# Material Safety Data Sheet

## SECTION I PRODUCT INFORMATION

**Product Name:** Midas Bright Acid Copper Plating Solution  
**Synonyms:** Mixture  
**DATE PREPARED:** 07/16/96  
**Based on Manufacturer’s MSDS:** Not Applicable

## FLAMMABILITY: 0  HEALTH: 2  REACTIVITY: 1

## SECTION II INGREDIENT/EXPOSURE LIMIT INFORMATION

<table>
<thead>
<tr>
<th>Chemical Component</th>
<th>%</th>
<th>CAS No.</th>
<th>TLV</th>
<th>PEL</th>
<th>REL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cupric Sulfate</td>
<td></td>
<td>7758-98-7</td>
<td>1 mg/m³ (Cu, dm)</td>
<td>1 mg/m³ (Cu, dm)</td>
<td>1 mg/m³ (Cu, dm)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>0.2 mg/m³ (Cu, f)</td>
<td>0.1 mg/m³ (Cu, f)</td>
<td>0.1 mg/m³ (Cu, f)</td>
</tr>
<tr>
<td>Sulfuric Acid</td>
<td></td>
<td>7664-93-9</td>
<td>1 mg/m³</td>
<td>1 mg/m³ (Cu, f)</td>
<td>1 mg/m³ (Cu, f)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3 mg/m³ (a)</td>
<td>(C.C., Sk)</td>
<td>(C.C.)</td>
</tr>
<tr>
<td>Benzidine Compound</td>
<td></td>
<td>92-87-5</td>
<td>(C.C.)</td>
<td>N.E.</td>
<td>N.E.</td>
</tr>
<tr>
<td>Sodium Potassium Tartrate</td>
<td></td>
<td>UNKNOWN</td>
<td>N.E.</td>
<td>N.E.</td>
<td>N.E.</td>
</tr>
</tbody>
</table>

- Cu=As Copper fume, dm=dust/mist, f=As fume, hr=10hr TWA, a=Short Term Exposure Limit (STEL), C.C.=Confirmed Carcinogen  
- Workers should be properly equipped to eliminate to the fullest extent possible all exposure, Sk=Skin designation, L.F.C.=Lowest Feasible Concentration, N.E.=None Established (Exposure Limit)

## SECTION III PHYSICAL PROPERTIES

- Vapor Pressure (mm Hg): Not Available  
- Vapor Density (Air = 1): Not Available  
- Solubility in Water: Not Available  
- Appearance: Blue liquid  
- Odor: Characteristic odor  
- Melting Point: Not Available  
- Specific Gravity: Not Available  
- Boiling Point: Not Available  
- Evaporation Rate: Not Available  
- Volatility (%): Not Available  
- pH: 4 at 0.2 m solution

## SECTION IV FIRE AND EXPLOSION DATA

- Flash Point: Not Available  
- Auto Ignition Temperature: Not Available  
- Flammable Limits: LEL: Unknown  
- UEL: Unknown

**EXTINGUISHING MEDIA:** Use dry chemical or carbon dioxide. DO NOT USE WATER!

**Special Fire Fighting Procedures:** Fire fighters should wear full turnout gear and pressure-demand self-contained breathing apparatus (SCBA).

**Unusual Fire and Explosion Hazards:** None Known

## SECTION V REACTIVITY DATA

- Stable? Yes  
- **Conditions to Avoid:** Excessive heat, air, moisture

**Incompatibility (Materials to Avoid):** Combustible materials, organic solvents, metal powders, cyanides, alkalis, water

**Hazardous Decomposition Products:** Copper fumes, sulfur oxide

**Hazardous polymerization may occur?** No  
**Conditions to Avoid:** None Known
SECTION VI HEALTH HAZARD DATA

Primary Routes of Exposure: Inhalation, eye contact, skin contact, and skin absorption

Acute signs and Symptoms of Overexposure: This product contains dilute sulfuric acid which is a severe irritant to eyes, skin, and respiratory tract, and a systemic irritant by inhalation. This product also causes delayed gastrointestinal symptoms including nausea, vomiting, and diarrhea. Other health effects may include skin sensitization, brittle nails, hypotension, abdominal pains, salivation, profuse sweating, and "metal-fume fever", which is characterized by chills, muscle aches, fever, dry throat, cough, weakness, and a metallic or sweet taste.

Chronic Signs and Symptoms of Overexposure: Discoloration of skin and hair. Blood damage, lung damage.

<table>
<thead>
<tr>
<th>Carcinogenicity?</th>
<th>Yes</th>
<th>NTP</th>
<th>IARC</th>
<th>ACGIH</th>
<th>OSHA</th>
<th>PROP65</th>
</tr>
</thead>
<tbody>
<tr>
<td>Benzidine Compound</td>
<td>HC</td>
<td>HC1</td>
<td>A1</td>
<td>Yes</td>
<td>C</td>
<td></td>
</tr>
</tbody>
</table>

HC=Human Carcinogen, HC1=Human Carcinogen (Group 1), A1=Confirmed Human Carcinogen, C=Known in the state of California to be a Carcinogen

Conditions That May Increase Overexposure Potential: The extent of exposure to this product will depend largely on the intensity and duration of product use. Employers who supply this product for use by their employees must determine the conditions under which overexposure can result.

Medical Conditions Generally Aggravated by Exposure: Wilson’s disease - a genetic disorder in which copper is abnormally absorbed and retained in the body. May be fatal if left untreated. Any pre-existing skin, eye, or respiratory disorders.

FIRST AID PROCEDURES:

- **Eye Contact:** Flush contaminated eye(s) with plenty of water for at least 15 minutes while holding eyelids open. Seek medical attention immediately if irritation persists or if injury has occurred. If exposure is severe or irritation persists, seek medical attention.
- **Skin Contact:** WARNING! BENZIDINE IS ABSORBED THROUGH THE SKIN. Seek medical attention if exposure is severe or injury occurs.
- **Inhalation:** Remove source(s) of contamination and move victim to fresh air. If breathing has stopped, properly trained personnel should begin artificial respiration or cardiopulmonary resuscitation (CPR) immediately. Get medical attention immediately.
- **Ingestion:** DO NOT INDUCE VOMITING. Have victim drink 8 to 10 ounces of water to dilute the material in the stomach. Obtain medical attention immediately.

SECTION VII PRECAUTIONS FOR SAFE HANDLING AND USE

Actions to Take for Spills: Wearing appropriate personal protective clothing, neutralize and contain spill. Cover with an absorbent material, scoop up and place into a suitable container. Do not flush down sewer.

Waste Disposal: Dispose of via a licensed disposal firm in accordance with all federal, state, and local regulations.

Precautions to be Taken in Handling and Storage: Store in a cool, dry area, away from incompatibles.

Community Right-to-Know Requirements: SARA 302: Cupric Sulfate, RQ=10 lbs; Sulfuric Acid, RQ=1000 lbs, TPQ=1000 lbs (EPA Extremely Hazardous Substance); Benzidine Compound, RQ=1 lb (see 40 CFR 355). SARA 313: Annual release reporting requirements for Cupric Sulfate, Sulfuric Acid, and Benzidine Compound (see 40 CFR 372.65).

SECTION VIII EMPLOYEE PROTECTION MEASURES

Ventilation: Local ventilation is preferred to meet TLV requirements. General ventilation is acceptable, if exposure is maintained below TLV.

Respiratory Protection: When airborne concentrations exceed TLV or are unknown, use a NIOSH/MSHA approved respirator for dust/mists/fumes and organic vapor in accordance with the OSHA respiratory protection requirement 29 CFR 1910.134.

Eye Protection: Chemical goggles or a full face shield

**Protective Gloves:** Rubber gloves are recommended.
SECTION VIII EMPLOYEE PROTECTION MEASURES (continued)

Other Protective Equipment:  Rubber apron and chemical resistant shoes

Work/Hygiene Practices:  Eyewash station and safety shower should be available in areas of use. Wash thoroughly after handling product.

The information herein is given in good faith, but no warranty, express or implied, is made.