SAFETY DATA SHEET

1. Identification

Product identifier  MicroJuice

Other means of identification

Product code  32141

Recommended use  Agricultural/ Horticultural Use- Micronutrient Fertilizer- Refer to product label.

Recommended restrictions  Refer to product label.

Manufacturer/Importer/Supplier/Distributor information

Manufacturer

Company name  Ag Focus

Address  P.O. Box 197

Lexington, IL 61753

United States

Telephone  (309) 365-2771

Website  www.agfocus.com

E-mail  Not available.

Emergency phone number  (309) 365-2771

2. Hazard(s) identification

Physical hazards  Not classified.

Health hazards

Serious eye damage/eye irritation  Category 1

Sensitization, skin  Category 1

Germ cell mutagenicity  Category 2

Reproductive toxicity  Category 2

Specific target organ toxicity, repeated exposure  Category 1

Environmental hazards

Hazardous to the aquatic environment, acute hazard  Category 3

Hazardous to the aquatic environment, long-term hazard  Category 3

OSHA defined hazards  Not classified.

Label elements

Signal word  Danger

Hazard statement  May cause an allergic skin reaction. Causes serious eye damage. Suspected of causing genetic defects. Suspected of damaging fertility or the unborn child. Causes damage to organs through prolonged or repeated exposure. Harmful to aquatic life. Harmful to aquatic life with long lasting effects.

Precautionary statement

Prevention  Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Do not breathe mist or vapor. Wash thoroughly after handling. Do not eat, drink or smoke when using this product. Contaminated work clothing must not be allowed out of the workplace. Avoid release to the environment. Wear protective gloves/protective clothing/eye protection/face protection.

Response  If on skin: Wash with plenty of water. If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a poison center/doctor. If skin irritation or rash occurs: Get medical advice/attention. Wash contaminated clothing before reuse.

Storage  Store locked up.
Disposal
Dispose of contents/container in accordance with local/regional/national/international regulations.

Hazard(s) not otherwise classified (HNOC)
None known.

Supplemental information
None.

3. Composition/information on ingredients

Mixtures

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>Common name and synonyms</th>
<th>CAS number</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manganese Sulfate, monohydrate</td>
<td></td>
<td>10034-96-5</td>
<td>5 - &lt; 10*</td>
</tr>
<tr>
<td>Zinc Sulfate</td>
<td></td>
<td>7733-02-0</td>
<td>3 - &lt; 5*</td>
</tr>
<tr>
<td>Cupric Sulfate, pentahydrate</td>
<td></td>
<td>7758-99-8</td>
<td>1 - &lt; 3*</td>
</tr>
<tr>
<td>Acetic Acid</td>
<td></td>
<td>64-19-7</td>
<td>&lt; 1*</td>
</tr>
<tr>
<td>Disodium Octaborate Tetrahydrate</td>
<td></td>
<td>12008-41-2</td>
<td>&lt; 1*</td>
</tr>
<tr>
<td>Cobalt Sulfate, Monohydrate</td>
<td></td>
<td>10124-43-3</td>
<td>&lt; 0.1*</td>
</tr>
<tr>
<td>Nickel Sulfate, Hexahydrate</td>
<td></td>
<td>10101-97-0</td>
<td>&lt; 0.1*</td>
</tr>
<tr>
<td>Propylene glycol</td>
<td></td>
<td>57-55-6</td>
<td>&lt; 0.1*</td>
</tr>
<tr>
<td>Other components below reportable levels</td>
<td></td>
<td></td>
<td>80 - &lt; 90</td>
</tr>
</tbody>
</table>

*Designates that a specific chemical identity and/or percentage of composition has been withheld as a trade secret.

4. First-aid measures

Inhalation
Move to fresh air. Call a physician if symptoms develop or persist.

Skin contact
Remove contaminated clothing immediately and wash skin with soap and water. In case of eczema or other skin disorders: Seek medical attention and take along these instructions.

Eye contact
Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention immediately.

Ingestion
Rinse mouth. Get medical attention if symptoms occur.

Most important symptoms/effects, acute and delayed
Severe eye irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Permanent eye damage including blindness could result. May cause an allergic skin reaction. Dermatitis. Rash. Prolonged exposure may cause chronic effects.

Indication of immediate medical attention and special treatment needed
Provide general supportive measures and treat symptomatically. Keep victim under observation. Symptoms may be delayed.

General information
IF exposed or concerned: Get medical advice/attention. If you feel unwell, seek medical advice (show the label where possible). Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Show this safety data sheet to the doctor in attendance. Wash contaminated clothing before reuse.

5. Fire-fighting measures

Suitable extinguishing media
Water fog. Foam. Dry chemical powder. Carbon dioxide (CO2).

Unsuitable extinguishing media
Do not use water jet as an extinguisher, as this will spread the fire.

Specific hazards arising from the chemical
During fire, gases hazardous to health may be formed.

Special protective equipment and precautions for firefighters
Self-contained breathing apparatus and full protective clothing must be worn in case of fire.

Fire fighting equipment/instructions
Move containers from fire area if you can do so without risk.

Specific methods
Use standard firefighting procedures and consider the hazards of other involved materials.

General fire hazards
No unusual fire or explosion hazards noted.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures
Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Wear appropriate protective equipment and clothing during clean-up. Do not breathe mist or vapor. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ensure adequate ventilation. Local authorities should be advised if significant spillages cannot be contained.
Methods and materials for containment and cleaning up

Prevent entry into waterways, sewer, basements or confined areas.

Large Spills: Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Absorb in vermiculite, dry sand or earth and place into containers. Following product recovery, flush area with water.

Small Spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination.

Never return spills to original containers for re-use. Put material in suitable, covered, labeled containers.

Environmental precautions

Avoid release to the environment. Inform appropriate managerial or supervisory personnel of all environmental releases. Prevent further leakage or spillage if safe to do so. Avoid discharge into drains, water courses or onto the ground.

7. Handling and storage

Precautions for safe handling

Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Do not breathe mist or vapor. Do not get this material in contact with eyes. Avoid contact with eyes, skin, and clothing. Avoid prolonged exposure. When using, do not eat, drink or smoke. Pregnant or breastfeeding women must not handle this product. Should be handled in closed systems, if possible. Provide adequate ventilation. Wear appropriate personal protective equipment. Wash hands thoroughly after handling. Avoid release to the environment. Observe good industrial hygiene practices.

Conditions for safe storage, including any incompatibilities

Store locked up. Store in original tightly closed container.

8. Exposure controls/personal protection

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>Acetic Acid (CAS 64-19-7)</td>
<td>PEL</td>
<td>25 mg/m³</td>
</tr>
<tr>
<td></td>
<td></td>
<td>10 ppm</td>
</tr>
<tr>
<td>Manganese Sulfate, monohydrate (CAS 10034-96-5)</td>
<td>Ceiling</td>
<td>5 mg/m³</td>
</tr>
<tr>
<td>Nickel Sulfate, Hexahydrate (CAS 10101-97-0)</td>
<td>PEL</td>
<td>1 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>Acetic Acid (CAS 64-19-7)</td>
<td>STEL</td>
<td>15 ppm</td>
<td></td>
</tr>
<tr>
<td></td>
<td>TWA</td>
<td>10 ppm</td>
<td></td>
</tr>
<tr>
<td>Cobalt Sulfate, Monohydrate (CAS 10124-43-3)</td>
<td>TWA</td>
<td>0.02 mg/m³</td>
<td>Dust and mist.</td>
</tr>
<tr>
<td>Cupric Sulfate, pentahydrate (CAS 7758-99-8)</td>
<td>TWA</td>
<td>1 mg/m³</td>
<td>Fume.</td>
</tr>
<tr>
<td>Disodium Octaborate Tetrahydrate (CAS 12008-41-2)</td>
<td>STEL</td>
<td>6 mg/m³</td>
<td>Inhalable fraction.</td>
</tr>
<tr>
<td>Manganese Sulfate, monohydrate (CAS 10034-96-5)</td>
<td>TWA</td>
<td>2 mg/m³</td>
<td>Inhalable fraction.</td>
</tr>
<tr>
<td>Nickel Sulfate, Hexahydrate (CAS 10101-97-0)</td>
<td>TWA</td>
<td>0.1 mg/m³</td>
<td>Inhalable fraction.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Components</th>
<th>Type</th>
<th>Value</th>
<th>Form</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>TWA</td>
<td>0.02 mg/m³</td>
<td>Respirable fraction.</td>
</tr>
<tr>
<td></td>
<td>TWA</td>
<td>0.1 mg/m³</td>
<td>Inhalable fraction.</td>
</tr>
</tbody>
</table>
US. NIOSH: Pocket Guide to Chemical Hazards

Components | Type | Value | Form |
---|---|---|---|
Acetic Acid (CAS 64-19-7) | STEL | 37 mg/m³ | |
| | | 15 ppm | |
| | TWA | 25 mg/m³ | |
| | | 10 ppm | |
Cupric Sulfate, pentahydrate (CAS 7758-99-8) | TWA | 1 mg/m³ | Dust and mist. |
| | | 0.1 mg/m³ | Fume. |
Manganese Sulfate, monohydrate (CAS 10034-96-5) | STEL | 3 mg/m³ | Fume. |
| | | 1 mg/m³ | Fume. |
| | TWA | 1 mg/m³ | Fume. |
| | | 0.015 mg/m³ | |
Nickel Sulfate, Hexahydrate (CAS 10101-97-0) | TWA | 1 mg/m³ | Fume. |

US. Workplace Environmental Exposure Level (WEEL) Guides

Components | Type | Value | Form |
---|---|---|---|
Propylene glycol (CAS 57-55-6) | TWA | 10 mg/m³ | Aerosol. |

Biological limit values

ACGIH Biological Exposure Indices

Components | Value | Determinant | Specimen | Sampling Time |
---|---|---|---|---|
Cobalt Sulfate, Monohydrate (CAS 10124-43-3) | 15 µg/l | Cobalt | Urine | * |

* - For sampling details, please see the source document.

Appropriate engineering controls

Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. Provide eyewash station.

Individual protection measures, such as personal protective equipment

Eye/face protection

Chemical respirator with organic vapor cartridge and full facepiece.

Skin protection

Hand protection

Wear appropriate chemical resistant gloves. Suitable gloves can be recommended by the glove supplier.

Other

Wear appropriate chemical resistant clothing. Use of an impervious apron is recommended.

Respiratory protection

Chemical respirator with organic vapor cartridge and full facepiece.

Thermal hazards

Wear appropriate thermal protective clothing, when necessary.

General hygiene considerations

Observe any medical surveillance requirements. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Contaminated work clothing should not be allowed out of the workplace.

9. Physical and chemical properties

Appearance

Liquid.

Physical state

Liquid.

Form

Liquid.

Color

Light blue

Odor

Not available.

Odor threshold

Not available.

pH

2.5

Melting point/freezing point

Not available.
Initial boiling point and boiling range
1562 °F (850 °C) estimated

Flash point
Not available.

Evaporation rate
Not available.

Flammability (solid, gas)
Not applicable.

Upper/lower flammability or explosive limits
- Flammability limit - lower (%)
  Not available.
- Flammability limit - upper (%)
  Not available.
- Explosive limit - lower (%)
  Not available.
- Explosive limit - upper (%)
  Not available.

Vapor pressure
0.00001 hPa estimated

Vapor density
Not available.

Relative density
1.21 g/ml (typical)

Solubility(ies)
- Solubility (water)
  Not available.
- Partition coefficient (n-octanol/water)
  Not available.

Auto-ignition temperature
Not available.

Decomposition temperature
Not available.

Viscosity
Not available.

Other information
- Explosive properties
  Not explosive.
- Oxidizing properties
  Not oxidizing.
- Percent volatile
  85.35 % estimated
- Pounds per gallon
  10.08 lb/gal (typical)

10. Stability and reactivity

Reactivity
The product is stable and non-reactive under normal conditions of use, storage and transport.

Chemical stability
Material is stable under normal conditions.

Possibility of hazardous reactions
Hazardous polymerization does not occur.

Conditions to avoid
Contact with incompatible materials.

Incompatible materials
Strong oxidizing agents.

Hazardous decomposition products
No hazardous decomposition products are known.

11. Toxicological information

Information on likely routes of exposure
- Inhalation
  May cause damage to organs through prolonged or repeated exposure by inhalation.
- Skin contact
  May cause an allergic skin reaction.
- Eye contact
  Causes serious eye damage.
- Ingestion
  Expected to be a low ingestion hazard.

Symptoms related to the physical, chemical and toxicological characteristics
Severe eye irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Permanent eye damage including blindness could result. May cause an allergic skin reaction. Dermatitis. Rash.

Information on toxicological effects

Acute toxicity
May cause an allergic skin reaction.
### Test Results

<table>
<thead>
<tr>
<th>Product</th>
<th>Species</th>
<th>Test Results</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MicroJuice</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Acute</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Dermal</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LD50</td>
<td>Rat</td>
<td>23260 mg/kg</td>
</tr>
<tr>
<td><strong>Inhalation</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LC50</td>
<td>Rat</td>
<td>1625 mg/l, 4 Hours</td>
</tr>
<tr>
<td><strong>Oral</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LD50</td>
<td>Rat</td>
<td>7100 mg/kg</td>
</tr>
<tr>
<td><strong>Components</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Species</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Test Results</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cupric Sulfate, pentahydrate (CAS 7758-99-8)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Acute</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Oral</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LD50</td>
<td>Rat</td>
<td>960 mg/kg</td>
</tr>
<tr>
<td>Disodium Octaborate Tetrahydrate (CAS 12008-41-2)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Acute</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Dermal</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LD50</td>
<td>Rabbit</td>
<td>&gt; 2000 mg/kg</td>
</tr>
<tr>
<td><strong>Oral</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LD50</td>
<td>Rat</td>
<td>2550 mg/kg</td>
</tr>
<tr>
<td>Manganese Sulfate, monohydrate (CAS 10034-96-5)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Acute</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Oral</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LD50</td>
<td>Rat</td>
<td>2150 mg/kg</td>
</tr>
<tr>
<td>Propylene glycol (CAS 57-55-6)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Acute</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Dermal</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LD50</td>
<td>Rabbit</td>
<td>2000 mg/kg</td>
</tr>
<tr>
<td><strong>Inhalation</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LD50</td>
<td>Rabbit</td>
<td>317 mg/l</td>
</tr>
<tr>
<td><strong>Oral</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LD50</td>
<td>Rat</td>
<td>&gt; 20000 mg/kg</td>
</tr>
<tr>
<td>Zinc Sulfate (CAS 7733-02-0)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Acute</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Dermal</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LD50</td>
<td>Rat</td>
<td>&gt; 2000 mg/kg</td>
</tr>
<tr>
<td><strong>Oral</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LD50</td>
<td>Rat</td>
<td>920 mg/kg</td>
</tr>
</tbody>
</table>

* Estimates for product may be based on additional component data not shown.

#### Skin corrosion/irritation
- Prolonged skin contact may cause temporary irritation.

#### Serious eye damage/eye irritation
- Causes serious eye damage.

#### Respiratory or skin sensitization
- **Respiratory sensitization**
  - Not a respiratory sensitizer.
- **Skin sensitization**
  - May cause an allergic skin reaction.
- **Germ cell mutagenicity**
  - Suspected of causing genetic defects.
- **Carcinogenicity**
  - This product is not considered to be a carcinogen by IARC, ACGIH, NTP, or OSHA.

#### IARC Monographs. Overall Evaluation of Carcinogenicity
- Nickel Sulfate, Hexahydrate (CAS 10101-97-0)
  - Carcinogenic to humans.

#### OSHA Specifically Regulated Substances (29 CFR 1910.1001-1052)
- Not regulated.
US. National Toxicology Program (NTP) Report on Carcinogens

Cobalt Sulfate, Monohydrate (CAS 10124-43-3) Reasonably Anticipated to be a Human Carcinogen.
Nickel Sulfate, Hexahydrate (CAS 10101-97-0) Known To Be Human Carcinogen.

Reproductive toxicity
Suspected of damaging fertility or the unborn child.

Specific target organ toxicity - single exposure
Not classified.

Specific target organ toxicity - repeated exposure
Causes damage to organs through prolonged or repeated exposure.

Aspiration hazard
Not an aspiration hazard.

Chronic effects
Causes damage to organs through prolonged or repeated exposure. Prolonged inhalation may be harmful.

12. Ecological information

Ecotoxicity
Harmful to aquatic life with long lasting effects.

<table>
<thead>
<tr>
<th>Product</th>
<th>Species</th>
<th>Test Results</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MicroJuice</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Aquatic</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Crustacea</td>
<td>EC50</td>
<td>Daphnia</td>
</tr>
<tr>
<td></td>
<td></td>
<td>119.4296 mg/l, 48 hours estimated</td>
</tr>
<tr>
<td>Fish</td>
<td>LC50</td>
<td>Fish</td>
</tr>
<tr>
<td></td>
<td></td>
<td>52.3217 mg/l, 96 hours estimated</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Components</strong></th>
<th><strong>Species</strong></th>
<th><strong>Test Results</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Acetic Acid (CAS 64-19-7)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Aquatic</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Crustacea</td>
<td>EC50</td>
<td>Water flea (Daphnia magna)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>65 mg/l, 48 hours</td>
</tr>
<tr>
<td>Fish</td>
<td>LC50</td>
<td>Bluegill (Lepomis macrochirus)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>75 mg/l, 96 hours</td>
</tr>
</tbody>
</table>

| **Cobalt Sulfate, Monohydrate (CAS 10124-43-3)** |              |                                                  |
| **Aquatic**            |              |                                                  |
| Fish                   | LC50         | Fathead minnow (Pimephales promelas)            |
|                       |              | 3.75 mg/l, 96 hours                             |

| **Cupric Sulfate, pentahydrate (CAS 7758-99-8)** |              |                                                  |
| **Aquatic**            |              |                                                  |
| Crustacea              | EC50         | Water flea (Daphnia magna)                       |
|                       |              | 0.0058 - 0.0073 mg/l, 48 hours                   |
| Fish                   | LC50         | Bluegill (Lepomis macrochirus)                   |
|                       |              | 0.66 - 1.15 mg/l, 96 hours                       |

| **Disodium Octaborate Tetrahydrate (CAS 12008-41-2)** |              |                                                  |
| **Aquatic**            |              |                                                  |
| Crustacea              | LC50         | Daphnia magna                                   |
|                       |              | 619 mg/l                                        |
| Fish                   | LC50         | Pimephales promelas                             |
|                       |              | 370 mg/l                                        |

| **Manganese Sulfate, monohydrate (CAS 10034-96-5)** |              |                                                  |
| **Aquatic**            |              |                                                  |
| Crustacea              | EC50         | Water flea (Daphnia obtusa)                     |
|                       |              | 30.8 - 44.1 mg/l, 48 hours                      |
| Fish                   | LC50         | Fathead minnow (Pimephales promelas)            |
|                       |              | 36.9 mg/l, 96 hours                             |

| **Nickel Sulfate, Hexahydrate (CAS 10101-97-0)** |              |                                                  |
| **Aquatic**            |              |                                                  |
| Crustacea              | EC50         | Rotifer (Philodina acuticornis)                 |
|                       |              | 7.1 mg/l, 48 hours                              |
| Fish                   | LC50         | Carp (Cyprinus carpio)                          |
|                       |              | 5.79 - 6.54 mg/l, 96 hours                      |

| **Propylene glycol (CAS 57-55-6)** |              |                                                  |
| **Aquatic**            |              |                                                  |
| Crustacea              | EC50         | Water flea (Daphnia magna)                      |
|                       |              | > 10000 mg/l, 48 hours                          |
| Fish                   | LC50         | Fathead minnow (Pimephales promelas)            |
|                       |              | 29485 - 39339 mg/l, 96 hours                    |
Components Test Results

<table>
<thead>
<tr>
<th>Species</th>
<th>Test Results</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Zinc Sulfate (CAS 7733-02-0)</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Aquatic</strong></td>
<td></td>
</tr>
<tr>
<td>Algae</td>
<td>LC50</td>
</tr>
<tr>
<td>Green algae (Chlorella vulgaris)</td>
<td>5 mg/l, 24 hours</td>
</tr>
<tr>
<td>Crustacea</td>
<td>EC50</td>
</tr>
<tr>
<td>Amphipod (Crangonyx pseudogracilis)</td>
<td>15.1 - 24.5 mg/l, 96 hours</td>
</tr>
<tr>
<td>Rotifer (Philodina acuticornis)</td>
<td>0.5 mg/l, 48 hours</td>
</tr>
<tr>
<td>Fish</td>
<td>LC50</td>
</tr>
<tr>
<td>Fathead minnow (Pimephales promelas)</td>
<td>10.62 - 11.3 mg/l, 5 days</td>
</tr>
<tr>
<td>Fish (Lepidocephalichthyes guntea)</td>
<td>0.168 - 0.25 mg/l, 96 hours</td>
</tr>
</tbody>
</table>

* Estimates for product may be based on additional component data not shown.

**Persistence and degradability**  
No data is available on the degradability of this product.

**Bioaccumulative potential**

- **Partition coefficient n-octanol / water (log Kow)**
  - Acetic Acid: -0.17
  - Propylene glycol: -0.92

**Mobility in soil**  
No data available.

**Other adverse effects**  
No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.

### 13. Disposal considerations

**Disposal instructions**  
Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Do not allow this material to drain into sewers/water supplies. Do not contaminate ponds, waterways or ditches with chemical or used container. Dispose of contents/container in accordance with local/regional/national/international regulations.

**Local disposal regulations**  
Dispose in accordance with all applicable regulations.

**Hazardous waste code**  
The waste code should be assigned in discussion between the user, the producer and the waste disposal company.

**Waste from residues / unused products**  
Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).

**Contaminated packaging**  
Since emptied containers may retain product residue, follow label warnings even after container is emptied. Empty containers should be taken to an approved waste handling site for recycling or disposal.

### 14. Transport information

**DOT**

- **UN number**: UN3082
- **UN proper shipping name**: Environmentally hazardous substances, liquid, n.o.s. (Cupric Sulfate, pentahydrate RQ = 1000 LBS)
- **Transport hazard class(es)**
  - **Class**: 9
  - **Subsidiary risk**: -
  - **Label(s)**: 9
  - **Packing group**: III
- **Special precautions for user**: Not available.
- **Special provisions**: 8, 146, 335, IB3, T4, TP1, TP29
- **Packaging exceptions**: 155
- **Packaging non bulk**: 203
- **Packaging bulk**: 241

Not DOT regulated in domestic (USA ground) transportation in package sizes less than 1000 lbs (107 gallons); 454 kg (405 liters). The DOT transportation information above is for shipments with package sizes equal to or exceeding this value.

DOT Regulated Marine Pollutant.
IMDG Regulated Marine Pollutant.
DOT Shipping Notes: 40 CFR 172.504(f)(9) For Class 9, a CLASS 9 placard is not required for domestic (USA ground) transportation, however shipments with packaging exceeding the Reportable Quantity (RQ) or bulk packaging must be marked with the appropriate identification number on a CLASS 9 placard, an orange panel, or a white square-on-point display configuration as required. Since the Class 9 placard is not required (although it may be used) the hazardous material endorsement is also not required on a Commercial Drivers License.

IATA
UN number UN3082
UN proper shipping name Environmentally hazardous substance, liquid, n.o.s. (Cupric Sulfate, pentahydrate)
Transport hazard class(es)
  Class 9
  Subsidiary risk -
  Packing group III
  Environmental hazards Yes
  ERG Code 9L
Special precautions for user Not available.
Other information
  Passenger and cargo aircraft Allowed with restrictions.
  Cargo aircraft only Allowed with restrictions.

IMDG
UN number UN3082
UN proper shipping name ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Cupric Sulfate, pentahydrate), MARINE POLLUTANT
Transport hazard class(es)
  Class 9
  Subsidiary risk -
  Packing group III
  Environmental hazards Yes
  Marine pollutant
  EmS F-A, S-F
Special precautions for user Not available.

DOT; IATA; IMDG

Marine pollutant

General information Not DOT regulated in domestic (USA ground) transportation in package sizes less than 1000 lbs (107 gallons); 454 kg (405 liters). The DOT transportation information above is for shipments with package sizes equal to or exceeding this value.

DOT Regulated Marine Pollutant.
IMDG Regulated Marine Pollutant.
15. Regulatory information

US federal regulations
This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)
Not regulated.

CERCLA Hazardous Substance List (40 CFR 302.4)
Acetic Acid (CAS 64-19-7) Listed.
Cobalt Sulfate, Monohydrate (CAS 10124-43-3) Listed.
Manganese Sulfate, monohydrate (CAS 10034-96-5) Listed.
Zinc Sulfate (CAS 7733-02-0) Listed.

SARA 304 Emergency release notification
Not regulated.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1052)
Not regulated.

Superfund Amendments and Reauthorization Act of 1986 (SARA)
SARA 302 Extremely hazardous substance
Not listed.

Classified hazard categories
Serious eye damage or eye irritation
Respiratory or skin sensitization
Germ cell mutagenicity
Reproductive toxicity
Specific target organ toxicity (single or repeated exposure)

SARA 313 (TRI reporting)

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>CAS number</th>
<th>% by wt.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cupric Sulfate, pentahydrate</td>
<td>7758-99-8</td>
<td>1 - &lt; 3</td>
</tr>
<tr>
<td>Manganese Sulfate, monohydrate</td>
<td>10034-96-5</td>
<td>5 - &lt; 10</td>
</tr>
<tr>
<td>Nickel Sulfate, Hexahydrate</td>
<td>10101-97-0</td>
<td>&lt; 0.1</td>
</tr>
<tr>
<td>Zinc Sulfate</td>
<td>7733-02-0</td>
<td>3 - &lt; 5</td>
</tr>
</tbody>
</table>

Other federal regulations

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List
Cobalt Sulfate, Monohydrate (CAS 10124-43-3)
Manganese Sulfate, monohydrate (CAS 10034-96-5)
Nickel Sulfate, Hexahydrate (CAS 10101-97-0)

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)
Not regulated.

Safe Drinking Water Act (SDWA)
Not regulated.

FEMA Priority Substances Respiratory Health and Safety in the Flavor Manufacturing Workplace
Acetic Acid (CAS 64-19-7) High priority

US state regulations

California Proposition 65
WARNING: This product contains a chemical known to the State of California to cause cancer and birth defects or other reproductive harm.

California Proposition 65 - CRT: Listed date/Carcinogenic substance
Cobalt Sulfate, Monohydrate (CAS 10124-43-3) Listed: May 20, 2005
Nickel Sulfate, Hexahydrate (CAS 10101-97-0) Listed: May 7, 2004

US. California. Candidate Chemicals List. Safer Consumer Products Regulations (Cal. Code Regs, tit. 22, 69502.3, subd. (a))
Cobalt Sulfate, Monohydrate (CAS 10124-43-3)
Disodium Octaborate Tetrahydrate (CAS 12008-41-2)

International Inventories

<table>
<thead>
<tr>
<th>Country(s) or region</th>
<th>Inventory name</th>
<th>On inventory (yes/no)*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australia</td>
<td>Australian Inventory of Chemical Substances (AICS)</td>
<td>Yes</td>
</tr>
<tr>
<td>Canada</td>
<td>Domestic Substances List (DSL)</td>
<td>Yes</td>
</tr>
<tr>
<td>Canada</td>
<td>Non-Domestic Substances List (NDSL)</td>
<td>No</td>
</tr>
<tr>
<td>Country(s) or region</td>
<td>Inventory name</td>
<td>On inventory (yes/no)</td>
</tr>
<tr>
<td>---------------------</td>
<td>-------------------------------------------------------------------</td>
<td>-----------------------</td>
</tr>
<tr>
<td>China</td>
<td>Inventory of Existing Chemical Substances in China (IECSC)</td>
<td>Yes</td>
</tr>
<tr>
<td>Europe</td>
<td>European Inventory of Existing Commercial Chemical Substances (EINECS)</td>
<td>Yes</td>
</tr>
<tr>
<td>Europe</td>
<td>European List of Notified Chemical Substances (ELINCS)</td>
<td>No</td>
</tr>
<tr>
<td>Japan</td>
<td>Inventory of Existing and New Chemical Substances (ENCS)</td>
<td>No</td>
</tr>
<tr>
<td>Korea</td>
<td>Existing Chemicals List (ECL)</td>
<td>Yes</td>
</tr>
<tr>
<td>New Zealand</td>
<td>New Zealand Inventory</td>
<td>Yes</td>
</tr>
<tr>
<td>Philippines</td>
<td>Philippine Inventory of Chemicals and Chemical Substances (PICCS)</td>
<td>Yes</td>
</tr>
<tr>
<td>Taiwan</td>
<td>Taiwan Chemical Substance Inventory (TCSI)</td>
<td>Yes</td>
</tr>
<tr>
<td>United States &amp; Puerto Rico</td>
<td>Toxic Substances Control Act (TSCA) Inventory</td>
<td>Yes</td>
</tr>
</tbody>
</table>

*A “Yes” indicates that all components of this product comply with the inventory requirements administered by the governing country(s) 
A “No” indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

### 16. Other information, including date of preparation or last revision

**Issue date**
05-24-2016

**Revision date**
04-19-2019

**Version #**
02

**Disclaimer**
The information provided in this Safety Data Sheet is correct to the best of Manufacturer’s knowledge, information and belief at the date of its publication; however, it is provided only as a guidance for safe handling, use, processing, storage, transportation, disposal and release of the Product. No warranties of any kind, either expressed or implied, including warranties of merchantability or fitness for a particular purpose, are made with respect to the Product or the information provided herein, or that the Product or information herein may be used without infringing the intellectual property rights of others. The information provided in this Safety Data Sheet relates only to the specific Product designated and may not be valid if the Product is used in combination with other materials or in any other process, unless specified herein. The user assumes all risk and liability for loss, injury, damage or expense due to any use, handling, storage or disposal of the Product, and Manufacturer recommends that the user conducts its own tests of the Product to determine suitability of the Product for user’s particular use.

**Revision information**
Identification: Recommended restrictions
Physical & Chemical Properties: Multiple Properties
Physical and chemical properties: Appearance
Physical and chemical properties: Color
Toxicological Information: Toxicological Data
Transport Information: Material Transportation Information