**SECTION I - PRODUCT AND COMPANY INFORMATION**

Product Name: Copper-Tin-Lead Alloys & Leaded Tin Bronzes

Example UNS Alloy Designations: C922, C936, C844, C903, C905, C932, C937, C938, C941, C943

Company Identification: ANVIL INTERNATIONAL, LLC
2 HOLLAND WAY
EXTER, NH 03833

Contact: Corporate
Telephone: (603) 418-2800
Fax: (603) 418-2833
Internet: www.anvilintl.com

**SECTION II - HAZARDOUS COMPONENTS**

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Cas No.</th>
<th>Percent</th>
<th>TLV (mg/m³)</th>
<th>PEL (mg/m³)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Copper* (as Cu)</td>
<td>7440-50-8</td>
<td>67.0-89.0</td>
<td>0.2</td>
<td>0.1</td>
</tr>
<tr>
<td>Fume as Cu</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dust and Mist as Cu</td>
<td></td>
<td></td>
<td>1.0</td>
<td>1.0</td>
</tr>
<tr>
<td>Lead*</td>
<td>7439-92-1</td>
<td>0.0-27.0</td>
<td>N/E</td>
<td>0.03 (30ug/m³)</td>
</tr>
<tr>
<td>Action Level</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nickel* (as Ni)</td>
<td>7440-02-0</td>
<td>0.0-4.0</td>
<td>1.0</td>
<td>1.0</td>
</tr>
<tr>
<td>Metal</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Insoluble Compounds as Ni</td>
<td></td>
<td></td>
<td>1.0</td>
<td>1.0</td>
</tr>
<tr>
<td>Soluble Compounds as Ni</td>
<td></td>
<td></td>
<td>0.1</td>
<td>1.0</td>
</tr>
<tr>
<td>Tin (as Sn)</td>
<td>7440-31-5</td>
<td>0.0-11.0</td>
<td>2.0</td>
<td>N/E</td>
</tr>
<tr>
<td>Metal</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oxide</td>
<td></td>
<td></td>
<td>2.0</td>
<td>N/E</td>
</tr>
<tr>
<td>Zinc**</td>
<td>1314-13-2</td>
<td>0.0-10.0</td>
<td>5.0/10.0 (CL)</td>
<td>5.0</td>
</tr>
<tr>
<td>Zinc Oxide Fume</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Zinc Oxide Total Dust</td>
<td></td>
<td></td>
<td>10.0</td>
<td>15.0</td>
</tr>
<tr>
<td>Zinc Oxide Respirable Dust</td>
<td></td>
<td></td>
<td>N/E</td>
<td>5.0</td>
</tr>
</tbody>
</table>

N/E - Not Established; N/A - Not Applicable; TLV - Threshold Limit Value (8-hour time weighted average); PEL - OSHA Permissible Exposure Limit; mg/m³ - Milligrams per cubic meter of air; NTP - National Toxicology Program; CL - Ceiling Limit

**CARCINOGEN CLASSIFICATION**

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>OSHA</th>
<th>NTP</th>
<th>IARC</th>
<th>TARGET ORGAN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lead</td>
<td>N</td>
<td>N</td>
<td>2B</td>
<td>Lung, stomach, kidney</td>
</tr>
<tr>
<td>Nickel</td>
<td>N</td>
<td>2</td>
<td>2B</td>
<td>Lung, nasal</td>
</tr>
</tbody>
</table>

Y - Listed as a human carcinogen; N - Not listed as a human carcinogen.

Code for IARC (International Agency for Research on Cancer) evidence for human carcinogenicity:

1 = positive; 2A = probable; 2B = possible; 3 = not classified; 4 = probably negative.

Elements having a listed percentage greater than zero will be present in all grades. Those having a value of "0" may not be present in certain 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 40 CFR Part 372. Quantity and threshold amounts are 25,000 pounds for manufacturing, importing or processing and 10,000 pounds for otherwise using the listed chemical. Chemicals marked ** are reportable only if in the form of dust or fume.
SECTION III - OVERVIEW

There are no chemical hazards from these castings in solid form.

Machining, grinding, flame cutting, or welding of the casting will put contaminants, primarily copper, zinc and lead, in the air.

Fumes and dusts from the castings irritate the nose and throat. If too much fume is inhaled, it will cause a sweet or metallic taste in the mouth. High Concentrations of the fumes can also cause metal fume fever, which resembles the flu.

Breathing or swallowing lead dust or fume from the casting can result in lead poisoning. The effects are fatigue, headache, loss of appetite, aching bones and muscular weakness. Overexposure for a long time can cause kidney damage, nervous system damage, reproductive effects, and anemia.

These castings contain up to 4% nickel. Some forms of nickel have been found to cause cancer in animals. Studies have shown that the potential for ordinary forms of nickel and its oxides to cause cancer in humans is very weak, if it exists at all. The nickel content of the casting is so low (4% or less) that over-exposure is not likely.

Because of this potential hazard from metal dust and fumes, grinding, welding operations, etc., should be done under local exhaust ventilation. If ventilation is not adequate, wear a NIOSH approved dust and fume respirator. In addition, good hygiene practices should be followed. Smoking should not be allowed in lead handling areas. Wash hands thoroughly before eating. Keep work area clean.

Tin fumes or dust present no significant hazards.

SECTION IV - HEALTH HAZARD INFORMATION

Physical Description: Solid metal, no odor
Melting Point: 1790˚F (for copper, zinc, lead, nickel)
Vapor Pressure: N/A
Vapor Density: N/A
Solubility in Water: Not soluble
Specific Gravity: 8.94 (for copper)
Percent Volatile by Volume: None
Evaporation Rate: N/A

SECTION V - FIRE AND EXPLOSION DATA

None

SECTION VI - HEALTH HAZARD DATA

Eyes: Metal particles in the eyes may cause irritation if not removed. Contact lenses should be worn with caution in a metal casting environment. Obey work rules concerning contact lenses.

Skin: Nickel: Dermatitis; Zinc: Dermatitis.

Breathing: Prolonged or repeated overexposure to dust or fumes from these castings may cause the following health effects:
Copper: Nose and throat irritation, sweet or metallic taste, metal fume fever with flu-like symptoms, anemia.
Lead: Anemia, nervous system damage, kidney damage, lung and stomach cancer.
Nickel: Lung and nasal cancer.
Tin: Benign pneumoconiosis of the lung, persistent cough.
Zinc: Metal fume fever with flu-like symptoms, pneumoconiosis of the lung, gastric or duodenal ulcer.

Ingestion: Hand, clothing, food and drink contact with metal dust, fume or powder can cause ingestion of particulate during hand to mouth activities such as eating, drinking, smoking, nail biting, etc.

First Aid
If in eyes: Metal particles should be removed by a trained individual such as a nurse or physician.
If on skin: Use a mild hand cream if irritation develops.
If breathed: (Fumes from welding): move to fresh air.
If ingested: Consult local physician.
SECTION VII - REACTIVITY DATA

Stability: Stable

SECTION VIII - SPILL OR LEAK PROCEDURES

Steps to be taken if material is released or spilled:
If damaged, return castings to vendor or send to scrap reclaimer. Collected dust from machining, welding, etc., may be classed as a "hazardous waste" depending on circumstances. Consult local authorities regarding disposal.

SECTION IX - PROTECTIVE EQUIPMENT TO BE USED

Respiratory protection: Wear a NIOSH approved respirator for dusts or fume if concentrations exceed the TLV or PEL.
Ventilation: Provide general ventilation and/or local exhaust if necessary to maintain concentrations below TLVs.
Protective Gloves: Work gloves advisable for handling castings.
Eye Protection: Safety glasses with side shields and/or face shields for particles (grinding). Welding goggles or helmet for welding.

SECTION X - SPECIAL PRECAUTIONS OR OTHER COMMENTS

Storage: No special precautions.

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