1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1. Product Identifier

Product Name: Klozur® SP
Alternate Commercial Name: Klozur® Persulfate
Synonyms: Sodium Persulfate; Sodium Peroxydisulfate; Disodium Peroxydisulfate; Peroxydisulfuric acid, disodium salt; Peroxydisulfuric acid, sodium salt
CAS-No: 7775-27-1
EC-No: 231-892-1
REACH registration number: 01-2119495975-15-0001
Formula: Na2O8S2

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

Recommended Use: In situ and ex situ chemical oxidation of contaminants and compounds of concern for environmental remediation applications

Restrictions on Use: No uses to be advised against were identified

1.3. Details of the supplier of the safety data sheet

Manufacturer/Supplier: PeroxyChem LCC
Only Representative: PeroxyChem Spain s.l.u.
C/ Afueras s/n 50784 La Zaida (Zaragoza) Spain
Tel: +34 976 179600

E-mail address: sdsinfo@peroxychem.com

1.4. Emergency telephone numbers

For leak, fire, spill or accident emergencies, call:
1 800 / 424 9300 (CHEMTREC - U.S.A.)
1 703 / 527 3887 (CHEMTREC - Collect - All Other Countries)
(303) 595-9048 (Medical - U.S. - Call Collect)
2. HAZARDS IDENTIFICATION

2.1. Classification of the substance or mixture

Regulation (EC) No 1272/2008

<table>
<thead>
<tr>
<th>Hazard</th>
<th>Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute oral toxicity</td>
<td>4</td>
</tr>
<tr>
<td>Skin corrosion/irritation</td>
<td>2</td>
</tr>
<tr>
<td>Serious eye damage/eye irritation</td>
<td>2</td>
</tr>
<tr>
<td>Respiratory sensitization</td>
<td>1</td>
</tr>
<tr>
<td>Skin sensitization</td>
<td>1</td>
</tr>
<tr>
<td>Specific target organ systemic toxicity</td>
<td>3</td>
</tr>
</tbody>
</table>

For the full text of the H- and EUH- phrases mentioned in this Section, see Section 16.

2.2. Label Elements

Signal word: DANGER

Hazard Statements

- H334 - May cause allergy or asthma symptoms or breathing difficulties if inhaled
- H335 - May cause respiratory irritation
- H319 - Causes serious eye irritation
- H315 - Causes skin irritation
- H317 - May cause an allergic skin reaction
- H302 - Harmful if swallowed
- H272 - May intensify fire; oxidizer

Precautionary statements

- P220 - Keep/Store away from clothing/ combustible materials
- P280 - Wear protective gloves/ protective clothing/ eye protection/ face protection
- P302 + P352 - IF ON SKIN: Wash with plenty of soap and water
- P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
- P304 + P341 - IF INHALED: If breathing is difficult, remove to fresh air and keep at rest in a position comfortable for breathing
- P405 - Store locked up

2.3. OTHER INFORMATION

General Hazards

Risk of decomposition by heat or by contact with incompatible materials
3. COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Substance</th>
<th>Component</th>
<th>EC-No</th>
<th>CAS-No</th>
<th>Weight %</th>
<th>Classification according to Regulation (EC) No. 1272/2008 [CLP]</th>
<th>REACH registration number</th>
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</thead>
<tbody>
<tr>
<td>Sodium sulfate 7757-82-6 ( &lt; 2 )</td>
<td>Present</td>
<td>7757-82-6</td>
<td>&lt; 2</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

For the full text of the H- and EUH- phrases mentioned in this Section, see Section 16

4. FIRST AID MEASURES

4.1. Description of first-aid measures

General Advice
May produce an allergic reaction.

Skin Contact
Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes. Get medical attention if irritation develops and persists.

Eye Contact
Rinse thoroughly with plenty of water for at least 15 minutes, lifting lower and upper eyelids intermittently. Consult a physician. If symptoms persist, call a physician.

Inhalation
Remove from exposure, lie down. If breathing is irregular or stopped, administer artificial respiration. Call a physician immediately.

Ingestion
Do NOT induce vomiting. Call a physician or poison control center immediately. Rinse mouth. Drink 1 or 2 glasses of water.

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

Itching; Redness; Coughing and/or wheezing.

4.3. Indication of immediate medical attention and special treatment needed, if necessary

Indication of immediate medical attention and special treatment needed, if necessary
Treat symptomatically.

5. FIRE-FIGHTING MEASURES

5.1. Extinguishing media

Suitable Extinguishing Media
Water. Cool containers with flooding quantities of water until well after fire is out.

Extinguishing media which shall not be used for safety reasons
Do not use a solid water stream as it may scatter and spread fire.

5.2. Special hazards arising from the substance or mixture

Special exposure hazards arising from the substance or preparation itself, combustion products, resulting gases
In case of fire, formation of sulphur oxides, nitrogen oxides, toxic pyrolysis products.

5.3. Advice for firefighters
Special protective equipment for fire-fighters
As in any fire, wear self-contained breathing apparatus and full protective gear.

OTHER INFORMATION
The product is not combustible. Contact with combustible materials may intensify fires. Adjust fire fighting measures to surrounding fire, if possible. Cool endangered containers with water spray and move out of danger area. Collect contaminated fire extinguishing water separately. This must not be discharged into drains. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.

6. ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions, protective equipment and emergency procedures
Keep off any unprotected persons. Avoid contact with the skin and the eyes. Avoid breathing dust. Wear personal protective equipment.

6.2. Environmental Precautions
Prevent material from entering into soil, ditches, sewers, waterways, and/or groundwater. See Section 12, Ecological Information for more detailed information.

6.3. Methods and materials for containment and cleaning up
Vacuum, shovel or pump waste into a drum and label contents for disposal. Avoid dust formation. Store in closed container. Clean up spill area and treat as special waste. Dispose of waste as indicated in Section 13. Never add other substances or combustible waste to product residues.

6.4. Reference to other sections.
For personal protection see Section 8. Dispose of waste as indicated in Section 13.

7. HANDLING AND STORAGE

7.1. Precautions for Safe Handling
Wear personal protective equipment. Use only in area provided with appropriate exhaust ventilation. Avoid dust formation. Handle product only in closed system or provide appropriate exhaust ventilation at machinery. Avoid contact with skin and eyes. Avoid breathing dust. Remove and wash contaminated clothing before re-use. Reference to other sections.

Additional information
Use clean plastic or stainless steel scoops only.

7.2. Conditions for safe storage, including any incompatibilities
Storage
Keep containers tightly closed in a dry, cool and well-ventilated place. Keep away from heat. Do not store near combustible materials. Avoid contamination of opened product. Keep away from food, drink and animal feedingstuffs. Avoid formation and deposition of dust.

Materials to avoid
Acids, alkalis, halides (fluorides, chlorides, bromides), combustible materials, reducing agents and organic compounds.

7.3. Specific end uses
Refer to Section 1 and the Annex.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. Control parameters
Exposure Limits

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>European Union</th>
<th>The United Kingdom</th>
<th>Ireland</th>
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<tbody>
<tr>
<td>Sodium Persulfate</td>
<td></td>
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<td>TWA 0.1 mg/m³</td>
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</table>
Klozur® SP

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<tr>
<th>Chemical name</th>
<th>France</th>
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<th>Finland</th>
<th>Norway</th>
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<td>Sodium Persulfate</td>
<td>TWA 2 mg/m³</td>
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<table>
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<td>TWA 10 mg/m³</td>
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<td>7757-82-6</td>
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<table>
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<th>Russia</th>
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### Derived No Effect Level (DNEL)

<table>
<thead>
<tr>
<th>DNELs - General Population</th>
<th>Route of Exposure</th>
<th>Description</th>
<th>DNEL/DMEL</th>
<th>Most Sensitive Endpoint</th>
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<tr>
<td>Sodium Persulfate (7775-27-1)</td>
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<td></td>
</tr>
<tr>
<td>Acute - systemic dermal</td>
<td>LD0</td>
<td></td>
<td>200 mg/kg bw</td>
<td>Acute toxicity</td>
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<tr>
<td>Acute - systemic Inhalation</td>
<td>LC0</td>
<td></td>
<td>295 mg/m³</td>
<td>Acute toxicity</td>
</tr>
<tr>
<td>Acute - systemic oral</td>
<td>LD0</td>
<td></td>
<td>30 mg/kg bw</td>
<td>Acute toxicity</td>
</tr>
<tr>
<td>Acute - local dermal</td>
<td>LD0</td>
<td></td>
<td>1.124 mg/cm³</td>
<td>Acute toxicity</td>
</tr>
<tr>
<td>Acute - local Inhalation</td>
<td>LC0</td>
<td></td>
<td>295 mg/m³</td>
<td>Acute toxicity</td>
</tr>
<tr>
<td>Long term - systemic dermal</td>
<td>NOAEL</td>
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<td>91 mg/kg bw/day</td>
<td>repeated dose toxicity</td>
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<tr>
<td>Long term - systemic Inhalation</td>
<td>NOAEC</td>
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<td>1.03 mg/m³</td>
<td>repeated dose toxicity</td>
</tr>
<tr>
<td>Long term - systemic oral</td>
<td>NOAEL</td>
<td></td>
<td>9.1 mg/kg bw/day</td>
<td>repeated dose toxicity</td>
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<tr>
<td>Long term - local dermal</td>
<td>NOAEL</td>
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<td>0.051 mg/cm³</td>
<td>repeated dose toxicity</td>
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<tr>
<td>Long term - local Inhalation</td>
<td>NOAEC</td>
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<td>1.03 mg/m³</td>
<td>repeated dose toxicity</td>
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</table>

### Predicted No Effect Concentration (PNEC)

#### 8.2. Exposure Controls

**Engineering measures**

Provide local exhaust or general ventilation adequate to maintain exposures below permissible exposure limits.

**Personal protective equipment**

- **General information**

  Protective engineering solutions should be implemented and in use before personal protective equipment is considered.

- **Respiratory Protection**

  P2 Dust mask when airborne dust concentrations elevated.

- **Eye/Face Protection**

  Eye protection recommended. Chemical goggles consistent with EN 166 or equivalent.

- **Skin and Body Protection**

  Wear suitable protective clothing: Long sleeved clothing.

- **Hand Protection**

  Protective gloves: Neoprene gloves, Polyvinylchloride, Natural Rubber.

**Hygiene measures**

Keep away from food, drink and animal feeding stuffs. Do not eat, drink or smoke when using this product. Wash hands before breaks and after shifts. Keep work clothes separate, remove contaminated clothing - launder after open handling of product.

**Environmental exposure controls**

The product should not be allowed to enter drains, water courses or the soil.

### 9. PHYSICAL AND CHEMICAL PROPERTIES

#### 9.1. Information on basic physical and chemical properties

- **Appearance**

  Crystalline solid

- **Color**

  White
9.2. OTHER INFORMATION

Bulk Density: 1.12 g/cm³ (loose)
Molecular weight: 238.1
VOC content (%): Not applicable

10. STABILITY AND REACTIVITY

10.1. Reactivity

None under normal use conditions

10.2. Chemical Stability

Stable under recommended storage conditions. Unstable if heated. Unstable on exposure to moisture. Unstable in presence of contamination.

10.3. Possibility of Hazardous Reactions

None under normal processing.

10.4. Conditions to avoid


10.5. Incompatible materials

Acids, alkalis, halides (fluorides, chlorides, bromides), combustible materials, reducing agents and organic compounds.

10.6. Hazardous Decomposition Products

Oxygen which supports combustion

11. TOXICOLOGICAL INFORMATION

11.1. Information on toxicological effects

Acute toxicity
Product Information.

LD50 Dermal: Sodium Persulfate: > 10 g/kg
LD50 Oral: Sodium Persulfate: 895 mg/kg (rat)
Klozur® SP

LC50 Inhalation
Sodium Persulfate: >5.10 mg/L (4h) (rat)

Skin Contact
Irritating to skin. Persulfates in general, specifically diammonium persulfate and dipotassium persulfate, exhibited skin irritation properties in human case reports, following occupational exposure and consumer use. Slightly or non-irritating (rabbit).

Eye Contact
Irritating to eyes. Has been shown to exhibit eye irritation properties in human case reports following occupational exposure and consumer use. Non-irritating (rabbit).

Inhalation
Respiratory sensitizer: May cause allergy or asthma symptoms or breathing difficulties if inhaled. May cause irritation of respiratory tract. Respiratory irritation has been seen in workers exposed to persulfates. In animals, diammonium persulfate, produced pathological respiratory irritation in a subchronic study.

Ingestion
May be harmful if swallowed.

Chronic toxicity

Sensitization
Sodium Persulfate: May cause sensitization by inhalation and skin contact.

Neurological effects
Not neurotoxic.

Target organ effects
Eyes. Lungs.

Carcinogenicity
Contains no ingredient listed as a carcinogen.

Mutagenicity
Did not show mutagenic effects in animal experiments

Reproductive toxicity
Diammonium persulfate did not affect fertility or the developing fetus in animal studies (NOAEL: 250 mg/kg bw).

Developmental toxicity
None known.

Teratogenicity
Not teratogenic in animal studies.

12. ECOLOGICAL INFORMATION

12.1. Toxicity

Ecotoxicity effects

<table>
<thead>
<tr>
<th>Sodium Persulfate (7775-27-1)</th>
<th>Duration</th>
<th>Species</th>
<th>Value</th>
<th>Units</th>
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</thead>
<tbody>
<tr>
<td>Sodium Persulfate</td>
<td>96 h LC50</td>
<td>Rainbow trout</td>
<td>163</td>
<td>mg/L</td>
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<tr>
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<td>Daphnia magna</td>
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<td>mg/L</td>
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<td>Sodium Persulfate</td>
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<td>Grass shrimp</td>
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<td>mg/L</td>
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<tr>
<td>Sodium Persulfate</td>
<td>72 h EC50</td>
<td>Algae Selenastrum capricornutum</td>
<td>116</td>
<td>mg/L</td>
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</tbody>
</table>

12.2. Persistence and degradability

Biodegradability does not pertain to inorganic substances.

12.3. Bioaccumulative potential

Does not bioaccumulate.

12.4. Mobility in soil

Dissociates into ions.

12.5. Results of PBT and vPvB assessment

PBT/vPvB assessment is not required for inorganic substances.
12.6. Other Adverse Effects

None known.

13. DISPOSAL CONSIDERATIONS

13.1. Waste treatment methods

Waste from residues / unused products: Where possible recycling is preferred to disposal or incineration. If recycling is not practicable, dispose of in compliance with local regulations.

Product / Packaging disposal: Dispose of as hazardous waste in compliance with local and national regulations.

Contaminated Packaging: Empty remaining contents. Dispose of in accordance with local regulations.

14. TRANSPORT INFORMATION

**ADR/RID**

<table>
<thead>
<tr>
<th>UN/ID no</th>
<th>UN 1505</th>
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<tbody>
<tr>
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<tr>
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<td>5.1</td>
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<tr>
<td>Packing Group</td>
<td>III</td>
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**IMDG/IMO**

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<td>5.1</td>
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<tr>
<td>Packing Group</td>
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**ICAO/IATA**

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<td>SODIUM PERSULFATE</td>
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<td>Hazard class</td>
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<tr>
<td>Packing Group</td>
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**ADN**

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<td>5.1</td>
</tr>
<tr>
<td>Packing Group</td>
<td>III</td>
</tr>
</tbody>
</table>

**Transport Symbol**

![Transport Symbol](image)

**Environmental Hazards**

This product contains no chemical substance that is listed as a marine pollutant according to DOT.

**Special Precautions for users**

According to United Nations "Recommendations on the transport of dangerous goods"

**Transport in bulk according to MARPOL 73/78 and the IBC Code**

See IMDG above.

15. REGULATORY INFORMATION

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

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>TSCA (United States)</th>
<th>DSL (Canada)</th>
<th>EINECS/ELINCS (Europe)</th>
<th>ENCS (Japan)</th>
<th>China (IECSC)</th>
<th>KECL (Korea)</th>
<th>PICCS (Philippines)</th>
<th>AICS (Australia)</th>
<th>NZIoC (New Zealand)</th>
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</thead>
<tbody>
<tr>
<td>Sodium Persulfate</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
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<tr>
<td>Sodium sulfate</td>
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<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
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</tr>
</tbody>
</table>

Directive 2008/98/EC on waste
Applicable

Major Accidents (Directive 2012/18/EU)
Included for storage of quantities exceeding 50 Tm

CWC (Chemical Weapons Convention) - Annex on Chemicals
Not applicable

15.2. Chemical Safety Report

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

16. OTHER INFORMATION

Full text of H-phrases referred to in sections 2 and 3
H272 - May intensify fire; oxidizer
H302 - Harmful if swallowed
H315 - Causes skin irritation
H319 - Causes serious eye irritation
H334 - May cause allergy or asthma symptoms or breathing difficulties if inhaled
H317 - May cause an allergic skin reaction
H335 - May cause respiratory irritation

Issuing Date: 2017-03-17
Restrictions on Use
This product's foreseen or recommended applications are: In situ and ex situ chemical oxidation of contaminants and compounds of concern for environmental remediation applications

Revision date: 2015-03-13
Revision note
SDS sections updated: 3

List of Abbreviations and Acronyms
ATE Acute Toxicity Estimate
ADR European Agreement concerning the International Carriage of Dangerous Goods by Road
AND European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways
CE50 Concentración Efectiva MediaCEN European Committee for Standardisation
C&L Classification and Labelling
CLP Classification Labelling Packaging Regulation; Regulation (EC) No 1272/2008
CLV Ceiling Limit Value Par CAS# Chemical Abstracts Service number
CMR Carcinogen, Mutagen, or Reproductive Toxicant
CSA Chemical Safety Assessment
CSR Chemical Safety Report
DNEL Derived No Effect Level
DOT Department of Transportation
DPD Dangerous Preparations Directive 1999/45/EC
DSD Dangerous Substances Directive 67/548/EEC
DU Downstream User
EC European Community
ECH A European Chemicals Agency
ECA Number EINECS and ELINCS Number (see also EINECS and ELINCS)
EEA European Economic Area (EU + Iceland, Liechtenstein and Norway)
EEP European Economic Community
EINECS European Inventory of Existing Commercial Substances
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Prepared By:

PeroxyChem

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End of Safety Data Sheet