Section 1. Chemical Product and Company Identification

Product Name: MICROFAB® CU-300 MAKE-UP

Material Uses: Specialty chemicals for the electronics and surface finishing industries.

Manufacturer: ENTHONE
350 Frontage Road
West Haven, CT 06516
(203) 799-4917
(203) 799-8179 (fax)
www.cooksonelectronics.com

Supersedes Date: 02/14/03
Revision No.: 1
Print Date: 5/14/2003.
Validation Date: 5/14/2003.
Prepared by: Anton Mayer - Regulatory Specialist

Section 2. Composition, Information on Ingredients

<table>
<thead>
<tr>
<th>Name</th>
<th>CAS #</th>
<th>% by Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>SULFURIC ACID</td>
<td>7664-93-9</td>
<td>10-20</td>
</tr>
<tr>
<td>COPPER SULFATE</td>
<td>7758-98-7</td>
<td>5-10</td>
</tr>
<tr>
<td>WATER</td>
<td>7732-18-5</td>
<td>70-80</td>
</tr>
</tbody>
</table>

All ingredients comply with applicable rules or orders under TSCA

Section 3. Hazards Identification

Physical State and Appearance: Liquid.
Odor: Acidic.
Color: Blue.

Emergency Overview: DANGER!
May be fatal if swallowed. May cause burns to mouth, throat and stomach.

Routes of Entry: Dermal contact. Eye contact. Inhalation. Ingestion.

Potential Acute Health Effects:

**Eyes** Very hazardous in case of eye contact (corrosive). Eye contact can result in corneal damage or blindness.

**Skin** Very hazardous in case of skin contact (corrosive). Acid burns are possible depending on contact time.

**Inhalation** Very hazardous in case of inhalation (lung corrosive). Inhalation of the spray mist may produce severe irritation of respiratory tract, characterized by coughing, choking, or shortness of breath.

**Ingestion** May be fatal if swallowed. May cause burns to mouth, throat and stomach.

Medical Conditions Caused or Aggravated by Overexposure: Prolonged contact with skin, eyes, or respiratory tract may result in burns or tissue damage due to corrosive effects. Repeated or prolonged skin contact can cause drying and cracking of the skin (dermatitis).

Continued on Next Page
**Section 4. First Aid Measures**

**Eye Contact**
Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention immediately.

**Skin Contact**
In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention immediately.

**Inhalation**
If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention immediately.

**Ingestion**
If swallowed, do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention immediately.

**Section 5. Fire Fighting Measures**

**Flammability of the Product**
Non-flammable.

**Flash Points**
Not applicable.

**Products of Combustion**
This material is not combustible, however in a fire it may give off sulfur oxides (SO2, SO3...) Metallic oxides.

**Fire Fighting Media and Instructions**
Use an extinguishing agent suitable for surrounding fires.

**Protective Equipment (Fire)**
Wear NIOSH approved self-contained breathing apparatus or equivalent and full protective gear.

**Unusual Firefighting Hazards**
May react with amphoteric metals (such as aluminum, zinc, tin) generating hydrogen gas which will burn or explode if ignited.

**Section 6. Accidental Release Measures**

**Spill or Leak**
Do not touch damaged container or spilled material. Stop leak if without risk. Prevent entry into sewers, basements or confined areas; dike if needed. Absorb with an inert material and place in an appropriate waste disposal container. Call for assistance on disposal.

**Section 7. Handling and Storage**

**Handling**
Do not ingest. Do not breathe vapor or mist. Keep container closed. Use only with adequate ventilation. Wash thoroughly after handling.

**Storage**
Keep container tightly closed. Keep container in a cool, well-ventilated area.

**Section 8. Exposure Controls, Personal Protection**

**Engineering Controls**
Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective occupational exposure limits. Ensure that eyewash stations and safety showers are proximal to the work-station location.

**Personal Protection**

**Eyes**
Face shield. Splash goggles.

**Body**
Chemical resistant protective suit.

**Respiratory**
Respirator selection must be based on known or anticipated exposure levels, the hazards of the product, and the safe working limits of the selected respirator. Be sure to use a MSHA/NIOSH approved respirator or equivalent.

**Hands**

**Feet**
Boots.

**Protective Equipment (Pictograms)**

**Personal Protection in Case of a Large Spill**
Face shield. Splash goggles. Full suit. Boots. Gloves. A self-contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.
Section 9. Physical and Chemical Properties

<table>
<thead>
<tr>
<th>Physical State and Appearance</th>
<th>Odor</th>
<th>Color</th>
</tr>
</thead>
</table>

pH: <1 [Acidic.]

Boiling Point: 110 °C
Melting/Freezing Point: -3.89 °C
Specific Gravity: 1.22 (Water = 1)
VOC: Not applicable.
Solubility: Soluble in cold water, hot water.

Section 10. Stability and Reactivity

Stability and Reactivity: Stable under recommended storage and handling conditions (see section 7).
Incompatible Substances: Reactive with oxidizing agents, alkalis. Cyanides. Hydrogen, a highly flammable and explosive gas, may be generated by the action of acids on many metals.
Hazardous Decomposition Products: In a fire: toxic sulfur oxides. Metallic oxides.
Hazardous Polymerization: Will not occur.

Section 11. Toxicological Information

Toxicity Data

<table>
<thead>
<tr>
<th>Ingredient Name</th>
<th>Test</th>
<th>Result</th>
<th>Route</th>
<th>Species</th>
</tr>
</thead>
<tbody>
<tr>
<td>SULFURIC ACID</td>
<td>LD50</td>
<td>2140 mg/kg</td>
<td>Oral</td>
<td>Rat</td>
</tr>
<tr>
<td></td>
<td>LC50</td>
<td>347 ppm (1 hours)</td>
<td>INHALATION</td>
<td>Rat</td>
</tr>
<tr>
<td>COPPER SULFATE</td>
<td>LD50</td>
<td>300 mg/kg</td>
<td>Oral</td>
<td>Rat</td>
</tr>
<tr>
<td></td>
<td>LD50</td>
<td>369 mg/kg</td>
<td>Oral</td>
<td>Mouse</td>
</tr>
<tr>
<td></td>
<td>LDLo</td>
<td>5 mg/kg</td>
<td>Oral</td>
<td>Domestic Animals.</td>
</tr>
<tr>
<td></td>
<td>LDLo</td>
<td>60 mg/kg</td>
<td>Oral</td>
<td>Dog</td>
</tr>
<tr>
<td></td>
<td>LDLo</td>
<td>300 mg/kg</td>
<td>Oral</td>
<td>wild bird species</td>
</tr>
</tbody>
</table>

Chronic Effects on Humans: CARCINOGENIC EFFECTS: Classified A2 (Suspected for human.) by ACGIH [SULFURIC ACID].
MUTAGENIC EFFECTS: Not available.
TERATOGENIC EFFECTS: Not available.
Special Remarks on Toxicity

Inhalation of the spray mist may produce severe irritation of respiratory tract, characterized by coughing, choking, or shortness of breath. Workers exposed to sulfuric acid mist showed a statistical increase in laryngeal cancer. This data suggests a possible relationship between carcinogenesis and inhalation of sulfuric acid mist.

Any component listed in this section that is not listed in Section 2 is present in the product in concentrations below legal disclosure limits (1% for hazardous components and 0.1% for carcinogens).

Section 12. Ecological Information

Enthone has not conducted specific studies on the ecotoxicity or environmental fate of this product.

Section 13. Disposal Considerations

Waste Information

Waste must be disposed of in accordance with federal, state and local environmental control regulations.

Section 14. Transport Information

DOT Classification 8
UN number UN3264
Proper shipping name CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (SULFURIC ACID/COPPER SULFATE)
Packing Group II
Special Remarks on Transportation Information ERG #154

This Transport Information applies only to the Product Code Number(s) listed in Section 1. Other container sizes may require different Transport Information. If assistance is required, contact Regulatory Affairs at 203-799-4936.

Section 15. Regulatory Information

U.S. Federal Regulations SARA 313 toxic chemical notification and release reporting: SULFURIC ACID; COPPER SULFATE
All ingredients comply with applicable rules or orders under TSCA
State Regulations California prop. 65: None identified.

Any component listed in this section that is not listed in Section 2 is present in the product in concentrations below legal disclosure limits (1% for hazardous components and 0.1% for carcinogens).

Section 16. Other Information

Definition of Terms

ACGIH American Conference of Governmental Industrial Hygienists
Ceiling Maximum exposure limit defined by OSHA
CAS Chemical Abstract Service
IARC International Agency for Research on Cancer
NIOSH National Institute for Occupational Safety and Health
NTP National Toxicology Program
OSHA Occupational Safety and Health Administration
PEL Permissible Exposure Limit
REL Recommended Exposure Limit
RTK Right to Know
SARA Superfund Amendments and Reauthorization Act
STEL Short Term Exposure Limit
TLV ACGIH Threshold Limit Value
TLV-C ACGIH Threshold Limit Value, Ceiling
TRADE SECRET Claimed as allowed under 29CFR§1910.1200
TSCA Toxic Substances Control Act

Disclaimer

Continued on Next Page
This Material Safety Data Sheet may be used to comply with OSHA’s Hazard Communication Standard, 29CFR§1910.1200. Enthone furnishes the data contained herein in good faith at customer’s request without liability or legal responsibility for same whatsoever, and no warranty or guarantee, express or implied, is made with respect to such data; nor does Enthone grant permission, recommendation, or inducement to infringe any patent whether owned by Enthone or others. The data is offered solely for your information and consideration. Since conditions of use are beyond Enthone’s control, user assumes all responsibility and risk.