



SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Revision date 01.07.2019

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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: TYFOROP 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

According to the present state of knowledge provided this product is handled correctly, there is no danger to humans or the environment.

SECTION 3: Composition/information on ingredients

3.1. Substances

Chemical nature: Triethylene glycol monomethyl ether; 2-(2-(2-methoxyethoxy)ethoxy)-ethanol

Substance / REACH registration number	CAS number	EC number	INDEX number	Classification acc. CLP
2-(2-(2-methoxyethoxy)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.

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: Alcohol-resistant foam. Water spray. Carbon dioxide (CO₂). Dry powder.

5.2. Special hazards arising from the substance or mixture

Specific hazards during firefighting: In case of fire, hazardous combustion gases are formed: Carbon monoxide (CO), carbon dioxide (CO₂).

5.3. Advice for fire-fighters

Special protective equipment: Self-contained breathing apparatus.

Further information: Wear suitable protective equipment. Cool containers/tanks with water spray.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Personal precautions: Wear suitable protective equipment.

6.2. Environmental precautions

Do not allow to enter drains or waterways.

6.3. Methods and material for containment and cleaning up

Methods for cleaning up: Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust). Dispose of absorbed material in accordance with official regulations.

6.4. Reference to other sections

Additional information: Information regarding safe handling, see section 7. For personal protection see section 8. Information regarding waste disposal, see section 13.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Advice on safe handling: Ensure adequate ventilation. Take measures to prevent the build up of electrostatic charge.

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).

7.3. Specific end uses: No further recommendations.

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/m ³
Consumers	Skin contact	Long-term - systemic effects	20 mg/kg body weight/day
Consumers	Inhalation	Long-term - systemic effects	93 mg/m ³
Consumers	Ingestion	Long-term - systemic effects	20 mg/kg body weight/day

SECTION 8: Exposure control/personal protection - Continuation

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.

Hand protection:

Long-term exposure: Impervious 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. 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 breakthrough time. Consider also the particular working conditions under which the gloves are being used.

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.

General protective measures:

Avoid contact with skin and eyes. Handle in accordance with good industrial hygiene and safety practice. Wearing of closed work clothing is recommended.

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.	
pH value (20 °C):	neutral.	
Melting point:	-44 °C (1013 hPa).	(DIN 51583)
Boiling point:	250 °C (1013 hPa).	
Flash point:	110 °C (1013 hPa).	(DIN 51758)
Evaporation rate:	not tested.	
Upper explosion limit:	9.9 vol. %.	
Lower explosion limit:	1.3 vol. %.	
Vapour pressure (20 °C):	0.1 hPa.	
Relative vapour density:	not tested.	
Density (20 °C):	ca. 1.05 g/cm ³ .	(DIN 51757)
Solubility:	Water solubility: soluble (20°C).	
Partition coefficient n-octanol/H₂O:	log P _{ow} (20 °C): -1.12.	(OECD test guideline 117)
Ignition temperature:	ca. 210 °C (1013 hPa).	(DIN 51794)
Decomposition temperature:	>300 °C.	
Viscosity (dynamic, 20 °C):	7.3 mPa·s.	
Viscosity (kinematic, 20 °C):	7.0-7.5 mm ² /s.	
Explosive properties:	There are no chemical groups associated with explosive properties present in the molecule.	
Oxidising properties:	There are no chemical groups associated with oxidising properties present in the molecule.	

SECTION 9: Physical and chemical properties - Continuation

9.2. Other Information

Hygroscopicity: hygroscopic.
 Molecular weight: 164.2 g/mol.

SECTION 10: Stability and reactivity

10.1. Reactivity: Refer to section 10.3. 'Possibility of hazardous reactions'.
10.2. Chemical stability: Stable under normal conditions.
10.3. Possibility of hazardous reactions: No dangerous reaction known under conditions of normal use.
10.4. Conditions to avoid: None known.
10.5. Incompatible materials: Substances to avoid: not known.
10.6. Hazardous decomposition products: When handled and stored appropriately, no dangerous decomposition products are known.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

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: 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).

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:

Bioaccumulation: Low potential for bioaccumulation ($\log P_{ow} < 3$).

12.4. Mobility in soil:

Transport between environmental compartments: Not expected to adsorb on soil.

12.5. Results of PBT and vPvB assessment:

After consideration of all available toxicity and ecotoxicity data it is concluded that the substance does not fulfil neither the PBT criteria nor the vPvB criteria.

12.6. Other adverse effects:

Additional ecotoxicological remarks: If handled correctly it causes no disturbance in treatment plants.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Product:

In accordance with regulations for special waste, the product must be taken to an authorised special waste incineration plant. According to the European Waste Catalogue (EWC), waste codes are not product specific, but application specific. Waste codes should be assigned by the user, preferably in discussion with the waste disposal authorities.

Contaminated packaging:

Packaging that cannot be cleaned should be disposed of as product waste.

SECTION 14: Transport information

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

14.7. Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

No transport as bulk according IBC-Code.

SECTION 15: Regulatory information

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

Legal basis	Remark / Evaluation
Regulation (EC) No. 649/2012 of the European Parliament and the Council concerning the export and import	Not applicable
REACH - Candidate List of Substances of Very High Concern for Authorisation (Article 59)	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

Apart from the data/regulations specified in this section, no further information is available concerning safety, health and environmental protection.

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
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
IBC	International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk
ICAO	International Civil Aviation Organization
IMDG	International Maritime Dangerous Goods Code
INDEX number	Identification code for hazardous substances, Annex VI of Regulation (EC) No. 1272/2008
LC0	Maximum tolerable concentration
LC50	Median Lethal Concentration
LD50	Median Lethal Dose
LOAEL	Lowest Observed Adverse Effect Level
MARPOL	International Convention for the Prevention of Marine Pollution from Ships
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].

SECTION 16: Other information - Continuation

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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 the SDS product in the user's end product, if applicable.