

MATERIAL SAFETY DATA SHEET

PLEASE CAREFULLY READ AND UNDERSTAND THIS MATERIAL SAFETY DATA SHEET BEFORE USING THIS PRODUCT

For U.S. Manufactured Welding Consumables and Related Products. May be used to comply with OSHA's Hazard Communication Standard, 29 CFR 1910.1200 and Superfund Amendments and Reauthorization Act (SARA) of 1986 Public Law 99-499. Standard must be consulted for specific requirements

SECTION I (IDENTIFICATION)

Manufacturer/Supplier Name: UNIWELD PRODUCTS, INC. Emergency Phone No.: (954) 584-2000
 2850 Ravenswood Road
 Fort Lauderdale, FL 33312

Product Name(s): **UNI-1500, UNI-1500FC, Low Fuming Bronze Bare & Flux Coated AWS A5.8 and 5.27 RBCUZN-C, RCUZN-C**

Product Classification: **Copper Base Brazing Rod Flux Coated and Bare**

SECTION II (HAZARDOUS INGREDIENTS/IDENTITY INFORMATION)

Important: This section covers the hazardous materials from which this product is manufactured. The fumes and gases produced during normal use of this product are also addressed in Section 5. The term "Hazardous" in "Hazardous Material" should be interpreted as a term required and defined in OSHA Hazard Communication Std. (29 CFR Part 1910). 1200 and it does not necessarily imply the existence of hazard. The chemical or compound reportable by section 313 of SARA are marked by the symbol #.

NOMINAL COMPOSITION AND INFORMATION ON INGREDIENTS

CHEMICAL NAME	CAS#	%W/W	EXPOSURE LIMITS IN AIR						
			ACGIH-TLV		OSHA-PEL		IDLH mg/m ³	OTHER mg/m ³	
			TWA mg/m ³	STEL mg/m ³	TWA mg/m ³	STEL mg/m ³			
Copper (exposure limits are for "Copper fume, as Cu")	7440-50-8	56-62	0.2 (fume) 1 (dusts & mists)	NE	0.1 (fume) 1 (dusts & mists)	NE	100	NIOSH REL: TWA = 0.1 (Inhalable Fraction) DFG MAK: TWA = 0.1 PEAK = 2*MAK 30 MIN., Average value Carcinogen: EPA-D	
Zinc (exposure limits given are for Zinc oxide, Fume and Dust)	7440-66-6	Balance	5 (fume) 10 (dust)	10 (fume)	5 (fume) 5 (total dust) 15 (dust, respirable dust) 5 (dust, respirable dust, Vacated 1989 PEL)	10 (fume, Vacated 1989 PEL)	500	NIOSH RELS: TWA = 5 (fume & dusts) STEL = 10 (fume), 15 (ceiling, 15 minutes, dusts) DFG MAKs: TWA = 1.5 (Respirable fraction, fume) Carcinogen: EPA-D	
Tin	7440-31-5	0.30-1.5	2	NE	2	NE	100	NIOSH REL: 2	
Manganese (exposure limits are for Manganese, elemental and inorganic compounds, and fume as Mn)	7439-96-5	0.50	0.2	NE	1 (vacated 1989 PEL)	5 (ceiling) 3 (vacated 1989 PEL)	500	NIOSH RELS: TWA = 1 DFG MAK: TWA = 0.5 (Inhalable Fraction) PEAK = 10*MAK 30 min. average value DFG MAK Pregnancy Risk Classification: C Carcinogen: EPA-D	
Iron (Exposure limits are for iron oxide, fume & Dust [Fe ₂ O ₃], asFe)	7439-89-6	1.0	5, A4 (not Classifiable as a Human Carcinogen)	NE	10	NE	2500	NIOSH REL: TWA = 5 DFG MAK: TWA = 6 Respirable Fraction) Carcinogen: IARC-3 TLV-A4	
Silicon	7440-21-3	0.50	10	NE	15 (Total dust) 5 (Respirable fraction) 10 (Total dust) Vacated 1989 PEL)	NE	NE	NIOSH REL: TWA = 10 (Total dust; 5 (Respirable Fraction)	
Flux Coating on Rods									
Boric Acid	10043-35-3	50-80	NE	NE	NE	NE	NE	NE	NE
Methacrylate/Aliphatic & Naphthenic Hydrocarbon Compound	Proprietary		NE	NE	NE	NE	NE	NE	NE
Borax Glass (the exposure limits are for Borates, anhydrous)	1303-96-4	10-30	1	NE	10 (Vacated 1989 PEL)	NE	NE	NE	NIOSH REL: TWA = 1

NE = Not Established.

NOTE (1): The ACGIH has an established exposure limit for Welding Fumes, Not Otherwise Classified. The Threshold Limit Value is 5 mg/m³. NIOSH classifies welding fumes as carcinogens. Single values shown are maximum, unless otherwise noted.

NOTE (2): ALL WHMIS required information is included in appropriate sections based on the ANSI Z400.1-1998 format. This product has been classified in accordance with the hazard criteria of the CPR and the MSDS contains all the information required by the CPR.

SECTION III (PHYSICAL DATA)

Boiling Point: N/A Melting Point: 1600-1900 Vapor Pressure: N/A
 Vapor Density (air = 1): N/A Solubility in Water: N/A Specific Gravity: 8.3-8.5 G/CC
 Evaporation rate: N/A Appearance and odor: Bare or coated bronze rod. No odor

SECTION IV (FIRE AND EXPLOSION HAZARD DATA)

Nonflammable. Welding arc and spark can ignite combustibles. Refer to American National Standard Z-49.1 for fire prevention during welding.

SECTION V (REACTIVITY DATA)

Welding fumes and gases cannot be classified simply. The composition and quantity of both are dependent upon the metal being welded, the process, procedures, and electrodes used. Other conditions which also influence the composition and quantity of the fumes and gases to which workers may be exposed include: coatings on the metal being welded (such as paint, plating or galvanizing), the number of welds and volume of the work area, quality and amount of ventilation, 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 activities).

When the electrode is consumed, the fume and gas decomposition products generated are different in percentage and composition from the ingredients listed in Section II. Fume and gas decomposition products, not the ingredients in the electrode, are important. Decomposition products generated in normal operations include those originating from the volatilization, reaction, or oxidation of the materials shown in Section II plus those from the base metal, coating, etc., as noted above.

It is understood, however, that the elements and/or oxides to be mentioned are virtually always present as complex oxides and not as metals (Characterization of Arc Welding Fume: American Welding Society). The elements or oxides listed below correspond to the ACGIH categories located in "TLV Threshold Limit Values for Chemical Substances and Physical Agents in the workroom Environment."

Reasonably expected constituents of the fume would include: fluoride and complex oxides of iron. Gaseous reaction products may include carbon monoxide and carbon dioxide. Ozone and nitrogen oxides may be formed by the radiation from the arc.

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One recommended way to determine the composition and quantity of fumes to which workers are exposed is to take an air sample inside the welder's helmet, if worn, or in the worker's breathing zone. (See ANSI/AWS F1.1, available from the American Welding Society, P.O. Box 351040, Miami, FL 33135. Also from AWS is F1.3, "Evaluating Contaminants in the Welding Environment – A Sampling Strategy Guide," which gives additional advice on sampling.) At a minimum, materials listed in this section should be analyzed.

SECTION VI (HEALTH HAZARD DATA)

Threshold Limit Value: The ACGIH recommended general limit for welding fume NOC (Not Otherwise Classified) is 5 mg/m². ACGIH 1984-85 preface states, "The TLV-TWA should be used as guides in the control of health hazards and should not be used as firm lines between safe and dangerous concentrations." See Section V for specific fume constituents which may modify this TLV.

Effects of Overexposure:

FUMES AND GASES can be dangerous to your health. Primary route of exposure is inhalation of fumes. Preexisting respiratory or allergic conditions may be aggravated in some individuals.

WARNING: DO NOT BREATHE FUMES!

SHORT-TERM (ACUTE) OVEREXPOSURE to welding fumes may result in discomfort such as dizziness, nausea, or dryness or irritation of the nose, throat or eyes. A short term dose of lead can lead to acute encephalopathy. Lead adversely affects numerous body systems, and causes forms of health impairments and disease which arise after periods of exposure as short as days or as long as several years.

LONG-TERM (CHRONIC) OVEREXPOSURE to Copper, Zinc and Manganese may cause metal fume fever. Symptoms of metal fume fever include fever, fatigue, dryness of throat, head and body ache, and chill. Chronic exposures may affect the central nervous system leading to emotional disturbances, gait and balance difficulties and paralysis. Overexposure to copper may result in skin and hair discoloration. Nickel has been identified as a potential cancer causing agent. Prolonged exposure to silver may produce a greyish-blue discoloration of the skin. The product will not irritate the skin or eyes in bulk form. Particulates may cause dermatitis due to mechanical irritation. X-rays may reveal chronic exposure. But x-rays may also reflect such non-welding factors as smoking, etc.

ARC RAYS can injure eyes and burn skin.

ELECTRIC SHOCK can kill. See Section VII.

Emergency and First Aid procedures: Call for medical aid. Employ first aid techniques recommended by the American Red Cross. Eyes and skin: if irritation or burns develop after exposure, consult a physician.

CARCINOGENICITY: Chromium VI, cobalt, beryllium, nickel and its compounds should be considered as possible carcinogens.

WARNING: CALIFORNIA PROPOSITION 65: This product, when used for welding, soldering, brazing, cutting and other metal working or flame processes, produces fumes, particulates, residues and/or other by-products which contain chemicals known to the State of California to cause cancer and birth defects or other reproductive harm. **WARNING:** This product contains chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.

SECTION VII

(PRECAUTIONS FOR SAFE HANDLING AND USE/APPLICABLE CONTROL MEASURES)

Read and understand the manufacturer's instructions and the precautionary label on the product. (See American National Standard Z-49.1, "Safety in Welding and Cutting," published by the American Welding Society, P.O. Box 351040, Miami, FL 33135 and OSHA Publication 2206 (29 CFR 1910), US Government Printing Office, Washington, DC 20402 for more detail on the following): Use enough ventilation, local exhaust at the arc, or both, to keep the fumes and gases below the TLV's in the worker's breathing zone and the general area. Train the welder to keep his head out of the fumes.

WARNING: DO NOT BREATHE FUMES!

RESPIRATORY PROTECTION: Use NIOSH approved or equivalent respirable fume respirator or air supply respirator when welding in confined space or where local exhaust or ventilation does not keep exposure below TLV.

EYE PROTECTION: Wear helmet or use face shield with filter lens. As a rule of thumb, begin with shade #14. Adjust if needed by selecting the next lighter or darker shade number.

PROTECTIVE CLOTHING: Wear hand, head, and body protection which help to prevent injury from radiation, sparks and electrical shock. See ANSI Z-49.1. At a minimum, this includes welder's gloves and a protective face shield and may include arm protectors, aprons, hats, shoulder protection, as well as substantial clothing. Train the welder not to touch live electrical parts and to insulate himself from work and ground.

PROCEDURE FOR CLEANUP OF SPILLS OR LEAKS: not applicable.

WASTE DISPOSAL: Prevent waste from contaminating surrounding environment. Discard any product, residue, disposable container or liner in an environmentally acceptable manner and in full compliance with federal, state and local regulations.

SPECIAL PRECAUTIONS: IMPORTANT. MAINTAIN EXPOSURE BELOW PEL/TLV. USE INDUSTRIAL HYGIENE MONITORING TO ENSURE THAT YOUR USE OF THIS MATERIAL DOES NOT CREATE EXPOSURES WHICH EXCEED PEL/TLV. Always use exhaust ventilation. Refer to the following sources for important additional information: ANSI Z-49.1. The American Welding Society, P.O. Box 351040, Miami FL 33135; OSHA (29 CFR 1910), US Dept. of Labor, Washington, DC 20210.

This data is believed to be accurate. Uniweld Products, Inc. makes no warranty to and disclaims all liability from reliance.

VIII (HAZARD IDENTIFICATION)

EMERGENCY OVERVIEW: This product consists of bare or coated, odorless, solid bronze rods. There are no immediate health hazards associated with this product. This product is not flammable nor reactive. If involved in a fire, this product may generate irritating fumes and a variety of metal oxides. Emergency responders must wear personal protective equipment suitable for the situation to which they are responding.

SYMPTOMS OF OVEREXPOSURE BY ROUTE OF EXPOSURE: During brazing operations, the most significant route of overexposure is via inhalation of fumes. **INHALATION:** Inhalation is not anticipated to be a significant route of overexposure to the rods. Inhalation of large amounts of particulates generated by this product during metal processing operations may result in irritation. Inhalation of copper oxide and zinc oxide fumes can cause metal fume fever. Initial symptoms of metal fume fever can include a metallic or sweet taste in the mouth, dryness or irritation of the throat, and coughing. Later symptoms (after 4-48 hours) can include sweating, shivering, headache, fever, chills, thirstiness, muscle aches, nausea, vomiting, weakness, and tiredness. Repeated overexposures, via inhalation, to the dusts or fumes generated by this product during brazing operations may have adverse effects on the lungs with possible pulmonary edema and emphysema (life-threatening lung injuries). Chronic overexposure to Copper dust may cause tiredness, stuffiness, diarrhea, and vomiting. Refer to Section 10 (Stability and Reactivity) for information on the specific composition of brazing fumes and gases. **CONTACT WITH SKIN or EYES:** Contact of the rod form of this product with the skin is not anticipated to be irritating. Rare cases of allergic contact dermatitis have been reported in people working with copper dust. Contact with the rod form of this product can be physically damaging to the eye (i.e., foreign object). Fumes generated during brazing operations can be irritating to the skin and generated during brazing operations can be irritating to the skin and eyes. Symptoms of skin overexposure may include irritation and redness; prolonged or repeated skin overexposures may lead to allergic contact dermatitis. Contact with the molten rods will burn contaminated skin or eyes. **SKIN ABSORPTION:** Skin absorption is not known to be a significant route of overexposure for any component of this product. **INGESTION:** Ingestion is not anticipated to be a route of occupational exposure for this product. **INJECTION:** Though not a likely route of occupational exposure for this product, injection (via punctures or lacerations in the skin) may cause local reddening, tissue swelling, and discomfort. **HEALTH EFFECTS OR RISKS FROM EXPOSURE:** An Explanation in Lay Terms. Symptoms associated with overexposure to this product and the fumes generated during brazing operations are as follows: **ACUTE:** The chief acute health hazard associated with this product would be the potential for irritation of contaminated skin and eyes when exposed to fumes during brazing operations. Inhalation of large amounts of particulates generated by this product during metal processing operations may result in irritation. Inhalation of copper oxide and zinc oxide fumes can cause metal fume fever. Inhalation of large amounts of particulates generated by this product during metal processing operations can result in pneumoconiosis (a disease of the lungs). Contact with the molten material will burn contaminated skin or eyes. Severe ingestion overexposure to Copper (a component of this product) may be fatal. **CHRONIC:** Chronic skin overexposure to the fumes of this product during brazing operations may produce dermatitis (red, inflamed skin). Chronic overexposure to Copper dust may cause tiredness, stuffiness, diarrhea, vomiting, discoloration of the skin and eyes, and kidney and liver disorder. Additionally, rare cases of allergic contact dermatitis have been reported in people working with copper dust. Refer to Section 11 (Toxicological Information) for further information. **TARGET ORGANS:** For fumes: Skin, eyes, respiratory system, kidney and liver.

SECTION IX (FIRE-FIGHTING MEASURES)

FLASH POINT: Not flammable.

AUTOIGNITION TEMPERATURE: Not flammable.

FLAMMABLE LIMITS (in air by volume, %):

Lower (LEL): Not applicable.
Upper (UEL): Not applicable.

FIRE EXTINGUISHING MATERIALS:

Water Spray: YES
Halon: YES
Dry Chemical: YES
Carbon Dioxide: YES
Foam: YES
Other: Any "ABC" Class

UNUSUAL FIRE AND EXPLOSION HAZARDS: When involved in a fire, this product may generate irritating fumes and a variety of metal compounds. The molten material can present a significant thermal hazard to firefighters.

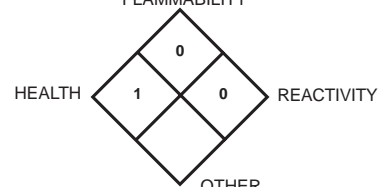
Explosion Sensitivity to Mechanical Impact: Not sensitive.
Explosion Sensitivity to Static Discharge: Not sensitive.

SPECIAL FIRE-FIGHTING PROCEDURES: Not applicable for these products.

HEALTH	(BLUE)	0	
FLAMMABILITY	(RED)	0	
REACTIVITY	(YELLOW)	0	
PROTECTIVE EQUIPMENT		X	
EYES	RESPIRATORY	HANDS	BODY
	SEE ABOVE		SEE ABOVE

For routine industrial applications for the rods

NFPA RATING
NATIONAL FIRE PROTECTION ASSOCIATION
FLAMMABILITY



OTHER

Health Hazard: 0 (material that on exposure under fire conditions would offer no hazard beyond that of ordinary combustible materials); 1 (materials that on exposure under fire conditions could cause irritation or minor residual injury)