MASTER MATERIAL SAFETY DATA SHEET

NOTICE

This is your master Material Safety Data Sheet (MSDS). Please see that this copy is retained by the proper person in your organization.

This is the only copy of the master sheet you will receive. The Products Sheet for each of our different product offerings are separate worksheets. Each sheet refers to the master MSDS.

Manufacturer's Name: Rockmount Research & Alloys Inc
Address: 11909 NE 95th Street
Vancouver, WA 98682

Telephone Number: 360-254-2020
Facsimile Number: 360-254-2332

Material Name:

- Aluminum Alloys
- Babbitt Alloys
- Brass & Bronze
- Copper & Alloys
- Cadmium & Alloys
- Lead & Alloys
- Low Melting Alloys
- Master Alloys
- Nickel Alloys
- Solder
- Tin & Alloys
- White Metal Alloys
- Zinc & Alloys
- Plus other metals and alloys

II HAZARDOUS INGREDIENTS

ELEMENT	SYMBOL	CAS#	TLV mg/cu.m	PEL mg/cu.m	MELTING PT. F deg.	BOILING PT. F deg.	SPECIFIC GRAVITY g./c.c
**ALUMINUM	A1	7429-90-5	10.0- metal dust 5.0- welding fume	15.0-Total 5.0-resp. 5.0-welding fume	1220	4521	2.70
ALUMINA		1344-28-1	10.0 -dust	10.0-dust 5.0-resp.			
*ANTIMONY	Sb	7440-36-0	0.5	0.5	1167	2888	6.69
*ARSENIC	As	7440-38-2	0.5	0.5	1502	Subl-1135	5.78
*BERYLLIUM	Be	7440-41-7	0.002	0.002	2354	5018	1.85
BISMUTH	Bi	7440-69-9	N/E	15.0	520	2847	9.80
BORON	B	7440-42-8	See oxide	See oxide	4172	4622	2.30
BORON OXIDE		1303-86-2	10.0 - Total	10.0- dust 5.0-resp.			
*CADMIUM	Cd	7440-43-9	0.05-fume 0.05-dust	0.1-fume 0.2-dust	610	1412	8.65
CALCIUM	Ca	1317-65-3	15.0-Total 5.0-resp.	15.0-Total 5.0-resp.	1502	2703	1.55
*CHROMIUM	Cr	7440-47-3	0.5	1.0	3407	4856	7.14

ELEMENT	SYMBOL	CAS#	TLV mg/cu.m	PEL mg/cu.m	MELTING PT. F deg.	BOILING PT. F deg.	SPECIFIC GRAVITY g./c.c
COBALT as Metal, Dust & Fume	Co	7440-48-4	0.1	0.05	2723	5252	8.90
COLUMBIUM	Cb	7440-03-1	N/E	N/E	4474	8901	8.57
*COPPER	Cu	7440-50-8	1.0-dust 0.2-fume	1.0-dust 0.1-fume	1982	4678	8.94
INDIUM	In	7440-74-6	0.1	0.1	311	3763	7.31
IRON	Fe	1309-37-1	See oxide	See oxide	2795	5430	7.87
IRON OXIDE		1309-37-1	5.0-FUME	10.0-dust & fume			
*LEAD	Pb	7439-92-1	0.15	0.05	621	3182	11.35
LITHIUM	Li	7439-93-2	N/A	N/A	358	2448	0.53
MAGNESIUM	Mg	7439-95-4	See oxide	See oxide	1204	2007	1.74
MAGNESIUM OXIDE FUME			10.0	10.0-dust 5.0 -resp.			
*MANGANESE	Mn	7439-96-5	5.0-dust 1.0 -fume	1.0-fume	2273	3803	7.20
*MERCURY	Hg	7439-97-6	0.1	0.05 vapor	-38	676	13.55
MOLYBDENUM	Mo	7439-98-7	10.0 insoluble compounds	10.0-Total 5.0-resp. insoluble compounds	4730	10040	10.20
*NICKEL	Ni	7440-02-0	1.0	1.0	2645	4950	8.85
*PHOSPHORUS	P	7723-14-0	0.1	0.1	111	536	1.82
SELENIUM	Se	7782-49-2	0.2	0.2	428	1270	4.81
SILICON	Si	7440-21-3	10.0-Total	10.0-dust 5.0-resp.	2570	5936	2.40
*SILVER	Ag	7440-22-4	0.01	0.01	1761	3542	10.50
TELLURIUM	Te	13494-80-9	0.1	0.1	846	1810	6.24
TIN	Sn	7440-31-5	2.0	2.0	450	5018	7.30
			Inorganics except as oxidesfor PEL and TLV				
TITANIUM	Ti	7440-32-6	See oxide	See oxide	3034	5900	4.50
TITANIUM DIOXIDE		13463-67-7	10.0	10.0-dust 5.0-resp.			
**ZINC	Zn	7440-66-6	See oxide	See oxide	787	1661	7.14
ZINC OXIDE		1314-13-2	10.0 - dust 5.0-fume	10.0-dust 5.0-fume 5.0-resp.			
ZIRCONIUM	Zr	7440-67-7	5.0	5.0	3366	6692	6.40

FOR PERCENT OF METAL SEE ATTACHED CHART

SPECIAL INSTRUCTIONS FOR SARA 131 CHEMICALS

The chemicals present in this product which are marked with an asterisk (*) are subject to the reporting requirements of Section 313 of Title III of the Superfund Amendment and Reauthorization Act of 1986 in 40 CFR, Part 372. If no percentage is shown, the chemical represents less than 1% by weight of the product (if the chemical is not a carcinogen) or less than 0.1% (if the chemical is a known or suspected carcinogen). The chemicals marked with two asterisks (**) are only reportable as DUST or FUME.

SHORT TERM EXPOSURE LIMIT (STEL)

The elements with Short Term Exposure Limits (STELs) are as follows:

Manganese Fume - 3mg/m3
Mercury- 0.03mg/m3
Zinc Oxide Fume - 10 mg/m3

CEILING LIMITS (C)

The elements with Ceiling Limits (C) are as follows:

Beryllium - .005 mg/m3
Cadmium - FUME 0.3 mg/m3, DUST 0.6 mg/m3
Manganese Compounds - 5 mg/m3
Mercury- 0.1 mg/m3

III. PHYSICAL DATA

Melting Point (F): See Section II
Vapor Pressure: NA
% Volatile by Volume: NA
Solubility in Water : Insoluble
Appearance and Odor: Yellow with no odor

Specific Gravity: See Section II
Vapor Density: NA
Evaporation Rate: NA

IV. FIRE AND EXPLOSION HAZARD DATA

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

Method Used: NA
UEL = NA

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 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:

** Aluminum

Aluminum dust / fines and fumes are a low health risk by inhalation and are normally treated as a nuisance dust in normal operations (e.g., milling, cutting, grinding).

*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 suspected cancer-causing agents.

*Arsenic

Arsenic is a cumulative poison which is deposited in the liver, kidneys, hair and nails. Inhaled arsenic is excreted through the kidneys and can be detected in the urine from hours to years after exposure. Symptoms of persons who handle solid arsenic compounds are husky voice, cough, perforation of the nasal septum, ulceration of the skin, loss of hair and nails, warts and sometimes slow, non-malignant skin cancers.

*Beryllium

Beryllium and its compounds are severe pulmonary irritants, primary skin irritants, and skin sanitizers. The principal symptom of acute exposure is dyspnea. Chronic inhalation causes "berylliosis", or chronic pulmonary granulomatosis. The disease begins with dyspnea and cough and progresses to anorexia, fatigue, and weakness. Skin contact will result in dermatitis leading to moderate and severe burns. Eye contact produces conjunctivitis. Soluble compounds are both acutely and chronically toxic, insoluble compounds are only chronically hazardous.
Beryllium and its compounds have been identified as suspected cancer-causing agents.

Boron and its compounds

Hazards associated with excessive exposure to Boron compounds include irritation of the nasal mucous membranes, the respiratory tract, and eyes. Acute poisoning from boric acid or borax is usually the result of application of dressings, powders or ointment to large areas of burned or abraded skin, or accidental ingestion. The symptoms include: nausea, abdominal pain, diarrhea, violent vomiting, which may be accompanied by headache and weakness. A characteristic rash is followed by peeling. Severe cases may exhibit shock with fali in arterial pressure, tachycardia, and cyanosis. Central nervous system irritation, oliquria, and anuria may be present.

*Cadmium
Acute poisoning following ingestion causes gastrointestinal upset, salivation, shock, liver and kidney damage. Fume inhalation causes pulmonary disturbances, weakness, and leg pain, progressing to fever and lung congestion. Chronic inhalation produces anosmia, dyspnea, weight loss, and yellow discoloration of the teeth. Irreversible lung injury has resulted, as has kidney damage. Hypertension has recently been reported.
Cadmium and its compounds have been identified as suspected cancer-causing agents.

*Chromium
In some workers, chromium compounds act as allergens and may cause dermatitis and may also produce pulmonary sensitization. Chronic acid and chromates have direct corrosive effect on the skin and the mucous membranes of the upper respiratory tract. Although rare, there may be the possibility of skin and pulmonary sensitization. IARC has determined that there is sufficient evidence of increased lung cancer among workers in the chromate-producing industry and possibly chromium alloy workers. This determination is supported by sufficient evidence for carcingenicity to animals and possible mutagenicity testing of Cr Vi compounds.

*Cobalt
Cobalt has been reported as causing hypersensitization type dermatitis in individuals who are susceptible. Animal studies have shown that particulate cobalt is an acutely irritating substance and industrial exposures, possibly combines with small amounts of silica, are reported capable of producing serious pneumoconiosis which is initially of an insidious nature.

*Copper
Melting, grinding, cutting of copper may produce fumes or 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 the 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. Chronic poisoning results in Wilson's Disease, characterized by a hepatic cirrhosis, brain damage, demyelination, renal disease and copper deposition in the cornea.

Iron
The inhalation of iron oxide fumes may cause an apparent benign pneumoconiosis which is called siderosis. This disease is reported not to be disabling, but makes x-ray of other lung conditions difficult or impossible.

*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. Prolong 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 changes of miscarriage or birth defects.

Lithium

Lithium salts can be primary irritants. Kidney damage and bone marrow changes have been reported with carbonate. Reproductive effects have been found in experimental animals. Symptoms include eye, nose, and respiratory irritation; eye, skin, and gastrointestinal burns; nausea; visual disturbance; tinnitus weakness; tremors; oliguria; weight loss; central nervous system depression; and respiratory edema.

Magnesium

Inhalation of freshly produced magnesium fume has caused metal fume fever similar to the better known " zinc chills". Heavy exposure to magnesium oxide is irritating to the eyes, nose, and throat. Presence in a wound can increase inflammation and retard healing.
Finely powered magnesium is a fire hazard, and serve injuries and deaths have occurred from ignition of powered magnesium.

* 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 hypersusceptible to manganese. Freshly formed manganese fume has caused fever and chills similar to metal fume fever.

* Mercury

Mercury metal has a vapor pressure which may produce poisoning if a considerable area of the metal surface is exposed to air when it is in its liquid form at room temperature. Mercury intoxication can cause a tremor of the hands, irritation of the mucous membranes of the mouth, excessive flow of saliva, and personality changes. Inhalation of mercury vapor, usually in very high concentrations, may cause metal fume fever which sometimes disappears with no other symptoms, or may be followed by pneumonitis or other symptoms of mercurialism.

Molybdenum

Insoluble molybdenum compounds are irritants. Acute exposure will produce eye, nose and throat irritation.

*Nickel

The most common ailment arising from contact with nickel or its compounds is an allergic dermatitis know as " nickel itch" which usually occurs when he skin is moist. Generally nickel and most salts of nickel do not cause systemic poisoning. IARC has determined that there is at least limited evidence that nickel and certain nickel compounds may be human carcinogens. Several nickel compounds are carcinogenic to laboratory animals by various routes of entry.

*Phosphorus

Red phosphorus does not react with the air and is insoluble making it harmless. Spilled phosphorus should be covered with water immediately. Large spills can be confined to a small area by flooding with water or covering with sand or earth. It should be kept wet until the phosphorus can be burned or recovered. Chronic poisoning may cause general weakness, with anemia, loss of appetite, indigestion, and chronic cough which results from irritations of the gastrointestinal system and fatty degeneration of the liver.

Selenium
Selenium is an eye, skin, and mucous membrane irritant that is slightly toxic by ingestion. Poisoning may affect the liver, kidneys, and respiratory system. Metal fume fever, an influenza-like illness may occur as a result of the inhalation of freshly formed metal oxides. This can also result in tasting sweet, metallic, or foul taste in the mouth, exaggerated metal activity, and prostration. Repeated or prolong exposure may result in a garlic order on the breath or perspiration, pallor, coated tongue, and gastrointestinal disturbances. It is reported that tolerance to the fumes is rapidly developed but also is quickly lost. Persons with a history of chronic respiratory disease, gastrointestinal disturbance, allergies, liver or kidney disease or recurrent dermatitis may be at increased risk from exposure.

Silicon
Silicon is a nuisance dust. Deposition in the eyes, ears, skin, and nose may result in injury. Inhalation produces no change in x-ray.

*Silver
The only reported effect from silver comes from small particles in the skin which causes a permanent discoloration. Silver nitrate dust and solutions are highly corrosive to the skin, eyes , and intestinal tract. Silver nitrate dust may cause local irritation of the skin, burns of the conjunctiva, and blindness. Localized pigmentation of the skin and eyes may occur. The eye lesions are first seen in the caruncle, and then in the conjunctiva and cornea. The nasal septum and tonsillar pillars also may become pigmented.

Tellurium
Tellurium is reported to be irritating to the eyes, skin and mucous membranes. It is toxic if ingested and poisoning may affect the peripheral nervous system. Characteristic symptoms may include a garlic-like odor of the breath and perspiration and a metallic taste. The odor may persist for several days after exposure. In laboratory rats, repeated exposure resulted in peripheral nerve damage with paralysis of the hind limbs. Persons with neurological disorders, skin, blood or chronic respiratory disease may be at increases risk from exposure.

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

Titanium
Titanium is reported as an irritant in only some of the compounds not common to the metal industry.

** 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.

Zirconium
Zirconium is slightly toxic. Repeated topical application of zirconium salts has caused skim granulomas.

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.

VI. REACTIVITY DATA

Stability: Stable
Conditions to Avoid: Stable under normal conditions of transport and storage. Molten metal may react violently with water.
Incompatibility (Material to avoid): Acids, bases, and oxidizers
Hazardous Decomposition of 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 or 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 shield.
Other Protective Clothing or Equipment: As required.
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 when necessary. Always evaluate the jobs on this product in accordance with OSHA or relevant state, federal, or local stations.

--- Use precaution in lifting and prevent dropping----

IX. SPECIAL PRECAUTIONS

**** SPECIAL INSTRUCTIONS FOR CHEMICALS MARKED WITH AN ASTERISK****

Those chemicals marked with an asterisk (*) are subject to the reporting requirements of Section 313 of Title III of the Superfund Amendment and Reauthorization Act of 1986 in 40 CFR, Part 372.

THIS INFORMATION IS TAKEN FROM SOURCES BELIEVED TO BE RELIABLE; HOWEVER, THE MANUFACTURER MAKES NO WARRANTY AS TO THE ABSOLUTE CORRECTNESS OR SUFFICIENCY OR ANY OF THE FOREGOING OR THAT ADDITIONAL OR OTHER MEASURES MAY NOT BE REQUIRED UNDER PARTICULAR CONDITIONS.