MATERIAL SAFETY DATA SHEET (MSDS)

SECTION I – PRODUCT IDENTIFICATION

Product type: Copper alloy welding consumables

UNIQUE WELDING ALLOYS
a division of Weldamax (Pty) Ltd

Products:

Type	Product Trade Name	Specification
Copper alloy welding electrodes	Cu107(ECu), Cu207 (ECuSi), Cu227 (ECuSn-C), Cu237 (ECuAl-A2)	AWS A5.6
Copper alloy welding wires and rods	Deox Copper S201(ERCu), Silicon Bronze S211 (ERCuSi-A), Phos-Bronze S212(ERCuSn-A), Phos-Bronze S213 (ERCuSn-C), Aluminum Bronze S214(ERCuAl-A1), Aluminum Bronze S215(ERCuAl-A2),	AWS A5.7
	Low Fuming Bronze S222 (RBCuZn-C), Naval Bronze S223 (RBCuZn-A) , Nickel Silver S225 (RBCuZn-D), Nickel Bronze S227 (RBCuZn-B)	AWS A5.8
	Some rods may be bare or Flux Coated (FC)	

SECTION II – HAZARDOUS INGREDIENTS/Identity Information

IMPORTANT: This section covers materials from which these products are manufactured.

			Exposure Limit (mg/m3)	
Flux or other ingredients	CAS No.	Weight %	OSHA PEL	ACGIH TLV
Copper (fume)(4)	7440-50-8	44-97	0.1 , 1 (dust) 0.2,	1(Dust)
Zinc (oxide fume) (2,4)	7440-66-6	45.0	5,10 ** 5	10 **
Iron	7439-86-6	1.5	10	5.0
Manganese (3,4)	7439-95-5	1.5	1 , 5* , 3.0**	0.2
Nickel (4)	7440-02-0	13.0	1.0	1 , 1.5 (inhalable fraction)
Silicon	7440-21-3	3.5	15 (dust) 5 (Resp)	10, 20 **
Boric Acid (1)	10043-35-3	7.0	none found	none found
Borax Glass, Anhydrous (1)	1303-96-4	2.0	10	1.0
Acrylic Copolymer (non-haz) (1)	none found	1.0	none found	none found
Residual Monomer (non regst) (1)	none found	1.0	none found	none found
Tin	7440-31-5	1.0	2.0	2.0

Single values shown are maximum (1) Flux coating on the flux coated rods (2) STEL of 10 mg/m3 (3) STEL of 3.0 mg/m3 , 5.0 mg/m3ceiling (4) Subject to reporting requirements of Section 304, 313 of the Emergency Planning and Community Right -To-Know Act of 1986 and 40CFR 370 and 372 Short Term Exposure Limit (STEL) Values proposed by OSHA in 1989 *Ceiling Limit **Short Term Exposure Limit (Resp) = Respiratory/ Respiration

SECTION III - PHYSICAL DATA

Boiling point: 760 mm hg: N.A. Specific Gravity @ 20c/20C: 8.3 – 8.5 g/cc Melting point: 1600 – 1900 F

Appearance and Odor: The products are silver or yellow to red solid at room temperature and exhibit no odor. The metallic rod is insoluble in water. Flux coating is white / pink / blue / grey / black. Slightly soluble in water.

SECTION IV – FIRE AND EXPLOSION HAZARD DATA

Non-flammable. Welding arc and sparks can ignite combustible and flammable products. See ANSI 49.1 "Safety in Welding & Cutting"(referenced in section VII) for fire prevention and protection information. Never use water as an extinguishing agent around molten metal.Unusual fire and explosion hazards: None but material may react with acids, bases, or oxidizers, material does not present a significant health hazard under normal handling and storage conditions.

SECTION V – REACTIVITY DATA

Hazardous Decomposition Products

Welding fumes and gases cannot be classified simply. The composition and quantity of these fumes and gases are dependent upon the metal being welded, the procedures followed and the electrodes used.

Workers should be aware that the composition and quantity of fumes and gases to which they may be exposed, are influenced by: coatings which may be present on the metal being welded (such as paint, plating, or galvanizing), the number of welders in operation and the

ıe of the work area, the quality and amount of ventilation, the position of the welder's head with respect to the fume plume, as well presence of contaminants in the atmosphere (such as chlorinated hydrocarbon vapors from cleaning and degreasing procedure). the electrode is consumed, the fumes and gas decomposition products generated are different in percent and form from the lients listed in Section II, The composition of these fumes and gases are the concerning matter and not the composition of the ɔde itself. Decomposition products include those originating from the volatilization, reaction, or oxidation of the ingredients shown tion II, plus those from the base metal, coating and the other factors noted above.
ry routes of exposure are inhalation of fumes, gases of particulate and ingestion of particulate. Absorption through the skin in not . Chronic exposure to copper, zinc and manganese may cause metal fume fever. Symptoms of metal fume fever include fever, ss of throat, head and body ache, and chill.
ıic exposure may affect central nervous system leading to emotional disturbances, gait and balance difficulties or paralysis. xposure to copper may result in skin and hair discoloration. Nickel has been identified as a potential cancer-causing agent.
us reaction products may include carbon monoxide and carbon dioxide. Ozone and nitrogen oxides may be formed by the radiation he arc. One method of determining the composition and quantity of the fumes and gases to which the workers are exposed is to take sample from inside the welder's helmet while worn or within the worker's breathing zone. See ANSI/AWS F1.1 publication ble from the American Welding Society 550 N.W. LeJeune Road, Miami, Florida 33126

SECTION VI– HEALTH HAZARD DATA

hold Limit Value: The ACGIH recommended general limit for welding fume NOC (Not otherwise classified) is 5 mg/m3. ACGIH ɔreface states: "The TLC-TWA should be used as guides in the control of health hazards and should not be used as fine lines en safe and dangerous concentrations." See section V for specific fume constituents, which may modify this TLV.
s of Overexposure: Inhalation of welding fumes and gases can be dangerous to your health. Primary route of entry is by tion.Pre-existing medical conditions: individuals with impaired respiratory function may have symptoms worsened by exposure to ıg fumes.Short term (acute) over-exposure to zinc vapors when heated form zinc oxide, which inhaled can cause habituation, which ɔcome immune to. Long term (chronic) overexposure to welding fumes can lead to siderosis (iron deposits in lung) and affect nary function.Arc rays can injure eyes and burn skin. Heat rays (infrared radiating from flame of hot metal) can injure eyes. Electric can kill. Noise can damage hearing. Carcinogenic assessment: chromium and nickel must be considered a possible carcinogen OSHA 29CFR 1910.1200. IARC has indicated that chromium and nickel & certain of its compounds are probably carcinogenic for ıs, but the compounds cannot be specified precisely. These conclusions were drawn from operations different from welding. dless, exposure level must be kept below those levels specified in Section II.
nogenicity: OSHA (29 CFR 1910.1200) lists Nickel and Chromium as possible carcinogens.
rnia Proposition 65: These products contain or produce chemicals known to the State of California to cause cancer, and/or birth s (or other reproductive harm). (Health and Safety Code section 25249.5 et seq.)
gency and First Aid Procedures: Call for medical assistance. Use first aid procedures recommended by the American Red Cross. ıthing is difficult – give oxygen. If not breathing-use CPR (cardiopulmonary resuscitation). Consult a physician if irritation of the nd skin or flash burns develops after exposure.

SECTION VII – CONTROL MEASURES AND PRECAUTIONS FOR SAFE HANDLING AND USE

ınd understand the manufacturer's instructions. See American Standard Z49.1 Safety in Welding and Cutting, published by the ɌICAN WELDING SOCIETY, 550 N.W. LeJeune Road, Miami, Florida 33126 and OSHA Publication 2206 (29 CFR 1910), U.S. nment Printing Office, Superintendent of Documents, P.O. Box 371954, Pittsburg, Pa 15250-7954 for more details on the following

ation: Use plenty of ventilation and/or local exhaust at the arc, to keep the fumes and gases below the threshold limit value within ırker's breathing zone and the general work area. Welders should be advised to keep their head out of the fumes.
ratory Protection: Use respirable fume respirator or air supplied respirator when welding in a confined space or general work area local exhaust and/or ventilation does not keep exposure below the threshold limit value.
rotection: Wear a helmet or face shield with a filter lens shade number 12-14 or darker. Shield other workers by providing screens ısh goggles.
tive Clothing: Wear approved head, hand and body protection, which help to prevent injury from radiation, sparks and calshock. See ANSI Z-49.1. This would include wearing welder's gloves and a protective face shield and may include arm tors, apron,hats, shoulder protection, as well as dark substantial clothing. Welders should be trained not to allow electrically live ɔ contract the skin or wet clothing and gloves. The welders should insulate themselves from the work and ground.
Disposal Method: Discard any products, residue, disposal container, or liner in an environmentally acceptable manner approved eral, State and Local regulations.