

# Material Safety Data Sheet

<b>Company:</b> Encore Group Ltd 5607-67 St. N.W Edmonton, AB T6B 3H5	<b>Issue Date:</b> February 2009	<b>Identification:</b> C95400, C95500, C95510, C95900, C86300, C62400, C63000, C67300, C67400, RCB-95495400,
<b>Trade Name (Common name or synonym):</b> Copper-Aluminum-Iron, Copper-Aluminum-Iron-Nickel, Aluminum Bronze and Manganese Bronze	<b>Emergency Phone Number:</b> 780-577-0526 or contact your nearest Encore Metals Branch	
<b>Chemical Name:</b> Copper-Aluminum Alloys	<b>Form:</b> Continuous Cast Bars, Centrifugal Cast Tubes and Sand Castings	

## I. INGREDIENTS

Material or Component	CAS Number	% Weight	Exposure Limits	
			OSHA PEL (mg/m <sup>3</sup> )	ACGIH TLV (mg/m <sup>3</sup> )
Base Metal				
Copper	7440-50-8	50.0-91.5	0.1 (Fume); 1 (Dust)	0.2 (Fume):1 (Dust)
Principle Alloying Elements				
Aluminum	7429-90-5	0.005-13.5	15 (Total Dust): 5 (Respirable Fraction)	10
Iron	7439-89-6	0.005-5.0	10 (Total Dust & Fume)	5 (Fume)
Lead	7439-92-1	0.005-1.5	0.05	0.15
Nickel	7440-02-0	0.005-6.0	1	0.1
Tin	7440-31-5	0.005-1.5	2	2
Zinc	7440-66-6	.005-42.0	15 (Total Dust): 5 (Fume)	5 (Fume)
Manganese	7439-96-5	0.005-14.0	5 (Ceiling)	0.2
Silicon	7440-21-3	0.005-5.0	15 (Total Dust): 5 (Respirable Fraction)	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.

## II. PHYSICAL DATA

<b>Material is (under normal conditions):</b> <input type="checkbox"/> Liquid <input checked="" type="checkbox"/> Solid <input type="checkbox"/> Gas <input type="checkbox"/> Other		<b>Appearance and Odor:</b> Solid metal, yellow to red in color, no odor		
<b>Acidity/Alkalinity:</b> Ph=NA	<b>Melting Point:</b> Approx. 1980° F (Copper)	<b>Boiling Point:</b> NA	<b>Specific Gravity:</b> (H <sub>2</sub> O=1) Approx 8.94 (Copper)	<b>Solubility in Water (% by weight):</b> NA
<b>Vapor Pressure(mm Hg at 20° C):</b> NA				

## III. PERSONAL PROTECTIVE EQUIPMENT (PPE)

<b>Respiratory Protection:</b> NIOSH approved dust/mist/fume respirator should be used during welding or burning if OSHA PEL or TLV is exceeded.	<b>Hands, Arms and Body:</b> Use appropriate PPE such as welder's aprons and gloves when welding or burning. Check local codes.
<b>Eyes and Face:</b> Safety glasses or shield as appropriate.	<b>Other equipment or clothing:</b> As needed depending on the operation and safety codes.

## IV. EMERGENCY MEDICAL PROCEDURES

<b>Inhalation:</b> Remove to fresh air. If condition continues, consult a physician.	<b>Skin Contact:</b> Remove particles by washing with soap and water.
<b>Eye Contact:</b> Flush thoroughly with water. Get medical attention of the irritation persists.	<b>Ingestion:</b> If significant amounts are ingested, seek medical attention.

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## V. HEALTH AND SAFETY INFORMATION

<b>HEALTH</b>			
<p>Copper alloys in their natural state do not present an inhalation, ingestion or contact health hazard. However, operations such as welding, burning, sawing, brazing, grinding, and possibly machining, which results in elevating the temperature of the product to or above its melting point or results in the generation of airborne particulates may present hazards. The above operations should be performed in well ventilated areas. The major exposure hazard is inhalation. The effects of overexposure are as follows:</p> <p><b>Acute:</b> Excessive inhalation of metallic fumes and dusts may result in irritation of eyes, nose and throat. Also high concentration of fumes and dusts of iron-oxide, manganese, copper and selenium may result in metal fume fever. Typical symptoms consist of a metallic taste in the mouth, dryness and irritation of the throat, chills and fever, and usually last from 12 to 48 hours.</p> <p><b>Aluminum:</b> Inhalation of welding fumes may produce systemic toxicity.</p> <p><b>Copper:</b> 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.</p> <p><b>Iron (Iron Oxide):</b> Pulmonary effects, siderosis.</p> <p><b>Lead:</b> 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 behavioural changes, kidney damage, CNS damage and reproductive effects. Lead is considered to be possibly carcinogenic to humans.</p> <p><b>Manganese:</b> 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 hyper susceptible to manganese. Freshly formed manganese fume has caused fever and chills, similar to metal fume fever.</p> <p>Accumulation in lungs can cause benign pneumoconiosis, but is not considered to be responsible for pulmonary functional</p> <p><b>Nickel:</b> 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.</p> <p><b>Silicon:</b> Accumulation in lungs can cause benign pneumoconiosis, but is not considered to be responsible for pulmonary functional impairment or respiratory symptoms.</p> <p><b>Tin:</b> Chronic exposure to tin fumes may cause an apparent benign pneumoconiosis, which is called stannosis.</p>			
Occupational Exposure Limits: See Section I. Chromium and Nickel have been identified by the Internal Agency for Research on Cancer (IARC) and the National Toxicology Program (NTP) as potential carcinogens.			
<b>FIRE AND EXPLOSION</b>			
<b>Flash Point:</b> N/A °F	<b>Auto Ignition Temperature:</b> N/A °F	<b>Flammable Limits in Air:</b> Lower: N/A % Upper: N/A %	<b>Extinguishing Media:</b> N/A
<b>Fire and Explosion Hazards:</b> Steel products in their natural state do not present a fire or explosion hazard.			<b>Extinguishing Media NOT to be used:</b> N/A
<b>REACTIVITY</b>			
<b>Stability:</b> <input checked="" type="checkbox"/> Stable <input type="checkbox"/> Unstable	<b>Incompatibility (Materials to avoid):</b> 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.		
<b>Conditions to Avoid:</b> Non-ventilated areas when cutting, welding, burning or brazing. Avoid generation of airborne dusts and fumes.			
<b>Hazardous Decomposition Products:</b> Metallic Oxides			

## VI. ENVIRONMENTAL

<b>Spill or Leak Procedures:</b> N/A Use good housekeeping practices to prevent accumulation of dust and to keep airborne dust to a minimum. Avoid breathing metal fumes or dust.	<b>Waste Disposal Method:</b> Follow the federal, state, provincial and local regulations regarding disposal.
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## VII. ADDITIONAL INFORMATION

<p><b>NOTICE:</b> 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.</p> <p><b>Liability Disclaimer:</b> The information in this MSDS was obtained from sources, which we believe are reliable. However, the information is provided without any representation or warranty, expressed or implied regarding the accuracy or correctness. The conditions or methods of handling, storage, use and disposal of the product are beyond our control and may be beyond our knowledge. For this and other reasons, we do not assume responsibility and expressly disclaim liability for loss, damage or expense arising out of or in any way connected with the handling, storage, use or disposal of the product.</p>
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