1. PRODUCT AND COMPANY IDENTIFICATION

Product Name: COPPER ALLOY
Chemical Name: Mixture - Metal Alloy
Synonyms: Copper, UNS/CDA Alloy Nos. C10000-C15599 (except 15815)
Chemical Family: Copper
Formula: Not applicable - mixture
Product Use: Metallurgical Products

Manufacturer/Distributor: IMS Company
10373 Stafford Road
Chagrin Falls, OH 44023-5296
Web: www.imscompany.com

Emergency Phone #: 800-424-9300
Prepared by: Safety Advisor
Prepared/Revised: June 1, 2015
Sales: sales@imscompany.com
2. HAZARD IDENTIFICATION

United States (US)
According to OSHA 29 CFR 1910.1200 HCS

Health hazards associated with this product only apply in a fume or dust form.

Classification of the substance or mixture (Fume or Dust)
OSHA HCS 2012

- Flammability - 0
- Health - 1
- Physical - 0

Label elements
OSHA HSC 2012

- !

Hazard Statements

Causes skin irritation - H315
May cause respiratory irritation - H335

Precautionary statements

Avoid breathing dust or fumes - P261

Prevention

Avoid breathing dust or fumes - P261
Do not get in eyes, on skin, or on clothing - P262
In case of inadequate ventilation wear respiratory protection - P285

Response

**EYE CONTACT:**
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. - P305 + P351 + P338
If eye irritation develops, Get medical advice/attention - P313

**SKIN CONTACT:**
Rinse skin with water/shower - P353
Take off contaminated clothing and wash before reuse - P362
If skin irritation or rash develops, get medical advice/attention - P363

**INHALATION:**
If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing - P340
Get medical advice/attention - P313

**INGESTION:**
Not a likely route of exposure for finished metal alloy. If dust is ingested, immediately drink water to dilute.
Get medical advice/attention - P363
NOTE TO PHYSICIANS: There is no specific antidote to the active ingredients in this product; use symptomatic treatment.

Other Hazards
OSHA HSC 2012


MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: Exposure to dust or fume may aggravate an existing dermatitis, asthma, emphysema, or other respiratory disease.

Canada

According to WHMIS

Classification of the substance or mixture

WHMIS

This product is considered to be a manufactured article and therefore not subject to WHMIS requirements.

Other Information

NFPA

Not rated

3. COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>CAS Number</th>
<th>Components</th>
<th>% By Weight</th>
<th>EINECS/ ELINCS</th>
<th>EU Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>7440-50-8</td>
<td>Copper</td>
<td>99.75 - 100</td>
<td>231-159-6</td>
<td>None</td>
</tr>
</tbody>
</table>

OSHA REGULATORY STATUS: In solid form, not hazardous. Dust or fume: irritant

In solid form, this material is not hazardous. Dust and fumes are hazardous materials.

4. FIRST AID MEASURES

EYE CONTACT: Immediately flush out fume and dust particles with large amounts of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. If eye irritation develops, call a physician at once.

SKIN CONTACT: If exposed to dust or fumes, wash skin with plenty of water. Remove contaminated clothing and shoes and launder before reuse. If skin irritation or rash develops and persists or recurs, get medical attention.

INHALATION: If symptoms of lung irritation occur (coughing, wheezing or breathing difficulty), remove from exposure area to fresh air immediately. If breathing has stopped, perform artificial respiration. Keep affected person warm and at rest. Get medical attention.

INGESTION: Not a likely route of exposure for finished metal alloy. If dust is ingested, immediately drink water to dilute. Consult a physician if symptoms develop.

NOTE TO PHYSICIANS: There is no specific antidote to the active ingredients in this product; use symptomatic treatment.

5. FIRE FIGHTING MEASURES

<table>
<thead>
<tr>
<th>PROPERTY</th>
<th>VALUE</th>
<th>PROPERTY</th>
<th>VALUE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Explosive</td>
<td>No</td>
<td>Flammable</td>
<td>NO</td>
</tr>
<tr>
<td>Combustible</td>
<td>No</td>
<td>Pyrophoric</td>
<td>No</td>
</tr>
<tr>
<td>Flash Point (°C):</td>
<td>Not applicable</td>
<td>Burning Rate of Material:</td>
<td>Not applicable</td>
</tr>
<tr>
<td>------------------</td>
<td>---------------</td>
<td>--------------------------</td>
<td>----------------</td>
</tr>
<tr>
<td>Lower Explosive Limit:</td>
<td>Not applicable</td>
<td>Autoignition Temp.:</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Upper Explosive Limit:</td>
<td>Not applicable</td>
<td>Flammability Classification:</td>
<td>(defined by 29 CFR)</td>
</tr>
</tbody>
</table>

**UNUSUAL FIRE AND EXPLOSION HAZARDS:**
Dust may cause an ignitable and/or an explosive atmosphere. For localized powder fires, smother with dry sand, dry dolomite, sodium chloride or soda ash. Use fire-extinguishing media appropriate to fight surrounding fires. None required.

**SPECIAL FIREFIGHTING PROCEDURES:**

**6. ACCIDENTAL RELEASE MEASURES**

**FOR ALL TRANSPORTATION ACCIDENTS, CALL (618)258-5167.** In dust form, this product may be an explosion hazard. Remove all sources of ignition. Dust of fume may be suppressed by the use of a local exhaust system. Dispose of per guidelines under Section 13, WASTE DISPOSAL.

**7. HANDLING AND STORAGE**

**HANDLING:**
Avoid dispersion of dust in air.
No special requirements.

**STORAGE:**

- **Shelf Life Limitations:** None known
- **Incompatible Materials for Storage or Transport:** None known

**OTHER PRECAUTIONS:**
Do not shake clothing, rags or other items to remove dust. Dust should be removed by washing or HEPA vacuuming.

**8. EXPOSURE CONTROLS/PERSONAL PROTECTION**

<table>
<thead>
<tr>
<th>CAS #</th>
<th>CHEMICAL NAME</th>
<th>ACGIH TLV</th>
<th>OSHA PEL</th>
<th>INTERNATIONAL OELS</th>
</tr>
</thead>
<tbody>
<tr>
<td>7440-50-8</td>
<td>Copper</td>
<td>0.2 mg/m³ (fume), 1 mg/m³ (dusts and mists)</td>
<td>0.1 mg/m³ (fume)</td>
<td>Austria, Belgium, Canada: 0.2 mg/m³ (fumes), 1 mg/m³ (dusts)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1 mg/m³ (dusts and mists)</td>
<td>Denmark: 1.0 mg/m³ (dust and powder) Germany (MAK): 0.1 mg/m³ (fume), 1 mg/m³ (dusts and mists)</td>
</tr>
</tbody>
</table>

**ENGINEERING CONTROLS:**
Local exhaust ventilation is recommended if significant dusting occurs or fumes are generated. Otherwise, use general exhaust ventilation.

**EYE / FACE PROTECTION:**
Use safety glasses.

**SKIN PROTECTION:**
Wear impervious (cut-resistant) gloves and other protective clothing (aprons, coveralls) as appropriate to prevent skin contact when using this product. If generating a dust, wash thoroughly after handling, especially before eating, drinking, or smoking.

**RESPIRATORY PROTECTION:**
Respiratory protection not normally needed. If dusting occurs or fumes are generated above the PEL/TLV, use a NIOSH-approved half-face or full-face respirator equipped with High Efficiency Particulate (HEPA) filter cartridges.

**GENERAL HYGIENE CONSIDERATIONS:**
Do not eat, drink, or smoke while using this product in dust form.

**9. PHYSICAL AND CHEMICAL PROPERTIES**

<table>
<thead>
<tr>
<th>PROPERTY</th>
<th>VALUE</th>
<th>PROPERTY</th>
<th>VALUE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance:</td>
<td>Red metallic</td>
<td>Vapor Density (air = 1):</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Odor:</td>
<td>None</td>
<td>Boiling Point (°F):</td>
<td>No data</td>
</tr>
</tbody>
</table>
10. STABILITY AND REACTIVITY

STABILITY:
Not affected by mechanical impact or shock or by electrical discharge.

CONDITIONS TO AVOID:

MATERIALS TO AVOID:
Acetylene, chlorine

HAZARDOUS DECOMPOSITION PRODUCTS:
When heated to decomposition, may produce metal oxides and fumes. Inhalation of high concentrations of metal fumes may cause a condition known as "metal fume fever" which is characterized by flu-like symptoms. Will not occur.

HAZARDOUS POLYMERIZATION:

11. TOXICOLOGICAL INFORMATION

POTENTIAL EXPOSURE ROUTES: For dust: ingestion, inhalation, and eye contact. For fume: inhalation and eye contact. The finished alloy metal is not hazardous.

ACUTE ANIMAL TOXICITY DATA:

<table>
<thead>
<tr>
<th>For Product:</th>
<th>For Components</th>
</tr>
</thead>
<tbody>
<tr>
<td>The toxicological properties of this product have not been thoroughly investigated.</td>
<td>Copper</td>
</tr>
<tr>
<td>Oral LD₅₀</td>
<td>Believed to be &gt; 5 g/kg</td>
</tr>
<tr>
<td>Dermal LD₅₀</td>
<td>Believed to be &gt; 2 g/kg</td>
</tr>
<tr>
<td>Inhalation LC₅₀</td>
<td>Believed to be slightly to moderately toxic</td>
</tr>
<tr>
<td>Irritation</td>
<td>Eye and respiratory irritant, sensitizer</td>
</tr>
</tbody>
</table>

SUBCHRONIC/CHRONIC TOXICITY:
Carcinogenicity:
No information for product.
This product is not known or reported to be carcinogenic by IARC, NTP, OSHA, or EPA.

Mutagenicity:
Reproductive, Teratogenicity, or Developmental Effects:
This product is not known or reported to be mutagenic.
This product is not known or reported to cause reproductive or developmental effects. Boron in the form of boric acid has caused testicular damage and reproductive effects in laboratory animals.
This product is not known or reported to cause neurological effects.

Neurological Effects:
None known or reported.

INTERACTIONS WITH OTHER CHEMICALS WHICH ENHANCE TOXICITY:

12. ECOLOGICAL INFORMATION
ECOTOXICITY: No data is available on this product. Individual constituents are as follows:

Copper: The toxicity of copper to aquatic organisms varies significantly not only with the species, but also with the physical and chemical characteristics of the water, such as its temperature, hardness, turbidity and carbon dioxide content. Copper concentrations varying from 0.1 to 1.0 mg/l have been found by various investigators to be not toxic for most fish. However, concentrations of 0.015 to 3.0 mg/l have been reported as toxic, particularly in soft water to many kinds of fish, crustaceans, mollusks, insects, and plankton.

MOBILITY: No data
PERSISTENCE/DEGRADABILITY: No data
BIOACCUMULATION: No data

13. DISPOSAL CONSIDERATIONS
If this product becomes a waste, it DOES NOT meet the criteria of a hazardous waste as defined under 40 CFR 261, in that it does not exhibit the characteristics of hazardous waste of Subpart C, nor is it listed as a hazardous waste under Subpart D. Care must be taken to prevent environmental contamination from the use of this material. The user of this material has the responsibility to dispose of unused material, residues and containers in compliance with all relevant local, state and federal laws and regulations regarding treatment, storage and disposal for hazardous and non-hazardous wastes. This product may be a candidate for metal reclamation.

14. TRANSPORT INFORMATION

<table>
<thead>
<tr>
<th>PROPER SHIPPING NAME</th>
<th>U.S. DOT</th>
<th>RID/ADR</th>
<th>INDG</th>
<th>IATA</th>
<th>IMO</th>
<th>Canada TDG</th>
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<tr>
<td>PROPER SHIPPING NAME</td>
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<tr>
<td>HAZARD CLASS:</td>
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<tr>
<td>UN NO.:</td>
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<tr>
<td>PACKING GROUP:</td>
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<tr>
<td>LABEL:</td>
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<tr>
<td>REPORTABLE QUANTITY:</td>
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15. REGULATORY INFORMATION

US FEDERAL

TSCA: The components of this product are listed on the Toxic Substance Control Act inventory.

CERCLA: Copper, R.Q. = 5000 lbs. (No reporting is required if diameter of the pieces of metal is equal to or exceeds 100 micrometers (0.004 inches).

SARA 313: Copper

SARA 313 Hazard Class: Health: For dust or fume only Acute - Yes, Chronic - No
Fire: None Reactivity: None Release of Pressure: None

SARA 302 RHS List: None of the components of this product are listed.

*Q = Reportable Quantity

STATE RIGHT-TO-KNOW STATUS

<table>
<thead>
<tr>
<th>Component</th>
<th>CA Prop. 65</th>
<th>New Jersey</th>
<th>Pennsylvania</th>
<th>Massachusetts</th>
<th>Michigan</th>
</tr>
</thead>
<tbody>
<tr>
<td>Copper</td>
<td>Not listed</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

EUROPEAN REGULATIONS

This material in its massive solid form is not required to be labeled under EC regulations.

German WGR Classification: Not classified

CANADIAN REGULATIONS

DSL LIST: The components of this product are on the DSL or are exempt from reporting under the New Substances Notification Regulations.

IDL: Copper
WHMIS: This product is considered to be a manufactured article and therefore not subject to WHMIS requirements.

16. OTHER INFORMATION

REVISIONS: Update to composition 1/1/04, revised format 6/1/15
PREPARED BY: Olin Brass

NOTICE: THE INFORMATION IN THIS SDS SHOULD BE PROVIDED TO ALL WHO WILL USE, HANDLE, STORE, TRANSPORT, OR OTHERWISE BE EXPOSED TO THIS PRODUCT. THIS INFORMATION HAS BEEN PREPARED FOR THE GUIDANCE OF PLANT ENGINEERING, OPERATIONS AND MANAGEMENT AND FOR PERSONS WORKING WITH OR HANDLING THIS PRODUCT. OLIN BRASS BELIEVES THIS INFORMATION TO BE RELIABLE AND CURRENT AS OF THE DATE OF PUBLICATION, BUT MAKES NO WARRANTY THAT IT IS.

This document reviewed annually.