



## Material Safety Data Sheet (MSDS)

Aluminum, Brass and Bronze - Grindings, Sawings, Scrap and Skimmings

MSDS#: 1600

Rev: 0

Rev Date: 10/31/08

### PART I: What is the material and what do I need to know in an emergency?

#### SECTION 1 — PRODUCT IDENTIFICATION & COMPANY INFORMATION

PRODUCT NAME:

**Aluminum, Brass and Bronze - Grindings, Sawings, Scrap and Skimmings**

PRODUCT IDENTIFICATION:

Grindings, Sawings, Scrap and Skimmings

MANUFACTURER'S NAME:

Multi-Cast Corporation

STREET ADDRESS:

225 East Linfoot Street

EMERGENCY TELEPHONE NO. :

419-335-0010

MAILING ADDRESS:

P.O. Box 111

TELEPHONE NO.:

419-335-0010

CITY, STATE, ZIP CODE:

Wauseon, OH 43567

FAX NO.:

419-337-4263

E-MAIL ADDRESS/WEB SITE:

[castings@multi-cast.com](mailto:castings@multi-cast.com) / [www.multi-cast.com](http://www.multi-cast.com)

#### SECTION 2 – HAZARD IDENTIFICATION

##### OVERVIEW:

There are no health hazards from these products in normal form. If dust is present there is a moderate risk of fire and explosion .

Dust and fume from processing can cause irritation of eyes, skin and respiratory tract; lung disease and other systemic effects.

##### POTENTIAL HEALTH EFFECTS:

EYES:

May cause eye irritation or injury.

SKIN:

Chromium, Cobalt, Nickel, Phosphorus and Zinc : Dermatitis or irritation is possible from skin contact with chromium, cobalt, nickel and zinc.

Magnesium: Cuts and scratches may be prone to skin blisters that are slow to heal.

INGESTION:

Ingestion of particulate can occur during hand to mouth activities such as eating, drinking and smoking. Ingestion of lead can cause anemia, nervous system damage, kidney damage, reproductive effects, lung and stomach cancer.

INHALATION:

Prolonged or repeated exposure to dust or fumes from these grindings, sawings, scrap, and skimmings may cause the following health effects:

**Aluminum:** Irritation of the respiratory tract

**Chromium, hexavalent:** Lung Cancer

**Cobalt:** Respiratory sensitization, asthma, scarring of the lungs and damage to the heart muscle.

**Copper:** Nose and throat irritation, metal fume fever and gastrointestinal tract irritation

**Iron:** Overexposure the iron oxide fume over a long period of time can cause siderosis, sometimes called "iron pigmentation" of the lung. It can be seen on a chest x-ray but causes little or no disability.

**Lead:** Anemia, nervous system damage, kidney damage, reproductive effects, lung and stomach cancer.

**Manganese:** Central nervous system impairment.

**Nickel:** Lung and nasal cancer

**Silicon:** Nose irritation

**Tin:** Benign pneumoconiosis of the lung, persistent cough

**Zinc:** Inhalation of zinc fume may cause metal fume fever with flu-like symptoms

##### ENVIRONMENTAL EFFECTS:

Environmental effects may be possible depending on conditions of use.

#### SECTION 3 – COMPOSITION / INFORMATION ON INGREDIENTS

##### Section 3A – Information on Ingredients

MATERIAL	Wt % Aluminum	Wt % Brass/Bronze	CAS NUMBER	ACGIH TLV mg/m <sup>3</sup>	OSHA PEL mg/m <sup>3</sup>
Aluminum ( Al)	62 - 98	0.0 – 11.5	7429-90-5		

Total Dust Respirable Dust				10 N/E	15 5
Chromium (Cr)	0.1 - 0.6		7440-47-3	.5	1
Cobalt (Co) Metal Dust and Fume Elemental and Inorganic Compounds	N/A	0.0 – 5.5	7440-48-4	N/E 0.02	0.1 N/E
Cooper (Cu)	0.0 – 5.0	55.0 – 95.1	7440-50-8	1	1
Iron (Fe)	0.0 – 10.6	0.06 - 2.0	7439-89-6	N/E	N/E
Lead (Pb)	N/A	0.0 - 25	7439-92-1	0.05	30µg/m <sup>3</sup> AL 50µg/m <sup>3</sup> PEL
Magnesium (Mg)	0.0 – 10.6	N/A	7439-95-4	N/E	N/E
Manganese (Mn)	0.0 – 10.6	0.0 – 14	7439-96-5	N/E	N/E
Nickel (Ni)	0.05 – 3.0	0.0 – 5.5	7440-02-0	1.5 <sup>(1)</sup>	1
Phosphorus (P)	0.0 – 1.0	N/A	7723-14-0	0.1	0.1
Silicon (Metal) (Si) Total Dust Respirable Dust	0.0 – 20	0.0 – 3.3	7440-21-3	N/E N/E	15 5
Tin (Sn)	0.0 – 7.0	0.0 – 20.0	7440-31-5	2	2
Zinc (Zn)	0.0 – 8.0	0.0 – 42.0	7440-66-6	N/E	N/E

**TERMS**

- N/A = Not Applicable (See column header)
- N/E = Non Established
- TLV = Threshold Limit Value / American Conference of Industrial Hygienists (ACGIH) 8 hour time weighted average
- PEL = Permissible Exposure Limit / OSHA 8 hour time weighted average
- AL = OSHA Action Level
- mg/m<sup>3</sup> = milligrams per cubic meter
- µg/m<sup>3</sup> = micrograms per cubic meter
- STEL = Short Term Exposure Limit
- (CEL) = Ceiling Limit
- (I) = Inhalable fraction
- (R) = Respirable fraction

**Section 3B – Carcinogen Classification of Ingredients / Potential Byproducts**

INGREDIENT	OSHA	NTP	IARC	ACGIH	EPA	TARGET ORGAN
Aluminum (Al)	NL	NL	NL	NL	NL	--
Chromium (Metal) (Cr)	NL	NL	3	A4	NL	Lung, Nasal
Chromium (II) inorganic compounds	NL	NL	NL	NL	NL	
Chromium (III) inorganic compounds	NL	NL	3	A4	D	
Chromium (VI), (hexavalent)	Y	K	1	A1	NL	
Cobalt Alloys	NL	NL	NL	NL	NL	Lung
Cobalt and Compounds (Co)	NL	NL	2B	NL	NL	
Cobalt and Inorganic Compounds (Co)	NL	NL	NL	A3	NL	
Copper (Cu)	NL	NL	NL	NL	D	GI Tract
Iron Oxide (Fe <sub>2</sub> O <sub>3</sub> )	NL	NL	3	A4	NL	
Lead (Pb)	NL	R	2A (Inorganic Compounds)	A3 (Inorganic Compounds)	B2	Lung, Stomach, Liver, Kidney
Magnesium Oxide (MgO)	NL	NL	NL	A4	NL	--
Manganese (Mn)	NL	NL	NL	NL	D	
Nickel, Insoluble compounds (Ni)	NL	K	NL	A1	NL	Lung, Nasal
Nickel, Soluble compounds (Ni)	NL	K	NK	A4	NL	
Nickel, Elemental (Ni)	NL	R	2B	A5	NL	
Nickel Oxide (NiO)	NL	K	1	A1	N	
Phosphorus (P)	NL	NL	NL	NL	D	
Tin (Sn)	NL	NL	NL	NL	NL	--
Tin Oxide (OSn) & Inorganic Compounds Except Hydride	NL	NL	NL	NL	NL	
Silicon	NL	NL	NL	NL	NL	

Zinc Oxide (ZnO)	NL	NL	NL	NL	D	Lung, Throat
<b>OSHA – Occupational Safety &amp; Health Administration</b> Y = Listed as a Human Carcinogen  <b>NTP – National Toxicology Program</b> K = Known to be a Human Carcinogen R = Reasonably Anticipated to be a Human Carcinogen (RAHC)  <b>IARC – International Agency for Research on Cancer</b> 1 = Carcinogen to Humans 2A = Probably Carcinogenic to Humans 2B = Possibly Carcinogenic to Humans 3 = Unclassified as Carcinogenic to Humans 4 = Probably not Carcinogenic to Humans  <b>NL</b> = Not Listed		<b>ACGIH – American Conference of Governmental Industrial Hygienists</b> A1 = Confirmed human Carcinogen A2 = Suspected Human Carcinogen A3 = Confirmed Animal Carcinogen A4 = Not Classifiable as a Human Carcinogen A5 = Not Suspected as a Human Carcinogen  <b>EPA – U.S. Environmental Protection Agency</b> A = Human Carcinogen K = Known Human Carcinogen D = Not Classified as to Human Carcinogenicity. No Data Available B1 = Probable Human Carcinogen. Sufficient Evidence from Epidemiology Studies L = Likely to Product Cancer in Humans B2 = Probable Human Carcinogen. Sufficient Evidence from Animal Studies				

**PART II: What should I do if a hazardous situation occurs?**

**SECTION 4 – FIRST AID MEASURES**

**EYES:** Flush eyes with plenty of water or eye wash solution. Embedded metal particles should be removed by a trained individual such as a nurse or physician.

**SKIN:** If a rash develops, seek medical attention.

**INGESTION:** Not normally applicable.

**INHALATION:** If problems develop move to fresh air and seek medical attention.

**SECTION 5 – FIRE & EXPLOSION DATA**

**FLAMMABLE PROPERTIES:**  
Finely divided metal dust may burn or explode.

**EXTINGUISHING MEDIA:**  
Use Class D extinguishing agents on dusts, fines or molten metal. Use coarse water spray on chips and turnings.  
DO NOT USE Halogenated agents on small chips, dusts or fines.

**PROTECTION OF FIREFIGHTERS:**  
Firefighters should wear NIOSH approved, positive pressure, self-contained breathing apparatus and full protective clothing as appropriate for the surrounding fire.

**SECTION 6 – ACCIDENTAL RELEASE MEASURES**

Collect for re-melting. Dust collected from machining, welding, etc. may be classified as a hazardous waste. Consult federal, state, and local regulations.

**PART III: How can I prevent hazardous situations from occurring?**

**SECTION 7 – HANDLING & STORAGE**

**RECOMMENDED STORAGE:**  
No special storage requirements needed. If possible keep dry.

**PROCEDURES FOR HANDLING:**  
For castings with sharp edges, wear appropriate work gloves. When handling heavy castings wear appropriate foot protection. Hot and cold aluminum castings are not visually different.

**SECTION 8 – EXPOSURE CONTROLS & PERSONAL PROTECTION**

**ENGINEERING CONTROLS:**  
No specific controls are needed when the casting is in a solid state. If welding, grinding or machining, local exhaust to maintain concentrations below PEL's and TLV's. Refer to Section 3 for exposure guidelines.

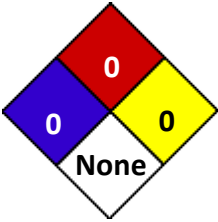
If ventilation is not adequate, wear a NIOSH approved dust and fume respirator.

If work is to be done in a confined space use appropriate confined space procedures (OSHA Standard 29 CFR 1910.146).

Grinding castings that have not been cleaned or that contain embedded sand may generate significant amounts of dust containing free silica, which can cause silicosis. Good local ventilation is frequently required to prevent over-exposure in this situation. If good ventilation is not available, use a NIOSH approved respirator.

**PERSONAL PROTECTION:**  
**Gloves:** Handling this product with your hands is not advised, but if you must, wear proper gloves.  
**Eye:** Safety glasses with side shields and/or face shield for particles.  
**Respiratory:** If an exposure limit is exceeded, a NIOSH approved half-face dust/mist respirator may be worn for up to ten times the exposure limits. A full piece dust/mist respirator may be worn for up to fifty times the exposure limit. For emergencies or instances where the exposure levels are not known, use a full face piece with positive pressure, air supplied respirator  
**Footwear:** General plant rules.

Clothing:	Wear appropriate protective clothing.		
Other:	If noise is at or above 85 dBA, hearing protection should be worn. Refer to OSHA Standard 29 CFR 1910.95.		
<b>SECTION 9 – PHYSICAL &amp; CHEMICAL PROPERTIES</b>			
PHYSICAL STATE:	Solid	APPEARANCE:	Varies Considerably
ODOR:	None	VAPOR DENSITY:	Not Applicable
MELTING POINT:	900°F - 2030°F (482°C - 1110°C)	SPECIFIC GRAVITY:	Not Applicable
BOILING POINT:	4220°F - 4703°F (2326°C - 2595°C)	VAPOR PRESSURE:	Not Applicable
FLASH POINT:	Not Applicable for Solid Castings	EVAPORATION RATE:	Not Applicable
FLAMMABILITY:	Not Flammable	SOLUBILITY IN WATER:	Insoluble
UPPER AND LOWER FLAMMABILITY LIMITS:	Not Applicable for Solid Castings	pH:	Not Applicable
AUTO IGNITION TEMPERATURE:	Not Applicable	PERCENT VOLATILE BY VOLUME:	Not Applicable
DECOMPOSITION TEMPERATURE:	Not Applicable	PARTITION COEFFICIENT:	Not Applicable
<b>SECTION 10 – STABILITY &amp; REACTIVITY</b>			
CHEMICALLY STABLE:	Yes	CONDITIONS TO AVOID:	Contact with chlorinated hydrocarbons, water, heat, strong oxidizers, acids, alkalis and halogenated compounds.
INCOMPATIBILITY:	Metal dust can burn or explode and must be protected from ignition sources such as grinding sparks, etc. Under some conditions, metal dust is incompatible with some oxidizing conditions and may be incompatible with oxidizers, acids and water and may ignite or explode. Contact of bronzes with acids, bases or oxidizers may produce metal fume and should be avoided. Copper reacts violently with acetylene.		
CONDITIONS OF REACTIVITY:	None	IMPACT / SHOCK SENSITIVITY:	Not Applicable
HAZARDOUS DECOMPOSITION PRODUCTS:	None	HAZARDOUS POLYMERIZATION:	Not Applicable
<i>PART IV: Is there any other useful information about this material?</i>			
<b>SECTION 11 – TOXICOLOGY INFORMATION</b>			
No toxicological information is available for these products. There are extensive toxicological data available on the various components of this material. An adequate representation of all these data is beyond the scope of this document.			
<b>SECTION 12 – ECOLOGICAL INFORMATION</b>			
No ecological information is available for these products. There are extensive ecological data available on the various components of this material. An adequate representation of all these data is beyond the scope of this document.			
<b>SECTION 13 – DISPOSAL CONSIDERATIONS</b>			
Reuse or recycle material whenever possible. Dispose of according to federal, state and local regulations.			
<b>SECTION 14 – TRANSPORTATION INFORMATION</b>			
USA DEPARTMENT OF TRANSPORTATION (DOT) - HM181:	Not Regulated	SHIPPING NAME:	Not Regulated
CANADIAN TRANSPORT DANGEROUS GOODS (TDG):	Not Regulated	UN / NA #:	Not Regulated
HAZARD CLASS:	Not Regulated	PACKING GROUP:	Not Regulated
LABEL(S) REQUIRED:	No	SPECIAL SHIPPING INFORMATION:	Not Applicable
INTERNATIONAL TRANSPORTATION REGULATIONS:	Not Applicable		
<b>SECTION 15 – REGULATORY INFORMATION</b>			
USA - OSHA (Hazard Communication Standard): Reference 29 CFR 1910.1200, 1910.1000 and 1910.1025.			

<p>USA - EPA (Toxic Substances Control Act – TSCA): All constituents of these products are already on the TSCA inventory list or are excluded from listing.</p> <p>USA - EPA (SARA Title III): The following constituents, Aluminum dust or fume, Chromium, <b>Cobalt, Copper, Lead, Manganese, Nickel, and Zinc dust or fume</b> make this product subject to reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 72. Quantity threshold amounts are 25,000 pounds for manufacturing, importing or processing and 10,000 pounds for otherwise used.</p>									
<p>CANADA - WHMIS (Workplace Hazardous Materials Information System): This MSDS has been prepared according to the hazard criteria of the Controlled Product Regulations (CPR) and the MSDS contains the information required by the CPR.</p>									
<p>CEPA (Canadian Environmental Protection Act): Lead and Nickel Oxide are on the CEPA Toxic Substances List</p>									
<p>CANADIAN DSL (Domestic Substance List) Inventory Status: All components of these products are on the DSL Inventory.</p>									
<p>EINECS No. (European Inventory of Commercial Chemical Substances): All components of these products are on the EINECS list.</p>									
<p>RoHS (Restriction of Hazardous Substances): Castings containing lead may be regulated by</p>									
<p>CALIFORNIA PROPOSITION 65: WARNING: This product contains or produces chemicals known to the State of California to cause cancer and birth defects (or other reproductive harm). (California Health &amp; Safety Code 25248.5 et seq.)</p>									
<p>U.S. STATE REGULATORY INFORMATION: Some of the components listed in Section 3 may be covered under specific state regulations.</p>									
<p><b>SECTION 16– OTHER INFORMATION</b></p>									
<p><b>NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) RATINGS:</b> For Castings in Solid Form</p>	<p><b>HAZARDOUS MATERIALS INFORMATION SYSTEM (HMIS) RATINGS:</b> For Castings in Solid Form</p>								
	<table border="1" style="border-collapse: collapse; width: 100%;"> <tr> <td style="background-color: #0000FF; color: white; padding: 2px;">Health</td> <td style="width: 30px; text-align: center;">0</td> </tr> <tr> <td style="background-color: #FF0000; color: white; padding: 2px;">Flammability</td> <td style="text-align: center;">0</td> </tr> <tr> <td style="background-color: #FFA500; padding: 2px;">Physical</td> <td style="text-align: center;">0</td> </tr> <tr> <td style="padding: 2px;">PPE</td> <td style="text-align: center;"><input type="checkbox"/></td> </tr> </table>	Health	0	Flammability	0	Physical	0	PPE	<input type="checkbox"/>
Health	0								
Flammability	0								
Physical	0								
PPE	<input type="checkbox"/>								
<p>OSHA STANDARD 29 CFR 1910.1200: All needed label information is displayed in this MSDS.</p>									
<p>Note: This data is offered in good faith as typical values and not as a product specification. No warranty either expressed or implied is hereby made. The recommended industrial hygiene and safe handling procedures are believed to be generally applicable. However, each user should review the recommendations in specific context of the intended use and determine if they are appropriate.</p>									
<p>MSDS SHEET PREPARED BY: <a href="#">Joshua Stollar</a> MSDS Coordinator / Engineer</p>	<p>REVISION: 0 DATE: 10/31/08</p>								