

SAFRA

INFORMATION AND DATA

ON HEALTH AND SAFETY FOR

COPPER ALLOY WELDING WIRES AND RODS



1. IDENTIFICATION

PRODUCT NAME SAFRA solid copper welding consumables, in MIG and TIG form.

INTENDED USE: welding wire.

COMPANY NAME: SAFRA SPA

ADDRESS: Via Averolda, 13/15 – 25039 – Travagliato (BS), Italy

EMERGENCY PHONE NUMBER: +1 248 7408066

2. HAZARD(S) IDENTIFICATIONS

HAZARD CATEGORY: None required

SIGNAL WORD: Warning

HAZARD STATEMENT: may be harmful, if inhaled.

EMERGENCY OVERVIEW: The solid alloy presents no significant health hazard. Processing of the alloy (e.g., grinding, heating, welding) may result in airborne metal particulates or fumes. Dusts can form explosive mixtures in air. Molten metal may react violently with water. Keep away from strong acids, bases, gases, oxidizers, mercury, ammonia and acetylene.

POTENTIAL HEALTH EFFECTS:

INHALATION: The alloys as sold do not represent inhalation hazards; however, airborne exposures to dust or fumes may result from welding, grinding or sanding operations or during repair or maintenance on contaminated equipment. Irritation of nose, throat, lungs, cough, metallic taste in mouth, fever, fatigue, nausea, bronchitis, chills, "metal fume fever," decreased pulmonary function, asthma-like symptoms, Wilson's disease, Parkinson's disease.

INGESTION: Ingestion can occur during hand-to-mouth transfer. No significant health hazards identified

SKIN: Irritation may result from metal abrasion.

EYES: Irritation or mechanical injury to cornea or conjunctiva may result from contact with airborne dust or contaminated hands.

CHRONIC HEALTH EFFECTS: Overexposure to metal dusts/fumes – damage to the respiratory system, nasal septum perforation (copper), and irritation of gastrointestinal tract.

TARGET ORGANS: Generally, for exposure to dusts or fumes containing these elements, the respiratory system, central nervous system, blood, kidneys, skin, eyes, and livers may be affected.

CARCINOGENICITY: N/A

CONDITIONS AGGRAVATED BY EXPOSURE: Allergic reaction or sensitivity to metals. Persons with impaired pulmonary function, airway diseases or conditions such as asthma, emphysema, or chronic bronchitis. Prior damage to blood, nervous system or kidneys. Wilson's disease can occur in those with a rare metabolic disorder characterized by retention of copper in liver, brain, kidneys and corneas. These individuals are at increased risk from copper exposure, which may lead to liver cirrhosis, brain damage, demyelination, and kidney disease. If untreated, Wilson's disease is progressive and may lead to fatal liver failure.

3. COMPOSITION/INFORMATION ON INGREDIENTS.

Copper and copper alloys sold by SAFRA SPA, Italy, may contain any or all of the elements listed below (1% or greater for all chemicals and 0.1% or greater for carcinogens). All ingredients are listed on the TSCA inventory.

Element	CAS number	Weight %	OSHA PEL* (mg/m ³)	
			TWA	STEL
Copper	7440-50-8	78-99	0.1 [0.2] fume 1 dust & mist	NE
Aluminium	7429-90-5	0.01-9.0	15 metal dust, 5 pyro powders 2 soluble salts, [2] alkyls (NOS) 5 welding fumes	NE
Iron	1309-37-1	0.03-5.0	10 fume [5] total particulate (as iron oxide)	NE
Tin	7440-31-5	0.6-7.0	[2] metal [2] oxide & inorganic compounds, except tin hydride [0.1] organic compounds	[0.2] organic compounds
Zinc	1314-13-2	0.02-0.2	15 [2] total particulate 5 fume 5 respirable particulate (as zinc oxide)	[10] (as zinc oxide)
Silicon	7440-21-3	0.1-4.0	10 total dust 5 respirable dust	NE
Manganese	7439-96-5	0.1-14.0	5 fume [0.2]	3 fume
Nickel (metal)	7440-02-0	0.1-5.5	[0.5] as metal	NE

rate of airflow sufficient to maintain 100 linear feet per minute in the zone of welding when the hood is at its most remote distance from the point of welding. Disruption of airflow, such as by a floor fan, should be avoided. **RESPIRATORY PROTECTION:** When potential exposures are above OSHA PELs, approved respirators must be used, as specified by an industrial hygienist or other qualified personnel, and respirator users must be included in a respiratory protection program-. The minimum respiratory protection recommended is a negative pressure air-purifying full-face respirator with cartridges that are NIOSH approved against dusts, fumes and mists having a TWA not less than 0.05 mg/m³. Pressure-demand airline respirators are recommended for jobs with high exposure potential. Exposure to unknown concentrations of fumes or dusts requires the wearing of a pressure-demand airline respirator or pressure-demand self-contained breathing apparatus.

PROTECTIVE GLOVES: Wear gloves to prevent metal cuts and skin abrasions particularly during handling of wrought forms, solid metal sheet, strip or tube. Glove types may include NBR-coated hot mill gloves, nitrile-coated abrasive resistant gloves or others depending on the application. Wear gloves during melt, grind, cut or weld operations.

EYE PROTECTION: Wear safety glasses, goggles, face shield or welder's helmet when risk of eye injury is present during any process that generates dust, fumes or chips.

OTHER PROTECTIVE EQUIPMENT: No protective equipment or clothing is required when handling solid forms. Fire retardant clothing and splash resistant garments should be worn as necessary to protect against accidental molten metal splash. Protective overgarments or work clothing should be worn by persons with potential to become contaminated with dusts or fumes. Contaminated clothing and overgarments should be managed in such a manner to prevent secondary exposure to others. Never use compressed air to clean work clothing.

OTHER REQUIREMENTS: Workplace exposure to lead is regulated by 29 CFR 1910.1025, which contains additional requirements. OSHA's hazard communication standard requirements for labeling of potential carcinogens (29 CFR 1910.1000 and 29 CFR 1910.1200) must be followed. For welding requirements, refer to ANSI Z49.1 "Safety in Welding and Cutting" published by the American Welding Society.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance Red, yellow, or silver lustrous metal that becomes dull on exposure to air.

Odor: None

Volatile Organic Compound content: Not Applicable

Physical State: Solid; though residues may include metal oxides as dust or fume.

Boiling Point: Not Applicable

Vapor Pressure: Not Applicable

Evaporation Rate: Not Applicable

Specific Gravity: 7.53 – 9.03

Vapor Density: Not Applicable

Solubility in Water: Insoluble

10. STABILITY AND REACTIVITY

Stability: alloys are stable

Incompatibility: avoid contact with mineral acids and oxidizing agents which may generate hydrogen gas, an explosion hazard. Molten metal may react violently with water. See information on specific elements below.

Hazardous Decomposition Products: metal fumes.

Hazardous Polymerization: will not occur.

Reactivity: Copper is incompatible with oxidizers, acetylene, ammonium nitrate, bromates, phosphorus, potassium peroxide, sodium azide, sodium peroxide, 1-bromo-2-propyne, acid chlorides, halogens, and acids. Contact of copper with hydrogen peroxide may cause a violent reaction. Contact with acetylene may form unstable acetylides. Copper foil burns spontaneously in gaseous chlorine. Finely divided copper with finely divided halogenates may explode with heat, percussion or light friction.

Iron is incompatible with acids, moisture, and oxygen and reacts violently with strong oxidizing agents, halogens, and phosphorus. Lead is incompatible with strong oxidizers such as hydrogen peroxide, chlorine trifluoride, and active metals. Manganese will react with water or steam to produce hydrogen. Silicon is incompatible with chlorine, fluorine, oxidizers, calcium, cesium carbide, and alkaline carbonates. Aluminum is incompatible with strong oxidizers and acids, and halogenated hydrocarbons. Tin is incompatible to chlorine, turpentine, acids, and alkalis.

11. TOXICOLOGICAL INFORMATION

Toxicity not established for product as a whole. Copper LD50 (mouse, interperitoneal): 3,500 µg/kg. Silicon LD50 (rat, oral): 3,160 mg/kg.

12. ECOLOGICAL INFORMATION

Copper - In freshwater, acute toxicity decreases as hardness increases. At a hardness of 100 mg/l, acute National Ambient Water Quality Criterion is 18 µg/l and chronic NAWQ is 12µg/l. In saltwater, acute sensitivities of aquatic life range from 5.8 µg/l for blue mussel to 600 µg/l for green crab. Freshwater plants have similar sensitivities as freshwater animals. Lowest chronic value for aquatic plants is 1 µg/l. Lowest Observed Effect Concentration (LOEC) for terrestrial plant (little bluestem) is 100 mg/kg. Because many copper compounds and complexes are readily soluble, copper is among the more mobile heavy metals in soil and other surface environments. The major process that limits the environmental mobility of copper is adsorption to organic matter, clays, and other materials. As an essential nutrient, copper is accumulated by plants and animals, although apparently it is not generally biomagnified. Bio concentration factors in freshwater species range from zero for the bluegill to 2,000 for the alga *Chlorella regularis*. Among saltwater species, the highest bioaccumulation factors are those for the bivalve mollusks. Oysters can bio accumulate copper up to 28,200 times without any significant mortality.

13. DISPOSAL CONSIDERATIONS

Maximize product recovery for reuse or recycling. Waste must be disposed of in accordance with federal, state and local environmental control regulations. If discarded in its purchased form, this product would not be a hazardous waste either by listing or by characteristic. Under RCRA, it is the responsibility of the product user to determine at the time of disposal, whether a material containing the product or derived from the product should be classified as a hazardous waste (40 CFR 261.20-24). Use may also generate liquid wastes with metal concentrations in excess of those permitted through pretreatment or direct discharge NPDES requirements. Appropriate analyses should be conducted to ensure compliance with existing wastewater permits.

14. TRANSPORT INFORMATION

DOT Hazardous Material Description: No special requirements.
 Proper Shipping Name: No special requirements.
 Hazard Class: No special requirements.
 ID Number: No special requirements.
 Packing Group: No special requirements.
 Canadian Transportation of Dangerous Goods Classification: No special requirements.

15. REGULATORY INFORMATION

CERCLA Reportable quantity: 5,000 lbs (for solid copper pieces less than 100 micrometers in diameter), 1 lb (Manganese).
 Canadian WHMIS: Not Applicable
 This product contains the following toxic chemicals, which may be subject to reporting requirements of Section 313 of the Emergency Planning and Community Right-to-Know Act of 1986 (40 CFR 372):

Wrought alloy	Copper no.	Description	Chemical name	Weight %
High copper	C18900	Deoxidized copper	Copper Iron	96.87-98.86 0.25-1.2
	C61000	Aluminium Bronze	Copper Aluminium	90.68-93.18 6.0-8.5
	C61800	Aluminium Bronze	Copper Aluminium Iron	87.18-90.86 8.5-11.0 0.5-1.5
	C65600	Silicon Bronze	Copper Tin Zinc Silicon Manganese	91.98-93.18 1.0 1.0 2.8-4.0 1.5
	C63280	Nickel-aluminum bronze	Copper Iron Nickel Manganese Aluminum	75.78-83.9 3.0-5.0 4.0-5.5 0.6-3.5 8.5-9.5
	C63380	Manganese-nickel-	Copper	69.73-78.5

Wrought alloy	Copper no.	Description	Chemical name	Weight %
		aluminium bronze	Manganese Iron Nickel Aluminum	11.0-14.0 2.0-4.0 1.5-3.0 7.0-8.5

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OTHER INFORMATION

Disclaimer of liability:

The information in this SDS was obtained from sources which we believe are reliable. However, the information is provided without any warranty, express or implied, regarding its correctness. The conditions or methods of handling, storage, use and disposal of the product are beyond our control. For this and other reasons, we do not assume responsibility and expressly disclaim liability for loss, damage or expense arising out of or in any way connected with the handling, storage, use or disposal of the product. Neither the above named supplier nor any of its subsidiaries assumes any liability whatsoever for the accuracy or completeness of the information contained herein.