROP EEC - Safety data sheet
Page 03 of 04 Product: TYFOCOR®L

10. Stability and reactivity

Substances to avoid:	powerful oxidizing agents
Hazardous reactions:	No hazardous reactions if stored and handled as prescribed
*Hazardous decomposition products:	No hazardous reactions if stored and handled as described

11. Toxicological information

The statement has been derived from the properties of the individual components.

Acute Toxicity:	LD50 /oral / rat: >2000 mg/ kg Primary skin irritation / rabbit / Draize test: non-irritant Primary irritation of the mucous membrane / rabbit / literature indication: non-irritant
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12. Ecological information

The statement has been derived from the properties of the individual components.

Persistence and degradability:	Test method OECD 301A / ISO 7827 Method of analysis: DOC decrease Degree of elimination: >70 % (28 d) Evaluation: readily biodegradable
Impact on the environment:	Inhibition of degradation activity in activated sludge is not to be anticipated during correct introduction of low concentrations.
Ecotoxicity:	Algae toxicity: EC50 (72h): >100 mg/L Bacteria toxicity: >1,000 mg/L, Warburg Daphnia toxicity (acute): EC50 (48h) >100 mg/ L Fish toxicity: LC50 (96h): >100 mg/ l, Oncorhynchus mykiss

*13. Disposal considerations

TYFOCOR®L must be dumped or incinerated in accordance with local regulations. For quantities below 100 L, contact competent local waste management services.

Contaminated packaging:	Uncontaminated packs can be reused. Packs that cannot be cleaned should be disposed of in the same manner as the contents.
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TYFOROP EEC - Safety data sheet
Page 04 of 04 Product: TYFOCOR®L

14. Transport information

VbF: Not classified as a combustible liquid. Shippable by mail.

GGVE/RID: - GGVS/ADR: - IMDG CODE: -

UN No.: - IATA DGR: - TA Air: -

Not classified as hazardous under transport regulations.

15. Regulatory information

Labelling according to EU regulations: not subject to labelling

***National legislation/regulations:** German water hazard class: WHC 1 (slightly hazardous to water), acc. to VwVwS dated 17.05.99 (Germany)

16. Ecological information

All data that has changed since the last edition is identified with an asterisk. Previous data has become invalid.

This safety data sheet is intended to provide information and recommendations for how to handle chemical substances and preparations, in accordance with the essential requirements of safety precautions. It also provides physical, toxicological, and ecological data and how to handle, store, use and transport them safely. No liability for damage incurred in connection with the use of this information, or with the use, application, adaptation, or processing of the products here described will be accepted. An exception will be made for the case where our legal representatives are held responsible and liable by reason of intent or gross negligence. No liability will be accepted for damage indirectly incurred.

We provide this information and data according to our present level and knowledge and experience. No assurances concerning the characteristics of our product are hereby furnished.

Department which issued this data sheet: Dept. AT, Tel.: 040-61 40 39



EEC - SAFETY DATA SHEET

acc. 91/155/EEC Revised: 01.09.99

1. Substance/preparation, and company name

Trade name: TYFOCOR®LS ready-to-use, frost protection down to -28 degrees C
Company: TYFOROP Chemie GmbH, Hellbrookstraße 5a, D-22305 Hamburg
 Tel.: +49-40-61 21 69 and -61 40 39; Fax: -61 52 99; Email: info@tyfo.de
Emergency information: +49-40--61 40 39, between 6 p.m. and 8 a.m.: +49-621-43333

2. Composition/information on ingredients

Chemical nature
 Aqueous solution of 1,2 propylene glycol with corrosion inhibitors, CAS-No.: 57-55-6

3. Hazard identification

No particular hazards known

4. First aid measures

General advice: Remove contaminated clothing.

On contact with eyes: Rinse with plenty of water for at least 15 minutes ensuring eyelids are held open.

On skin contact: Wash thoroughly with water and soap.

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

Note to physician: Symptomatic treatment (decontamination, vital functions), no known specific antidote.

5. Fire-fighting measures

Suitable extinguishing media: Water spray, dry powder, alcohol-resistant foam, carbon dioxide (CO₂).

Specific hazards: Evolution of gases / fumes. Degree of risk depends on burning substances and fire conditions.

Special protective equipment: In case of fire, wear a self-contained breathing apparatus.

Further information: Contaminated extinguishing water must be disposed of in accordance with official regulations.

6. Accidental release measures

Personal precautions:	No specific measures are necessary.
Environmental precautions:	Do not discharge into natural waters without pre-treatment (biological treatment plant).
Methods for cleaning up/ taking up:	Contain and recover spilled material using sand or other suitable absorbent material; sweep into a pile to promote absorption. Put into containers or plastic bags for disposal. For small spills: rinse thoroughly with large quantities of water. For larger quantities which might flow into the draining system or waters, contact appropriate authorities.

7. Handling and storage

Handling:	Good ventilation at workplace, otherwise no specific measures necessary.
Protection against fire and explosion:	No specific measures necessary. Water cool containers that might heat up.
Storage:	Store in tightly sealed containers in a dry place. Do not store in galvanized containers.

8. Exposure controls and personal protection

Additional instructions for the design of technical equipment: see 7.

Personal protection

Eye protection:	Safety glasses
Hand protection:	Rubber or PVC gloves

General safety and hygiene measures: The usual precautions for the handling of chemicals must be observed.

9. Physical and chemical properties

Form:	liquid	
Colour:	red fluorescent	
Odour:	product specific	
Freezing point:	approx. 28 degrees C	(DIN 51583)
Boiling point:	>100 degrees C	(ASTM D 1120)
Flash point:	not applicable	
Explosion limits:		
-lower:	2.6 Vol.-%	(1,2 propylene glycol)
-upper:	12.6 Vol.-%	
Ignition temperature:	not applicable	
Vapour pressure at 20 degrees C:	2 mbar	
Density at 20 degrees C:	approx.. 1.030 g/cm ³	(DIN 51757)
Solubility in water:	unlimited	
Solubility in other solvents:	soluble in polar solvents	
pH value (500 g/L, 20 degrees C):	9.0 - 10.5	(ASTM D 1287)
Viscosity at 20 degrees C:	approx. 5.0 mm ² /s	(DIN 51562)

TYFOROP EEC - Safety data sheet

Page 03 of 04 Product: TYFOCOR®LS -ready-to-use

10. Stability and reactivity

Substances to avoid: powerful oxidizing agents

Hazardous reactions: No hazardous reactions if stored and handled as prescribed

***Hazardous decomposition products:** No hazardous reactions if stored and handled as prescribed

11. Toxicological information

The statement has been derived from the properties of the individual components.

Acute toxicity: LD50 /oral / rat: >2000 mg/ kg
 Primary skin irritation / rabbit / Draize test: non-irritant
 Primary irritation of the mucous membrane / rabbit / literature indication: non-irritant

12. Ecological information

The statement has been derived from the properties of the individual components.

Persistence and degradability: Test method: OECD 301A / ISO 7827
 Method of analysis: DOC decrease
 Degree of elimination: >70 % (28 d)
 Evaluation: readily biodegradable

Impact on the environment: Inhibition of degradation activity in activated sludge is not to be anticipated during correct introduction of low concentrations.

Ecotoxicity: Algae toxicity: EC50 (72h): >100 mg/L
 Bacteria toxicity: >1,000 mg/L, Warburg
 Daphnia toxicity (acute): EC50 (48h): >100 mg/L
 Fish toxicity: LC50 (96h): >100 mg/ L, Leuciscus idus

***Other ecological information:** AOX: The product does not contain organically bound halogen

*13. Disposal considerations

TYFOCOR®LS must be dumped or incinerated in accordance with local regulations. For quantities below 100 L, contact competent local waste management services.

Contaminated packaging: Uncontaminated packs can be reused.
 Packs that cannot be cleaned should be disposed of in the same manner as the contents.

TYFOROP EEC - Safety data sheet
Page 04 of 04 Product: TYFOCOR®LS -ready-to-use

14. Transport information

VbF: Not classified as a combustible liquid. Shippable by mail.

GGVE/RID: - GGVS/ADR: - IMDG-CODE: -
UN-No.: - IATA-DGR: - TA Air: -

Not classified as hazardous under transport regulations.

15. Regulatory information

**Labelling according to
EU regulations:** not subject to labelling

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We provide this information and data according to our present level of knowledge and experience. No assurances concerning the characteristics of our product are hereby furnished.

Department which issued this data sheet: Dept. AT, Tel.: 040-61 40 39

PHÖNIX SonnenWärme AG
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12459 Berlin

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