



Material Safety Data Sheet (MSDS)

Company: Dura-Bar Metal Services 2195 W. Lake Shore Dr. Woodstock, IL 60098-7467	Revised Date: June 2005 (no changes as of January 2008)	Product Identification Numbers: C95400, C95500, C95510, C95900, C86300, C62400, C63000, C67300, C67400, RCB-954
Trade Name (Common Name of Synonym): Copper-Aluminum-Iron, Copper-Aluminum-Iron-Nickel, Aluminum Bronze and Manganese Bronze	Emergency Phone Number: 815-338-3800	
Chemical Name: Copper-Aluminum Alloys	Form: Continuous Cast Bars, Centrifugal Cast Tubes and Sand Castings	

SECTION I. INGREDIENTS

Ingredient	CAS Number	% Weight	Exposure Limits		
			OSHA PEL (mg/m ³)	OSHA SKIN PROTECTION	ACGIH TLV (mg/m ³)
Base Metal					
Copper	7440-50-8	50.0-91.5	0.1 (Fume); 1 (Dust)	None	0.2 (Fume):1 (Dust)
Principle Alloying Elements					
Aluminum	7429-90-5	0.005-13.5	15 (Total Dust): 5 (Respirable Fraction)	None	10
Iron	7439-89-6	0.005-5.0	10 (Total Dust & Fume)	None	5 (Fume)
Lead	7439-92-1	0.005-1.5	0.05	None	0.15
Nickel	7440-02-0	0.005-6.0	1	None	0.1
Tin	7440-31-5	0.005-1.5	2	None	2
Zinc	7440-66-6	.005-42.0	15 (Total Dust): 5 (Fume)	None	5 (Fume)
Manganese	7439-96-5	0.005-14.0	5 (Ceiling)	None	0.2
Silicon	7440-21-3	0.005-5.0	15 (Total Dust): 5 (Respirable Fraction)	None	5 (Dust)

Note:
The above listing is a summary of the principle elements. Various grades of copper will contain varying amounts or combination of these elements. Other elements may also be present in minute amounts. N/E means none established.

SECTION II. PHYSICAL DATA

Physical Description: Solid metal, yellow to red in color, no odor.		Percent Volatile By Volume: Not Applicable	
Acidity / Alkalinity: Not Applicable	Approximate Melting Point: 1980°F (Copper) Boiling Point: Not Applicable	Evaporation Rate: Not Applicable Specific Gravity: 8.94 (Copper) Solubility in Water: Not Applicable	Vapor Pressure/Vapor Density: Not Applicable

SECTION III. PERSONAL PROTECTIVE EQUIPMENT

Respiratory Protection: NIOSH approved dust/mite/fume respirator should be used when cutting, grinding, welding or burning, if PEL or TLV is exceeded.	Hands, Arms and Body: Use appropriate protective clothing such as welder's aprons and gloves, when welding or burning.
Eyes and Face: Safety glasses with side shields should be worn for grinding or cutting; tinted face shields should be worn for welding or burning.	Other Clothing or Equipment: As required for specific work or jobs.

SECTION IV. EMERGENCY MEDICAL PROCEDURES

Inhalation:	Remove to fresh air and seek medical attention.
Eye Contact:	Immediately flush with water to remove particulates; seek medical attention.
Skin Contact:	If irritation occurs, remove clothing, wash with soap and water. If condition persists, seek medical attention.
Ingestion:	If significant amounts of metal are ingested, seek medical attention.

SECTION V. HEALTH AND SAFETY INFORMATION

Copper alloy castings in their natural state do not present inhalation, ingestion or contact hazards. However, dust or fumes from machining, cutting, grinding, welding, flame cutting and arc gouging will release contaminants into the air, with inhalation as the primary route of entry. Since the castings are primarily copper, the dust and fume generated from the working of these castings will be primarily copper, lead and tin.

Effects of Acute Exposure:

Inhalation of high concentrations of metal dust or fume for short periods of time can cause irritation to the eyes, nose and throat and cause a sweet or metallic taste in the mouth. Metal fume fever can also occur, characterized by a metallic taste, dryness of the mouth, throat irritation and influenza-like symptoms.

Effects of Chronic Exposure, by Principle Elements:

Aluminum:	Inhalation of welding fumes may produce systemic toxicity.
Copper:	Fumes may cause metal fume fever, with flu-like symptoms and hair and skin discoloration. Keratinization of the hands and feet has been reported. Systemically, dust and fume cause irritation of the upper respiratory tract, metallic taste and nausea.
Lead:	Inhalation or ingestion of lead particles may result in lead-induced systemic toxicity. Symptoms of lead poisoning include abdominal cramps, anemia, muscle weakness and headache. Prolonged exposure can cause behavioral changes, kidney damage, CNS damage and reproductive effects. Lead is considered to be possibly carcinogenic to humans.
Nickel:	The most common ailment arising from contact with nickel or its compounds is an allergenic dermatitis known as "nickel itch", which occurs usually when the skin is moist. Generally, nickel and most salts of nickel do not cause systemic poisoning, but nickel and some nickel compounds have been identified as suspected carcinogens.
Tin:	Chronic exposure to tin fumes may cause an apparent benign pneumoconiosis, which is called stannosis.
Zinc:	Overexposure to zinc oxide fumes can cause metal fume fever.
Iron:	Iron oxide dust or fumes may cause benign pneumoconiosis (siderosis). This disease may make x-ray diagnosis of other lung conditions difficult or impossible, but causes little or no disability.
Manganese:	Chronic manganese poisoning may result from inhalation of dust or fume. The central nervous system is the chief site of injury. This is not a fatal disease, although it is extremely disabling. Some persons may be hypersusceptible to manganese. Freshly formed manganese fume has caused fever and chills, similar to metal fume fever.
Silicon:	Accumulation in lungs can cause benign pneumoconiosis, but is not considered to be responsible for pulmonary functional impairment or respiratory symptoms.

SECTION VI. FIRE AND EXPLOSION DATA

Castings will not burn or explode. Dust from this product can form explosive mixtures in air. Explosive concentrations are usually very thick dust clouds. Use class "D" fire extinguishing agents and isolate the fire.

SECTION VII. REACTIVITY DATA

Stability: Stable	Incompatibility: Finely divided dusts from castings, bromates, chlorates, or iodates form an explosive mixture. Acetylene or ethylene oxide can react with heated casting to form explosive acetylides. Also not compatible with halogens, strong acids, or strong oxidizers.
Hazardous Polymerization: Will not occur	Hazardous Decomposition: Metal fume.

SECTION VIII. SPILLS, LEAKS, AND DISPOSAL PROCEDURES

Steps to be taken if material is spilled or released: If castings are damaged, consult with vendor or send to a scrap reclaimer.

Disposal: Metal working wastes may be classified as "hazardous waste" or as some other form of regulated waste. Consult with federal, state and local officials regarding waste determinations and proper disposal.

SECTION IX. CONTROL MEASURES

Ventilation:	Required if dust or fumes is created in the handling or working of this material.
Local Exhaust:	Same as "Ventilation". However, consult with local and state environmental agencies for air pollution control requirements.
Mechanical (General):	Same as above, to reduce airborne dust and fume.
Work/Hygiene Practices:	Evaluate jobs done on this product and meet requirements of all applicable OSHA and environmental standards.

SECTION X. SPECIAL PRECAUTIONS AND OTHER COMMENTS

NOTICE: This product contains a toxic chemical or chemicals, subject to the reporting requirements of Section 313, Title III or SARA and of 40 CFR Part 372.

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