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

1.1 Product identifier

Product name
Sentinel X100 Rapid-Dose

Pure substance/mixture
Mixture.

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

Recommended Use
Corrosion and Scale Inhibitor for Central Heating 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

Additional Labeling
Special labelling for aerosols: Pressurized container: protect from sunlight and do not expose to temperatures exceeding 50 °C. Do not pierce or burn, even after use.

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

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>EC-No</th>
<th>CAS-No</th>
<th>w/w%</th>
<th>Classification (EU Reg. 1272/2008)</th>
<th>REACH Registration Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potassium tetraborate tetrahydrate</td>
<td>215-575-5</td>
<td>12045-78-2</td>
<td>1-10</td>
<td>*</td>
<td>no data available</td>
</tr>
<tr>
<td>Disodium molybdate</td>
<td>231-551-7</td>
<td>7631-95-0</td>
<td>1-5</td>
<td>*</td>
<td>01-2119489495-21-XXXX</td>
</tr>
<tr>
<td>Sodium Nitrate</td>
<td>231-554-3</td>
<td>7631-99-4</td>
<td>1-5</td>
<td>Ox. Sol. 3 (H272) Acute Tox. 4 (H302)</td>
<td>01-2119488221-41-XXXX</td>
</tr>
<tr>
<td>2,2',2''-nitrilotriethanol</td>
<td>203-049-8</td>
<td>102-71-6</td>
<td>1-10</td>
<td>*</td>
<td>01-2119486482-31-XXXX</td>
</tr>
<tr>
<td>Benzotriazole</td>
<td>202-394-1</td>
<td>95-14-7</td>
<td>1-3</td>
<td>Acute Tox. 4 (H302) Acute Tox. 4 (H332)</td>
<td>01-2119979079-20-XXXX</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Eye Irrit. 2 (H319) Aquatic Chronic 3 (H412)</td>
<td></td>
</tr>
</tbody>
</table>

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, Foam, Dry powder, Carbon dioxide (CO₂).

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

Exposure to heat may cause bursting of the aerosol containers. Thermal decomposition can lead to release of irritating and toxic gases and vapors: Carbon monoxide (CO), Carbon dioxide (CO₂), Nitrogen oxides (NOx), Phosphorus 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 inhalation of mists or vapor. 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

Physically collect containers. In case of liquid spills: 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 breathing vapors or mists. Avoid contact with skin, eyes and clothing. 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 below 50 °C. Keep away from heat and sources of ignition. Keep away from direct sunlight. Protect from frost.

7.3 Specific end use(s)

Corrosion and Scale Inhibitor for Central Heating Systems.

Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Potassium tetraborate tetrahydrate 12045-78-2</th>
<th>Disodium molybdate 7631-95-0</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spain</td>
<td>TWA: 2 mg/m³</td>
<td></td>
</tr>
<tr>
<td>The United Kingdom</td>
<td>TWA: 5 mg/m³</td>
<td>STEL: 10 mg/m³</td>
</tr>
<tr>
<td>France</td>
<td>TWA: 5 mg/m³</td>
<td></td>
</tr>
<tr>
<td>Spain</td>
<td>TWA: 0.5 mg/m³</td>
<td></td>
</tr>
<tr>
<td>Portugal</td>
<td>TWA: 0.5 mg/m³</td>
<td></td>
</tr>
<tr>
<td>Finland</td>
<td>TWA: 0.5 mg/m³</td>
<td></td>
</tr>
<tr>
<td>Denmark</td>
<td>TWA: 5 mg/m³</td>
<td></td>
</tr>
<tr>
<td>Austria</td>
<td>STEL 10 mg/m³</td>
<td></td>
</tr>
<tr>
<td>Switzerland</td>
<td>TWA: 5 mg/m³</td>
<td></td>
</tr>
<tr>
<td>Poland</td>
<td>STEL: 10 mg/m³</td>
<td>TWA: 4 mg/m³</td>
</tr>
<tr>
<td>Norway</td>
<td>TWA: 5 mg/m³</td>
<td>STEL: 10 mg/m³</td>
</tr>
<tr>
<td>Ireland</td>
<td>TWA: 10 mg/m³ TWA: 0.5 mg/m³</td>
<td></td>
</tr>
<tr>
<td>Chemical Name</td>
<td>2,2',2''-nitrilotriethanol 102-71-6</td>
<td></td>
</tr>
</tbody>
</table>
Sentinel X100 Rapid-Dose

<table>
<thead>
<tr>
<th>Country</th>
<th>TWA</th>
<th>Ceiling / Peak</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spain</td>
<td>5 mg/m³</td>
<td></td>
</tr>
<tr>
<td>Germany</td>
<td>5 mg/m³</td>
<td></td>
</tr>
<tr>
<td>Portugal</td>
<td>5 mg/m³</td>
<td>20 mg/m³</td>
</tr>
<tr>
<td>Finland</td>
<td>5 mg/m³</td>
<td></td>
</tr>
<tr>
<td>Denmark</td>
<td>TWA: 0.5 ppm</td>
<td>TWA: 3.1 mg/m³</td>
</tr>
<tr>
<td>Austria</td>
<td>STEL 1.6 ppm</td>
<td>STEL 10 mg/m³</td>
</tr>
<tr>
<td></td>
<td>TWA: 0.8 ppm</td>
<td>TWA: 5 mg/m³</td>
</tr>
<tr>
<td>Switzerland</td>
<td>STEL: 20 mg/m³</td>
<td>TWA: 5 mg/m³</td>
</tr>
<tr>
<td>Norway</td>
<td>TWA: 5 mg/m³</td>
<td>STEL: 10 mg/m³</td>
</tr>
<tr>
<td>Ireland</td>
<td>TWA: 5 mg/m³</td>
<td></td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
<th>Remarks • Methods</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical state</td>
<td>Liquid</td>
<td></td>
</tr>
<tr>
<td>Appearance</td>
<td>Aerosol can containing: Aqueous solution</td>
<td></td>
</tr>
<tr>
<td>Odor</td>
<td>Characteristic</td>
<td></td>
</tr>
<tr>
<td>Color</td>
<td>Yellow. Amber</td>
<td></td>
</tr>
<tr>
<td>Odor Threshold</td>
<td>No information available</td>
<td></td>
</tr>
<tr>
<td>pH</td>
<td>6.4</td>
<td>@ 25 °C</td>
</tr>
<tr>
<td>Melting/freezing point</td>
<td>-13 °C</td>
<td>No information available</td>
</tr>
<tr>
<td>Freezing Point</td>
<td></td>
<td>(at 760 mm Hg)</td>
</tr>
<tr>
<td>Boiling point/boiling range</td>
<td>104 °C</td>
<td>Not flammable</td>
</tr>
<tr>
<td>Flash Point</td>
<td></td>
<td>No information available</td>
</tr>
<tr>
<td>Evaporation rate</td>
<td></td>
<td>Not applicable</td>
</tr>
<tr>
<td>Flammability (solid, gas)</td>
<td></td>
<td>Not flammable</td>
</tr>
<tr>
<td>Flammability Limits in Air</td>
<td></td>
<td></td>
</tr>
<tr>
<td>upper flammability limit</td>
<td></td>
<td></td>
</tr>
<tr>
<td>lower flammability limit</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vapor pressure</td>
<td></td>
<td>No information available</td>
</tr>
<tr>
<td>Vapor density</td>
<td></td>
<td>No information available</td>
</tr>
<tr>
<td>Relative density</td>
<td>1.26</td>
<td>@ 25 °C</td>
</tr>
</tbody>
</table>
Sentinel X100 Rapid-Dose

Water solubility
Solubility in other solvents
Partition coefficient: n-octanol/water
Auto-ignition temperature
Decomposition temperature
Viscosity, kinematic
Viscosity, dynamic

Explosive properties
Oxidizing properties

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 (CO2), Nitrogen oxides (NOx), Phosphorous 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

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>LD50 Oral</th>
<th>LD50 Dermal</th>
<th>LC50 Inhalation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disodium molybdate</td>
<td>4g/kg (Rat)</td>
<td>-</td>
<td>&gt;2080 mg/m³ (Rat) 4 h</td>
</tr>
<tr>
<td>Sodium Nitrate</td>
<td>1267mg/kg (Rat)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>2,2',2''-nitrilotriethanol</td>
<td>4190mg/kg (Rat)</td>
<td>&gt;2000 mg/kg (Rabbit)</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>&gt;16 mL/kg (Rat)</td>
<td>-</td>
</tr>
<tr>
<td>Benzotriazole</td>
<td>560mg/kg (Rat)</td>
<td>&gt;1 g/kg (Rat)</td>
<td>-</td>
</tr>
</tbody>
</table>
Sentinel X100 Rapid-Dose

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.

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>European Union</th>
<th>IARC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sodium Nitrate</td>
<td>-</td>
<td>Group 2A</td>
</tr>
<tr>
<td>2,2',2''-nitrilotriethanol</td>
<td>-</td>
<td>Group 3</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Toxicity to algae</th>
<th>Toxicity to fish</th>
<th>Toxicity to daphnia and other aquatic invertebrates</th>
</tr>
</thead>
<tbody>
<tr>
<td>2,2',2''-nitrilotriethanol</td>
<td>EC50: 216 mg/L 72 h (Desmodesmus subspicatus)</td>
<td>LC50: &gt;1000 mg/L 96 h static (Pimephales promelas)</td>
<td>EC50: 1386 mg/L 24 h (Daphnia magna)</td>
</tr>
<tr>
<td>Benzotriazole</td>
<td>EC50: 15.4 mg/L 96 h (freshwater algae)</td>
<td>-</td>
<td>EC50: 141.6 mg/L 48 h (water flea)</td>
</tr>
</tbody>
</table>

WGK Classification  1

12.2 Persistence and degradability

Product is biodegradable.

12.3 Bioaccumulative potential

Does not bioaccumulate.

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Bioconcentration factor (BCF)</th>
<th>log Pow</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sodium Nitrate</td>
<td>-</td>
<td>-3.8</td>
</tr>
<tr>
<td>2,2',2''-nitrilotriethanol</td>
<td>&lt;3.9</td>
<td>-2.53</td>
</tr>
</tbody>
</table>

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
Disposal should be in accordance with local, state or national legislation.

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

<table>
<thead>
<tr>
<th>ADR/RID/ADN</th>
<th>ICAO/IATA</th>
<th>IMDG / IMO</th>
</tr>
</thead>
<tbody>
<tr>
<td>14.1 UN Number</td>
<td>1950</td>
<td>1950</td>
</tr>
<tr>
<td>14.2 UN proper shipping name</td>
<td>AEROSOLS</td>
<td>AEROSOLS</td>
</tr>
<tr>
<td>14.3 Transport hazard class(es)</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>14.4 Packing group</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>14.5 Environmental Hazards</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>14.6 Special precautions for user</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code</td>
<td>N/A</td>
<td></td>
</tr>
</tbody>
</table>

**Modal information:**

**Land transport:**
- Proper Shipping Name: AEROSOLS
- Transport - Hazard label(s): 2.2 Non-flammable, non-toxic, Gas
- ADR/RID Class: 2
- Packing Group: Not applicable.
- HIN: None.
- EAC: None.
- Limited Quantity: 1 litre

**Sea transport:**
- Proper Shipping Name: AEROSOLS
- Transport - Hazard label(s): 2.2 Non-flammable, non-toxic, Gas
- IMO-IMDG Class: 2
- Packing Group: Not applicable.
- EmS: F-D, S-U
- Marine Pollutant: No.
- Limited Quantity: 1 litre

**Air transport:**
- Proper Shipping Name: AEROSOLS, Non-flammable
- Transport - Hazard label(s): 2.2 Non-flammable, non-toxic, Gas
- ICAO/IATA Class: 2
- Packing Group: Not applicable.
- ERG: 2L
- Packing instruction (cargo aircraft): Y203, 203
- Packing instruction (passenger aircraft): Y203, 203
- Max. Net qty/ package: Packing instruction (cargo aircraft): 150 kg
  Packing instruction (passenger aircraft): 75 kg (30 kg non-UN Packaging.)
Sentinel X100 Rapid-Dose
Limited Quantity: 1 litre

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. 453/2010

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

H272 - May intensify fire; oxidizer
H302 - Harmful if swallowed
H319 - Causes serious eye irritation
H332 - Harmful if inhaled
H412 - Harmful to aquatic life with long lasting effects

Issuing Date 01-06-17
Revision Date 30-05-17
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.