



# MATERIAL SAFETY DATA SHEET

For Welding Consumables and Related Products  
Essentially Similar to U.S. Department of Labor Form OSHA 20  
(to comply with OSHA Hazard Communication Standard 29 CFR 1910.1200)

## SECTION I Identification

Manufacturer/Supplier Name: UNIBRAZE CORP.  
Address: 1050 PENNER CREST, HOUSTON, TX 77055  
Emergency Phone: (713) 869-6000, 1-800-364-6900

Trade Name: Naval Bronze (RBCuZn-A) Nickel Bronze (RBCuZn-B) Low Fuming Bronze (RBCuZn-C),  
Nickel Silver (RBCuZn-D) Silicon Bronze (ERCuSi-A) Deox Copper (ERCu),  
Phos-Bronze A (ERCuSn-A) Phos-Bronze C (ERCuSn-C) Aluminum Bronze A-1 (ERCuAl-A1)  
Aluminum Bronze A-2 (ERCuAl-A2) Aluminum Bronze A-3 (ERCuAl-A3),  
Nickel-Aluminum Bronze (ERCuNiAl) Manganese-Nickel-Aluminum (ERCuMnNiAl)

Classification: AWS A5.6 AWS A5.8 AWS A5.27

## SECTION II HAZARDOUS INGREDIENTS/Identity Information

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

Flux or other ingredients	CAS No.	Weight %	LD50	LC50
Copper	7440-40-8	44-97	NA	NA
Zinc	7440-66-6	0-45	NA	NA
Iron	7439-86-6	0-1.5	NA	NA
Manganese	7439-95-5	0-1.5	NA	NA
Nickel	7440-02-6	0-13	NA	NA
Silicon	7440-21-3	0-3.5	NA	NA
Boric Acid	FC only	0-7	3450 ml/kg	NA
Borax Glass, Anhydrous FC	1303-96-4	2		
Acrylic Copolymer (non-haz)	FC only	0-1		
Residual Monomer (non regst)	FC only	0-1		
Tin	7440-31-5	0-		

## 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 or blue green. 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 volume 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 as the presence of contaminants in the atmosphere (such as chlorinated hydrocarbon vapors from cleaning and degreasing procedure). When the electrode is consumed, the fumes and gas decomposition products generated are different in percent and form from the ingredients listed in Section II. The composition of these fumes and gases are the concerning matter and not the composition of the electrode itself. Decomposition products include those originating from the volatilization, reaction, or oxidation of the ingredients shown in Section II, plus those from the base metal, coating and the other factors noted above.

Primary routes of exposure are inhalation of fumes, gases of particulate and ingestion of particulate. Absorption through the skin is not likely. Chronic exposure to copper, zinc and manganese may cause metal fume fever. Symptoms of metal fume fever include fever, dryness of throat, head and body ache, and chill.

Chronic exposure may affect central nervous system leading to emotional disturbances, gait and balance difficulties or paralysis. Overexposure to copper may result in skin and hair discoloration. Nickel has been identified as a potential cancer-causing agent. Gaseous reaction products may include carbon monoxide and carbon dioxide. Ozone and nitrogen oxides may be formed by the radiation from the arc. One method of determining the composition and quantity of the fumes and gases to which the workers are exposed is to take an air sample from inside the welder's helmet while worn or within the worker's breathing zone. See ANSI/AWS F1.1 publication available from the American Welding Society 550 N.W. LeJeune Road, Miami, Florida 33126.

## SECTION VI

### HEALTH HAZARD DATA

**Threshold Limit Value:** The ACGIH recommended general limit for welding fume NOC (Not otherwise classified) is  $5 \text{ mg/m}^3$ . ACGIH1985 preface states: "The TLC-TWA should be used as guides in the control of health hazards and should not be used as fine lines between safe and dangerous concentrations." See section V for specific fume constituents, which may modify this TLV.

**Effects of Overexposure:** Inhalation of welding fumes and gases can be dangerous to your health. Primary route of entry is by inhalation. Pre-existing medical conditions: individuals with impaired respiratory function may have symptoms worsened by exposure to welding fumes. Short term (acute) over-exposure to zinc vapors when heated form zinc oxide, which inhaled can cause habituation, which you become immune to. Long term (chronic) overexposure to welding fumes can lead to siderosis (iron deposits in lung) and affect pulmonary function. Arc rays can injure eyes and burn skin. Heat rays (infrared radiating from flame of hot metal) can injure eyes. Electric shock can kill. Noise can damage hearing. Carcinogenic assessment: chromium and nickel must be considered a possible carcinogen under OSHA 29CFR 1910.1200. IARC has indicated that chromium and nickel & certain of its compounds are probably carcinogenic for humans, but the compounds cannot be specified precisely. These conclusions were drawn from operations different from welding. Regardless, exposure level must be kept below those levels specified in Section II.

**Emergency and First Aid Procedures:** Call for medical assistance. Use first aid procedures recommended by the American Red Cross. If breathing is difficult – give oxygen. If not breathing-use CPR (cardiopulmonary resuscitation). Consult a physician if irritation of the eyes and skin or flash burns develops after exposure.

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

Read and understand the manufacturer's instructions and precautionary label on this product. See American Standard Z49.1 Safety in Welding and Cutting, published by the AMERICAN WELDING SOCIETY, 550 N.W. Lejeune Road, Miami, Florida 33126 and OSHA Publication 2206 (29 CFR 1910), U.S. Government Printing Office, Washington D.C. 20402 for more details on the following topics.

**Ventilation:** Use plenty of ventilation and/or local exhaust at the arc, to keep the fumes and gases below the threshold limit value within the worker's breathing zone and the general work area. Welders should be advised to keep their head out of the fumes.

**Respiratory Protection:** Use respirable fume respirator or air supplied respirator when welding in a confined space or general work area where local exhaust and/or ventilation does not keep exposure below the threshold limit value.

**Eye Protection:** Wear a helmet or face shield with a filter lens shade number 12-14 or darker. Shield other workers by providing screens and flash goggles.

**Protective Clothing:** Wear approved head, hand and body protection, which help to prevent injury from radiation, sparks and electrical shock. See ANSI Z-49.1. This would include wearing welder's gloves and a protective face shield and may include arm protectors, apron, hats, shoulder protection, as well as dark substantial clothing. Welders should be trained not to allow electrically live parts to contract the skin or wet clothing and gloves. The welders should insulate themselves from the work and ground.

**Waste Disposal Method:** Discard any product, residue, disposal container, or liner in an environmentally acceptable manner approved by Federal, State and Local regulations.

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Unibrazer believes that information set forth in this Material Safety Data Sheet is accurate.

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