

I. MATERIAL IDENTIFICATION

This includes all brass and bronze alloys used by Ryder-Heil Bronze.

Other Designations: ALLOYS

C 83300	C 86400	C 92300	C 94300	C 93600
C 83400	C 86500	C 92500	C 94400	
C 83450	C 90200	C 92600	C 94500	
C 83600	C 90300	C 92700	C 94800	
C 83800	C 90500	C 92900	C 94900	
C 84400	C 90700	C 93200	C 95200	
C 84500	C 90800	C 93400	C 95300	
C 84800	C 90900	C 93500	C 95400	
C 85200	C 91000	C 93700	C 95500	
C 85400	C 91100	C 93800	C 95800	
C 85700	C 91300	C 93900	C 97300	
C 86100	C 91600	C 94000	C 97400	
C 86200	C 91700	C 94100	C 97600	
C 86300	C 92200	C 94200	C 97800	

II. HAZARDOUS INGREDIENTS

	<u>CAS Number</u>	<u>OSHA</u> <u>8-hr TWA</u>	<u>ACGIH</u> <u>8-hr TWA</u>	<u>*SARA</u> <u>Title III, sec 313</u>
Copper	7440-50-8	Dust=1 mg/m3 Fume=0.1 mg/m3	1 mg/m3 0.2 mg/m3	if _ 1.0%
Manganese	7439-96-5	Dust=5 mg/m3 Fume=1 mg/m3	Dust=5 mg/m3 Fume=1 mg/m3	if _ 1.0%
Nickel	7440-02-0	1 mg/m3	1 mg/m3	if _ 0.1%
Iron	1309-37-1	10 mg/m3 as oxide fume	5 mg/m3 as oxide fume	-
Lead	7439-92-1	50 ug/m3	150 ug/m3	if _ 0.1%
Zinc	7440-66-6	5 mg/m3	5 mg/m3 fume	not as supplied but reportable as a dust or fume if _ 1.0%
Aluminum	7429-90-5	Total dust=15 mg/m3 Respirable fractions=5 mg/m3	10 mg/m3	not as supplied but reportable as a dust or fume if _ 1.0%
Tin	7440-31-5	2 mg/m3 (Inorganics)	2 mg/m3	-
Antimony	7440-36-0	0.5 mg/m3	0.5 mg/m3	if _ 1.0%

*The chemicals indicated are subject to the reporting requirements of Section 313, Title III, of the Superfund Amendments and Reauthorization Act of 1986 in 40CFR, Part 372.

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III. PHYSICAL DATA

Boiling Point (C): NA	Specific Gravity-7.5-9.0
Vapor Pressure: NA	Vapor Density: NA
Z Volatile by Volume: NA	Evaporation Rate: NA
Solubility in Water: Insoluble	
Appearance and Odor: Yellow to Red Solids with no odor	

IV. FIRE AND EXPLOSION HAZARD DATA

Flash Point: NA	Method Used: NA
Flammable Limits: LEL=NA	UEL=NA
Extinguishing Media: See Below	

Special Fire Fighting Procedures: Solid, massive form is not combustible. Fire and explosion hazards are moderate when material is in the form of dust and exposed to heat, flames, chemical reaction, or in contact with powerful oxidizers. Use special mixtures of dry chemical or sand. Firefighters should wear self contained breathing apparatus and protective clothing.

V. HEALTH HAZARD DATA

Permissible Exposure Limits and Threshold Limit Values: See Section II

Route(s) of Entry:
Inhalation: Yes
Skin: Yes
Ingestion: Yes

Effects of Overexposure:

Manganese

Chronic manganese poisoning may result from inhalation of dust or fume. The central nervous system is the chief site of the injury. Chronic manganese poisoning is not a fatal disease although it is extremely disabling. Some individuals may be hyper-susceptible to manganese. Freshly formed manganese fume has caused fever and chills similar to metal fume fever.

Nickel

The most common ailment arising from contact with nickel or its compounds is an allergic dermatitis known as "nickel itch: which usually occurs when the skin is moist. Generally nickel and most salts of nickel do not cause systemic poisoning, but nickel has been identified as a suspected carcinogen.

Iron

The inhalation of iron oxide fumes or dust may cause an apparent benign pneumoconiosis which is called siderosis. This disease is reported to be disabling, but makes x-ray diagnosis of other lung conditions difficult or impossible.

Copper

Melting, grinding, cutting of copper may produce fumes of dust exposure and breathing these fumes or dust may present potentially significant health hazards. Fumes of copper may cause metal fume fever with flu-like symptoms and skin and hair discoloration. While industrial dermatitis has not been reported, keratinization of hands and the soles of the feet has been reported. Systemically as well, copper dust and fume cause irritation of the upper respiratory tract, metallic taste in the mouth, and nausea.

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VI. REACTIVITY DATA

Stability: Stable

Conditions to Avoid: Stable under normal conditions of transport and storage. Molten metal may react violently with water.

Incompatibility (Materials to avoid): Acids, bases and oxidizers.

Hazardous Decomposition or Byproducts: Metal fume.

Hazardous polymerization: Will Not Occur

VII. PRECAUTIONS FOR SAFE HANDLING OR USE

Steps to Be Taken in Case Material is Released or Spilled: No special precautions are necessary for spills of bulk material. If large quantities of dust are spilled, remove by vacuuming or wet sweeping to prevent heavy concentrations of airborne dust. Follow federal, state, and local regulations concerning the disposal of waste.

Waste Disposal Method: Dispose of in accordance with federal, state and local regulations. Cleanup personnel should wear respirators and protective clothing.

Precautions to be Taken in Handling and Storing: Store material away from incompatible materials and keep dust from sources of ignition.

Other Precautions: See all other sections of this MSDS.

VIII. CONTROL MEASURES

Respiratory Protection: If exposure above the PEL or TLV, NIOSH approved respirator for fume or dust, dependent upon the source of airborne contaminant.

Ventilation: Required if dust or fume created in handling or working on this material.

Local Exhaust: Required if dust or fume created in handling or working on this material.

Mechanical (general): As above to reduce airborne dust of fume levels.

Protective Gloves: Required for melt, grind, cut, weld operations. Select glove approved for the specific operation.

Eye Protection: Required for melt, grind, cut or weld operations. Minimum requirement of safety glasses with side shields for these operations. Melting and welding may require special eye protection including face shields and specially tinted glass. Grinding operations may also require face shields.

Other Protective Clothing or Equipment: As required for the work done on or with the metal.

Work/Hygiene Practices: As required for the work done with lead bearing materials. No food may be allowed in the work area. Always wash thoroughly before leaving work area. Shower before leaving the work site and provide special work clothing when necessary. Work clothes must be stored separate from street clothing and be marked for laundering. Meet requirements of the OSHA lead standard where necessary. Always evaluate the jobs done on this product in accordance with OSHA or relevant state, federal, or local standards.

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Lead

Short Term Exposure-

Lead is an accumulative poison. Inhalation effects of exposure to fumes or dust of inorganic lead may not develop quickly. Symptoms may include decreased physical fitness, fatigue, sleep disturbance, headache, aching bones and muscles, constipation abdominal pains, and decreasing appetite. The effects are reversible and complete recovery is possible. Inhalation of large amounts of lead may lead to seizures, coma, and death.

Long Term Exposure -

Long term exposure can result in a buildup of lead in the body and more severe symptoms. These may include anemia, pale skin, a blue line at the gum margin, decreased hand grip strength, abdominal pain, severe constipation, nausea, vomiting, and paralysis of the wrist joint. Prolonged exposure may also result in kidney damage. If the nervous system is affected, usually due to very high exposures, the resulting effects include severe headache, convulsions, coma, delirium, and death. Alcohol ingestion and physical exertion may bring on symptoms. Continued exposure can result in decreased fertility and/or increased chances of miscarriage or birth defects.

Tin

The inhalation of inorganic tin fumes or dust may cause an apparent benign pneumoconiosis called stannosis which is reported not to be disabling.

Zinc (as Oxide)

Zinc is relatively low in toxicity but inhalation of fumes may cause "metal fume fever." Onset of symptoms may be delayed 4-12 hours and include irritation of the nose, mouth, and throat, cough, stomach pain, headache, nausea, vomiting, metallic taste, chills, fever, pains in the muscles and joints, thirst, bronchitis or pneumonia and a bluish tint to the skin. These symptoms go away in 24-48 hours and leave no effect.

Aluminum

Excessive exposure to aluminum fume and dust has been associated with lung disease, but this effect is probably due to simultaneous silica exposures.

Antimony

Antimony and its compounds are irritating to the skin and mucous membranes and are systemic poisons. Effects are reported to include a metallic taste in the mouth, vomiting, colic, loss of appetite and weight, and diarrhea. In addition, dermatitis may result which starts as an inflammation of the hair follicles and can progress through pus formation and sloughing to leave a contracted scar. Chronic inhalation of antimony trioxide is reported to produce a reduction in white blood cells and damage to the liver. Antimony and its compounds have been identified as potential cancer causing agents.

Emergency and First Aid Procedures:

Eye Contact: Flush well with running water to remove particulate. Get medical attention.

Skin Contact: Vacuum off excess dust. Wash well with soap and water. Avoid blowing particulate into the atmosphere.

Inhalation: Remove to fresh air. Get medical attention.

Ingestion: Seek medical attention if large quantities of material have been ingested. Check airborne levels of lead and employee blood leads in accordance with OSHA standards.