

**SAFETY DATA SHEET (SDS) Non-Ferrous Alloys****Copper Beryllium Castings, Extrusions, and Forgings**

No. J79-198, Rev. 1

Dated 30-07-2015

**SECTION 1: PRODUCT IDENTIFICATION****Product Identifier:** Copper Beryllium Castings, Extrusions, Forgings, and Safety Tools**Manufacturer's Name:**

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**Material Name:**

Copper Base Alloy Castings, Rods, Bars, Tubes, Shapes, Flat Products, Scrap Materials and Safety Tools.

These materials are commonly referred to as High-Copper Alloys, AMPCOLOY 83, AMPCOLOY 89, AMPCOLOY 91, AMPCOLOY 95 Beryllium Copper, Copper Beryllium, BeCu, CuBe

**SECTION 2: HAZARDS IDENTIFICATION**

Dust or fumes generated by machining, grinding, sawing, blasting, polishing, buffing, brazing, soldering, welding or thermal cutting of the casting may produce airborne contaminants (see Section 8) that are hazardous.

**Emergency Overview**

If the material is involved in a fire, pressure-demand self-contained breathing apparatus and protective clothing must be worn by persons potentially exposed to the metal fumes or airborne particulate.

**Classification according to Directive 67/548/EEC or 1999/45/EC as amended****Classification** Carc. Cat. 2;R49, Xn;R48/20, R42/43**Classification according to Regulation (EC) No 1272/2008 as amended****Health hazards****Respiratory sensitisation Category 1**

H334 - May cause allergy or asthma symptoms or breathing difficulties if inhaled.

**Skin sensitisation Category 1**

H317 - May cause allergic skin reaction.

**Carcinogenicity Category 1B**

H350i - May cause cancer by inhalation.

**Specific target organ toxicity - repeated Category 1 exposure<sup>5</sup>**

H372 - Causes damage to organs (respiratory system) through prolonged or repeated exposure by inhalation.

**Hazard summary****Physical hazards** Not classified for physical hazards.

**Health hazards** May cause cancer by inhalation. May cause sensitisation by inhalation and skin contact. Also harmful: danger of serious damage to health by prolonged exposure through inhalation. Occupational exposure to the substance or mixture may cause adverse health effects.

**Environmental hazards** Not classified for hazards to the environment.

**Specific hazards** Harmful: danger of serious damage to health by prolonged exposure through inhalation. Irritating to mouth, throat, and stomach. Risk of serious damage to eyes. May cause cancer by inhalation. Limited evidence of a carcinogenic effect. Danger of serious damage to health by prolonged exposure. Prolonged exposure may cause chronic effects.

#### Label elements

**Label according to Regulation (EC) No. 1272/2008 as amended**

**Contains:** Beryllium, Cobalt, Copper, Nickel, Zirconium

#### Hazard pictograms



**Signal word** Danger

#### Hazard statements

H350i May cause cancer by inhalation.

H317 May cause allergic skin reaction.

H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.

H372 Causes damage to organs (respiratory system) through prolonged or repeated exposure by inhalation.

#### Precautionary statements

##### Prevention

P201 Obtain special instructions before use.

P202 Do not handle until all safety precautions have been read and understood.

P260 Do not breathe dust/fume.

P264 Wash thoroughly after handling.

P270 Do not eat, drink or smoke when using this product.

P272 Contaminated work clothing should not be allowed out of the workplace.

P272 Contaminated work clothing must not be allowed out of the workplace.

P280 Wear protective gloves/protective clothing/eye protection/face protection.

##### Response

P302 + P350 If on skin: Wash with plenty of water.

P304 + P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.

P308 + P311 If exposed or concerned: Call a poison center/doctor.

P333 + P313 If skin irritation or rash occurs: Get medical advice/attention.

P342 + P311 If experiencing respiratory symptoms: Call a poison center/doctor.

P362 + P364 Take off contaminated clothing and wash it before reuse.

##### Storage

P405 Store locked up.

##### Disposal

P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

**Other hazards** None known.

### **SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS**

Individual AMPCOLOY compositions are shown on the Certification of Chemical and Mechanical Properties, when supplied, or may be found in AMPCO promotional literature.

Elements having a listed percentage greater than zero will be present in all alloy grades.

Elements having percentages starting with zero may not be present in certain alloy grades.



Element	CAS Number	Percent(%) by weight
Aluminum**	7429-90-5	0-0.2
Beryllium*	7440-41-7	0.25 – 2.0
Cobalt*	7440-48-4	0.2 – 1.3
Copper*	7440-50-8	93 -100
Iron	7439-89-6	0-0.1
Nickel	7440-02-0	0.2 - 2
Silicon	7440-21-3	0-0.2
Zirconium	7440-67-7	0-0.5

\* This constituent, a toxic chemical, makes this product subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40CFR Part 372. Quantity threshold for this chemical, below which reporting of releases is not required, is 25,000 pounds.

\*\* This constituent is reportable only if in the form of dust or fume.

Note: Nickel has been identified as potential human carcinogens. This material is classified as not hazardous under OSHA regulations

#### **SECTION 4: FIRST AID MEASURES**

##### **Eye Contact**

No need for first aid is anticipated under normal use conditions

Dust or powder should be flushed from the eyes with a lot of clean water. Obtain medical help if irritation persists. Contact lenses should not be worn when working with metal dusts and powders because the contact lens must be removed to provide adequate treatment.

##### **Inhalation**

No need for first aid is anticipated under normal use conditions.

Breathing difficulty caused by inhalation of dust or fume requires immediate removal to fresh air. There are no known cases in which a person stopped breathing as a result of exposure. If breathing has stopped, perform artificial respiration and obtain medical help.

##### **Skin**

No need for first aid is anticipated under normal use conditions.

Swallowing metal powder or dust can be treated by having the affected person drink large quantities of water and attempting to induce vomiting, if conscious. Obtain medical help

##### **Ingestion**

No need for first aid is anticipated under normal use conditions.

Swallowing metal powder or dust can be treated by having the affected person drink large quantities of water and attempting to induce vomiting, if conscious. Obtain medical help

##### **Most Important Symptoms and Effects, both Acute and Delayed**

None expected under normal conditions of use.

Dust or fumes generated by machining, grinding, sawing, blasting, polishing, buffing, brazing, soldering, welding or thermal cutting of the casting may produce airborne contaminants (see Sections 8 and 11) that are hazardous.

##### **Indication of Immediate Medical Attention and Special Treatment Needs**

Not applicable

##### **Treatment of chronic Beryllium disease**

There is no known treatment which will cure chronic beryllium disease. Prednisone or other corticosteroids are the most specific treatment currently available. They are directed at suppressing the immunological reaction and have been effective in diminishing many signs and symptoms of chronic beryllium disease. In cases where steroid therapy has had only partial or minimal effectiveness, other immunosuppressive agents, such as cyclophosphamide, cyclosporine, or methotrexate, have been used. These latter agents remain investigational. Further, in view of the potential side effects of all the immunosuppressive medications, including steroids such as prednisone, they should be used only under the direct care of a physician. In general, these medications should be reserved for cases with significant symptoms and/or significant loss of lung function. Other symptomatic treatment, such as oxygen, inhaled steroids or bronchodilators, may be used by some physicians and are effective in selected cases. The decision about when and with what medication to treat is a judgment situation for individual physicians. For the most part,



treatment is reserved for those persons with symptoms and measurable loss of lung function. The value of starting oral steroid treatment, before signs or symptoms are evident, remains a medically unresolved issue currently under study. Some physicians are concerned that their patients may develop a resistance to medication if it is started too soon. The effects of continued low exposure to beryllium are unknown for individuals who are sensitized to beryllium or who have a diagnosis of chronic beryllium disease. This uncertainty leads some physicians to advise a reduction or elimination of further exposure to beryllium. However, some individuals have developed CBD or have gradually become worse after removal from further exposure. Others have continued to work in the beryllium industry without any additional, or accelerated, loss of lung function.

**SECTION 5: FIRE FIGHTING MEASURES****Suitable Extinguishing Media**

Use suitable extinguishing methods for surrounding fire

**Special Hazards Arising from the Substance**

Not applicable

**Special Protective Actions for Fire Fighter**

Not applicable

**SECTION 6: ACCIDENTAL RELEASE MEASURES****Personal Precautions, Protective Equipment and Emergency Procedures**

Persons entering the restricted zone must wear adequate respiratory protection and protective clothing appropriate for the severity of the spill. Cleanup should be conducted with a vacuum system utilizing a high efficiency particulate air (HEPA) filtration system followed by wet cleaning methods. Special precautions must be taken when changing filters on HEPA vacuum cleaners used to clean up potentially toxic materials. Wear protective gloves to avoid cuts from burrs or sharp edges when handling larger pieces for disposal.

**Environmental Precautions**

Caution should be taken to minimize airborne generation of powder or dust and avoid contamination of air and water. Depending upon the quantity of material released, fine powder or dust spills to the environment may require reporting Vacuum or sweep material and place in a disposal container.

**Methods and Material for Containment and Clean-up**

In solid form, this material poses no special health or environmental risk. If this material is in powder or dust form, establish a restricted entry zone based on the severity of the spill.

**SECTION 7: HANDLING AND STORAGE****Precautions for Safe Handling**

No special requirements.

**Conditions for Safe Storage, Including Any Incompatibilities**

No special storage requirements.

**SECTION 8: EXPOSURE CONTROLS AND PERSONAL PROTECTION****Occupational Exposure Limits**

Dust or fumes generated by machining, grinding, sawing, blasting, polishing, buffing, brazing, soldering, welding or thermal cutting of the casting may produce airborne contaminants with the following

Occupational Exposure Limits (OELs):

Component	CAS Number	Percent	OSHA PEL 8-Hr TWA	ACGIH- TLV 8-Hr TWA
			Milligrams Per Cubic Meter	
<b>Aluminum**</b>	<b>7429-90-5</b>	<b>0-0.2</b>		
<b>Metal</b>		<b>Dust</b>	<b>15</b>	<b>10</b>
		<b>Fume</b>	<b>5</b>	<b>5</b>
<b>Beryllium*</b>	<b>7440-41-7</b>	<b>0.25-2</b>		
<b>Inhalable particulate matter</b>			<b>0.0002</b>	<b>0.00005</b>



<b>Cobalt*</b>	<b>7440-48-4</b>	<b>0.2-1.3</b>		
<b>Metal</b>			<b>0.02</b>	<b>0.02</b>
<b>Copper*</b>	<b>7440-50-8</b>	<b>93-100</b>		
<b>Metal</b>		<b>Dust</b>	<b>1</b>	<b>1</b>
		<b>Fume</b>	<b>0.1</b>	<b>0.2</b>
<b>Iron</b>	<b>7439-89-6</b>	<b>0-0.1</b>		
<b>Iron Oxide</b>		<b>Dust &amp; Fume</b>	<b>10</b>	<b>5</b>
<b>Nickel*</b>	<b>7440-02-0</b>	<b>0.2-2</b>		
<b>Metal &amp; Insoluble Compounds</b>			<b>1</b>	<b>1,5</b>
<b>Silicon</b>	<b>7440-21-3</b>	<b>0-0.2</b>		
		<b>Dust</b>	<b>10</b>	<b>10</b>

Elements having a listed percentage greater than zero will be present in all alloy grades. Elements having percentages starting with zero may not be present in certain alloy grades.

\* This constituent, a toxic chemical, makes this product subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40CFR Part 372. Quantity threshold for this chemical, below which reporting of releases is not required, is 25,000 pounds.

\*\* This constituent is reportable only if in the form of dust or fume.

**Exposure Limit Abbreviations**

**NE**= None Established

**ACGIH TLV**= American Conference of Governmental Industrial Hygienists Threshold Limit Value ©, 2015 Edition

**OSHA PEL**= Occupational Health and Safety Administration Permissible Exposure Limit

**TWA**= Time Weighted Average

**STEL**= Short Term Exposure Limit

**C**= Ceiling Limit

**mg/m<sup>3</sup>**= milligram of substance per cubic meter of air

**R**= Respirable fraction of particulate sampled

**I**= Inhalable fraction of particulate sampled

**Appropriate Engineering Controls**

In the solid state, no special requirements are necessary. If processes such as machining, grinding, sawing, blasting, polishing, buffing, brazing, soldering, welding or thermal cutting are used on the casting, local exhaust ventilation or other engineering controls is the preferred method of controlling exposure to airborne dust and fume may be required to maintain concentrations of airborne hazardous ingredients below the applicable exposure limits.

**Personal Protective Equipment**

**Eye Protection**

Wear safety glasses, goggles, face shield, or welder’s helmet when risk of eye injury is present, particularly during melting, casting, machining, grinding, welding, powder handling, etc.

**Skin protection**

No chemical protective clothing is required. If material is processed, use appropriate protective clothing and gloves for the application.

**Respiratory Protection**

In the solid state, no special requirements are necessary. Airborne dust or fumes can be generated by machining, grinding, sawing, blasting, polishing, buffing, brazing, soldering, welding or thermal cutting of the castings. Respiratory protection may be necessary if concentrations of these hazardous ingredients exceed the applicable exposure limits. In these cases a NIOSH approved respirator should be selected based on the form and concentration of the contaminant in air.

**SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES**

<b>Appearance</b>	Solid, Golden or copper colored material
<b>Odor</b>	Not applicable
<b>Odor threshold</b>	Not applicable
<b>pH</b>	Not applicable
<b>Melting Point</b>	1600 - 1960° F (871-1071° C)
<b>Initial boiling point &amp; boiling range</b>	Not applicable
<b>Flash Point</b>	Not applicable
<b>Evaporation Rate</b>	Not applicable
<b>Flammability</b>	Not applicable
<b>Upper/Lower flammability or explosive limits</b>	Not applicable
<b>Vapor Pressure</b>	0.72 hPa estimated
<b>Vapor Density</b>	Not applicable
<b>Relative Density</b>	Not applicable
<b>Solubility in Water</b>	Not applicable
<b>Partition Coefficient</b>	Not applicable
<b>Auto-Ignition Temperature</b>	Not applicable
<b>Decomposition Temperature</b>	Not applicable
<b>Viscosity</b>	Not applicable

**SECTION 10: STABILITY AND REACTIVITY**

<b>Reactivity</b>	Inert, not reactive
<b>Chemical Stability</b>	Stable
<b>Possibility of Hazardous Reactions</b>	Will not occur
<b>Conditions to avoid</b>	None known
<b>Incompatible Materials</b>	None known
<b>Hazardous Decomposition Products</b>	None expected under conditions of normal use.

**SECTION 11: TOXICOLOGICAL INFORMATION**

This product as sold is an article but processing may release hazardous substances. Information about these components is supplied.

**Acute Toxicity**

**Copper** Eye and respiratory irritation may occur. High exposure to copper dust may cause gastrointestinal effects due to oral ingestion.

**Nickel** One study showed severe lung and kidney damage following exposure to extremely high levels of nickel powder.

**Skin Corrosion / Irritation**

None expected

**Serious Eye Damage or Irritation**

None expected

**Respiratory or Skin Sensitization**

**Cobalt** May cause allergy or asthma symptoms or breathing difficulties if inhaled. Contact allergic dermatitis may occur.

**Nickel** Contact allergic dermatitis may occur.

**Germ Cell Mutagenicity**

**Nickel** Chromosomal aberrations and in vitro and in vivo testing has shown that nickel is genotoxic (ASTDR)

**Carcinogenicity**

**Beryllium** Listed by IARC (possibly carcinogenic to humans-Group 1).

**Cobalt** Listed by IARC (possibly carcinogenic to humans-Group 2B). Not listed by NTP or OSHA.

**Copper** Not listed by IARC, NTP or OSHA

**Nickel** Listed by IARC (possibly carcinogenic to humans-Group 2BA) and NTP (known to be a human carcinogen). The strongest evidence for carcinogenicity is for sulfidic nickel forms and the evidence for oxidic forms of nickel are the weakest. There is no evidence that metallic nickel is associated with nasal or lung cancer (ASTDR).

**Reproductive Toxicity**

None expected

**Specific Target Organ Toxicity-Single Exposure**

My cause allergy or asthma symptoms or breathing difficulties if inhaled. May cause allergic skin reaction

**Specific Target Organ Toxicity-Repeated Exposure**

May cause damage to organs ( respiratory system) thru prolonged exposure by inhalation

**Aspiration Hazard**

Based on the physical form, the product is not expected to be an aspiration hazard.

**SECTION 12: ECOLOGICAL INFORMATION**

**Toxicity** Eco toxicity is expected to be minimal since the casting is a solid with low water solubility.

**Persistence and Degradation** Not applicable

**Bioaccumulation** Not applicable

**Mobility in Soil** Not applicable

**Environmental Fate** Not applicable

**SECTION 13: DISPOSAL INFORMATION**

This product is not considered to be hazardous waste according to US RCRA and Canadian regulations. Recover or recycle if possible. Dispose of according to federal, state and local regulations. Dust collected from casting processing operations (e.g. machining, grinding, sawing, blasting, polishing, buffing, brazing, soldering, welding or thermal cutting) may be classified as a hazardous waste. Consult federal, state and local regulations.

**SECTION 14: TRANSPORTATION INFORMATION**

**U.S. Department of Transportation (DOT)** Product is not regulated

**International Maritime Dangerous Goods (IMDG)** Product is not regulated

**Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code**

Product is not regulated

**International Civil Aviation Org. / International Air Transport Assoc. (ICAO/IATA)**

Product is not regulated

**SECTION 15: REGULATORY INFORMATION**

If this product is reformulated or further processed, the regulatory status of the components listed in the composition section of this sheet may be altered. The following regulatory information may not be complete and should not be relied upon as the sole source of information regarding regulatory responsibilities.



**Occupational Health and Safety Administration**

This product is an article as sold. Dust or fumes generated by machining, grinding, sawing, blasting, polishing, buffing, brazing, soldering, welding or thermal cutting of the casting may produce airborne contaminants that are regulated by OSHA.

**TSCA Chemical Inventories**

This product is an article as defined by TSCA regulations, and is exempt from TSCA Inventory listing requirements

**Other Regulatory Information**

Chemical	CAS #	EINECS	CERCLA RQ (lbs)	Section 313	NPRI Threshold Category	California Prop 65
Beryllium	7440-41-7	231-072-3		313	1A	Carcinogen
Cobalt	7440-48-4	231-158-0		313	1A	Carcinogen
Nickel	7440-02-0	231-111-4	100	313	1A	Carcinogen

**CAS**- Chemical Abstract Service- Registry Number

**EINECS** - European Inventory of Existing Commercial Chemical Substances

**CERCLA RQ (reportable quantity)** - if a value is listed then releases of particles, ≤ 100 µm in size, to the environment may require reporting under CERCLA Sections 102-103 (40 CFR Part 302)

**Section 313** - if '313' is listed then may be subject to the reporting requirements found under EPCRA Section 313 (40 CFR Part 372)

**NPRI (National Pollutant Release Inventory) Threshold Category** - if 1A or 1B is listed, may be subject to reporting under the Canadian Environmental Protection Act, 1999

**California Prop 65** - if listed WARNING: This product contains chemicals known to the State of California to cause cancer.

These products are not believed to contain any substances that meet the notification requirements found under EPCRA Sections 302 or 304 (40 CFR Part 355) nor subject to the accidental release prevention requirements under CAA 112(r) (40 CFR Part 68).

**SECTION 16: OTHER INFORMATION**

This MSDS is intended to be used as a guide to the appropriate handling, storage, and use of this product by an adequately trained person. AMPCO METAL S.A. is not responsible for the misuse, mishandling or improper storage of this material by the user. This product is exempt from classification according to the OSHA Hazard Communication Standard (CFR 1910.1200) since it is an article as sold and under normal conditions of use.

Dust or fumes generated by machining, grinding, sawing, blasting, polishing, buffing, brazing, soldering, welding or thermal cutting of the casting can produce airborne contaminants that are hazardous. Consult the Safety Data Sheet (SDS) for this product for further information.

WARNING: This product contains chemical(s) known to the State of California to cause cancer.