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## MATERIAL SAFETY DATA SHEET

### Copper/Copper Sulfate Reference Electrodes

#### 1. General Information

This MSDS is furnished for gelled copper/copper sulfate reference electrodes marketed by Electrochemical Devices, Inc. All such electrodes have the designation "CUG" as the second grouping in the model designation, e.g. US-CUG-SW. These products are not considered hazardous during proper installation and under normal conditions of use. The only material in this product that may be considered hazardous is copper sulfate, which is entirely contained in a polymer housing with a small membrane-covered opening. The amount of copper sulfate varies, depending upon the model, but in all cases is less than 400 grams. If the housing is damaged, copper sulfate may escape. The balance of this MSDS is restricted to information on copper sulfate as supplied to EDI by the manufacturer and EDI disclaims all liability for the content.

#### 2. Hazardous Ingredients

Copper Sulfate Formula:  $\text{CuSO}_4$   
Synonyms: Cupric Sulfate, Rome/Blue Vitriol, Blue Copper

#### 3. Physical/Chemical Characteristics

Boiling Point: 1202F (650C) Decomposes Specific Gravity ( $\text{H}_2\text{O} = 1$ ): 3.6  
Melting Point: 392F (200C) Slight Decomposition Solubility in  $\text{H}_2\text{O}$ : 14.3% @ 0C  
Vapor Pressure: N/A Vapor Density: N/A Evaporation Rate: N/A  
Appearance & Odor: Grayish white to greenish white. Rhombic crystals (usually bluish in color).

#### 4. Fire and Explosion Hazard Data

Flash Point: Negligible fire and explosion hazard when exposed to heat or flame.  
Extinguishing Media: Dry chemical, carbon dioxide, halon, water spray or foam.  
Special Fire Fighting Procedures: Move container from fire area if possible. Do not scatter spilled material. Dike fire control water for later disposal.  
Unusual Fire and Explosion Hazards: Avoid breathing vapors or dusts.

#### 5. Reactivity Data

Stable under normal conditions.  
Incompatibility (Materials to avoid): Hydroxylamine/Magnesium/Sodium Hypobromite  
Hazardous Decomposition or Byproducts: Thermal decomposition may release toxic oxides of sulfur.  
Hazardous Polymerization: Not reported to occur under normal temperature and pressure.

## 6. Health Hazard Data

Entry Routes: Can include inhalation, skin and ingestion.

Irritant to respiratory tract, skin, eyes, and can be considered to be toxic.

Chronic exposure may cause congestion, itching of the skin, eye irritation.

Carcinogenicity: N/A

Signs and Symptoms of Exposure: Breathing difficulty, skin irritation and/or rash, eye inflammation, stomach pain, nausea and vomiting.

Medical Conditions Generally Aggravated by Exposure: Persons with history of chronic respiratory, skin, and/or Wilson's Disease may be at increased risk.

Emergency First Aid Procedures:

Inhalation - move to fresh air;

Skin & eyes - flush with clean water and remove clothing;

Ingestion - induce vomiting.

## 7. Precautions for Safe Handling and Use

Steps to be Taken in Case Material is Released or Spilled: Sweep up and place in suitable clean, dry containers for reclamation or later disposal.

Precautions to be Taken in Handling and Storing: Provide local exhaust. Wear appropriate protective clothing. Protective gloves and eye protection must be worn.

Other Precautions: Contact lenses should not be worn.

## 8. Control Measures

Respiratory Protection: Limit exposure to  $50\text{mg}(\text{Cu})/\text{m}^3$

Local Exhaust: Required

Protective Gloves: Required

Eye Protection: Splash proof/Dust resistant Safety goggles.

Work/Hygienic Practices: Avoid repeated or prolonged contact. Wash up with soap and clean water.