

SAFETY DATA SHEET

Date Issued: April, 2015
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1. PRODUCT AND COMPANY IDENTIFICATION:

Product Name: C18000, C18150, C18200, C18020, and Thermal-Mould™ Super

MANUFACTURER: Various

EMERGENCY : Call 911

2. HAZARD IDENTIFICATION AND POTENTIAL HEALTH EFFECTS

GHS Classification (29 CFR 1910.1200): Solid, Alloy, Mixture Acute toxicity, category 4, Carcinogenicity, category 2, Reproductive toxicity, category 2.

GHS Label Elements, Symbol(s)



Signal Word: **WARNING**

Hazard Statements: Harmful if swallowed; Harmful if inhaled; Suspected of causing cancer; Suspected of damaging fertility or the unborn child.

Precautionary Statements: Do not breath dust or fume; Wear protective gloves/protective clothing/eye protection/face protection; In case of inadequate ventilation, wear respiratory protection. Wash thoroughly after handling. IF SWALLOWED OR INHALED: Call a POISON CENTER or doctor/physician if you feel unwell.

NOTE: This safety data sheet (SDS) provides information on a specific group of manufactured metal alloy products. As these metal alloy products may share a common physical nature and constituents, the data presented may be applicable to all alloys identified. In the solid form in which it is provided, this material does not pose a health hazard. Subsequent operations performed by the end user may alter this via machining, exposure to heat, melting/casting or other metalworking operations. As a result of such working, there may be a potential for the alloy to be released as an inhalable dust. IBC Advanced Alloys does not warranty this material for any specific application and all precautions must be taken by the end user to prevent and protect against inhalable particulate. See section 8 for information on exposure controls and personal protection.

3. COMPOSITION/INFORMATION ON INGREDIENTS

<u>ELEMENT</u>	<u>CAS#</u>
COPPER (Cu)	7440-50-8
IRON (Fe)	7439-89-6
NICKEL (Ni)	7440-02-0
CHROMIUM (Cr)	7440-47-3
SILICON (Si)	7440-21-3
TIN (Sn)	7440-31-5
LEAD (Pb)	7439-92-1
COBALT (Co)	7440-48-4
ZINC (Zn)	7440-66-6
ZIRCONIUM (Zr)	7440-67-7

UNS #	Description	Cu	Fe	Ni	Cr	Si	Pb	Other
C18000	---	Bal	0.15	1.8 -3.0 ⁽³⁾	0.10- 0.80	0.40- 0.80	-	-
C18150 ⁽⁵⁾	---	Bal	-	-	0.50- 1.50	-	-	0.005- 0.25 Zr
C18200 ⁽⁴⁾	Chromium Copper	Bal	0.10	-	0.6- 1.2	0.10	0.05	-
C18020	---	Bal	-	-	.10- .30	.05	-	.05-.25 Sn .10-.30 Zn
Thermal-Mould™ Super		Bal	-	7	1	2	-	-

(3) includes Co

(4) Cu+Sum of Named Elements, 99.5% min.

(5) Cu+Sum of Named Elements, 99.7% min.

4 FIRST AID MEASURES

General Measures: Under normal handling and use, exposure to solid forms of this material present few health hazards. Subsequent operations such as grinding, melting or welding may produce hazardous dust or fumes which can be inhaled or come in contact with the skin or eyes. Emergency responders should take care to avoid secondary exposure to particulate. Wear appropriate protective equipment.

INHALATION: Remove to fresh air, keep warm and quiet, give oxygen if breathing is difficult. Seek immediate medical attention.

INGESTION: Rinse mouth with water. Do not induce vomiting. Seek immediate medical attention. Never induce vomiting or give anything by mouth to an unconscious person.

SKIN: Remove contaminated clothing; wash affected area with soap and water. Seek medical attention. Wash contaminated clothing before reusing.

EYES: Flush eyes with lukewarm water, including under upper and lower eyelids, for at least 15 minutes. Seek medical attention.

Most Important Symptoms/Effects, Acute and Delayed: May cause irritation. See section 11 for more information.

Indication of Immediate Medical Attention and Special Treatment: No other information available.

5. FIRE FIGHTING MEASURES

General Fire Hazards: See Section 9 for Flammability Properties. This product does not present fire or explosion hazard as shipped. Fine dust from processing may ignite if allowed to accumulate and subjected to an ignition source.

Hazardous Combustible Products: When heated, alloy could emit toxic fumes. In event of fire avoid breathing fumes. May cause sensitization by inhalation and skin contact.

Extinguishing Media: Isolate the fire and use class "D" fire extinguishing materials such as Lith-X, Dry Graphite, etc

Unsuitable Extinguishing Media: Do Not use water, foam or halon.

Special Protective Equipment and Precautions for Firefighters: Firefighters should wear full protective gear, self contained breathing apparatus when necessary

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions, Protective Equipment and Emergency Procedures: Wear appropriate respiratory and protective equipment specified in Section 8. Avoid creating dusts. Avoid breathing dust or fumes. Isolate spill area and provide ventilation.

Methods and Materials for Containment and Clean Up: For larger pieces, pick up mechanically. For chips or dust, vacuum area using a system equipped with a HEPA filtration system and place in property labeled closed containers. Special precautions must be taken when changing filters on HEPA vacuum systems used to clean up spills/releases of materials. Caution should be taken to minimize airborne generation of particulate and avoid contamination of air and water.

Emergency Measures: Isolate area. Keep unnecessary personnel away. Environmental Precautions: If released into the environment, do not allow to enter sewage systems or penetrate ground or soil. See Section 13 for disposal information.

7 HANDLING AND STORAGE

Precautions for Safe Handling: Handle in a well-ventilated area. Avoid creating dust. Avoid exposure to high temperature. Avoid breathing dust or fumes. Avoid contact with skin and eyes. Wash thoroughly before eating or smoking. See section 8 for information on personal protection equipment.

Conditions for Safe Storage, Including Any Incompatibilities: Store in a sealed container. Store in a cool, dry area. Protect from moisture. Do not store together with strong oxidizers or acids. See section 10 for more information on incompatible materials.

8. EXPOSURE CONTROLS, PERSONAL PROTECTIVE EQUIPMENT

ELEMENT	CAS#	OSHA / P. E. L. ⁽¹⁾
COPPER (Cu) ⁽⁴⁾	7440-50-8	1.0 dust & mists, 0.1 fume
IRON (Fe)	7439-89-6	10 oxide fume
NICKEL (Ni) ^{(4) (5)}	7440-02-0	1 nickel metal
CHROMIUM (Cr)	7440-47-3	1.0 chrome metal
SILICON (Si)	7440-21-3	10 total dust
TIN (Sn)	7440-31-5	2 inorganic compounds
LEAD (Pb)	7439-92-1	0.05 ug inorganic
COBALT (Co) ⁽⁴⁾	7440-48-4	0.05 dust & fume
ZINC (Zn)	7440-66-6	10 oxide dust
ZIRCONIUM (Zr)	7440-67-7	5 zirconium compounds

(1) Permissible Exposure Limits are expressed in milligrams per cubic meter of air (mg/m³), unless noted.

(2) ug = microgram (one millionth of a gram; 10⁻⁶ gram)

(3) CL = Ceiling limit, not to be exceeded

(4) Is listed as a toxic chemical and requires reporting under Section 313 of the Community Right-To-Know Act.

(5) Item is suspected carcinogens in humans.

Appropriate Engineering Controls: Whenever possible the use of local exhaust ventilation or other engineering controls is the preferred method of controlling exposure to airborne dust and fume to meet established occupational exposure limits. Use good housekeeping and sanitation practices. Do not use tobacco or food in work area. Wash thoroughly before eating or smoking. Do not blow dust off clothing or skin with compressed air. Clothing worn in areas of exposure to lead dust or fume should be restricted to the workplace and laundered regularly.

Individual Protection Measures, Such as Personal Protective Equipment:

Respiratory Protection: When potential exposures are above the occupational limits, approved respirators must be used.

Eye Protection: Safety glasses

Skin Protection: Wear impermeable gloves, protective work clothing as necessary.

9. PHYSICAL AND CHEMICAL PROPERTIES:

APPEARANCE: Solid Metal

COLOR: Red

ODOR: No odor

MELTING POINT (°F) 1590°F - 1976°F

WATER SOLUBILITY: Not Soluble

SPECIFIC GRAVITY: 8.26 – 8.89

BOILING POINT: N/A

EVAPORATION RATE: N/A

VAPOR DENSITY: N/A

VAPOR PRESSURE: N/A

10: STABILITY AND REACTIVITY

Reactivity: No data

Chemical Stability: Stable under recommended storage conditions.

Possibility of Hazardous Reactions: Zirconium fines will burn when exposed to an ignition source. Dust dispersed in air may be explosive. Keep fine turnings completely dry, or very wet. If wet, the water content should be more than 25% by weight for maximum safety in handling. Severe explosions can result from ignition of zirconium powder or machining fines containing moisture in the concentration range of 5 to 10%.

Conditions to Avoid: Avoid creating or accumulating fines or dusts. Avoid all sources of ignition.

Incompatible Materials: Acids, oxidizing agents, fluorine, chlorine, bromine, iodine, halocarbons, carbon tetrachloride, carbon tetrafluoride, freons, nitril-fluoride.

Hazardous Decomposition Products: Metal fumes; Zirconium oxide fume.

11. TOXICOLOGICAL INFORMATION:

Likely Route of Exposure: Product as shipped does not present a hazard. However, subsequent operations may create dust, small particulate or fumes, which could become an irritant by inhalation and contact with skin and eyes.

Symptoms of Exposure: May cause skin irritation and dermatitis especially in creases of skin where dust may accumulate or rub against skin. May cause eye irritation and/or conjunctivitis. May be harmful if swallowed. May be harmful if inhaled. May cause nose, throat irritation and metallic taste. Some individuals become sensitized from repeated contact with metal dusts, fumes, especially alloys containing copper and nickel. Inhalation of dust in high concentrations may cause irritation of the respiratory system and may cause headache, nausea, vomiting. Symptoms due to ingestion of lead dust or fume would be similar to those from inhalation.

Acute and Chronic Effects:

Copper (7440-50-8): Copper is a trace element that is essential for human health. Chronic exposure to copper dust can irritate the respiratory tract, nose, mouth and eyes, and cause headaches, dizziness, nausea and diarrhea. Ingestion of excessive amounts of copper may cause gastrointestinal distress. Chronic ingestion may damage the liver and kidneys.

Acute Toxicity: No data

Carcinogenicity: NTP: Not identified as carcinogenic IARC: Not identified as carcinogenic

Iron (7439-89-6): Chronic inhalation of finely divided iron powder may cause chronic iron poisoning and pathological deposition of iron in the body tissue. Ingestion may cause vomiting, diarrhea, pink urine, black stool, and liver damage.

Acute Toxicity: LD50 Oral - rat - 30,000mg/kg

Carcinogenicity: NTP: Not identified as carcinogenic IARC: Not identified as carcinogenic

Nickel (7440-02-0): The most common harmful health effect of metallic nickel in humans is an allergic skin reaction in those who are sensitive to nickel. Although nickel compounds are known human carcinogens, the evidence suggests that the relatively insoluble metallic nickel is less likely to present a carcinogenic hazard than are the nickel compounds that tend to release proportionately more nickel ion.

Acute Toxicity: No data

Carcinogenicity: NTP: R - reasonably anticipated to be a human carcinogen IARC: 2B - possibly carcinogenic to humans

Chromium (7440-47-3): Although much is known about the health effects of chromium compounds, the health effects of chromium metal, Cr(0), is not well studied. Due to insolubility most elements in their metallic state are not considered to be serious health hazards.

Acute Toxicity: No data

Carcinogenicity: NTP: Not identified as carcinogenic IARC: 3 - Not classifiable as to carcinogenicity in humans

Silicon (7440-21-2): Inhalation or contact with silicon dusts may cause irritation. There is no available data to show any toxic effects for elemental silicon.

Acute Toxicity: No data

Carcinogenicity: NTP: Not identified as carcinogenic IARC: Not identified as carcinogenic

Tin (7440-31-5): Elemental tin is considered to have low toxicity. Ingestion of food contaminated with tin may cause transient gastrointestinal disturbances such as nausea, vomiting, diarrhea, fever and headache. Inhalation of tin as dust or fumes may cause a benign pneumoconiosis in exposed workers.

Acute Toxicity: No data

Carcinogenicity: NTP: Not identified as carcinogenic IARC: Not identified as carcinogenic

Lead (7439-92-1): Lead accumulates in bone and body organs once it enters the body. Elimination from the body is slow. Initial and periodic medical examinations are advised for persons repeatedly exposed to levels above the exposure limits of lead dust or fumes. Once lead enters the body, it can affect a variety of organ systems, including the nervous system, kidneys, reproductive system, blood formation, and gastrointestinal system.

Acute Toxicity: No data

Carcinogenicity: NTP: R - Reasonably anticipated to be a carcinogen IARC: 2B - Possibly carcinogenic to humans

Cobalt (7440-48-4): Acute exposure to cobalt metal dusts or fumes is characterized by irritation to the eyes, and to a lesser extent, irritation to the skin. Chronic exposure to cobalt metal dust or fumes may cause respiratory and dermatologic signs and symptoms. Chronic exposure to cobalt by inhalation in humans results in effects on the respiratory system, such as respiratory irritation, wheezing, asthma, decreased lung function, pneumonia, and fibrosis.

Acute Toxicity: LD50 Oral - rat - 6,171mg/kg

Carcinogenicity: NTP: Not identified as carcinogenic IARC: 2B - Possibly carcinogenic to humans

Zinc (7440-66-6): Zinc is an essential trace element and necessary for human health. It is involved in the synthesis and metabolism of nutrients, cell and organ structure and integrity, cell division, immune function and wound healing. Acute ingestion of high amounts of zinc may cause nausea, vomiting, loss of appetite, abdominal cramps, diarrhea and headaches. Chronic ingestion of high amounts may cause copper deficiency, altered iron function and reduced immune function. Inhalation of fumes containing zinc oxide may cause metal fume fever. Symptoms include cough, shortness of breath, sore throat, chest pain, headache and fever.

Acute Toxicity: No data

Carcinogenicity: NTP: Not identified as carcinogenic IARC: Not identified as carcinogenic

Zirconium (7440-67-7): Zirconium is generally considered to be physiologically inert.

Acute Toxicity: No data

Carcinogenicity: NTP: Not identified as carcinogenic IARC: Not identified as carcinogenic

For more information refer to NIOSH Pocket Chemical Guide <http://www.cdc.gov/niosh/npg/default.html> and or OSHA's Chemical Sampling information https://www.osha.gov/dts/chemicalsampling/toc/toc_chemsamp.html

12. ECOLOGICAL INFORMATION (Non-Mandatory)

A. General Product Information: Data not available for metal alloy solid.

Ecotoxicity: No further relevant information available

Persistence and degradability: No further relevant information available

Bioaccumulative: Metal powders in water or soil may form metal oxides or other metal compounds that could become bioavailable. No further relevant information available

Other Adverse Effects: No further relevant information available

General Notes: Do not allow material to be released to the environment without proper permits

Additional Ecological Information

This material may be recyclable. Contact your Sales Representative.

13. DISPOSAL CONSIDERATIONS

MATERIAL DISPOSAL: Return metal to reclaimer. Collected dust from machining, welding, etc. might be considered "hazardous waste" in some circumstances. Consult local, state and federal authorities regarding disposal of this material.

14. TRANSPORTATION INFORMATION (Non-Mandatory)

DOT: Not regulated in solid form.

GHS Communication regulations of the U.S. Occupational Safety and Health Administration require this product to be labeled.

15 REGULATORY INFORMATION

TSCA Listed: All components are listed.

Regulation (EC) No 1272/2008 (CLP): Acute toxicity, category 4, Carcinogenicity, category 2, Reproductive toxicity, category 2.

Canada WHMIS Classification (CPR, SOR/88-66): Class D, Division 2, Subdivision A - Very toxic material causing other toxic effects.

HMIS Ratings: Health: 1 Flammability: 1 Physical: 0

NFPA Ratings: Health: 1 Flammability: 1 Reactivity: 0

Chemical Safety Assessment: A chemical safety assessment has not been carried out.

16. OTHER INFORMATION

Following is the label which accompanies this product during shipment.

This safety data sheet (SDS) provides information on a specific group of manufactured metal products. Since these metal products may share a common physical nature and constituents, the data presented are applicable to all alloys identified. This information was obtained from current and reputable resources. However, data are provided without warranty, expressed or implied, regarding correctness or accuracy. It is the user's responsibility both to determine safe conditions for use of this product and to assume liability for loss, injury, damage or expense resulting from improper use of this product.