**SECTION 1: Identification**

**1.1. Identification**
- **Product form**: Substance
- **Substance name**: Zinc Sulfate, Heptahydrate, ACS
- **CAS No**: 7446-20-0
- **Product code**: LC27220
- **Formula**: ZnSO4.7H2O
- **Synonyms**: white vitriol / zinc sulphate, heptahydrate / zincvitriol, heptahydrate

**1.2. Relevant identified uses of the substance or mixture and uses advised against**
- **Use of the substance/mixture**: Chemical raw material
  - Fungicide
  - Preservative
- **Restrictions on use**: Not for food, drug or household use

**1.3. Details of the supplier of the safety data sheet**
- LabChem Inc
  - Jackson's Pointe Commerce Park Building 1000, 1010 Jackson's Pointe Court
  - Zelienople, PA 16063 - USA
  - T 412-826-5230 - F 724-473-0647
  - info@labchem.com - www.labchem.com

**1.4. Emergency telephone number**
- **Emergency number**: CHEMTREC: 1-800-424-9300 or 011-703-527-3887

**SECTION 2: Hazard(s) identification**

**2.1. Classification of the substance or mixture**
- **GHS-US classification**
  - Acute toxicity (oral) Category 4: H302
  - Hazardous to the aquatic environment - Acute Hazard Category 1: H400
- **Full text of H statements**: see section 16

**2.2. Label elements**
- **GHS-US labeling**
- **Hazard pictograms (GHS-US)**: 
  - ![](image1.png)
  - ![](image2.png)
- **Signal word (GHS-US)**: Warning
- **Hazard statements (GHS-US)**: 
  - H302 - Harmful if swallowed
  - H400 - Very toxic to aquatic life
- **Precautionary statements (GHS-US)**: 
  - P264 - Wash exposed skin thoroughly after handling
  - P270 - Do not eat, drink or smoke when using this product
  - P273 - Avoid release to the environment
  - P301+P312 - IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell
  - P330 - If swallowed, rinse mouth
  - P391 - Collect spillage
  - P501 - Dispose of contents/container to comply with local, state and federal regulations

**2.3. Other hazards**
- **Other hazards not contributing to the classification**: None.

**2.4. Unknown acute toxicity (GHS US)**
- **Not applicable**
SECTION 3: Composition/Information on ingredients

3.1. Substance

Substance type: Mono-constituent

<table>
<thead>
<tr>
<th>Name</th>
<th>Product identifier</th>
<th>%</th>
<th>GHS-US classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zinc Sulfate, Heptahydrate, ACS (Main constituent)</td>
<td>(CAS No) 7446-20-0</td>
<td>100</td>
<td>Acute Tox. 4 (Oral), H302, Aquatic Acute 1, H400</td>
</tr>
</tbody>
</table>

Full text of hazard classes and H-statements: see section 16

3.2. Mixture

Not applicable

SECTION 4: First aid measures

4.1. Description of first aid measures


First-aid measures after inhalation: Remove the victim into fresh air. Doctor: administration of corticoid spray. Respiratory problems: consult a doctor/medical service.

First-aid measures after skin contact: Rinse with water. Soap may be used. Do not apply (chemical) neutralizing agents. Take victim to a doctor if irritation persists.

First-aid measures after eye contact: Rinse immediately with plenty of water for 15 minutes. Take victim to an ophthalmologist. Do not apply neutralizing agents.


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

Symptoms/injuries after inhalation: AFTER INHALATION OF DUST: Coughing.

Symptoms/injuries after skin contact: Slight irritation.

Symptoms/injuries after eye contact: Corrosion of the eye tissue. Visual disturbances. Inflammation/damage of the eye tissue.


Chronic symptoms: ON CONTINUOUS/REPEATED EXPOSURE/CONTACT: Skin rash/inflammation. Gastrointestinal complaints. Inflammation/damage of the eye tissue.

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

No additional information available

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media: EXTINGUISHING MEDIA FOR SURROUNDING FIRES: Adapt extinguishing media to the environment.

Unsuitable extinguishing media: No unsuitable extinguishing media known.

5.2. Special hazards arising from the substance or mixture

Fire hazard: DIRECT FIRE HAZARD. Non combustible.

Explosion hazard: DIRECT EXPLOSION HAZARD. No direct explosion hazard.

Reactivity: On burning: release of toxic and corrosive gases/vapours (sulphur oxides, zinc oxide) and formation of metallic fumes. Violent exothermic reaction with (strong) bases.

5.3. Advice for firefighters

Precautionary measures fire: Exposure to fire/heat: keep upwind. Exposure to fire/heat: consider evacuation. Exposure to fire/heat: have neighbourhood close doors and windows.

Firefighting instructions: Dilute toxic gases with water spray. Take account of environmentally hazardous firefighting water. Use water moderately and if possible collect or contain it.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

6.1.1. For non-emergency personnel
Emergency procedures: Mark the danger area. Prevent dust cloud formation. No naked flames. Wash contaminated clothes.
Measures in case of dust release: In case of dust production: keep upwind. Dust production: have neighbourhood close doors and windows.

6.1.2. For emergency responders
Protective equipment: Equip cleanup crew with proper protection. Do not breathe dust.
Emergency procedures: Stop release. Ventilate area.

6.2. Environmental precautions
Prevent soil and water pollution. Prevent spreading in sewers.

6.3. Methods and material for containment and cleaning up
For containment: Contain released substance, pump into suitable containers. Consult "Material-handling" to select material of containers. Plug the leak, cut off the supply. Dam up the solid spill. Knock down/dilute dust cloud with water spray.
Methods for cleaning up: Stop dust cloud by covering with sand/earth. Scoop solid spill into closing containers. See "Material-handling" for suitable container materials. Carefully collect the spill/leftovers. Clean contaminated surfaces with an excess of water. Wash clothing and equipment after handling.

6.4. Reference to other sections
No additional information available

SECTION 7: Handling and storage

7.1. Precautions for safe handling
Precautions for safe handling: Comply with the legal requirements. Remove contaminated clothing immediately. Clean contaminated clothing. Thoroughly clean/dry the installation before use. Do not discharge the waste into the drain. Avoid raising dust. Keep away from naked flames/heat. Observe strict hygiene. Keep container tightly closed. Carry operations in the open/under local exhaust/ventilation or with respiratory protection.
Hygiene measures: Wash contaminated clothing before reuse. Do not eat, drink or smoke when using this product.

7.2. Conditions for safe storage, including any incompatibilities
Incompatible products: Strong bases.
Incompatible materials: Heat sources.
Heat-ignition: KEEP SUBSTANCE AWAY FROM: heat sources.
Prohibitions on mixed storage: KEEP SUBSTANCE AWAY FROM: (strong) bases.
Storage area: Store at ambient temperature. Keep out of direct sunlight. Store in a dry area. Keep container in a well-ventilated place. Meet the legal requirements.
Special rules on packaging: SPECIAL REQUIREMENTS: closing. dry. clean. correctly labelled. meet the legal requirements. Secure fragile packagings in solid containers.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters
No additional information available

8.2. Exposure controls
Appropriate engineering controls: Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure. Provide adequate general and local exhaust ventilation.
Zinc Sulfate, Heptahydrate, ACS
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Materials for protective clothing: GIVE GOOD RESISTANCE: butyl rubber. PVC.
Hand protection: Gloves.
Skin and body protection: Protective clothing.
Respiratory protection: Dust production: dust mask with filter type P3.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical state</td>
<td>Solid</td>
</tr>
<tr>
<td>Color</td>
<td>Colourless or white</td>
</tr>
<tr>
<td>Odor</td>
<td>Odorless</td>
</tr>
<tr>
<td>Odor threshold</td>
<td>No data available</td>
</tr>
<tr>
<td>pH</td>
<td>4.5</td>
</tr>
<tr>
<td>Melting point</td>
<td>100 °C</td>
</tr>
<tr>
<td>Freezing point</td>
<td>No data available</td>
</tr>
<tr>
<td>Boiling point</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Flash point</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Relative evaporation rate (butyl acetate=1)</td>
<td>No data available</td>
</tr>
<tr>
<td>Flammability (solid, gas)</td>
<td>No data available</td>
</tr>
<tr>
<td>Vapor pressure</td>
<td>No data available</td>
</tr>
<tr>
<td>Relative vapor density at 20 °C</td>
<td>No data available</td>
</tr>
<tr>
<td>Relative density</td>
<td>2</td>
</tr>
<tr>
<td>Specific gravity / density</td>
<td>1970 kg/m³</td>
</tr>
<tr>
<td>Molecular mass</td>
<td>287.56 g/mol</td>
</tr>
<tr>
<td>Solubility</td>
<td>Soluble in water. Soluble in methanol. Soluble in glycerol. Water: 170 g/100ml</td>
</tr>
<tr>
<td>Log Pow</td>
<td>No data available</td>
</tr>
<tr>
<td>Auto-ignition temperature</td>
<td>No data available</td>
</tr>
<tr>
<td>Decomposition temperature</td>
<td>&gt; 500 °C</td>
</tr>
<tr>
<td>Viscosity, kinematic</td>
<td>No data available</td>
</tr>
<tr>
<td>Viscosity, dynamic</td>
<td>No data available</td>
</tr>
<tr>
<td>Explosion limits</td>
<td>No data available</td>
</tr>
<tr>
<td>Explosive properties</td>
<td>No data available</td>
</tr>
<tr>
<td>Oxidizing properties</td>
<td>No data available</td>
</tr>
</tbody>
</table>

9.2. Other information

VOC content: Not applicable
Other properties: Substance has acid reaction.

SECTION 10: Stability and reactivity

10.1. Reactivity

On burning: release of toxic and corrosive gases/vapours (sulphur oxides, zinc oxide) and formation of metallic fumes. Violent exothermic reaction with (strong) bases.

10.2. Chemical stability

No data available.

10.3. Possibility of hazardous reactions

Not established.
10.4. **Conditions to avoid**


10.5. **Incompatible materials**

Strong bases.

10.6. **Hazardous decomposition products**

Sulfur compounds.

**SECTION 11: Toxicological information**

11.1. **Information on toxicological effects**

Likely routes of exposure: Skin and eye contact

Acute toxicity: Oral: Harmful if swallowed.

**Zinc Sulfate, Heptahydrate, ACS (7446-20-0)**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>LD50 oral rat</td>
<td>1260 mg/kg (Rat)</td>
</tr>
<tr>
<td>ATE US (oral)</td>
<td>1260.000 mg/kg body weight</td>
</tr>
<tr>
<td>Skin corrosion/irritation</td>
<td>Not classified</td>
</tr>
<tr>
<td>pH:</td>
<td>4.5</td>
</tr>
<tr>
<td>Serious eye damage/irritation</td>
<td>Not classified</td>
</tr>
<tr>
<td>pH:</td>
<td>4.5</td>
</tr>
<tr>
<td>Respiratory or skin sensitization</td>
<td>Not classified</td>
</tr>
<tr>
<td>Germ cell mutagenicity</td>
<td>Not classified</td>
</tr>
<tr>
<td>Carcinogenicity</td>
<td>Not classified</td>
</tr>
<tr>
<td>Reproductive toxicity</td>
<td>Not classified</td>
</tr>
<tr>
<td>Specific target organ toxicity (single exposure)</td>
<td>Not classified</td>
</tr>
<tr>
<td>Specific target organ toxicity (repeated exposure)</td>
<td>Not classified</td>
</tr>
<tr>
<td>Aspiration hazard</td>
<td>Not classified</td>
</tr>
<tr>
<td>Symptoms/injuries after inhalation</td>
<td>AFTER INHALATION OF DUST: Coughing.</td>
</tr>
<tr>
<td>Symptoms/injuries after skin contact</td>
<td>Slight irritation.</td>
</tr>
<tr>
<td>Symptoms/injuries after eye contact</td>
<td>Corrosion of the eye tissue. Visual disturbances. Inflammation/damage of the eye tissue.</td>
</tr>
<tr>
<td>Chronic symptoms</td>
<td>ON CONTINUOUS/REPEATED EXPOSURE/CONTACT: Skin rash/inflammation. Gastrointestinal complaints. Inflammation/damage of the eye tissue.</td>
</tr>
</tbody>
</table>

**SECTION 12: Ecological information**

12.1. **Toxicity**

Ecology - general: Dangerous for the environment.

Ecology - air: Not classified as dangerous for the ozone layer (Regulation (EC) No 1005/2009).


**Zinc Sulfate, Heptahydrate, ACS (7446-20-0)**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>LC50 fish 2</td>
<td>4.6 ppm (LC50: 96 h; Salmo gairdneri)</td>
</tr>
<tr>
<td>EC50 Daphnia 2</td>
<td>0.56 mg/l (EC50: 48 h)</td>
</tr>
<tr>
<td>Threshold limit algae 1</td>
<td>.05 - .36,EC50; 72 h</td>
</tr>
</tbody>
</table>

12.2. **Persistence and degradability**

**Zinc Sulfate, Heptahydrate, ACS (7446-20-0)**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Persistence and degradability</td>
<td>Biodegradability: not applicable.</td>
</tr>
<tr>
<td>Biochemical oxygen demand (BOD)</td>
<td>Not applicable</td>
</tr>
</tbody>
</table>
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<table>
<thead>
<tr>
<th>Zinc Sulfate, Heptahydrate, ACS (7446-20-0)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemical oxygen demand (COD)</td>
<td>Not applicable</td>
</tr>
<tr>
<td>ThOD</td>
<td>Not applicable</td>
</tr>
</tbody>
</table>

12.3. Bioaccumulative potential

<table>
<thead>
<tr>
<th>Zinc Sulfate, Heptahydrate, ACS (7446-20-0)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>BCF fish 1</td>
<td>59 - 242 (BCF)</td>
</tr>
<tr>
<td>BCF fish 2</td>
<td>59 - 242 (BCF)</td>
</tr>
<tr>
<td>Bioaccumulative potential</td>
<td>Bioaccumulative</td>
</tr>
</tbody>
</table>

12.4. Mobility in soil

No additional information available

12.5. Other adverse effects

No additional information available

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Waste disposal recommendations: Remove waste in accordance with local and/or national regulations. Hazardous waste shall not be mixed together with other waste. Different types of hazardous waste shall not be mixed together if this may entail a risk of pollution or create problems for the further management of the waste. Hazardous waste shall be managed responsibly. All entities that store, transport or handle hazardous waste shall take the necessary measures to prevent risks of pollution or damage to people or animals. Recycle/reuse. Precipitate/make insoluble. Remove to an authorized dump (Class I). Treat using the best available techniques before discharge into drains or the aquatic environment.

Additional information: LWCA (the Netherlands): KGA category 05. Can be considered as non hazardous waste according to Directive 2008/98/EC.

SECTION 14: Transport information

Department of Transportation (DOT)

In accordance with DOT

Not regulated

SECTION 15: Regulatory information

15.1. US Federal regulations

<table>
<thead>
<tr>
<th>Zinc Sulfate, Heptahydrate, ACS (7446-20-0)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Not listed on the United States TSCA (Toxic Substances Control Act) inventory</td>
<td></td>
</tr>
<tr>
<td>SARA Section 311/312 Hazard Classes</td>
<td>Immediate (acute) health hazard</td>
</tr>
</tbody>
</table>

This product or mixture does not contain a toxic chemical or chemicals in excess of the applicable de minimis concentration as specified in 40 CFR §372.38(a) subject to the reporting requirements of section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372.

15.2. International regulations

CANADA

<table>
<thead>
<tr>
<th>Zinc Sulfate, Heptahydrate, ACS (7446-20-0)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Listed on the Canadian DSL (Domestic Substances List)</td>
<td></td>
</tr>
<tr>
<td>WHMIS Classification</td>
<td>Uncontrolled product according to WHMIS classification criteria</td>
</tr>
</tbody>
</table>

EU-Regulations

No additional information available

National regulations

No additional information available

15.3. US State regulations
Zinc Sulfate, Heptahydrate, ACS
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California Proposition 65 - This product does not contain any substances known to the state of California to cause cancer, developmental and/or reproductive harm

SECTION 16: Other information

Revision date: 12/20/2016

Full text of H-phrases: see section 16:

<table>
<thead>
<tr>
<th>H302</th>
<th>Harmful if swallowed</th>
</tr>
</thead>
<tbody>
<tr>
<td>H400</td>
<td>Very toxic to aquatic life</td>
</tr>
</tbody>
</table>

NFPA health hazard: 2 - Intense or continued exposure could cause temporary incapacitation or possible residual injury unless prompt medical attention is given.

NFPA fire hazard: 0 - Materials that will not burn.

NFPA reactivity: 2 - Normally unstable and readily undergo violent decomposition but do not detonate. Also: may react violently with water or may form potentially explosive mixtures with water.

NFPA reactivity: 2 - Normally unstable and readily undergo violent decomposition but do not detonate. Also: may react violently with water or may form potentially explosive mixtures with water.

HMIS III Rating

Health: 2 Moderate Hazard - Temporary or minor injury may occur

Flammability: 0 Minimal Hazard - Materials that will not burn

Physical: 2 Moderate Hazard - Materials that are unstable and may undergo violent chemical changes at normal temperature and pressure with low risk for explosion. Materials may react violently with water or form peroxides upon exposure to air.

Personal protection: E

E - Safety glasses, Gloves, Dust respirator

SDS US LabChem

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