Material Safety Data Sheet

Section 1: Chemical Product and Company Identification

<table>
<thead>
<tr>
<th>Catalog Number:</th>
<th>2488</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product Identity:</td>
<td>CUPRIC ACETATE TS, STRONGER (Barfoed's Reagent)</td>
</tr>
<tr>
<td>Manufacturer's Name:</td>
<td>RICCA CHEMICAL COMPANY LLC</td>
</tr>
<tr>
<td>Emergency Contact(24 hr) -- CHEMTREC®</td>
<td>Domestic: 800-424-9300, International: 703-527-3887</td>
</tr>
<tr>
<td>CAGE Code:</td>
<td>4TCW6, 0V553, 4XZQ2</td>
</tr>
<tr>
<td>Address:</td>
<td>448 West Fork Dr, Arlington, TX 76012</td>
</tr>
<tr>
<td>Telephone Number For Information:</td>
<td>817-461-5601</td>
</tr>
<tr>
<td>Date Prepared:</td>
<td>5/31/02</td>
</tr>
<tr>
<td>Revision:</td>
<td>0</td>
</tr>
<tr>
<td>Last Revised:</td>
<td>05/31/2002</td>
</tr>
<tr>
<td>Date Printed:</td>
<td>09/28/2012 1:02:17 pm</td>
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</tbody>
</table>

Section 2. Composition/Information on Ingredients

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS Registry #</th>
<th>Concentration</th>
<th>ACGIH TLV</th>
<th>OSHA PEL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cupric Acetate, Monohydrate</td>
<td>6046-93-1</td>
<td>6 - 7</td>
<td>Not Available</td>
<td>Not Available</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1 mg/m3</td>
<td>1 mg/m3</td>
</tr>
<tr>
<td>Acetic Acid</td>
<td>64-19-7</td>
<td>2 - 3</td>
<td>10 ppm</td>
<td>10 ppm</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>25 mg/m3</td>
<td>25 mg/m3</td>
</tr>
<tr>
<td>Water, Deionized</td>
<td>7732-18-5</td>
<td>Balance</td>
<td>Not Available</td>
<td>Not Available</td>
</tr>
</tbody>
</table>

Section 3: Hazard Identification

Emergency Overview: May cause irritation to the eyes, skin and respiratory system. Wash areas of contact with water. If ingested, dilute with water and call a physician.

Target Organs: eyes, skin, respiratory system, teeth

Eye Contact: May cause irritation, redness, pain, and tearing.

Inhalation: May cause irritation to the respiratory tract. Inhalation of copper fumes can cause 'metal fume fever,' which is a flu-like illness lasting up to 24 hours with characteristic symptoms of chills, aches, cough, and fever.

Skin Contact: May cause irritation, redness, and pain.

Ingestion: Moderately toxic by ingestion. Symptoms may include nausea and vomiting.

Chronic Effects/Carcinogenicity: Prolonged or repeated exposure may cause dermatitis.

IARC - No.

NTP - No.
Key terms:
- **OSHA - No.**
- **Reproductive Information:** Reproductive effects cited in 'Registry of Toxic Effects of Chemical Substances' for Cupric Acetate, Monohydrate. Reproductive effects cited in 'Registry of Toxic Effects of Chemical Substances' for Acetic Acid. Reproductive effects cited in 'Registry of Toxic Effects of Chemical Substances' for Acetic Acid.
- **Teratology (Birth Defect) Information:** Mutation data cited in 'Registry of Toxic Effects of Chemical Substances' for Acetic Acid. Mutation data cited in 'Registry of Toxic Effects of Chemical Substances' for Acetic Acid.

Section 4: First Aid Measures - In all cases, seek qualified evaluation.

**Eye Contact:** Irrigate immediately with large quantity of water for at least 15 minutes. Call a physician if irritation develops.

**Inhalation:** Remove to fresh air. Give artificial respiration if necessary. If breathing is difficult, give oxygen.

**Skin Contact:** Flush with plenty of water for at least 15 minutes. Call a physician if irritation develops.

**Ingestion:** Dilute immediately with water or milk. Induce vomiting. Call a physician.

Section 5: Fire Fighting Measures

**Flash Point:** N/A

**LFL:** N/A

**Method Used:** N/A

**UFL:** N/A

**Extinguishing Media:** Use any means suitable for extinguishing surrounding fire.

**Fire & Explosion Hazards:** Can react with oxidizing materials. Vapors may explode if ignited in an enclosed area.

**Fire Fighting Instructions:** Use normal procedures/instructions. Poisonous gases may be produced in fire.

**Fire Fighting Equipment:** Use protective clothing and NIOSH-approved breathing equipment appropriate for the surrounding fire.

Section 6: Accidental Release Measures

Absorb with suitable inert material (vermiculite, dry sand, etc) and place in a chemical waste container for proper disposal. Do not flush to sewer. Dispose of in accordance with local regulations.

Section 7: Handling and Storage

As with all chemicals, wash hands thoroughly after handling. Avoid contact with eyes and skin. Protect from freezing and physical damage.

**Safety Storage Code:** General

Section 8: Exposure Control/Personal Protection

**Engineering Controls:** No specific controls are needed. Normal room ventilation is adequate.

**Respiratory Protection:** Normal room ventilation is adequate.

**Skin Protection:** Chemical resistant gloves.

**Eye Protection:** Safety glasses or goggles.

Section 9: Physical and Chemical Properties

**Appearance:** slightly bluish-green liquid

**Odor:** slight acetic acid odor

**Solubility in Water:** Infinite

**Specific Gravity:** Approximately 1

**pH:** acidic

**Boiling Point(°C):** Approximately 100

**Melting Point(°C):** Approximately 0

**Vapor Pressure:** N/A

Section 10: Stability and Reactivity

**Chemical Stability:** Stable under normal conditions of use and storage.

**Incompatibility:** Sodium hypobromite, acetylene, hydrazine, and nitromethane.

**Hazardous Decomposition Products:** May produce oxides of copper and carbon when heated to decomposition.

**Hazardous Polymerization:** Will not occur.
Section 11. Toxicological Information
LD50, Oral, Rat (Cupric Acetate Monohydrate): 710 mg/kg, details of toxic effects not reported other than lethal dose value.

Section 12. Ecological Information
Ecotoxicological Information: Copper and its compounds have high acute and chronic toxicity to aquatic life.
Chemical Fate Information: Copper and its compounds are highly persistent in the aquatic environment, with a half-life of greater than 200 days. When released into the soil or water, this material is not expected to biodegrade. This material is expected to significantly bioaccumulate. When released into the soil, this material may leach into groundwater.

Section 13. Disposal Considerations
Whatever cannot be saved for recovery or reclamation should be handled with a RCRA approved hazardous waste facility for proper disposal. Do not flush to the sewer. Always dispose of in accordance with local, state and federal regulations.

Section 14. Transport Information
Part Numbers:

This product is not regulated.

Section 15. Regulatory Information (Not meant to be all inclusive - selected regulation represented)

TSCA Status: All components of this solution are listed on the TSCA Inventory or are mixtures (hydrates) of items listed on the TSCA Inventory.

Sara Title III:
Section 302 Extremely Hazardous Substances: Not Applicable.
Section 311/312 Hazardous Categories: Acute, Chronic: Yes Fire, Pressure, Reactivity: No
Section 313 Toxic Chemicals: Not Applicable.

California: None Reported.
Pennsylvania: Cupric Acetate, Monohydrate is listed as an Environmental Hazard on the state’s Hazardous Substances List. Acetic Acid is listed as an Environmental Hazard on the state’s Hazardous Substances List. Cupric Acetate, Monohydrate is listed as an Environmental Hazard on the state’s Hazardous Substances List.

RCRA Status: D002,D002

CERCLA Reportable Quantity: Cupric Acetate, Monohydrate - 100 pounds. Acetic Acid - 5,000 pounds. Cupric Acetate, Monohydrate - 100 pounds.


Section 16. Other Information

NFPA Ratings:
Health: 1 Flammability: 0 Reactivity: 0 Special Notice Key: None

HMIS Ratings:
Health: 1 Flammability: 0 Reactivity: 0 Protective Equipment: B (Protective Eyewear, Gloves)
When handled properly by qualified personnel, the product described herein does not present a significant health or safety hazard. Alteration of its characteristics by concentration, evaporation, addition of other substances, or other means may present hazards not specifically addressed herein and which must be evaluated by the user. The information furnished herein is believed to be accurate and represents the best data currently available to us. No warranty, expressed or implied, is made and RICCA CHEMICAL COMPANY assumes no legal responsibility or liability whatsoever resulting from its use.