



MSDSNO: Beryllium Copper
REVISED 2-2013

MATERIAL SAFETY DATA SHEET (MSDS)
 For Welding Consumables and Related Products
 Conforms to OSHA Hazard Communication Standard 29CFR 1910.1200
 Standard Must Be Consulted for Specific Requirements

SECTION I – IDENTIFICATION

Manufacturer/Supplier: Washington Alloy Company	Telephone No: 704-598-1325
Address: 7010-G Reames Road, Charlotte, NC 28216	Emergency No: 704-598-1325
Trade Name: USA	Specification:
Rainier 3A (ECuSn-C), Rainier 4A (ECu), Rainier 5A (ECuAl-A2), Rainier 6A (ECuSi), Alloy 187 (ECuNi)	AWS A5.6
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), Alloy 67 (ERCuNi)	AWS A5.7
Nickel Bronze (RBCuZn-B), Low Fuming Bronze (RBCuZn-C), Nickel Silver (RBCuZn-D), Naval Bronze (RBCuZn-A) Some rods may be bare or Flux Coated (FC)	AWS A5.8
C172 Beryllium Copper or BE-CU	CDA

SECTION II

HAZARDOUS INGREDIENTS/Identity Information

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

Flux or other ingredients	CAS No.	Weight %	Exposure Limit (mg/m ³)	
			OSHA PEL	ACGIH TLV
Beryllium(4)	7440-41-7	2.0	0.002, .005*	0.00005
Cobalt (4)	7440-48-4	1.0	0.1	0.02
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 and complete % for each filler may be found on the product certification. (1) Flux coating on the flux coated rods (2) STEL of 10 mg/m³ (3) STEL of 3.0 mg/m³, 5.0 mg/m³ ceiling (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: As shipped these are silver or yellow to red solid wire at room temperature and exhibit no odor that are nonflammable, non-explosive, non-reactive and non-hazardous –and may be FLUX coated. The metallic rod is insoluble in water. Flux coating may be white, blue, green or yellow. 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, halogens, or oxidizers, material does not present a significant health hazard under normal handling and storage conditions.

SECTION V – REACTIVITY & STABILITY 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 products 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 product 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 product 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. 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.

Stability: As shipped these products are stable.

SECTION VI- ENTRY DATA

Common Entry: During the welding or brazing processes inhalation of fumes may give the most common route of over exposure. Contact with skin, eyes, ingestion or injection should not be a source for exposure with proper protection.

SECTION VII- Threshold Limit Value

The ACGIH recommended general limit for welding fume NOC (Not otherwise classified) is 5 mg/m3. ACGIH-1985 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." Read all other sections for specific fume constituents, which may modify this TLV.

SECTION VIII – HEALTH HAZARD DATA

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: beryllium, chromium, cobalt and nickel must be considered a possible carcinogen under OSHA 29CFR 1910.1200. IARC has indicated that beryllium, chromium, cobalt 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. Chronic exposure may affect central nervous system leading to emotional disturbances, gait and balance difficulties or paralysis. Beryllium inhalation may cause chronic beryllium disease, a serious lung disease. Overexposure to copper may result in skin and hair discoloration. Beryllium, Cobalt & Nickel has been identified as a potential cancer-causing agent. Cobalt inhalation may cause asthmatic attacks shortness of breath as well as allergic respiratory tract issue and if ingestion takes place it may cause gastrointestinal irritation with nausea, vomiting and diarrhea as well as allergic reaction.

SECTION IX- Emergency and First Aid Procedures

Remove to fresh Air. Call for medical assistance. Use first aid procedures recommended by the American Red Cross. If breathing is difficult or not breathing – give oxygen or use CPR (cardiopulmonary resuscitation) by trained personnel. Consult a physician if irritation of the eyes and skin or flash burns develops after exposure.

SECTION X- TOXICOLOGICAL INFORMATION

Acute toxicity: Overexposure or inhalation of large amounts of welding/brazing fumes may cause symptoms such as metal fume fever, dizziness, nausea, dryness and irritation of your nose, throat or eyes as well as other lung disease.

Chronic toxicity: Overexposure or prolonged inhalation of large amounts of welding/brazing fumes with Beryllium, Cobalt, chromium or nickel compounds may cause cancer. Other overexposure or prolonged inhalation of large amounts of welding/brazing fumes symptoms related may include damage to the central nervous system, respiratory system, skin and could affect organs such as pancreas and liver

Carcinogenicity OSHA (29 CFR 1910.1200) lists Beryllium, Cobalt, Nickel and Chromium as possible carcinogens. **IRAC lists** beryllium as a Group 1-Known Human Carcinogen while Cobalt and Nickel as a Group 2B Possibly Carcinogenic to humans

California Proposition 65; These products may contain or produces chemicals known to the State of California to cause cancer, and/or birth defects (or other reproductive harm). (Health and Safety Code section 25249.5 et seq.)OSHA (29 CFR 1910.1200) lists Beryllium, Cobalt, Nickel and Chromium as possible carcinogens.

SECTION XI –SAFE HANDLING AND STORAGE

Handling: Do not eat or drink while using these products and ensure proper ventilation is used.

Storage: Store in a cool dry place away .Avoid extreme temperatures and incompatible items such as acids, oxidizers and halogens.

SECTION XII –DISPOSAL & WASTE

Waste Disposal Method: Recycle when possible. Discard any un-wanted product, residues, containers, or liners in a suitable disposal container in an environmentally acceptable manner approved by Federal, State and Local regulations. Beryllium amount shall be noted.

SECTION XIII- CONTROL MEASURES AND PERSONAL PROTECTION

Read and understand the manufacturer's instructions and precautionary label on this product and your employer's safety practices. See American National Standard ANSI Z49.1 *Safety in Welding, Cutting and Allied Processes*, published by the AMERICAN WELDING SOCIETY, 550 N.W. LeJeune Road, Miami, Florida 33126;OSHA *Safety and Health Standards* are published by the U.S. Government Printing Office, 732 North Capitol Street NW, Washington, DC 20401 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.

Beryllium Alloys : Read and understand OSHA regulation 29 CFR 1910.252 ; welding, cutting, grinding or any metal working in confined spaces shall be done with a minimum of local exhaust ventilation and pressure-demand airline respirators in the immediate work space unless you test workers exposure to ensure guidelines within 29CFR 1900.1000 are acceptable.

SECTION XIV- OTHER INFORMATION

Approval Date: 2-21-2013 NFPA CODES : FIRE: 0 HEALTH: 1 REACTIVITY: 0

Washington Alloy Co. Believes that the information contained in this (MSDS) Material Safety Data Sheet is accurate. However, Washington Alloy Co. does not express or implies any warranty with respect to this information.

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