C67300

Material **S**afety **D**ata **S**heet

Section 1 – Manufacturer's Identification

Company	Issue Date	Identification Number
Mueller Brass 302 Ashfield Street**/**2199 Lapeer Ave. Belding, MI 48809**/**Port Huron Mi.	02/16/09	
Trade Name (Common Name or Synonym) Leaded Brass	Emergency Phone Number 616.794.1200 / 810-987-7770	Information Phone # (EHS Manager) 616.794.4866 / 810-987-7770
Chemical Name Copper –Zinc-Lead Alloy	Formula Alloy	DOT Identification Number N/A

Section 2 - Ingredients

Material or Compound

Compound	CAS Number	% Composition by Weight
Copper	7440-50-8	58.0 - 63.0
Zinc	7440-66-6	Remainder
Lead	7439-92-1	.4 – 3.0
Iron	7439-89-6	.50
Aluminum	7429-90-5	.25
Nickel	7440-02-0	.25
Silicon	7440-21-3	.5-1.5
Tin	7440-31-5	.3
Manganese	7439-96-5	2.0-3.5

Section 3 – Physical/Chemical Characteristics

Boiling Point	N/A	Specific Gravity (H2O = 1)	8.3
Vapor Pressure (mm Hg)	N/A	Melting Point	1605 deg F
PH	N/A	Solid	N/A
Solubility in Water Negligible			
Appearance and Odor Yellow to Gold in color and has no odor			

Section 4 – Fire and Explosion Hazard Data

Flash Point (Method Used) N/A	Flammable Limits N/A	Auto Ignition Temperature N/A	Extinguishing Media N/A
Extinguishing Media N/A			

Section 5 – Reactivity Data

Stability	Unstable	Conditions to Avoid	
	Stable XXX		
Incompatibility (Materials to Avoid) Material reacts with acids, bases and oxidizers			
Hazardous Decomposition or Byproducts Nitrogen Oxide fumes with contact with Nitric Acid			
		Conditions to Avoid Contact between metal and acids.	

Section 6 – Health Hazard Data

Route(s) of Entry	Inhalation? Not applicable for material as shipped – with inhalation of metal dust during machining. Remove to fresh air and consult physicial	Eyes? Flush with water –consult physician Skin? N/A	Ingestion? Not Likely Occupational Exposure Limits: N/A
Emergency and First Aid Procedures Flush with water for first aid treatment. Contact physician if further treatment is necessary			
Waste Disposal Method Waste or residue from this material must be disposed of in accordance with Federal, State and Local Laws.			

Section 8 – Control Measures

Respiratory Protection (Specify Type) Protective devices may be required for normal machining which generates metal fines or chips.		
PPE	Hand, arms, and Body Wear appropriate hand and body Protection such as gloves, aprons, etc.	Eye and Face Wear suitable eye protection ie: safety glasses, goggles, face shield.
	Other No special clothing required for normal machining operations.	

Section 9 – Prepared By

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HEALTH HAZARD DATA

HEALTH HAZARDS (SHORT TERM AND LONG TERM)

ALUMINUM: Chronic inhalation of aluminum fumes or dust may cause pulmonary fibrosis. aluminum fragments left in the cornea may cause irreversible eye damage. Aluminum has been implicated in Alzheimer's disease.

COPPER: Inhalation of copper fumes or dust may cause metal fume fever and damage to nasal membranes. The skin and hair may turn green in severe cases. Skin and eye irritation may occur. Skin sensitization may occur. Chronic exposure may cause Wilson's disease which is characterized by damage to the blood cells, brain, kidneys, liver and pancreas. Copper fragments left in the cornea may cause cataracts. Copper fragments that penetrate the eye may cause irreversible eye damage if not removed immediately.

LEAD: Lead has been shown to cause birth defects and tumors of the kidneys and lungs in animal tests. It also is a cumulative central nervous system poison.

NICKEL: Ingestion of large doses of nickel have been shown to cause gastrointestinal disorders and convulsions. Nickel and most of its compounds are considered to be carcinogenic. Inhalation of airborne nickel can cause upper respirator cancer. Nickel causes both allergic skin and respiratory sensitization.

SILICON: Silicon itself poses little health risk. It has been shown to cause only minimal effects on the lungs if inhaled. Silicon dioxide formed by heating silicon in the presence of air may cause pulmonary fibrosis and silicosis in chronically exposed employees.

TIN: Tin has been shown to cause tumors in animal tests. Tin oxides have been shown to cause mildly restrictive lung disease. Tin dust and fumes are skin and eye irritants.

ZINC: Zinc itself poses little health risk. It has been shown to cause eye, skin, and respiratory irritation. Freshly formed zinc oxide fumes causes a form of metal fume fever.

MANGANESE: Manganese has been shown to cause tumors in animal tests. Manganese oxide has been shown to be a mutagen in animal tests causing birth defects in offspring. Inhalation of manganese fumes or dust may cause irritation of the lungs. Manganese is also a skin and eye irritant. Long term poisoning may cause permanent damage to the central nervous system.

SIGNS AND SYMPTOMS OF EXPOSURE

ALUMINUM: Pulmonary fibrosis is characterized by difficulty in breathing, coughing, shortness of breath, wheezing, and other respiratory symptoms.

COPPER: Metal fume fever is characterized by a dry irritated throat, chills, fever, and elevated white blood cell count, and general flu-like symptoms. Skin, eye, and nasal irritation and skin sensitization are characterized by pain, swelling, and reddening of the affected tissue. Wilson's disease is characterized by weakness, anemia, abdominal pain, and yellowing of the skin or jaundice.

LEAD: Chronic lead poisoning is characterized by a metallic taste in the mouth, a dark lead line at the base of the teeth, abdominal pain, diarrhea, loss of appetite, nausea, vomiting, insomnia, weakness, joint and muscle pain, irritability, headaches, dizziness, loss of weight, stupor, convulsions, and loss of consciousness.

NICKEL: Upper respiratory tract cancer is characterized by pain, bleeding nasal obstruction, impairment of vision, loss of weight, and change in voice. Allergic respiratory sensitization is characterized by difficulty breathing after a small exposure to nickel. Allergic skin sensitization is characterized by a severe rash after a small exposure to nickel.

SILICON: Pulmonary fibrosis is characterized by difficulty in breathing, coughing, shortness of breath, wheezing, and other respiratory symptoms.

TIN: skin and eye irritation are characterized by pain, swelling, and reddening of the affected tissue. Restrictive lung disease is characterized by shortness of breath, coughing, difficulty breathing wheezing, and other respiratory symptoms.

ZINC: Skin and eye irritation are characterized by pain, swelling, and reddening of the affected tissue. Respiratory irritation is characterized by coughing and pain in the nose and throat. Zinc fume fever is characterized by a sweet taste in the mouth, dry throat, cough, weakness, generalized body aches, fever, nausea, and vomiting.

MAGANESE: Acute exposure to manganese is associated with complex behavioral/psychiatric signs that may include Parkinsonian motor features. However, little is known about the behavioral consequences of chronic manganese exposures. In this study, cynomolgus macaque monkeys were exposed to manganese sulfate (10-15 mg/kg/week) over an exposure period lasting 272+/-17 days. Prior to manganese exposure, animals were trained to perform tests of cognitive and motor functioning and overall behavior was assessed by ratings and by videotaped analyses. By the end of the manganese exposure period, animals developed subtle deficits in spatial working memory and had modest decreases in spontaneous activity and manual dexterity. In addition, stereotypic or compulsive-like behaviors such as compulsive grooming increased in frequency by the end of the manganese exposure period. Blood manganese levels measured at the end of the manganese exposure period ranged from 29.4 to 73.7 micro g/l (mean=55.7+/-10.8 (compared to levels of 5.1-14.2 micro g/l at baseline (mean=9.2+/-2.7)), placing them within the upper range of levels reported for human environmental, medical or occupational exposures. These results suggest that chronic exposure to levels of manganese achieved in this study may have detrimental effects on behavior, cognition and motor functioning.