

Section 1 – Product and Company Identification

MSDS1159

Ampco Safety Tools
204 North Barnes Drive
Garland, Texas, U.S.A., 75042

Telephone Number: (972) 276-6181
Monday through Friday, 8:00 AM to 5:00 PM (Central Daylight Time)

Product Name: Non-sparking, non-magnetic, corrosion resistant hand tools
Material Name: Copper based alloy castings, rods, bars, tubes, and flat products.

Issue Date: 2/17/2005, Rev. 2

Section 2 – Hazards Identification

Emergency Overview: There are no chemical hazards from the alloy grades in the solid form.

Appearance/odor: Solid material, silver/grey, yellow or reddish in color, with no noticeable odor.

Potential Health Effects: See Section 11 for more information

Machining, grinding, heat treating, flame cutting or welding of these alloy products will generate airborne dust, fumes and particulates.

Likely Routes of Exposure: Inhalation, skin contact, ingestion.

Eye: Causes irritation and redness from acute exposure, avoid blowing particulate into the atmosphere.

Skin: Moderate irritation and redness from prolonged exposure.

Ingestion: Nausea, gastro-intestinal discomfort.

Inhalation: Acute exposure may cause irritation (chest tightness, difficulty breathing and coughing), apathy, loss of appetite, insomnia, headaches, tremors, salivation, tremors, sweating, mental detachment, metal fume fever, and central nervous system depression.

This product does contain carcinogens or potential carcinogens as listed by the ACGIH, OSHA, IARC, and NTP.

CARCINOGEN CLASSIFICATION

Ingredient	OSHA	ACGIH	NTP	IARC	Target Organ
Beryllium	N	A1	K	1	Lung, skin
Chromium	N	A4	N	3	Lung
Hexavalent chromium	N	A1	K	1	Lung
Lead	N	A3	N	2B	Lung, GI
Nickel	N	A1	K	1	Lung, GI

N – Not listed as a human carcinogen.

Code for ACGIH TLV evidence of human carcinogenicity: A1 = confirmed human carcinogen; A2 = suspected human carcinogen; A3 = confirmed animal carcinogen with unknown relevance to humans; A4 = not classifiable as a human carcinogen; A5 = not a suspect human carcinogen.

Code for NTP evidence of human carcinogenicity: K = known to be a human carcinogen; R = reasonably anticipated to be a human carcinogen.

Code for IARC evidence of human carcinogenicity: 1 = carcinogenic to humans; 2A = probably carcinogenic to humans; 2B = possibly carcinogenic to humans; 3 = unclassifiable as to human carcinogenicity; 4 = probably not carcinogenic to humans.

Potential Environmental Effects: See Section 12 for more information

Section 3 – Composition/Information on Ingredients

CHEMICAL INGREDIENTS

Component	CAS Number	Percent by Weight
Aluminum	7429-90-5	0-20
Beryllium	7440-41-7	0-5
Chromium	7440-47-3	0-2
Cobalt	7440-48-4	0-3
Copper	7440-50-8	50-99.9
Iron	7439-89-6	0-6
Lead	7439-92-1	0-11
Magnesium	7439-95-4	0-1
Manganese	7439-96-5	0-14
Nickel	7440-02-0	0-32
Phosphorous	7440-22-4	0-5
Silicon	7440-21-3	0-1
Titanium	7440-32-6	0-5
Tin	7440-31-5	0-12
Zinc	7440-66-6	0-42
Trade Secret	Trade Secret	0-5

Section 4 – First Aid Measures

Eye Contact: Flush well with running water to remove particulate for at least 15 minutes. Get medical attention.

Skin Contact: HEPA vacuum off excess dust/particulate. Remove contaminated clothing and wash before re-use. Wash skin with soap and water. Get medical attention if irritation develops.

Inhalation: Move to fresh air. Get medical attention if symptoms occur.

Ingestion: Get medical attention if large quantities of material have been ingested.

Section 5 – Fire Fighting Measures

Suitable Extinguishing Media: Not combustible under normal conditions. Use fire fighting methods that are appropriate for surrounding fire. Use Class D extinguishing agents or dry sand on metal fines.

Unsuitable Extinguishing Media: Water on molten metal, halogenated agents on small chips or metal fines.

Protection to Firefighters: Molten metal alloys may explode on contact with water. They may also react violently with water, rust and certain metal oxides. Vapors/fumes may be irritating to the eyes, nose, and respiratory tract. Dust clouds may be explosive. Firefighters should wear self-contained breathing apparatus and full fire-fighting turn-out gear.

Section 6 – Accidental Release Measures

Personal Precautions: There are no hazards from these alloy grades in solid form. Dust cloud may be explosive. Prevent the formation of a dust cloud. Use personal protection recommended in Section 8.

Environmental precautions: Minimize the use of water during clean-up to prevent environmental contamination.

Methods for Containment: No special instructions are necessary.

Methods for Clean-up: HEPA vacuum or sweep material, with care taken to minimize particulate disturbance, and place in a disposable container.

Section 7 – Handling and Storage

Handling: No special precautions are necessary for the material as supplied.

Storage: Store material away from incompatible materials and keep the dust, particulate, and fines away from sources of ignition.

Section 8 – Exposure Control/Personal Protection

Component	OSHA (mg/M ³)		ACGIH (mg/M ³)	
	STEL	TWA	STEL	TWA
Aluminum	NE	15.0*; 5.0**	NE	10.0
Beryllium	0.005 (C)	0.002	NE	NIC (0.0002)
Chromium	NE	1.0	NE	0.5
Cobalt ¹	NE	0.1	NE	0.02
Copper	NE	NE	NE	NE
Iron ¹	NE	10.0	NE	5.0
Lead	NE	0.05	NE	0.05
Manganese	NE	5 (C)	NE	0.2
Nickel	NE	1.0	NE	1.5
Phosphorous	NE	0.1	NE	0.1
Silicon	NE	15.0*; 5.0**	NE	10
Titanium	NE	NE	NE	NE
Tin	NE	2.0	NE	2.0
Zinc ¹	NE	5.0	NE	5.0
Trade Secret	NE	15.0*; 5.0**	NE	NE

* - Total dust

** - Respirable dust

1 - For metal dust and fume

C - Ceiling level, never to be exceed during a 8 hour period

NE - None established

NIC - Notice of intended change

Engineering Controls: Provide local exhaust ventilation when a dust or fume is created in handling or working with the material.

Eye/face Protection: Recommended for machining, melting, grinding, cutting, heat treat, welding operations or any operation posing a hazard to the eyes and face. Wear the minimum of safety glasses with side shields. Grinding may also require the use of a full-face shield. Welding, heat treating, and melting may require special eye protection with specially tinted glass, a full-face shield, and/or a welding mask/helmet.

Skin Protection: Wear gloves, foot protection, and/or full body clothing as appropriate for the operation.

Respiratory Protection: In the event of circumstances where airborne concentrations may exceed regulatory exposure limits, use a NIOSH approved air purifying respirator appropriate for the source of the airborne contaminant.

General Hygiene Considerations: Wash thoroughly after handling and before eating and drinking. Always evaluate the operation done on this product in accordance with OSHA or relevant Federal, State, Local, or Industry standards.

Section 9 – Physical and Chemical Properties

Color: Solid material, silver/grey, yellow or reddish
Odor: No noticeable odor
Odor Threshold: Not available
Physical State: Solid
Solubility in Water: Insoluble
pH: Not applicable
Melting Point: 1600-2100 degrees Fahrenheit
Freezing Point: Not applicable
Boiling Point: Not applicable
Flash Point: Not applicable
Evaporation Rate: Not applicable
Upper Flammability Limit: Not applicable
Lower Flammability Limit: Not applicable
Vapor Pressure: Not applicable
Vapor Density: Not applicable
Auto-ignition Temperature: Not applicable
Percent Volatile, wt %: Not applicable

Section 10 – Stability and Reactivity

Stability: Stable under normal conditions of use, storage, and transportation.

Conditions to Avoid: Molten metal may react violently with water. Avoid contact of finely divided material with heat, oxidizers, acids, alkalines, molten lithium and halogenated hydrocarbons. Contact of dust or fumes with these substances may form explosive hydrogen gas.

Incompatible Materials: Acids, bases, and oxidizing agents.

Hazardous Decomposition Products: Metal fumes

Possibility of Hazardous Reactions: Will not occur

Section 11 – Toxicology Information

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. cutting and grinding). Persons exposed to high levels of aluminum in air may have respiratory problems including coughing and asthma from breathing dust. Some studies show that people with Alzheimer's disease have more aluminum than usual in their brains. However, there is not definitive information aluminum causes the disease or whether the buildup of aluminum happens to people who already have the disease.

Chronic exposure may cause pulmonary fibrosis, characterized by breathing difficulty, coughing, shortness of breath and wheezing. There is inadequate evidence to suggest aluminum is carcinogenic to humans.

Beryllium:

Exposure to relatively high concentrations of beryllium may cause acute beryllium disease, characterized by chemical pneumonitis. Inhaling low concentrations of beryllium may cause the development of chronic beryllium disease, a granulomatous lung disease characterized by dyspnea, cough, reduced pulmonary function, and a variety of other symptoms, including weight loss. The lack of a dose-response relationship between the extent of exposure and development of the disease, long latency period between exposure and onset, and the low incidence among beryllium-exposed individuals suggests that the disease is immune mediated. Occupational risk associated with exposure to beryllium-containing alloys has been documented for individuals exposed to beryllium-copper and beryllium-nickel alloys. Beryllium is a suspected human carcinogen, based on results of animal data. Epidemiologic evidence relating beryllium exposure to cancer in humans is inadequate to demonstrate or refute that beryllium is carcinogenic in humans, and the International Agency for Research on Cancer lists the evidence for beryllium induced carcinogenicity in humans as 'limited'.

Chromium:

Breathing high levels of chromium VI can cause irritation to the nose, such as runny nose, nosebleeds, and ulcers and holes in the nasal septum. Ingesting large amounts of chromium VI can cause stomach upsets and ulcers, convulsions, kidney and liver damage, and even death. Skin contact with certain chromium VI compounds can cause skin ulcers. Some people are extremely sensitive to chromium VI or chromium III. Allergic reactions consisting of severe redness and swelling of the skin have been noted. There is inadequate evidence to suggest chromium metal is carcinogenic to humans.

Cobalt:

Exposure to high levels of cobalt can result in lung and heart effects and dermatitis. Liver and kidney effects have also been observed in animals exposed to high levels of cobalt. Animal studies have shown that particulate cobalt is an acutely irritating substance and industrial exposures, possibly combined with small amounts of silica, are capable of producing serious pneumoconiosis. There is inadequate evidence that suggest cobalt is carcinogenic to humans.

Copper:

Machining, melting, grinding, heat treating, and cutting of copper may produce fumes or dust exposure and breathing these particulates may present significant health hazards. Fumes of copper may produce metal fume fever with flu-like symptoms, skin discoloration, and hair discoloration. Industrial dermatitis has not been reported, but keratinization of the hands and soles of the feet has been reported. Systemically, copper dust and fume can cause irritation of the upper respiratory tract. A metallic taste in the mouth may be reported. Chronic poisoning may result in Wilson's disease, characterized by damage to the blood cells, brain, kidneys, liver and pancreas. Symptoms include weakness, anemia, abdominal pain and yellowing of the skin. There is inadequate evidence to suggest copper is carcinogenic to humans.

Iron:

The inhalation of iron oxide fumes may cause benign pneumoconiosis, referred to as siderosis. The disease is not reported to be disabling, but makes x-ray determination of other lung conditions difficult. There are no studies available for humans or animals to suggest iron is carcinogenic.

Lead:

Lead is an accumulative poison. Inhalation effects of exposure to fumes or dust or inorganic lead may develop quickly. Symptoms include decreased physical fitness, fatigue, sleep disturbance, headache, aching bones and muscles, constipation, abdominal pains, and decreasing appetite. The effects are reversible and a complete recovery is possible. Inhalation of large amounts of lead may lead to seizures, coma, or death. Chronically, lead can accumulate in the body and cause more severe symptoms. These symptoms include anemia, pale skin, nausea, constipation, decreased hand grip strength, vomiting and paralysis of the wrist joint. Prolonged exposure can result in kidney damage and central nervous depression. Continued exposure can result in decreased fertility and/or increased chances of miscarriage or birth defects. There is inadequate evidence to suggest lead is carcinogenic to humans.

Magnesium:

The most common condition arising from exposure to dust and fume is irritation to the eyes and mucous membranes. Small particles embedded in the skin may cause ulcerations, which may become infected. There is inadequate evidence to suggest magnesium is carcinogenic to humans.

Manganese:

Chronic manganese poisoning may result from inhalation of the dust or fume. Exposure to the fume may result in metal fume fever and cause flu-like symptoms. The central nervous system is the main target organ. Chronic poisoning is not a fatal disease, although it is extremely disabling. Some individuals may be hypersensitive to manganese. There is inadequate evidence to suggest manganese is carcinogenic to humans.

Nickel:

The most common condition arising from exposure is an allergic dermatitis condition known as “Nickel Itch”, which usually occurs when the skin is moist. Generally, nickel or the associated salts do not cause chronic poisoning. The IARC has determined that certain nickel compounds may be carcinogenic to humans. Several nickel compounds are carcinogenic to laboratory animals by various routes of entry.

Phosphorous:

Little information is available about the health effects that may be caused by phosphorus. The primary route of exposure is inhalation of the dust, fume or particulate. Breathing phosphorus for short periods may cause coughing and irritation of the throat and lungs. Breathing phosphorus for long periods may cause a condition known as "phossy jaw", which involves poor wound healing of the mouth and breakdown of the jaw bone. Eating or drinking small amounts of phosphorus may cause liver, heart, or kidney damage, vomiting, stomach cramps, drowsiness, or death. Little information exists on effects from eating or drinking very small amounts of phosphorus containing substances over long periods of time. Skin contact with burning phosphorus may burn skin or cause liver, heart, and kidney damage. There are no studies available for humans or animals that suggest phosphorous is carcinogenic.

Silicon

Silicon exposure poses little health risk with only minimal effect on the lungs. Silicon dioxide, silica, formed when silicon is heated in air may cause pulmonary fibroses and silicosis on chronic exposure. This is a form of pneumoconiosis which is characterized by the formation of the nodules of scar tissues (fibrosis) throughout the lungs. Silicosis can cause difficult or labored breathing especially on exertion, decreased physical work capacity and sometimes an enlarged chest. There are no studies available for humans or animals that suggest silicon is carcinogenic.

Titanium:

Titanium can irritate the eyes on contact, while breathing titanium can irritate the nose, throat and lungs causing coughing, wheezing and/or shortness of breath. Chronic health effects can occur at some time after exposure and can last for months or years. Other long term effects can include irritation to the lungs. Repeated exposure may cause bronchitis to develop with cough, phlegm, and/or shortness of breath. The only carcinogenic effects of titanium thus far reported have been the development of fibrosarcomas at the injection sites in exposed rats. There is inadequate evidence to suggest titanium is carcinogenic to humans.

Tin

The inhalation of inorganic tin fumes or dust may cause an apparent benign pneumoconiosis called stannosis, which is reported not to be disabling. Breathing tin dust, fumes or particulate can irritate the nose, throat and lungs causing coughing, wheezing and/or shortness of breath. Tin can cause nausea, vomiting, diarrhea and abdominal pain, headache, fatigue and tremors. Contact can irritate the skin and eyes. There are no studies available for humans or animals that suggest tin is carcinogenic.

Zinc

Zinc is relatively low in toxicity but inhalation of fumes may cause “metal fume fever.” Onset of symptoms may be delayed four to twelve 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 twenty-four to forty-eight hours and leave no effect. There is inadequate evidence to suggest zinc is carcinogenic to humans.

Section 12 – Ecological Information

No ecological data are available on the impact of the hand tool products to the environment. There are extensive ecological data available on the various components of this product. An adequate representation of all these data is beyond the scope of this document.

Section 13 – Disposal Considerations

The alloy grades covered by this material safety data sheet are recyclable. The value of solids, turnings, etc. will be increased when segregated by alloy grade. Recycling is recommended.

Disposal: The information presented below only applies to the material as supplied. It is the responsibility of the waste generator to determine the toxicity of physical properties of the material generated to determine the proper waste identification and disposal methods in compliance with applicable regulations. Disposal must be performed in accordance with Federal, State, and local regulations.

Section 14 – Transportation Information

United States DOT (ground): Not classified as a hazardous material for shipping.

Canadian TDG (ground): See US DOT

ICAO (air): See US DOT

IMO (water): See US DOT

Section 15 – Regulatory Information

Global Inventories:

TSCA:	United States	Included
WHMIS:	Canada	Included
EINECS:	European Union	Included

Federal Regulations:

Sara Title III, Section 313 Information:

<u>Component</u>	<u>CAS Number</u>	<u>Percent by Weight</u>
Aluminum	7429-90-5	0-20
Beryllium	7440-41-7	0-5
Chromium	7440-47-3	0-2
Cobalt	7440-48-4	0-3
Copper	7440-50-8	50-99.9
Lead	7439-92-1	0-11
Manganese	7439-96-5	0-14
Nickel	7440-02-0	0-32
Phosphorous	7440-22-4	0-5
Zinc	7440-66-6	0-42

State Regulations:

California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65): This material contains chemicals currently listed as carcinogens or reproductive toxins.

Section 16 – Other Information

MSDS format revised to comply with ANSI Z400.1-2004.

NFPA 704: National Fire Protection Association

Health: 0
Fire: 0
Reactivity: 0
Special information: None

Code for NFPA 704: 0 = minimal hazard; 1 = slight hazard; 2 = moderate hazard; 3 = severe hazard; 4 = extreme hazard

Please note a limited number of Ampco Safety Tool products contain minor concentrations of beryllium. Contact Ampco Safety Tools for a specific list of tool products containing beryllium, which is a highly toxic metal and in the form of a solid should not present an exposure hazard. However, if any work is done on the tool that may generate dust or fumes, refer to the Control Measures section of this material safety data sheet and **TAKE ALL NECESSARY PRECAUTIONS** in accordance with the information contained herein and all federal, state, and local regulations.

The tools sold by Ampco Safety Tools are “Articles” as defined by the Occupational Safety and Health Administration (OSHA) Hazard Communication Standard, 29 CFR 1910.1200. As such, the use of Ampco tools as intended by design should not generate dust or fumes. However, if an operation or work is done on the tool which might generate dust or fumes, please refer to the information on characteristics of the metals used in the production of the tools as described in this material safety data sheet.

The information contained in this document applies to the specific material as supplied. It may not be valid for this material if it is used in combination with any other materials. To the best of our knowledge and based upon current publicly available data at the time of this material safety data sheet (MSDS) development, the information contained in MSDS is accurate. Although certain hazards are described herein, Ampco Safety Tools or its representatives do not guarantee that these are the only hazards which exist. Furthermore, neither Ampco Safety Tools nor any of its representatives assume liability for the accuracy or completeness of the information contained herein. It is the user’s responsibility to satisfy oneself as to the suitability and completeness of this information for his/her own particular use. All materials may present unknown hazards and should be used with caution.

Prepared By:

Halff Associates, Inc., Technical Expert
8616 Northwest Plaza Drive
Dallas, Texas 75225