

MILLER CENTRIFUGAL CASTING COMPANY

Material Safety Data Sheet

Company Miller Centrifugal Casting Company P.O. Box 456 Cecil, PA 15321-0456	Issue Date December 21, 1999	Identification Number C. Alloy & Tool
Trade Name (Common Name of Synonym)		
Chemical Name Steel & Iron	Form Castings	

I. INGREDIENTS

Material or Component	CAS Number	% Weight	Exposure Limits	
Base Metal			OSHA PEL (mg/m ³)	ACGIH TLV (mg/m ³)
Iron (Fe)	7439-89-6	Balance	10(Fe2O3Fume)	5.0(Fe2O3 Fume)
Alloying Elements				
Aluminum (Al)	7429-90-5	0.10-1.8	None Listed	5.0 as welding fume
Carbon	7440-44-0	0.01-1.5	None Listed	None Listed
Chromium (Cr)	7440-47-3	0.01-15	1.0 as chrome	0.5 as chrome
Cobalt (Co)	7440-48-4	8 Max.	0.1 as cobalt and fume	0.05 as fume
Copper (Cu)	7440-50-8	0.04-0.7	0.2 as copper; 1.0 as dust	0.2 as fume; 1.0 as dust
Lead (Pb)	7439-92-1	0.15-0.35	0.05 as fume & dust	0.15 as dust and fume
Manganese (Mn)	7439-96-5	0.05-2.0	5 as manganese	5 as dust; 1 as fume
Molybdenum (Mo)	7439-98-7	0.01-1.10	15 as insoluble compds	10 as insoluble compds
Nickel (Ni)	7440-02-0	0.01-10	1.0 as Nickel	1.0 as Nickel
Phosphorus (P)	7723-14-0	0.15 Max	0.1 as Phosphorous	0.1 as Phosphorous
Silicon (Si)	7440-21-3	0.15-2.20	None Listed	10 total dust
Sulfur (S)	7704-34-9	0.001-0.35	13 sulfur dioxide	5 sulfur dioxide
Tungsten (W)	7440-33-7	0-18	None Listed	5 insoluble compds
Vanadium (V)	7440-62-2	0.01-1.0	0.5 dust; 0.1 fume	0.05 dust and fume
Zinc (Zn) coating	1314-13-2	10 Max	5.0 as fume	5.0 as fume

Note: The above listing is a summary of elements used in alloying steel. Various grades of steel will contain different combinations of these elements. Trace elements may also be present in minute amounts.

II. PHYSICAL DATA

Material is (At Normal Conditions):				Appearance and Odor	
Liquid	X Solid	Gas	Other	Gray -Black-with Metallic Lustre--Odorless	
Acidity/Alkalinity		Melting Point Approx. 2600 ^o F		Specific Gravity (H ₂ O = 1) - 7	Vapor Pressure
Ph=NA		Boiling Point NA		Solubility in water (% by weight) - NA	(mm Hg at 20 ^o F) NA

III. PERSONAL PROTECTIVE EQUIPMENT

Respiratory Protection NIOSH approved dust/mist/fume/respirator should be used during welding or burning if OSHA PEL or TLV is exceeded.	Hands, Arms, and Body Use appropriate protective clothing such as welder's aprons & gloves when welding or burning. Check local codes.
Eyes and Face Safety glasses should always be worn when grinding or cutting; face shields should be worn when welding or burning.	Other Clothing and Equipment As required

IV. EMERGENCY MEDICAL PROCEDURES

Inhalation: Remove to fresh air; if condition continues, consult physician.
Eye Contact: Immediately flush well with running water to remove particulate; get medical attention.
Skin Contact: If irritation develops, remove clothing and wash well with soap and water. If condition persists, seek medical attention.
Ingestion: If significant amounts of metal are ingested, seek medical attention.

V. HEALTH/SAFETY INFORMATION

HEALTH			
<p>Steel products in the 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 particulate may present hazards. The above operations should be performed in well-ventilated areas. The major exposure hazard is inhalation.</p> <p>Effects of overexposure are as follows:</p> <p>Acute: Excessive inhalation of metallic fumes and dusts may result in irritation of eyes, nose, and throat. Also high concentrations of fumes and dusts of iron-oxide, manganese, copper, zinc & lead 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>Chronic: Chronic and prolonged inhalation of high concentrations of fumes or dust of the following elements may lead to the conditions listed opposite the element:</p> <ul style="list-style-type: none"> Iron (iron-oxide) – Pulmonary effects, siderosis. Manganese – Bronchitis, pneumonitis, lack of coordination. Chromium – Various forms of dermatitis, inflammation and/or ulceration of upper respiratory tract, and possibly cancer of nasal passages and lungs. Based on available information, there does not appear to be any evidence that exposure to welding fume induces human cancer. Nickel – SAME AS CHROMIUM. Copper – Pulmonary effects. Vanadium – No reported cases of exposure to vanadium. Cobalt – Inhalation of cobalt dust may cause an asthma-like disease with cough and dyspnea. Molybdenum – Pain in joints, hands, knees, and feet. Tungsten – Some evidence of pulmonary involvement such as cough. Lead – Prolonged exposures can cause behavioral changes, kidney damage, periphery neuropathy characterized by decreased hand-grip strength and adverse reproductive effects. Zinc – None reported. 			
Occupational Exposure Limits See Section 1.			
FIRE AND EXPLOSION			
FLASH Point NA °F	Auto Ignition Temperature NA °F	Flammable Limits in Air Lower NA % Upper NA %	Extinguishing Media NA
Fire and Explosion Hazards None		Extinguishing Media Not to be Used NA	
REACTIVITY			
Stability X Stable Unstable		Incompatibility (Materials to Avoid) Reacts with strong acids to form hydrogen gas.	
Conditions to Avoid Keep Area Well Ventilated Non-ventilate areas when cutting, welding, burning, or brazing; avoid generation of airborne dusts and fumes.			
Hazardous Decomposition Products Metallic oxides.			
VI. ENVIRONMENTAL			
Spill or leak procedures NA Special Precautions: Use good housekeeping practices to prevent accumulation of dust and to keep airborne dust to a Minimum.			
Waste Disposal Method Dust, etc. – follow federal, state, and local regulations regarding disposal.			
VII. ADDITIONAL INFORMATION			
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