

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: 464, 544, 510, 623, 614
Trade Name (Common Name of Synonym): Cast and wrought, semi-finished, copper based alloys	Emergency Phone Number: 815-338-3800	
Chemical Name: Copper Alloys - extruded	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	46 min	0.1 (Fume); 1 (Dust)	None	0.2 (Fume):1 (Dust)
Principle Alloying Elements					
Aluminum	7429-90-5	12 max	15 (Total Dust): 5 (Respirable Fraction)	None	10
Iron	7436-89-6	6.5 max	10 (Total Dust & Fume)	None	5 (Fume)
Manganese	7439-96-5	14 max	5 (Ceiling)	None	0.2
Lead	7439-92-1	5 max	0.05	None	0.15
Nickel	7440-02-0	32 max	1	None	0.1
Silicon	7440-21-3	3.2 max	15 (Total Dust): 5 (Respirable Fraction)	None	5 (Dust)
Tin	7440-31-5	5 max	2	None	2
Zinc	7440-66-6	45 max	15 (Total Dust): 5 (Respirable Fraction)	None	5 (Fume)
Arsenic	7440-38-2	0.1 max	0.010	-	0.01
Phosphorus	7723-14-0	1 max	0.1	-	0.02
Chromium	7440-47-3	1.5 max	1.0	-	0.5
Zirconium	7440-67-7	0.1 max	5	-	10

Note:
The above listing is a summary of the principle elements. Various grades of metal 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: Metallic light yellow to dark brown	
Acidity / Alkalinity: Not Applicable	Approximate Melting Point: 1590 - 2269°F
Specific Gravity: 7.6 / 8.95 Solubility in Water: Nil Vapor pressure: Nil	

SECTION III. PERSONAL PROTECTIVE EQUIPMENT

Respiratory Protection: For welding, burning, grinding, cutting and other related operations, local dust extraction should be provided. If fumes or dust cannot be controlled by extraction then an approved respirator should be used to prevent inhalation.	Skin and Ingestion: Gloves and barrier cream may be necessary to prevent skin sensitization and dermatitis. Consumption of food and drink should be conducted away from the work area.
Eyes and Face: The appropriate approved safety glasses or goggles should be worn for welding, burning, grinding, cutting, turning and related operations.	Other Clothing or Equipment: Hand and foot protection: It is advisable to wear suitable hand and foot protection when handling materials in a solid state.

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, zinc, nickel and manganese.

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:

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.
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.
Chromium:	Respiratory system. Histologic fibrosis of lungs.
Zirconium:	Pneumoconiosis; Lung and skin granulomas.
Phosphorus:	Symptoms: Eye, respiratory tract irritation, abdominal pain, nausea, jaundice, anemia, cachexia, dental pain, excessive salivation, jaw pain, swelling, skin, eye burns. Acute pulmonary damage, cumulative bone and liver damage.
Arsenic:	Potential symptoms: Ulceration of nasal septum; dermatitis; gastrointestinal disturbances; peripheral neuropathy; respiratory irritation, hemolytic anemia, cardiovascular instability (prolonged Q-T interval on EKG; arrhythmias); increased capillary permeability (hematemesis, hematuria; bloody stools); facial and peripheral edema; acute encephalopathy; metallic taste, garlicky breath odor; stomatitis; conjunctivitis; leukopenia, pancytopenia; fatigue, anorexia with weight loss (oral); Mees' lines of the nails; hair loss; hyperpigmentation and hyperkeratosis of skin. Health Effects: Carcinogen (HE1); Cumulative systemic poison, cardiovascular disease, Raynaud's phenomena (HE3); gastrointestinal effects, hematologic effects (HE12), dermatitis (HE14), ocular effects, neurological effects (HE7), genotoxic effects (HE2); Bowen's disease (HE2); INGES ACUTE: Depends on salt, LDLO (man) 1.4 mg/kg Arsenic Trioxide. Affected organs: Liver, kidney, skin, lungs, lymphatic system; blood, CNS, eyes, gastrointestinal tract.
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.
Aluminum:	Inhalation of welding fumes may produce systemic toxicity.
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: Dust from castings may form explosive hydrogen gas when combined with oxidizers, halogens, halogenated hydrocarbons, acids, molten lithium and strong alkalis.
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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