1. Identification

1.1. Product identifier
Product Identity: Chemurgic's Manganese 7 Ligno +
Alternate Names: Common Name: Fertilizing compound, liquid.
Chemical Description: Manganese lignosulfonate complex, aqueous solution

1.2. Relevant identified uses of the substance or mixture and uses advised against
Intended use: See Technical Data Sheet.
Application Method: See Technical Data Sheet.

1.3. Details of the supplier of the safety data sheet
Company Name: Chemurgic Agricultural Chemicals, Inc.
P.O. Box 2106
Turlock, CA 95381

EMERGENCY PHONE NUMBERS
Company Phone Number
DAYS: (209) 634-2951
EVES: (209) 652-7260

24-Hour Emergency Telephone Number
INFOTRAC: 1-800-535-5053
EPA National Response Center: (800) 424-8802

2. Hazard(s) identification

2.1. Classification of the substance or mixture
Acute Toxicity (Oral): Category 5; H303
Acute Toxicity (Inhalation): Category 4; H332
Skin Corrosion/Irritation: Category 3; H316
Eye Irritation: Category 2B; H320

2.2. Label elements
Using the Toxicity Data listed in section 11 and 12 the product is labeled as follows.

HAZARD STATEMENTS:
H303: May be harmful if swallowed.
H332: Harmful if inhaled.
H316: Causes mild skin irritation.
H320: Causes eye irritation.
[Prevention]:
P261: Avoid breathing vapors.
P264: Wash hands, face, and other affected areas thoroughly after handling.
P271: Use only outdoors or in a well-ventilated area.

[Response]:
P312: Call a POISON CENTER or doctor/physician if you feel unwell.
P305+351+338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P332+313: If skin irritation occurs: Get medical advice / attention.
P337+313: If eye irritation persists: Get medical advice / attention.
P304+P340: If inhaled: Remove person to fresh air and keep comfortable for breathing.

[Storage]: No GHS storage statements
[Disposal]: No GHS disposal statements

[Sensitization]:
Not a skin sensitizer.

[Comments Health]:
Read all precautions of product being handled and follow the most restrictive language for all products to provide the safest work environment.

[Comments]:
KEEP OUT OF REACH OF CHILDREN

3. Composition/information on ingredients

This product contains the following substances that present a hazard within the meaning of the relevant State and Federal Hazardous Substances regulations.

<table>
<thead>
<tr>
<th>Common Chemical Name</th>
<th>CAS No.</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manganese sulfate</td>
<td>10034-96-5</td>
<td>1.0 – 10</td>
</tr>
</tbody>
</table>

4. First aid measures

4.1. Description of first aid measures

**General**
In all cases of doubt, or when symptoms persist, seek medical attention. Never give anything by mouth to an unconscious person.

**Inhalation**
Remove person to fresh air and keep comfortable for breathing. If breathing is irregular or stopped, give artificial respiration. If unconscious place in the recovery position and obtain immediate medical attention. Call a Poison Control Center or doctor if you feel unwell.

**Eyes**
Rinse cautiously with water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists, get medical attention.

**Skin**
Remove contaminated clothing. Wash skin thoroughly with soap and water. If skin irritation occurs, get medical attention.

**Ingestion**
Rinse mouth. Get medical attention if symptoms occur.

4.2. Most important symptoms and effects, both acute and delayed
Direct contact with eyes may cause temporary irritation. May cause redness.
5. Fire-fighting measures

5.1. Extinguishing media
Water fog, foam, dry chemical powder, carbon dioxide (CO2). Do not use water jet as an extinguisher as this will spread the fire.

5.2. Special hazards arising from the substance or mixture
Hazardous decomposition: Thermal degradation at high temperatures above 575° C (1067° F) may produce sulfur trioxide.

5.3. Advice for fire-fighters
Wear positive pressure, self-contained breathing apparatus and goggles. Contain any liquid runoff.

Unusual Fire and Explosion Hazards: None known.

6. Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures
Put on appropriate personal protective equipment (see section 8). Avoid inhalation of vapors and spray mist. Ensure adequate ventilation. Use good personal hygiene practices. Wash hands before eating, drinking, smoking or using toilet. Promptly remove soiled clothing and wash thoroughly before reuse.

6.2. Environmental precautions
Do not allow spills to enter drains or waterways. Prevent product spillage from entering drinking water supplies or streams.

6.3. Methods and material for containment and cleaning up
Collect liquid or absorb onto absorbent material and package for disposal. After removal of spilled product, flush contaminated area thoroughly with water. Do not return spills to original containers for re-use.

7. Handling and storage

7.1. Precautions for safe handling
Transfer products using chemical-resistant plastic or stainless steel tanks, pumps, valves, etc. Wear the appropriate personal protective equipment when handling this product. Avoid contact with eyes, skin and clothing. Avoid inhalation of spray mists. Ensure adequate ventilation. Wash hands thoroughly with water after handling. Do not eat, drink, or smoke when using this product.
See section 2 for further details. - [Prevention]:

7.2. Conditions for safe storage, including any incompatibilities
Handle containers carefully to prevent damage and spillage.
Incompatible materials: Contact with brass or strong oxidizing agents.
Store in plastic or stainless steel container in a cool, well-ventilated, dry place at temperatures above 40° F. Keep container tightly closed. Do not store in contact with brass. Do not store near food or feeds. Do not stack pallets more than two high. Keep out of reach of children.
See section 2 for further details. - [Storage]:

7.3. Specific end use(s)
No data available.
8. Exposure controls and personal protection

8.1. Control parameters

**Occupational Exposure limits**

**US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)**

<table>
<thead>
<tr>
<th>Components</th>
<th>Type</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manganese Sulfate (CAS 10034-96-5)</td>
<td>Ceiling</td>
<td>5 mg/m3</td>
</tr>
</tbody>
</table>

**US. ACGIH Threshold Limit Values**

<table>
<thead>
<tr>
<th>Components</th>
<th>Type</th>
<th>Value</th>
<th>Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manganese Sulfate (CAS 10034-96-5)</td>
<td>TWA</td>
<td>0.1 mg/m3</td>
<td>Inhalable fraction.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.02 mg/m3</td>
<td>Respirable fraction.</td>
</tr>
</tbody>
</table>

**US. NIOSH: Pocket Guide to Chemical Hazards**

<table>
<thead>
<tr>
<th>Components</th>
<th>Type</th>
<th>Value</th>
<th>Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manganese Sulfate (CAS 10034-96-5)</td>
<td>STEL</td>
<td>3 mg/m3</td>
<td>Fume.</td>
</tr>
<tr>
<td></td>
<td>TWA</td>
<td>1 mg/m3</td>
<td>Fume.</td>
</tr>
</tbody>
</table>

8.2. Exposure controls

**Respiratory**

If workers are exposed to concentrations above the exposure limit they must use the appropriate, certified respirators.

**Eyes**

Chemical dust/splash goggles or full-face shield to prevent eye contact. As a general rule, do not wear contact lenses when handling.

**Skin**

Impervious gloves and clothes.

**Engineering Controls**

Provide adequate ventilation. Where reasonably practicable this should be achieved by the use of local exhaust ventilation and good general extraction. If these are not sufficient to maintain concentrations of particulates and any vapor below occupational exposure limits suitable respiratory protection must be worn.

**Other Work Practices**

Use good personal hygiene practices. Wash hands before eating, drinking, smoking or using toilet. Promptly remove soiled clothing and wash thoroughly before reuse.

See section 2 for further details. - [Prevention]:

9. Physical and chemical properties

**Appearance**

Dark Brown Liquid

**Odor**

Lignin

**Odor threshold**

Not available

**pH**

5.5

**Melting point / freezing point**

1292° F (700° C) estimated / 15-25° F (-9.44- -3.89° C) estimated

**Initial boiling point and boiling range**

100° C (212° F) estimated

**Flash Point**

>200° F (ASTM D-56)

**Evaporation rate (Ether = 1)**

Same as water

**Flammability (solid, gas)**

Noncombustible

**Upper/lower flammability or explosive limits**

Lower Explosive Limit: Not available

Upper Explosive Limit: Not available

**Vapor pressure (Pa)**

760 mmHg

**Vapor Density**

< 1.0
SAFETY DATA SHEET
Chemurgic’s Manganese 7 Ligno +

Relative Density 1.24 – 1.29 g/cm³
 Specific Gravity 1.28
 Solubility in Water Completely miscible
 Partition coefficient n-octanol/water (Log Kow) Not available
 Auto-ignition temperature Not available
 Decomposition temperature Not available
 Viscosity (cSt) Not available
 Density 10.7 lbs/gal

9.2. Other information
No other relevant information.

10. Stability and reactivity

10.1. Reactivity
Stable and non-reactive under normal conditions of use, storage and transport.

10.2. Chemical stability
Stable under normal circumstances.

10.3. Possibility of hazardous reactions
Hazardous polymerization will not occur.

10.4. Conditions to avoid
Avoid contact with incompatible materials.

10.5. Incompatible materials
Contact with brass or strong oxidizing agents.

10.6. Hazardous decomposition products
Thermal degradation at high temperatures above 575° C (1067° F) may produce sulfur trioxide.

11. Toxicological information

Acute toxicity

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Oral LD50, mg/kg</th>
<th>Skin LD50, mg/kg</th>
<th>Inhalation LC50, mg/L/4hr</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manganese sulfate (CAS No. 10034-96-5)</td>
<td>2150 (Rat)</td>
<td>No data available</td>
<td>&gt;4.45 (Rat)</td>
</tr>
</tbody>
</table>

Note: When no route specific LD50 data is available for an acute toxin, the converted acute toxicity point estimate was used in the calculation of the product's ATE (Acute Toxicity Estimate).

Classification

<table>
<thead>
<tr>
<th>Classification</th>
<th>Category</th>
<th>Hazard Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute toxicity (oral)</td>
<td>5</td>
<td>May be harmful if swallowed.</td>
</tr>
<tr>
<td>Acute toxicity (dermal)</td>
<td>---</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>Acute toxicity (inhalation)</td>
<td>4</td>
<td>Harmful if inhaled.</td>
</tr>
<tr>
<td>Skin corrosion/irritation</td>
<td>3</td>
<td>Causes mild skin irritation.</td>
</tr>
<tr>
<td>Serious eye damage/irritation</td>
<td>2B</td>
<td>Causes eye irritation.</td>
</tr>
</tbody>
</table>
### 12. Ecological information

#### 12.1. Toxicity
Harmful to aquatic life with long lasting effects.

**Aquatic Ecotoxicity**

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>96 hr LC50 fish, mg/l</th>
<th>48 hr EC50 crustacea, mg/l</th>
<th>ErC50 algae, mg/l</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemurgic’s Manganese 7 Ligno + (CAS Mixture)</td>
<td>2350 mg/l Species: Fish</td>
<td>5700 mg/l Species: Daphnia</td>
<td>Not available</td>
</tr>
<tr>
<td>Manganese Sulfate - (10034-96-5)</td>
<td>24.3-38.9 mg/l Species: Fathead minnow (<em>Pimephales promelas</em>)</td>
<td>7.09-9.36 mg/l Species: Water flea (<em>Daphnia magna</em>)</td>
<td>Not Available</td>
</tr>
</tbody>
</table>

**12.2. Persistence and degradability:** No data is available.

**12.3. Bioaccumulative potential:** Not available.

**12.4. Mobility in soil:** No data available.

**12.5. Other adverse effects:** No other adverse environmental effects are expected from this component.

### 13. Disposal considerations

**13.1. Waste treatment methods**

Observe all federal, state and local regulations when disposing of this substance.
14. Transport information

DOT CLASSIFICATION: Not regulated as dangerous goods.

15. Regulatory information

Regulatory Overview
The regulatory data in Section 15 is not intended to be all-inclusive, only selected regulations are represented.

Toxic Substance Control Act (TSCA)
All components of this material are either listed or exempt from listing on the TSCA Inventory.

CERCLA Hazardous Substance List
Manganese Sulfate (CAS No. 10034-96-5) – Listed.

SARA 304 Emergency Release Notification
Not regulated.

OSHA Specifically Regulated Substances
Not listed.

SARA Title III Classification
Section 302 – Extremely hazardous substance: Not listed.
Section 311/312 – Hazardous chemical: No.
Section 313: Manganese Sulfate (CAS # 10034-96-5)

US EPA Tier II Hazards
Fire: No
Sudden Release of Pressure: No
Reactive: No
Immediate (Acute): Yes
Delayed (Chronic): No

California Proposition 65: This product does not contain any chemicals known to the state of California to cause cancer and/or reproductive harm.

State Right to Know: Manganese Sulfate (CAS # 10034-96-5) – NJ, RI

16. Other information

The information and recommendations contained herein are based upon data believed to be correct. However, no guarantee or warranty of any kind, expressed or implied, is made with respect to the information contained herein. We accept no responsibility and disclaim all liability for any harmful effects which may be caused by exposure to our products. Customers/users of this product must comply with all applicable health and safety laws, regulations, and orders.

This is the first version in the GHS SDS format. Listings of changes from previous versions in other formats are not applicable.

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End of Document