MATERIAL SAFETY DATA SHEET

I. PRODUCT INFORMATION

TRADE NAME (COMMON NAME OR SYNONYM)
Copper Tubing (All sizes and wall thicknesses including; Type K, L, M, DWV, Ref, K/OXY/MED and ARC/OXY/MED)

CHEMICAL NAME FORMULA MOLECULAR WEIGHT
Copper Cu 63.55

CONTACT PHONE NUMBER ISSUED DATE SUPERCEDES
Robert D. Libby 618/337-6000 January 1, 2004 October 8, 2003

II. COMPOSITION/INFORMATION ON INGREDIENTS

MATERIAL OR COMPONENT C.A.S. No. WT. % PERMISSIBLE AIR CONC. (mg/cu.m)
OSHA ACGIH
Copper 7440-50-8 99.9+ Dust - 1.0 mg/cu.m 1.0 mg/cu.m
Fume - 0.1 mg/cu.m 0.2 mg/cu.m

III HAZARDS IDENTIFICATION

PRIMARY ROUTES OF ENTRY INGESTION INHALATION SKIN CARCINGENICITY

A. Fumes are created by heating metallic copper past its melting point. Proper soldering or sweating copper tubes will not produce fumes. Brazing of copper tube may produce fumes. Consult Copper Development Association, Inc. (CDA) “The Copper Tube Handbook” for proper joining methods, and recommended solders, fluxes and filler metals (see CDA link on Cerro Flow Products, Inc. website to obtain handbook). Use approved ventilation or respiratory protection if the possibility of fume exists. Inhalation of fume may cause irritation of the respiratory tract or metal fume fever (chills, fever, aching muscles, dry mouth and throat, headache, nausea, vomiting, and diarrhea). Onset may be delayed several hours.

B. Ingestion of metallic copper is not a primary route of exposure. Metallic copper may be moderately irritating to the gastrointestinal tract.

CHRONIC OVEREXPOSURE (SYMPTOMS AND EFFECTS)
No long term effects. Skin irritation or discoloration of the skin and hair are short term.

MEDICAL CONDITIONS POSSIBLY AGGRAVATED
Wilson’s Disease (an abnormal genetic condition) could be aggravated.

IV. FIRST AID MEASURES

Inhalation: Remove from exposure; place individual under care of a physician.
Ingestion: Call a physician, induce vomiting in conscious individual may be recommended.
Skin or Eyes: Perform basic first aid consistent with the injury and seek further medical treatment if needed.

V. FIRE FIGHTING MEASURES

F LASH POINT AUTO IGNITION TEMPERATURE FLAMMABLE LIMITS IN AIR(% BY VOL.)
Not Applicable Not Applicable Not Applicable

UNUSUAL FIRE AND EXPLOSION HAZARDS FIRE EXTINGUISHING AGENTS RECOMMENDED FIRE EXTINGUISHING AGENTS TO AVOID
Not Applicable No specific agents recommended No specific agents recommended

SPECIAL FIRE FIGHTING PRECAUTIONS
Copper tube will not burn or give off toxic gases in normal fires. Use fire fighting methods compatible with surrounding materials.
VI. RELEASE MEASURES

SPILLS OR LEAKS
Proper instillation of copper tubes will not produce dust. Consult Copper Development Association, Inc. (CDA) “The Copper Tube Handbook” for proper joining methods (See CDA link on Cerro Flow Products, Inc. website to obtain handbook). Vacuuming is preferred for dust. Do not use compressed air for cleaning. Recycle unused or scrap copper tube at a local scrap metal dealer.

VII. HANDLING AND STORAGE

NORMAL HANDLING
Avoid conditions that create fumes or fine dust. Use of approved respirators is required where adequate ventilation cannot be provided. Do not use copper tubing where incompatible materials may be present, (see section X).

STORAGE
Do not store near incompatible materials, see Section X.

VIII. EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING CONTROLS
Local exhaust is recommended for dust and/or fume generating operations where airborne exposure may exceed permissible air concentrations.

PERSONAL HYGIENE
Avoid inhalation or ingestion. Practice good housekeeping and personal hygiene procedures. Showering is recommended if significant dust exposure occurs.

SPECIAL: PRECAUTIONS / PROCEDURES / LABEL INSTRUCTIONS
No special precautions.

LABEL SIGNAL WORD: CAUTION

RESPIRATORY PROTECTION
Where airborne exposures may exceed OSHA/ACGIH permissible air concentrations, the minimum respiratory protection recommended is a negative pressure air purifying respirator with cartridges that are NIOSH/MSHA approved against dust, fumes, and mists having a TWA not less than 0.05 mg/cu.m.

EYES AND FACE
Safety glasses recommended when dust or shavings may exist.

OTHER CLOTHING AND EQUIPMENT
Protective clothing is recommended to prevent burns during instillation of tube or splattering of fluxes, solders or filler metals.

IX. PHYSICAL / CHEMICAL PROPERTIES

MATERIAL IS (AT NORMAL CONDITIONS)
Solid

APPEARANCE AND ODOR
Yellow-red metal, various shapes and sizes.

MELTING POINT (DEGREES C)
1,083

BOILING POINT (DEGREES C)
2,595

SPECIFIC GRAVITY (H2O = 1)
8.96

VAPOR DENSITY (AIR = 1)
Not applicable

SOLUBILITY IN WATER (% BY WT.)
Insoluble

pH
Not Applicable

VAPOR PRESSURE (mm Hg)
Not Applicable

EVAPORATION RATE
Not Applicable

X. STABILITY AND REACTIVITY

STABILITY - Stable

CONDITIONS TO AVOID - Not Applicable

INCOMPATIBILITY (MATERIALS TO AVOID)
Reacts violently with acetylene, hydrogen peroxides, gaseous chlorine, ammonia nitrate, bromates, chlorates, hydrogen sulfide, lead azide, hydrazine.

HAZARDOUS DECOMPOSITION PRODUCTS
Copper does not decompose

HAZARDOUS POLYMERIZATION
Will not occur

CONDITIONS TO AVOID
Not Applicable
XI. TOXICOLOGICAL INFORMATION
LD50 (SPECIES, ROUTE)LC50 (SPECIES) MUTAGENICITY
Copper: 3.5 mg/kg (mouse, intraperitoneal) Not Available Not positive in Ames test

XII. ECOLOGICAL
ECOTOXICITY ENVIRONMENTAL FATE
The LC50 for copper in the fathead minnow is 12 mg/L. Acid solutions promote mobility and solubility of copper.

XIII. DISPOSAL CONSIDERATIONS
WASTE DISPOSAL METHODS
Recycling or disposal must be in accordance with the appropriate federal, state, or local statutes or regulations.

RCRA STATUS OF UNUSED MATERIAL
Copper is not a RCRA metal. Recycle unused or scrap tube at a local scrap metal dealer.

XIV. TRANSPORT
DOT REGULATION AND ID (OR PIN) NUMBER
Not regulated by DOT.

XV. REGULATORY INFORMATION
WHMIS CLASSIFICATION, SARA REGULATION AND OTHER INFORMATION
WHMIS does not classify this material
TSCA Status ------------------------ On TSCA Inventory
Regulated under SARA Title III:
  Sect. 302 ------------------------ None
  Sect. 311/312 --------------------- Immediate and Delayed
  Sect. 313 Chemicals --------------- Copper
CERCLA Reportable Quantity ------ 5,000 pounds for Copper Powder

XVI. REFERENCES
PERMISSIBLE CONCENTRATION REFERENCES
OSHA regulations for airborne contaminants 29 CFR 1910.1000 and 1018; ACGIH Threshold Limit Values for Chemical Substances

HAZARD INFORMATION REFERENCES
Documentation of the Threshold Limit Values, 6th Ed., ACGIH
Patty’s Industrial Hygiene and Toxicology, Vol. 2A, 3rd Rev. Ed., 1981
Handbook of Toxic and Hazardous Chemicals, Sittig, Marshall, 1981
TOMES Plus Database, Micromedex, Inc., Vol. 17, 1993

GENERAL
Handbook of Chemistry and Physics, 57th Ed., 1976-77, Weast, R. C., Editor, CRC Inc.

XVII. ADDITIONAL INFORMATION
INFORMATION (HAZARDS, FIRST AID, ETC.) IS ABBREVIATED. MORE INFORMATION IS CONTAINED IN REFERENCES FOUND IN SECTION XVI
No additional information.

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