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

1.1. Product identifier: **SOLARCLIN®**

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

Relevant identified uses: Cleaning fluid for solar thermal systems

1.3. Details of the supplier of the safety data sheet

Company: **TYFO**ROP Chemie GmbH, Ausschläger Billdeich 77, D-20539 Hamburg
Telephone/Telefax: Tel.: +49 (0)40 20 94 97 0, Fax: +49 (0)40 20 94 97 20
E-Mail: msds@tyfo.de (E-Mail address of person responsible for SDS)

1.4. Emergency telephone number: Tel.: +49 (0)551-19240 GIZ-Nord Poison Center

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

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

The substance is not subject to classification.

2.2. Label elements

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

The substance is not subject to labelling.

2.3. Other hazards

- This substance contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% by weight or higher.
- This substance does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% by weight or higher.

SECTION 3: Composition/information on ingredients

3.2. Mixtures

Chemical nature: Triethylene glycol monomethyl ether, 2-(2-(2-methoxy ethoxy)ethoxy)-ethanol

Components

Substance / REACH registration number	CAS number	EC number	INDEX number	Classification acc. to CLP
2-(2-(2-methoxy ethoxy)ethoxy)-ethanol 01-2119475101-50-0001	112-35-6	203-962-1	-	-

The full text of the abbreviations is listed in section 16.

SECTION 4: First aid measures

4.1. Description of first aid measures

General information: Remove/take off immediately all contaminated clothing.
If inhaled: When inhaled remove to fresh air and seek medical aid.
On skin contact: In case of contact, immediately flush skin with plenty of water.
On contact with eyes: In the case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
On ingestion: Get medical attention immediately.

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

Symptoms: No symptoms known currently. Hazards: No hazards known at this time.

SECTION 4: First aid measures

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

Treatment: Symptomatic treatment.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media: Water spray. Alcohol-resistant foam. Dry powder. Carbon dioxide (CO_2).

Unsuitable extinguishing media: None known.

5.2. Special hazards arising from the substance or mixture

Specific hazards during firefighting: Exposure to combustion products may be a hazard to health.

Hazardous combustion products: Carbon oxides.

5.3. Advice for fire-fighters

Special protective equipment: In the event of fire, wear self-contained breathing apparatus. Use personal protective equipment.

Specific extinguishing methods: Use extinguishing measures that are appropriate to local circumstances and the surrounding environment. Use water spray to cool unopened containers. Remove undamaged containers from fire area if it is safe to do so.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Personal precautions: Use personal protective equipment. Follow safe handling advice and personal protective equipment recommendations.

6.2. Environmental precautions

Discharge into the environment must be avoided. Prevent further leakage or spillage if safe to do so. Prevent spreading over a wide area (e.g. by containment or oil barriers). Retain and dispose of contaminated wash water. Local authorities should be advised if significant spillages cannot be contained.

6.3. Methods and material for containment and cleaning up

Methods for cleaning up: Soak up with inert absorbent material. For large spills, provide dyking or other appropriate containment to keep material from spreading. If dyked material can be pumped, store recovered material in appropriate container. Clean up remaining materials from spill with suitable absorbent. Local or national regulations may apply to releases and disposal of this material, as well as those materials and items employed in the cleanup of releases. You will need to determine which regulations are applicable. Sections 13 and 15 provide information regarding certain local or national requirements.

6.4. Reference to other sections: See sections 7, 8, 11, 12 and 13.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Technical measures: See Engineering measures in section 8.

Local/total ventilation: Use only with adequate ventilation.

SECTION 7: Handling and storage

Advice on safe handling: Avoid contact with skin and eyes. Take measures to prevent the buildup of electrostatic charge. Handle in accordance with good industrial hygiene and safety practice. Take care to prevent spills, waste and minimize release to the environment.

Advice on protection against fire and explosion: Observe the general rules of industrial fire protection.

Hygiene measures: Wash hands before breaks and at the end of workday. Use protective skin cream before handling the product. Take off immediately all contaminated clothing and wash it before reuse.

7.2. Conditions for safe storage, including any incompatibilities

Requirements for storage areas and containers: Storage: Do not use light metal containers. Store containers tightly sealed in a cool, dry and well ventilated place. Do not leave vessels/ containers open. Prevent entry of air/oxygen (peroxide formation).

Advice on common storage: Do not store with strong oxidizing agents. Keep away from food, beverages and animal feedstuffs.

7.3. 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

8.1. Control parameters

Components with occupational exposure limits

No components with occupational exposure limits contained.

DNEL values - information on Triethylene glycol mono methylether

End use	Exposure routes	Potential health effects	Value
Workers	Skin contact	Long-term - systemic effects	40 mg/kg body weight/day
Workers	Inhalation	Long-term - systemic effects	156 mg/m³
Consumers	Skin contact	Long-term - systemic effects	20 mg/kg body weight/day
Consumers	Inhalation	Long-term - systemic effects	93 mg/m³
Consumers	Ingestion	Long-term - systemic effects	20 mg/kg body weight/day

PNEC values - information on Triethylene glycol mono methylether

Fresh water	Marine water	Water (intermittent release)	Fresh water sediment	Marine water sediment	Soil	Sewage treatment plant	Oral (food)
10 mg/l	1 mg/l	50 mg/l	36.6 mg/kg	0.8 mg/kg	1.73 mg/kg	200 mg/l	89 mg/kg

8.2. Exposure controls

Engineering measures: Ensure adequate ventilation, especially in confined areas. Minimize workplace exposure concentrations.

Personal protective equipment

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

Hand protection: Long-term exposure: Impervious butyl rubber gloves. Minimum break-through 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.
Remarks: 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

SECTION 8: Exposure control/personal protection

breakthrough time. Consider also the particular working conditions under which the gloves are being used.

Skin and body protection: Wash skin thoroughly after contact. Wearing of closed work clothing is recommended.

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.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Appearance:	liquid.	
Colour:	light yellow.	
Odour:	odourless.	
Odour threshold:	not tested.	
Solidification temperature:	-44 °C (1013 hPa).	(DIN ISO 3016)
Initial boiling point/boiling range:	250 °C (1013 hPa).	
Evaporation rate:	not tested.	
Flammability (solid, gas):	not applicable.	
Upper explosion limit:	9.9 vol. %.	
Lower explosion limit:	1.3 vol. %.	
Flash point:	110 °C (1013 hPa).	(DIN 51758)
Ignition temperature:	ca. 210 °C (1013 hPa).	(DIN 51794)
Decomposition temperature:	>300 °C.	
pH value (20 °C):	neutral.	
Viscosity (kinematic, 20 °C):	7.0-7.5 mm^2/s.	
Solubility:	Water solubility: soluble (20 °C).	
Partition coefficient n-octanol/H_2O:	log P_{ow} (20 °C): -1.12.	(OECD test guideline 117)
Vapour pressure (20 °C):	0.1 hPa.	
Density (20 °C):	ca. 1.05 g/cm^3.	(DIN 51757)
Relative vapour density:	not tested.	
Particle properties:	not applicable.	

9.2. Other informatiom

9.2.1. Information with regard to physical hazard classes

Oxidizing properties: There are no chemical groups associated with oxidising properties present in the molecule.

Explosive properties: There are no chemical groups associated with explosive properties present in the molecule.

9.2.2. Other safety characteristics

Hygroscopicity: hygroscopic.

SECTION 10: Stability and reactivity

10.1. Reactivity: No hazardous reactions if stored and handled as prescribed/indicated.

10.2. Chemical stability: The product is stable if stored and handled as prescribed/indicated.

10.3. Possibility of hazardous reactions: No hazardous reactions if stored and handled as prescribed/indicated.

10.4. Conditions to avoid: No conditions to avoid anticipated.

SECTION 10: Stability and reactivity

10.5. Incompatible materials: Substances to avoid: strong oxidising agents.

10.6. Hazardous decomposition products: No hazardous decomposition products if stored and handled as prescribed/indicated.

SECTION 11: Toxicological information

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

Information on likely routes of exposure: Inhalation. Skin contact. Ingestion. Eye contact.

Acute toxicity: Not classified based on available information.
Acute oral toxicity: LD50 (Rat, male and female): >10500 mg/kg, method: OECD test guideline 401. Acute inhalation toxicity: LC0 (Rat, male and female): >10 ppm, exposure time: 8 h, method: OECD test guideline 403. Acute dermal toxicity: LD50 (Rabbit): >2000 mg/kg.

Skin corrosion/ irritation: Not classified based on available information.
No skin irritation (Rabbit), method: OECD test guideline 404.

Serious eye damage/ eye irritation: Not classified based on available information.
No eye irritation (Rabbit), method: OECD test guideline 405.

Respiratory or skin sensitisation: Skin sensitisation: Not classified based on available information.
Respiratory sensitisation: Not classified based on available information. Not sensitising to skin (Guinea pig), method: OECD test guideline 406.

Germ cell mutagenicity: Not classified based on available information.
Assessment: It is concluded that the product is not mutagenic based on evaluation of several mutagenicity tests.

Carcinogenicity: Not classified based on available information.
Assessment: No information available.

Reproductive toxicity: Not classified based on available information.
Assessment: No teratogenic effects to be expected. No reproductive toxicity to be expected.

Specific target organ toxicity (single exposure): Not classified based on available information.
Remarks: not tested.

Specific target organ toxicity (repeated exposure): Not classified based on available information.
Remarks: not tested.

Repeated dose toxicity: Not classified based on available information.
NOAEL (Rat, male and female): 400 mg/kg, application route: Drinking water, method: OECD test guideline 408.
LOAEL (Rat, male and female): 1200 mg/kg, application route: Drinking water, method: OECD test guideline 408.
LOAEL (Rat, male and female): 4000 mg/kg, application route: dermal, method: Repeated dose toxicity study (subchronic study).

Aspiration toxicity: Not classified based on available information.

11.2. Information on other hazards

Endocrine disrupting properties
This substance does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% by weight or higher.

SECTION 12: Ecological information

12.1. Toxicity

Information on Triethylene glycol mono methylether

Toxicity to	Value / exposure time	Species
fish	LC0: >5000 mg/l / 96 h	Danio rerio (Zebra fish) Method: OECD test guideline 203
daphnia and other aquatic invertebrates	EC50: >500 mg/l / 48 h	Daphnia magna (Water flea) Method: OECD test guideline 202
algae	EC50: >500 mg/l / 72 h	Desmodesmus subspicatus (Green algae)
bacteria	EC0: >2000 mg/l / 30 min.	Activated sludge Method: OECD test guideline 209

12.2. Persistence and degradability: Biodegradability: Biodegradation: 100 % (13 d), method: OECD test guideline 301 B. Result: readily biodegradable.

12.3. Bioaccumulative potential: Partition coefficient n-octanol/H_20: log P_{ow}: (20 °C): -1.12.

12.4. Mobility in soil: No data available.

12.5. Results of PBT and vPvB assessment: This substance contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% by weight or higher.

12.6. Endocrine disrupting properties: This substance does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated Regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% by weight or higher.

12.7. Other adverse effects: No data available.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Product: Do not allow to enter ground water, surface water or sewage system. Dispose of in accordance with local regulations.
According to the European Waste Catalogue (EWC), waste code numbers are not product specific, but application specific. Waste code numbers are to be assigned by the user in discussion with the manufacturer / the disposer / the competent authority.
Recommended EWC No.: 16 05 09 - discarded chemicals other than those mentioned in 16 05 06, 16 05 07 or 16 05 08.

Contaminated packaging: Dispose of as the product. Empty containers should be taken to an approved waste handling site for recycling or disposal.

SECTION 14: Transport information

	ADR/ RID	ADN	IMDG	IATA/ ICAO
	Not classified as a dangerous good under transport regulations			
14.1. UN number or ID number	-	-	-	-
14.2. UN proper shipping name	-	-	-	-
14.3. Transport hazard classes	-	-	-	-
14.4. Packing group	-	-	-	-
14.5. Environmental hazards	-	-	-	-

SECTION 14: Transport information

14.6. Special precautions for user

I See sections 6, 7, and 8.

I **14.7. Maritime transport in bulk according to IMO instruments**

Not applicable.

SECTION 15: Regulatory information

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

EU Regulations	Remark
Regulation (EC) No. 649/2012 of the European Parliament and the Council concerning the export and import	Not applicable
I REACH - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, preparations and articles (Annex XVII)	Not applicable
REACH - Candidate List of Substances of Very High Concern for Authorisation (Article 59)	Not applicable
I REACH - List of substances subject to authorisation (Annex XIV)	Not applicable
Regulation (EC) No. 1005/2009 on substances that deplete the ozone layer	Not applicable
Regulation (EC) No. 850/2004 on persistent organic pollutants	Not applicable
Seveso III - Directive 2012/18/EU of the European Parliament and of the Council on the control of major-accident hazards involving dangerous substances	Not applicable

Other regulations

No further information.

15.2. Chemical Safety Assessment

A Chemical Safety Assessment has been carried out for this substance.

SECTION 16: Other information

Full text of the abbreviations of classifications and H-Statements used in sections 2 and 3

Not applicable

Other abbreviations used in this safety data sheet in alphabetical order

ADN	European agreement concerning the international carriage of dangerous goods by inland waterways
ADR	European agreement concerning the international carriage of dangerous goods by road
ASTM	American Society for Testing and Materials
CAS number	Chemical Abstracts Service number
CLP	Regulation (EC) No. 1272/2008 on classification, labeling and packaging of chemical substances and mixtures
DIN	German Institute for Standardisation/German Industrial Standard
DNEL	Derived No Effect Level
EC50	Median Effective Concentration
EC number	EINECS number (European Inventory of Existing Substances) or ELINCS number (European List of Notified Chemical Substances)
IATA	International Air Transport Association
ICAO	International Civil Aviation Organization
IMDG	International Maritime Dangerous Goods Code
I IMO	International Maritime Organization

SECTION 16: Other information

INDEX number	Identification code for hazardous substances, Annex VI of Regulation (EC) No. 1272/2008
ISO	International Organisation for Standardisation/International Standard
LC50	Median Lethal Concentration
LD50	Median Lethal Dose
LOAEL	Lowest Observed Adverse Effect Level
NOAEL	No Observed Adverse Effect Level
OECD	Organisation for Economic Cooperation and Development
PNEC	Predicted No Effect Concentration
REACH	Regulation (EC) No. 1907/2006 on Registration, Evaluation, Authorisation and Restriction of Chemicals
RID	Regulation concerning the international carriage of dangerous goods by rail

Further information

Sources of key data used to compile the safety data sheet: Internal technical data, data from component SDS, OECD eChem Portal search results and European Chemicals Agency [ECHA].

Revision date:	01.04.2022 (Version 3.3)
Date of previous version:	01.07.2019 (Version 3.2)

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

The information provided in this safety data sheet (SDS) is correct to the best of our knowledge, information and belief at the date of its publication. The information is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and shall not be considered a warranty or quality specification of any type. The information provided relates only to the specific product identified at the top of this SDS and may not be valid when the SDS product is used in combination with any other materials or in any process, unless specified in the text. Product users should review the information and recommendations in the specific context of their intended manner of handling, use, processing, and storage, including an assessment of the appropriateness of this product in the user's end product, if applicable.