

# **CUFIX-E COPPER STRIPPER**

**AN ELECTRICAL COPPER STRIPPER  
FOR STRIPPING COPPER FROM STEEL OR  
ALUMINUM**

**MANUFACTURED BY**

**METALX SPECIALTY PRODUCTS, INC.**

**1213 UNDERDOWN AVENUE**

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## **INTRODUCTION**

**CUFIX-E** is an electrical copper stripper with the exceptional ability to throw into very deep recesses. It also has the ability to plate out the stripped copper making the bath last indefinitely. **CUFIX-E** contains no ammonia or ammonia compounds.

### **AEROSPACE SPECIFICATIONS:**

**BOEING AEROSPACE & ELECTRONICS:**

PSD Number 9-6

PROCESS SPEC. Number BAC 5771

### **EQUIPMENT NEEDED TO OPERATE THE CUFIX-E STRIPPER**

**TANKS:** Lined tanks are preferred to prevent stray currents, although stainless steel tanks can be used. If an unlined stainless steel tank is used, some copper will plate out on the walls.

**POWER SUPPLY:** A direct current power supply with an adjustable voltage of one to twelve volts is preferred. It should have the amperage capacity to supply about 20 amps per square foot of stripping surface area.

**AGITATION:** Mild air, mechanical, or pumped agitation should be used to prevent stratification of the bath.

**CATHODES:** Stainless steel or copper

**HEAT:** Heat is not normally needed, however, in very cold climates heat may be necessary to keep the bath between 80° - 120° F.

**VENTILATION:** Ventilation is always recommended to protect workers from breathing alkaline mist that may come from the stripping tank.

**FILTRATION:** Filtration of the bath is optional to remove small particles of copper that fail to adhere to the cathode. The intake to the pump should be close to the bottom of the tank under the cathode.

### BATH MAKE UP

Two and one half pounds of CUFIX-E powder is dissolved in warm water to make a one gallon solution.

### OPERATING INSTRUCTIONS

Parts should be cleaned of any dirt or grease that would prevent electrical contact. A good rule is that if the part is clean enough to plate, it is clean enough to strip.

Parts can be racked on stainless steel tipped racks or mild steel wires. Parts can also be barrel stripped, however, be sure no copper wire is exposed on the barrel contacts.

The parts to be stripped are attached to the positive electrode of the power supply (anodic) and the negative lead of the power supply is attached to the copper or stainless steel cathodes that are placed along each side of the tank.

Start the solution agitation. Adjust the amount of agitation as one would for nickel plating to prevent solution stratification and enhance the stripping rate.

Adjust the voltage of the power supply to ten to twenty five amperes per square foot of stripping surface area. If the parts are racked, three to six volts should be sufficient. If the parts are barrel stripped, then five to ten volts may be required. The bath is very tolerant, however, excess voltage may cause burning as one would see in an electrocleaner that was set at too high a voltage.

The parts may be removed and visually checked for copper. This can be done without rinsing. If the copper is not completely stripped it may look brown to black. If stripping is incomplete, just replace the parts and continue stripping until a clean base metal is attained.

**Stripped parts should not be allowed to remain in the stripping tank with the current off.** With the current off, a very slow replacement reaction between the exposed iron and the copper in solution will form a non-adherent copper/copper oxide immersion deposit that could microscopically etch the parts over several hours.

### STRIPPING RATE

The stripping rate is dependent on the amount of current per unit area. As the parts become stripped, the steel base metal will be exposed. If the voltage is high enough to evolve oxygen then the stripping efficiency will drop by the ratio of the current used to evolve oxygen to the total current in the bath. This is the same oxygen evolution process that is experienced in an electrocleaner. When stripping aluminum, the exposed aluminum becomes a non-conductor and no oxygen is evolved.

### POST TREATMENT

After stripping the parts may be immediately replated by normal plating procedures such as electroclean, acid dip, and replate. If replating is not to be done immediately, steel parts may be rinsed and a rust inhibitor applied for storage. The alkaline nature of the **CUFIX-E** stripping bath (pH 10.2-10.8) will provide some temporary rust prevention to allow steel parts to be transported between operations.

### WASTE WATER TREATMENT

**Cufix-E** is a chelated material. The rinse water can easily be treated with the addition of sodium dimethyldithiocarbamate. The copper in a more concentrated solution, such as a contaminated bath, can easily be plated out, usually overnight.

### BATH MAINTENANCE

The only bath maintenance is the density of the solution. Some loss of **CUFIX-E** will take place through drag out. Take the density of the solution just after make up and maintain that density by periodic addition of **CUFIX-E** powder.

**CAUTION: DO NOT ADD STRONG ACID TO THIS BATH. CARBON DIOXIDE EFFERVESCENCE MAY BUBBLE THE LIQUID OUT OF THE TANK!**

**DO NOT DRAG ACID OR OTHER CHEMICALS INTO YOUR CUFIX-E STRIPPER. A SLOW BUILD UP OF CHLORIDE OR SULFATE MAY CAUSE THE BASE METAL TO ETCH.**

**NOTICE:** Metalx Specialty Products, Inc. believes that the information contained on these instructions is accurate. The suggested procedures are based on experience as of the date of publication.

**NO WARRANTY IS MADE, EXPRESSED OR IMPLIED, OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR OTHERWISE.**

(Rev. January 2, 2007)

# MATERIAL SAFETY DATA SHEET

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MANUFACTURER

METALX SPECIALTY PRODUCTS, INC

1213 UNDERDOWN AVENUE

LENOIR, N. C. 28645

TELEPHONE 828-758-4997

PRODUCT NAME

CUFIX-E COPPER STRIPPER

24 HOUR EMERGENCY  
TELEPHONE NUMBER  
FOR INGREDIENTS LISTED  
BELOW: 316-524-5751

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## SECTION 1 COMPOSITION INFORMATION ON INGREDIENTS

<u>CHEMICAL NAME</u> <u>STANDARDS</u>	<u>CAS NUMBER</u>	<u>% RANGE</u>	<u>EXPOSURE</u>
POTASSIUM CARBONATE *	584 - 08 - 7	10 - 20	NONE ESTABLISHED

- **NOTE** : POTASSIUM CARBONATE IS NOT REGULATED AS A DOT HAZARDOUS MATERIAL
- **Freight Class 55**

## SECTION 2 HAZARDS IDENTIFICATION

### EMERGENCY OVERVIEW

White, hygroscopic, odorless granules. Irritating to eyes, and with prolonged exposure, to the skin.

HAZARD RATING (NFPA 704 CRITERIA)

Health = 1, Fire = 0, Reactivity = 0, Special = 0 where 0=Minimal, 1=Slight, 2=Moderate, 3=Serious, 4=Severe

## **POTENTIAL HEALTH EFFECTS**

### **INHALATION:**

Inhalation of significant amounts of CUFIX-E, whether as dust from solid product or as mist from solutions may result in varying degrees of irritation to the respiratory tract tissue and may increase susceptibility to respiratory illness.

### **SKIN:**

CUFIX-E dust may be irritating to the skin with prolonged contact or if cuts or open wounds are present. Solutions are more irritating to the skin and should be washed off promptly.

### **EYE:**

CUFIX-E dust is irritating to the eyes. The solutions are severely irritating to the eyes and may cause tissue destruction if not promptly and effectively treated by washing.

### **INGESTION:**

CUFIX-E is moderately caustic (solution pH is 10.2-10.8) and ingestion of either the granular solid or liquid solutions may cause burning and pain in lips, mouth, tongue, throat, and stomach. CUFIX-E is not toxic, only alkaline.

### **MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE**

There are no medical conditions known to be aggravated by exposure.

### **INTERACTIONS WITH OTHER CHEMICALS WHICH ENHANCE TOXICITY**

None known

## **SECTION 3 FIRST AID MEASURES**

### **INHALATION**

Remove to fresh air. If breathing is difficult, give oxygen. Get medical attention if condition persists. If not breathing, give artificial respiration and get medical attention immediately.

### **SKIN**

Immediately flush skin with plenty of water. Remove contaminated clothing and shoes. Wash clothing before reuse. Get medical attention if irritation persists.

## **EYES**

Immediately flush eyes with water for at least 15 minutes. Hold eyelids open and roll eyes in all directions. Do not attempt to neutralize with chemicals. Get medical attention immediately.

## **INGESTION**

Do not induce vomiting. If conscious, give large amounts of water. Never give anything by mouth to an unconscious person. Get medical attention.

## **NOTES TO PHYSICIAN**

Never attempt to neutralize potassium carbonate with chemicals.

## **SECTION 4 FIRE FIGHTING MEASURES**

**FIRE:** Not considered to be a fire hazard

**EXPLOSION:** Not considered to be an explosion hazard

**EXTINGUISHING MEDIA:** Water, carbon dioxide, dry chemical

**SPECIAL FIRE FIGHTING PROCEDURES:** Wear self contained breathing apparatus with full face piece operated in the positive pressure mode.

**HAZARDOUS DECOMPOSITION PRODUCTS:** Carbon dioxide, carbon monoxide, and oxides of potassium.

## **SECTION 5 ACCIDENTAL RELEASE MEASURES**

FOR ALL TRANSPORTATION ACCIDENTS, CALL CHEMTREC AT 800-424-9300  
ALL SPILLS OR LEAKS OF THIS MATERIAL MUST BE HANDLED, AND  
DISPOSED OF, IN ACCORDANCE WITH APPLICABLE LOCAL, STATE AND  
FEDERAL REGULATIONS

## **SECTION 6 HANDLING AND STORAGE**

## **HANDLING**

**WARNING!** May cause skin, eye, respiratory, and digestive tract irritation.

Avoid breathing dust. Avoid contact with eyes, skin, and clothing. Do not taste or swallow. Use only with adequate ventilation. Wear goggles or face shield and protective clothing when handling. Wash thoroughly after handling.

## **STORAGE**

Keep containers closed and dry. Material is hygroscopic and will absorb moisture if exposed to humidity for long periods.

## **INCOMPATIBLE MATERIALS FOR STORAGE OR TRANSPORT**

Avoid contact with lime (CaO). This product will react with lime in the presence of water to produce corrosive caustic potash (KOH).

## **SECTION 7 EXPOSURE CONTROLS, PERSONAL PROTECTION**

**VENTILATION:** Local exhaust ventilation should be used where airborne dust may be present.

**PERSONAL PROTECTIVE EQUIPMENT:** Wear chemical goggles. Use close fitting chemical goggles with face shield where liquid splashing is a possibility. Wear long sleeves and gloves to prevent contact with dust. Where airborne dust may be present, a NIOSH/MSHA approved high-efficiency particulate filter with full face piece should be used. Follow any applicable respirator use standards.

## **EXPOSURE GUIDELINES**

No occupational exposure levels have been established for potassium carbonate the ingredient of concern in CUFIX-E. The American Conference of Governmental Industrial Hygienists has established a TLV-TWA of  $10 \text{ mg/m}^3$  of total dust for Particulates Not Otherwise Classified (PNOCs). This limit applies to substances for which no specific exposure limit has been assigned. This limit is for normal workday and does not apply to brief exposures at higher concentrations. The Occupational Safety and Health Administration (OSHA) has established a PEL-TWA of  $15 \text{ mg/m}^3$ , total particulate, and  $5 \text{ mg/m}^3$ , respirable particulate, for PNOCs.

## **SECTION 8 STABILITY AND REACTIVITY**



**CHEMICAL STABILITY:** Stable

**CONDITIONS TO AVOID:** Avoid contact with unslaked lime (CaO). Potassium carbonate will react in the presence of moisture with lime to form caustic potash. Avoid contact with acid as carbon dioxide evolution may cause solution eruption or spattering.

**INCOMPATIBILITY WITH OTHER MATERIALS:** Magnesium at elevated temperature (especially if in a finely divided state), KCO, and chlorine trifluoride.

**HAZARDOUS DECOMPOSITION PRODUCTS:** Carbon monoxide in a fire.

**HAZARDOUS POLYMERIZATION:** Will not occur.

## SECTION 9 TOXICOLOGICAL INFORMATION

Oral LD<sub>50</sub> (Rat): > 10,000 mg/kg

This product is not known or reported to be carcinogenic by any reference source including IARC, OSHA, NTP, OR EPA.

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NOTICE: Metalx, Inc. believes that the information contained on this material safety data sheet is accurate. The suggested procedures are based on experience as of the date of publication. They are not necessarily all-inclusive nor fully adequate in every circumstance. Also, the suggestion should not be confused with nor followed in violation of applicable laws, regulations, rules or insurance requirements.

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