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

Trade Name: **SOLARCLIN**

Relevant use: Cleaning fluid for solar thermal 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 (Mon - Fri from 8 am - 5 pm)

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:
No particular hazards known.

3. Composition / Information on Ingredients

Chemical nature:

Triethylene glycol monomethyl ether; 2-[2-(2-methoxy ethoxy)ethoxy]-ethanol
REACH Registration number: 01-2119475101-50-0001
CAS number: 112-35-6
EC number: 203-962-1

4. First-Aid Measures

General information: Remove soiled or soaked clothing immediately.

After inhalation: When inhaled remove to fresh air and seek medical aid.

After contact with skin: Wash off immediately with soap and water.

After contact with eyes: Rinse thoroughly with plenty of water and seek medical advice.

After ingestion: Summon a doctor immediately.

Most important symptoms and effects, both acute and delayed:
Symptoms: No symptoms known currently. Hazards: No hazards known at this time.

Indication of any immediate medical attention and special treatment needed:
Treatment: Symptomatic treatment.

5. Fire-fighting Measures

Extinguishing media:
Alcohol-resistant foam, water spray jet, carbon dioxide, dry powder.
Cool containers by spraying with water.

5. Fire-fighting Measures - Continuation

| Special hazards arising from the substance or mixture:

In case of fire, hazardous combustion gases are formed: Carbon monoxide (CO), carbon dioxide (CO_2).

| Advice for fire-fighters:

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

| Further information:

Wear protective equipment.

6. Accidental Release Measures

| Personal precautions, protective equipment and emergency procedures:

Wear suitable personal protective equipment.

Environmental precautions:

Do not allow to enter drains or waterways.

| Methods and material for containment and cleaning up:

Pick up with absorbent material (e. g. sand, kieselgur, acid binder, universal binder, sawdust)

| Reference to other sections:

Additional information: Information regarding Safe handling, see chapter 7.

7. Handling and Storage

| Precautions for safe handling:

Advice for safe handling: Ensure adequate ventilation. Take precautionary measures against static discharges.

| Protection against fire and explosion:

Observe the general rules of industrial fire protection.

| Conditions for safe storage, including any incompatibilities:

Requirements for storage rooms and vessels: Storage: do not use light metal containers.
Further information on storage conditions: Do not leave vessels / containers open.
Prevent entry of air / oxygen (peroxide formation).

| Specific end uses:

No further recommendations.

8. Exposure Controls / Personal Protection

| Control parameters:

Exposure limit values: Exposure limit values are not available.

DNEL/DMEL values:
Triethylene glycol mono methylether, EC number: 203-962-1, CAS number: 112-35-6.

Route of exposure	Personnel	Exposure time/Effect	Value	Remarks
Dermal	Worker	Long term/systemic effects	40 mg/kg bw/day	DNEL
Inhalation	Worker	Long term/systemic effects	156 mg/m^3	DNEL
Dermal	General population	Long term/systemic effects	20 mg/kg bw/day	DNEL
Inhalation	General population	Long term/systemic effects	93 mg/m^3	DNEL
Oral	General population	Long term/systemic effects	2 mg/kg bw/day	DNEL

8. Exposure Controls / Personal Protection - Continuation

PNEC values:
Triethylene glycol mono methylether, EC number. 203-962-1, CAS number: 112-35-6.

Environmental compartment	Value
Water (fresh water)	10 mg/l
Water (sea water)	1 mg/l
Water (intermittent release)	50 mg/l
Sediment (fresh water)	36.6 mg/kg sediment dw
Sediment (sea water)	0.8 mg/kg sediment dw
Soil	1.73 mg/kg soil dw
STP	200 mg/l
oral	89 mg/kg food

General protective measures: Avoid contact with skin and eyes.

Hygiene measures: Wash hands before breaks and after work. Use barrier skin cream. Remove soiled or soaked clothing immediately and clean thoroughly before using again.

Respiratory protection: Use respiratory protection in case of insufficient exhaust ventilation or prolonged exposure. Full mask to standard DIN EN 136. Filter A (organic gases and vapours) to standard DIN EN 141. The use of filter apparatus presupposes that the environment atmosphere contains at least 17 % oxygen by volume, and does not exceed the maximum gas concentration, usually 0.5 % by volume. Relevant guidelines to be considered include EN 136/141/143/371/372 as well as other national regulations.

Hand protection: For longterm exposure: butyl rubber gloves. Minimum breakthrough time/ gloves: 480 min. Minimum thickness/gloves: 0.7 mm. For short-term exposure (splash protection): nitrile rubber gloves. Minimum breakthrough time/gloves: 30 min. Minimum thickness/gloves: 0.4 mm. These types of protective gloves are offered by various manufacturers. Please note the manufacturer's detailed statements, esp. about the minimum thickness and the minimum breakthrough time. Consider also the particular working conditionsunder which the gloves are being used.

Eye protection: Safety glasses with side protection shield.

9. Physical and Chemical Properties

Information on basic physical and chemical properties:

Form:	Liquid.	
Colour:	Light yellow.	
Odour:	Odourless.	
pH value (20 °C):	Neutral.	
Melting temperature:	-44 °C.	(DIN 51583)
Boiling point (1013 mbar):	250 °C.	(DIN 53171)
Flash point:	110 °C.	(DIN 51758, closed up)
Lower explosion limit:	1.3 % vol.	
Upper explosion limit:	9.9 % vol.	
Vapour pressure (20 °C):	0.1 mbar.	
Solubility in water (20°C):	Miscible.	
Octanol/water partition coefficient (log Pow, 20 °C): -1.12.		
Ignition temperature:	approx. 210 °C.	(DIN 51794)
Thermal decomposition:	> 300 °C.	
Viscosity (kinematic, 20 °C):	7.0-7.5 mm^2/s.	(DIN 51562)
Explosive properties:	No chemical groups associated with explosive properties present in the molecule	
Oxidising properties:	No chemical groups associated with oxidising properties present in the molecule	

Other information:

Density (20 °C):	ca. 1.05 g/cm^3.	(DIN 51757)
Further information:	Product is hygroskopic.	

10. Stability and Reactivity

Reactivity:	Refer to „Possibility of hazardous reactions“.
Chemical stability:	The product is stable under normal conditions.
Possibility of hazardous reactions:	No hazardous reactions when stored and handled according to prescribed instructions.
Conditions to avoid:	Not known.
Incompatible materials:	Not known.

Hazardous decomposition products:
No hazardous decomposition products when stored and handled according to prescribed instructions.

11. Toxicological Information

Information on toxicological effects:

Acute toxicity:	LD50 rat (oral): >10.500 mg/kg (OECD Guideline 401). LD50 rabbit (dermal): >2000 mg/kg. LC0 rat (inhalative, 8h): >10 ppm (OECD Guideline 403).
Irritation:	Skin irritation rabbit: Non-irritant (OECD Guideline 404). Eye irritation rabbit: Non-irritant (OECD Guideline 405).
Repeated dose toxicity:	Repeated Dose Toxicity (subchronic study) Route of application: drinking water. NOAEL: 400 mg/kg (Rats (male/female)). LOAEL: 1.200 mg/kg (Rats (male/female)) (OECD Guideline 408). Repeated Dose Toxicity (subchronic study) Route of application: dermal. NOAEL: 4.000 mg/kg (Rats (male/female)).
Assessment of mutagenicity:	It is concluded that the product is not mutagenic based on evaluation of several mutagenicity tests.

Assessment of toxicity to reproduction: No reproductive toxicity to be expected.

Assessment of teratogenicity: No teratogenic effects to be expected.’

12. Ecological Information

Toxicity:	Fish toxicity: LC50 (96 h): >5000 mg/l, zebra fish (OECD Guideline 203). Daphnia toxicity: EC50 (48 h): 500 mg/l, Daphnia magna (OECD Guideline 202 / ISO 6341 / EEC 84/449/V, C2). Algae toxicity: EC50 (72 h): >500 mg/l, Scenedesmus subspicatus). Bacteria toxicity: EC0 >2.000 mg/l (30 min, activated sludge). (OECD Guideline 209 * 1984 activated sludge.Respir.inhib).
Persistence and degradability:	Biodegradability: 100 % (13 d) Readily biodegradable. (OECD Guideline 301 B).

Bioaccumulation potential: Bioaccumulation: Low potential for bioaccumulation (log Pow < 3).

Mobility in soil:	Transport and distribution between environmental compartments: Low potential for adsorption to soil (log Pow < 3). Behaviour in environmental compartments: no known data.
Results of PBT and vPvB assessment:	Regarding all available tox and ecotox data it can be stated, that the substance does neither fulfil the PBT nor the vPvB criteria.
Other adverse effects:	Additional ecotoxicological remarks: If handled correctly it causes no disturbance in treatment plants.

13. Disposal considerations

| **Waste treatment methods:** Product: In accordance with regulations for special waste, must be taken to an authorised special waste incineration plant.
Uncleaned packaging: Packaging that cannot be cleaned should be disposed of as product waste.

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.

| **Special precautions for user:** see sections 6 to 8 of this Safety Data Sheet.

| **Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code:**
No transport as bulk according IBC - Code.

15. Regulatory information

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

| **Chemical Safety Assessment:**
A Chemical Safety Assessment (CSA) is available for the substance decribed herein.

16. Other Information

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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