SAFETY DATA SHEET

Issuing Date 01-06-17 **Revision Date** 27-06-17 **Version** 2.3

Section 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1 Product identifier

Product name Sentinel R100
Pure substance/mixture Mixture.

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

Recommended Use Heat transfer fluid for solar thermal systems.

Uses advised against None known.

1.3 Details of the supplier of the safety data sheet

Company Information SENTINEL PERFORMANCE SOLUTIONS LTD

7650 Daresbury Park
Warrington
Cheshire
WA4 4BS
United Kingdom

Telephone +44 (0) 1928 704 330
Fax +44 (0) 1928 562 070

For further information, please contact:

E-mail Address info.uk@sentinel-solutions.net

1.4 Emergency telephone

Emergency telephone +44 (0) 1928 704 339 (24 hours/ 7 days)

Section 2: HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008

Not classified

2.2 Label elements

According to Regulation (EC) No. 1272/2008 (CLP)

Signal Word
None

Hazard Statements
None

Precautionary statements
None

2.3 Other hazards

May cause skin and eye irritation. Ingestion may cause irritation of the gastrointestinal tract.

This preparation contains no substance considered to be persistent, bioaccumulating nor toxic (PBT)
This preparation contains no substance considered to be very persistent nor very bioaccumulating (vPvB)

Section 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.2 Mixtures

Chemical Name	EC-No	CAS-No	w/w%	Classification (EU Reg. 1272/2008)	REACH Registration Number
Propane-1,2-diol	200-338-0	57-55-6	30-40	*	01-2119456809-23-XXXX
Potassium hydroxide	215-181-3	1310-58-3	<1	Acute Tox. 4 (H302) Skin Corr. 1A (H314)*	01-2119487136-33-XXXX

For the full text of H-Statements see Section 16

* Substance with Workplace Exposure Limit. See Section 8.

Section 4: FIRST AID MEASURES

4.1 Description of first aid measures

Eye contact Immediately flush with plenty of water. After initial flushing, remove any contact lenses and continue flushing for at least 15 minutes. If symptoms develop obtain medical attention.

Skin contact Remove contaminated clothing and shoes. Wash off immediately with soap and plenty of water. If symptoms develop obtain medical attention.

Ingestion Do NOT induce vomiting. Wash out mouth with water and give 100 - 200 ml of water to drink. If symptoms develop obtain medical attention.

Inhalation Remove patient from exposure, keep warm and at rest. If symptoms develop obtain medical attention.

4.2 Most important symptoms and effects, both acute and delayed

Main Symptoms May cause skin and eye irritation. Ingestion may cause irritation of the gastrointestinal tract.

4.3 Indication of any immediate medical attention and special treatment needed

Notes to physician Treat symptomatically.

Section 5: FIRE-FIGHTING MEASURES

5.1 Extinguishing media

Suitable Extinguishing Media
Water spray, dry chemical, carbon dioxide (CO_2), or foam.

Extinguishing media which shall not be used for safety reasons
Do not use water jet.

5.2 Special hazards arising from the substance or mixture

Thermal decomposition can lead to release of irritating and toxic gases and vapors: Carbon monoxide (CO). Carbon dioxide (CO_2). Nitrogen oxides (NOx). Sulfur oxides.

5.3 Advice for firefighters

As in any fire, wear self-contained breathing apparatus and full protective gear. Cool containers / tanks with water spray.

Section 6: ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Ensure adequate ventilation. Avoid contact with the skin and the eyes. Avoid breathing vapors or mists. Use personal protective equipment.

6.2 Environmental precautions

Avoid release to the environment. Local authorities should be advised if significant spillages cannot be contained.

6.3 Methods and materials for containment and cleaning up

Absorb with earth, sand or other non-combustible material and transfer to containers for later disposal.

6.4 Reference to other sections

SECTION 8: Exposure controls/personal protection. SECTION 13: Disposal considerations.

Section 7: HANDLING AND STORAGE

7.1 Precautions for safe handling

Ensure adequate ventilation. Avoid contact with skin, eyes and clothing. Avoid breathing vapors or mists. Remove and wash contaminated clothing before re-use.

Do not eat, drink or smoke during work. Wash thoroughly after handling.

7.2 Conditions for safe storage, including any incompatibilities

Keep only in the original container/package in a cool well-ventilated place.

7.3 Specific end use(s)

Heat transfer fluid for solar thermal systems.

Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

Chemical Name	Propane-1,2-diol 57-55-6
The United Kingdom	STEL: 450 ppm STEL: 1422 mg/m^3 STEL: 30 mg/m^3 TWA 8hr (total vapour and particulates): 150 ppm TWA 8hr (total vapour and particulates): 474 mg/m^3 TWA 8hr (particulates): 10 mg/m^3
Norway	TWA: 25 ppm TWA: 79 mg/m^3 STEL: 37.5 ppm STEL: 118.5 mg/m^3
Ireland	TWA 8hr (total vapour and particulates): 150 ppm TWA 8hr (total vapour and particulates): 470 mg/m^3 TWA 8hr (particulates): 10 mg/m^3
Chemical Name	**Potassium hydroxide 1310-58-3**
The United Kingdom	STEL: 2 mg/m^3
France	STEL: 2 mg/m^3
Spain	STEL: 2 mg/m^3
Portugal	Ceiling: 2 mg/m^3
Finland	STEL: 2 mg/m^3 Ceiling: 2 mg/m^3
Denmark	Ceiling: 2 mg/m^3
Austria	TWA: 2 mg/m^3

Switzerland	TWA: 2 mg/m^3
Poland	STEL: 1 mg/m^3 TWA: 0.5 mg/m^3
Norway	Ceiling: 2 mg/m^3
Ireland	STEL: 2 mg/m^3

Derived No Effect Level (DNEL) No information available

Predicted No Effect Concentration (PNEC) No information available

8.2 Exposure controls

Appropriate engineering controls Provide adequate ventilation, including appropriate local extraction, to ensure that occupational exposure limits are not exceeded.

Personal protective equipment

Eye Protection	Goggles (EN 166)
Hand Protection	Protective gloves (EN 374)
Skin and body protection	Long sleeved clothing
Respiratory protection	Not normally required. In case of insufficient ventilation wear suitable respiratory equipment

Hygiene measures Handle in accordance with good industrial hygiene and safety practice.

Environmental Exposure Controls Avoid release to the environment

Section 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Physical state	Liquid
Appearance	Aqueous solution
Odor	Odorless
Color	Blue
Odor Threshold	Not applicable

Property	**Values**	**Remarks • Methods**
pH	8.5	@ 20 °C
Melting/freezing point		No information available
Freezing Point		No information available
Boiling point/boiling range	104 °C	(at 760 mm Hg)
Flash Point		Not flammable
Evaporation rate		No information available
Flammability (solid, gas)		Not applicable
Flammability Limits in Air		Not flammable
upper flammability limit		
lower flammability limit		
Vapor pressure		No information available
Vapor density		No information available
Relative density	1.04	@ 20 °C
Water solubility		Miscible
Solubility in other solvents		No information available
Partition coefficient: n-octanol/water		No information available
Auto-ignition temperature		No information available
Decomposition temperature		No information available
Viscosity, kinematic		No information available
Viscosity, dynamic		No information available

Explosive properties	Not explosive
Oxidizing properties	Not oxidizing

9.2 Other information

No information available

Section 10: STABILITY AND REACTIVITY

10.1 Reactivity

No data available.

10.2 Chemical stability

Stable under normal conditions.

10.3 Possibility of hazardous reactions

No information available.

10.4 Conditions to avoid

Heat, flames and sparks.

10.5 Incompatible materials

Oxidizing agents.

10.6 Hazardous decomposition products

Thermal decomposition can lead to release of irritating and toxic gases and vapors: Carbon monoxide (CO). Carbon dioxide (CO_2). Nitrogen oxides (NOx). Sulfur oxides.

Section 11: TOXICOLOGICAL INFORMATION

Inhalation	No known effect based on information supplied.
Eye contact	May cause eye irritation.
Skin contact	May cause skin irritation.
Ingestion	Ingestion may cause irritation of the gastrointestinal tract.

11.1 Information on toxicological effects

Acute toxicity

LD50 Oral: 19400-36000 mg/kg (rat)

Chemical Name	LD50 Oral	LD50 Dermal	LC50 Inhalation
Propane-1,2-diol	20000mg/kg (Rat)	20800 mg/kg (Rabbit)	-
Potassium hydroxide	365mg/kg (Rat)	-	-

Skin corrosion/irritation	Based on available data, classification criteria are not met.
Serious eye damage/irritation	Based on available data, classification criteria are not met.
Respiratory or skin sensitisation	Based on available data, classification criteria are not met.
Mutagenicity	Based on available data, classification criteria are not met.
Carcinogenicity	Based on available data, classification criteria are not met.

Reproductive toxicity Based on available data, classification criteria are not met.

STOT - Single exposure Based on available data, classification criteria are not met.

STOT - Repeated exposure Based on available data, classification criteria are not met.

Aspiration hazard Based on available data, classification criteria are not met.

Other information No information available.

Section 12: ECOLOGICAL INFORMATION

12.1 Toxicity

Fish: LC_{50}: 51600 mg/l/96h
Daphnia magna: EC_{50}: 34400 mg/l/48h
Algae: IC_{50}: 19000 mg/l/72h

Chemical Name	Toxicity to algae	Toxicity to fish	Toxicity to daphnia and other aquatic invertebrates
Propane-1,2-diol	EC50: 19000 mg/L 96 h (Pseudokirchneriella subcapitata)	-	EC50: >10000 mg/L 24 h (Daphnia magna) EC50: >1000 mg/L 48 h Static (Daphnia magna)

WGK Classification 1

12.2 Persistence and degradability

Product is biodegradable.

12.3 Bioaccumulative potential

Chemical Name	Bioconcentration factor (BCF)	log Pow
Propane-1,2-diol	<1	-
Potassium hydroxide	-	0.65 0.83

12.4 Mobility in soil

No information available.

12.5 Results of PBT and vPvB assessment

This preparation contains no substance considered to be persistent, bioaccumulating nor toxic (PBT). This preparation contains no substance considered to be very persistent nor very bioaccumulating (vPvB).

12.6 Other adverse effects

No information available.

Section 13: DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Waste from residues / unused products Dispose of as hazardous waste in compliance with local and national regulations.

Contaminated packaging Clean container with water. Empty containers should be taken to an approved waste handling site for recycling or disposal.

Section 14: TRANSPORT INFORMATION

Not classified as hazardous for transport.

	ADR/RID/ADN	ICAO/IATA	IMDG / IMO
14.1 UN Number	-	-	-
14.2 UN proper shipping name	-	-	-
14.3 Transport hazard class(es)	-	-	-
14.4 Packing group	-	-	-
14.5 Environmental Hazards	Not Classified	Not Classified	Not Classified
14.6 Special precautions for user	No special precautions are needed in handling this material		
14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code		-	

Section 15: REGULATORY INFORMATION

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

This safety data sheet complies with the requirements of Regulations (EC) No. 1907/2006 and No. 830/2015

WGK Classification 1

15.2 Chemical Safety Assessment

Chemical Safety Assessment has not been carried out.

Section 16: OTHER INFORMATION

Full text of H-Statements referred to under sections 2 and 3

H302 - Harmful if swallowed
H314 - Causes severe skin burns and eye damage

Issuing Date 01-06-2017

Revision Date 27.06.17

Revision Note All sections.

Disclaimer
The information and recommendations contained herein are based upon data believed to be up-to-date and correct. However, no guarantee or warranty of any kind, express or implied, is made with respect to the information and recommendations contained herein. We accept no responsibility and disclaim all liability for any harmful effects that may be caused by (incorrect) use, handling, purchase, resale, or exposure to our product. Customers and users of our product must comply with all applicable health and safety laws, regulations, and orders. In particular, they are under an obligation to carry out a risk assessment for the particular work places and to take adequate risk management measures in accordance with the national implementation legislation of EU Directives 89/391 and 98/24.