

## MATERIAL SAFETY DATA SHEET

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## 1. PRODUCT IDENTIFICATION

CATALOG NO.: R-0860  
 PRODUCT NAME: Copper Reagent #1  
 CHEMICAL FAMILY: Alkaline solution

## 2. INGREDIENTS

| INGREDIENT          | CAS NO.   | %      | NATURE OF HAZARD                   |
|---------------------|-----------|--------|------------------------------------|
| *Ammonium hydroxide | 1336-21-6 | <5     | Corrosive alkali<br>Vapors harmful |
| Citric acid         | 77-92-9   | <5     | Irritant                           |
| Deionized water     | 7732-18-5 | to 100 | None                               |

\*This chemical is subject to the reporting requirements of SARA Title III Section 313 and 40 CFR 372.

## 3. PHYSICAL/CHEMICAL CHARACTERISTICS

STATE: Liquid APPEARANCE: Clear, colorless ODOR: Ammonical  
 BOILING PT (F): 212 pH: 9.5 SPECIFIC GRAVITY: 1  
 VAPOR PRESSURE (mm Hg): 17 VAPOR DENSITY (AIR=1): .6  
 PERCENT VOLATILE BY VOLUME: 96 SOLUBILITY IN WATER: Soluble

## 4. FIRE, EXPLOSION HAZARD AND REACTIVITY DATA

FLASH PT: NA METHOD: NA  
 FLAMMABLE LIMITS: LEL: 16% as NH<sub>3</sub> UEL: 27% as NH<sub>3</sub>  
 EXTINGUISHING MEDIA: Dry chemical, carbon dioxide, water spray or foam  
 SPECIAL PROCEDURES: Wear self-contained (positive pressure if available) breathing apparatus and full-protective clothing  
 FIRE/EXPLOSION HAZARDS AND HAZARDOUS DECOMPOSITION PRODUCTS: May emit toxic fumes of nitrogen oxides, ammonia, chlorine.  
 NFPA CODE: Health: 2 Flammability: 1 Reactivity: 0 Specific: NA  
 CONDITIONS TO AVOID: Extreme heat, temperatures. Contact with strong acids, halogens, metals.

## 5. HEALTH HAZARD DATA

INGREDIENT: Ammonium hydroxide  
 TOXICITY: LD<sub>50</sub>(orl-rat): 350 mg/kg  
 PEL: 35 mg/m<sup>3</sup> (as ammonia) TLV: 18 mg/m<sup>3</sup> (as ammonia)  
 STEL: 27 mg/m<sup>3</sup> (as ammonia)

**5. HEALTH HAZARD DATA - continued**

ROUTE(S) OF ENTRY: Inhalation X    Ingestion X    Skin X

TARGET ORGAN(S): Eyes, skin, respiratory tract

CARCINOGENICITY: NTP No    IARC No    OSHA No

HEALTH HAZARDS AND SYMPTOMS OF EXPOSURE:

EYES: Corrosive. Contact causes severe burns.

SKIN: Corrosive. Contact causes severe burns.

INGESTION: Corrosive. Causes severe irritation or burns of mouth, esophagus, stomach.

INHALATION: Irritant

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: Eye, skin, and respiratory conditions

**6. PRECAUTIONARY MEASURES**

PROTECTIVE EQUIPMENT: Rubber gloves, safety glasses, lab coat, rubber apron, face shield, adequate ventilation

HANDLING: Avoid contact with eyes, skin, and clothing. Avoid breathing chemical. Wash thoroughly after handling.

STORAGE: Cool, dry, well-ventilated area. Avoid direct sunlight.

**7. EMERGENCY AND FIRST AID PROCEDURES**

EYE AND SKIN CONTACT: Immediately flush eyes with water for 20 minutes or until chemical is removed. Call physician. Wash skin thoroughly with soap and water.

INGESTION: Give large amounts of water. Follow with milk or egg whites beaten in water. Call physician. DO NOT INDUCE VOMITING. DO NOT give anything by mouth to a person who is unconscious, rapidly losing consciousness, or convulsing.

INHALATION: Remove to fresh air. Call physician.

**8. SPILL AND DISPOSAL PROCEDURES**

SPILL OR RELEASE: Neutralize with dilute acid. Absorb with vermiculite or other inert material. Containerize for later disposal.

DISPOSAL: Incineration or other method to comply with all local, state, and federal regulations.

NA = Not applicable

ND = Not determined

NE = Not established

This Material Safety Data Sheet has been prepared in accordance with 29 CFR Part 1910.1200 and contains information believed to be accurate and complete at the date of preparation. However, no warranty is expressed or implied. Advice given under "Spill and Disposal Procedures" assumes compliance with federal, state, and local regulations regarding the disposal of hazardous waste.

DATE PREPARED: August 2005