1. Identification

Product identifier: Yellow Brass Alloys

Other means of identification:
- SDS number: 106
- Product code: C85200, C85300, C85400, C85500, C85700, C85800, C36000

Recommended use: Manufacturing

Recommended restrictions: Not assigned.

Manufacturer / Importer / Supplier / Distributor information:
- Company name: United Bronze of Pittsburgh Inc.
- Address: P. O. Box 317, Creighton, PA 15030
- Telephone: 724-226-8500
- Contact person: Bob Orringer
- E-mail: bronze713@aol.com
- Emergency phone number: 724-226-8500

2. Hazard(s) identification

Physical hazards: Not classified.

Health hazards:
- Sensitization, skin Category 1
- Carcinogenicity Category 2
- Reproductive toxicity (fertility, the unborn child) Category 1A
- Specific target organ toxicity, repeated exposure Category 2 (Lung, central nervous system)

OSHA hazard(s): Not classified.

Label elements:
- Hazard symbol: "!
- Signal word: Danger
- Hazard statement: May cause an allergic skin reaction. May cause damage to organs (Lung, central nervous system) through prolonged or repeated exposure. Suspected of causing cancer. May damage fertility or the unborn child.

Precautionary statement

Prevention:
Do not breathe fumes and dusts. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Use personal protective equipment as required. Contaminated work clothing should not be allowed out of the workplace.

Response:
If on skin: Wash with plenty of soap and water. If skin irritation or rash occurs: Get medical advice/attention. Wash contaminated clothing before reuse. If exposed or concerned: Get medical advice/attention. Get medical advice/attention if you feel unwell.

Storage:
Store locked up.

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

Hazard(s) not otherwise classified (HNOC): Not classified.

Environmental hazards:
- Hazardous to the aquatic environment, long-term hazard Category 3

3. Composition/information on ingredients

Mixture
Hazardous components

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>Common name and synonyms</th>
<th>CAS number</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Copper</td>
<td></td>
<td>7440-50-8</td>
<td>58-64</td>
</tr>
<tr>
<td>Zinc</td>
<td></td>
<td>7440-66-6</td>
<td>32-41</td>
</tr>
<tr>
<td>Lead</td>
<td></td>
<td>7439-92-1</td>
<td>0.8-1.5</td>
</tr>
<tr>
<td>Tin</td>
<td></td>
<td>7440-31-5</td>
<td>0.5-1.5</td>
</tr>
<tr>
<td>Nickel</td>
<td></td>
<td>7440-02-0</td>
<td>0-1</td>
</tr>
</tbody>
</table>

Composition comments

All concentrations are in percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume. The alloy contains additional alloying elements at concentrations below disclosure requirements. At temperatures above the melting point the alloys may liberate fumes containing oxides of alloying elements.

4. First-aid measures

**Inhalation**
In case of exposure to fumes or particulates: Get medical attention immediately.

**Skin contact**
Contact with dust: Remove contaminated clothes and rinse skin thoroughly with water for at least 15 minutes. Get medical attention if irritation persists after washing. In case of allergic reaction or other skin disorders: Seek medical attention and bring along these instructions. In case of contact with hot or molten product, cool rapidly with water and seek immediate medical attention. Do not attempt to remove molten product from skin because skin will tear easily. Cuts or abrasions should be treated promptly with thorough cleansing of the affected area.

**Eye contact**
Do not rub eyes. Immediately flush eyes with plenty of water for at least 15 minutes. Remove any contact lenses and open eyelids wide apart.

**Ingestion**
Rinse mouth thoroughly if dust is ingested. Only induce vomiting at the instruction of medical personnel. Get medical attention if any discomfort continues.

**Most important symptoms/effects, acute and delayed**
May cause irritation to mucous membranes. May cause skin and eye irritation. Cough. Shortness of breath. Wheezing. Sensitization. The principal symptoms of lead poisoning are gastro-intestinal or central nervous system disturbances and anemia.

5. Fire-fighting measures

**Suitable extinguishing media**
Special powder against metal fires. Dry sand.

**Unsuitable extinguishing media**
Do not use water or halogenated extinguishing media. Do not use water on molten metal: Explosion hazard could result.

**Specific hazards arising from the chemical**
During fire, gases hazardous to health may be formed. Solid metal is not flammable; however, finely divided metallic dust or powder may form an explosive mixture with air. In a fire, nickel may form nickel carbonyl, a highly toxic substance and known carcinogen.

**Special protective equipment and precautions for firefighters**
Self-contained breathing apparatus and full protective clothing must be worn in case of fire. Selection of respiratory protection for firefighting: follow the general fire precautions indicated in the workplace.

**Fire-fighting equipment/instructions**
Move containers from fire area if you can do it without risk.

6. Accidental release measures

**Personal precautions, protective equipment and emergency procedures**
Ensure adequate ventilation. Avoid inhalation of dust and contact with skin and eyes. Wear protective clothing as described in Section 8 of this safety data sheet.

**Methods and materials for containment and cleaning up**
Avoid dust formation. Allow spilled material to solidify and scrape up with shovels into a suitable container for recovery or disposal. Collect dust using a vacuum cleaner equipped with HEPA filter. The vacuum cleaner should be explosion-proofed. If not possible, gently moisten dust before it is collected with shovel, broom or the like. This material and its container must be disposed of as hazardous waste.

**Environmental precautions**
Avoid release to the environment. Do not contaminate water.
7. Handling and storage

Precautions for safe handling

Follow special national provisions related to work with lead and its compounds. Pregnant women should not work with the product, if there is the least risk of lead exposure. Welding, burning, sawing, brazing, grinding or machining operations may generate fumes and dusts of metal oxides. Provide adequate ventilation. Avoid contact with sharp edges and hot surfaces. Avoid generation and spreading of dust and fumes. Avoid inhalation of dust and contact with skin and eyes. Avoid contact with hot or molten material. Dust clouds may be explosive under certain conditions. Take precautionary measures against static discharges when there is a risk of dust explosion. Use explosion-proof electrical equipment if airborne dust levels are high. To prevent and minimize fire or explosion risk from static accumulation and discharge, effectively bond and/or ground product transfer system. Wear appropriate personal protective equipment. Do not use water on molten metal. Do not eat, drink or smoke when using the product. Keep the workplace clean. Observe good industrial hygiene practices.

Conditions for safe storage, including any incompatibilities

Keep dry. Store away from incompatible materials.

8. Exposure controls/personal protection

Occupational exposure limits


<table>
<thead>
<tr>
<th>Components</th>
<th>Type</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lead (CAS 7439-92-1)</td>
<td>TWA</td>
<td>0.05 mg/m³</td>
</tr>
</tbody>
</table>

**US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)**

<table>
<thead>
<tr>
<th>Components</th>
<th>Type</th>
<th>Value</th>
<th>Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>Copper (CAS 7440-50-8)</td>
<td>PEL</td>
<td>1 mg/m³</td>
<td>Dust and mist.</td>
</tr>
<tr>
<td>Nickel (CAS 7440-02-0)</td>
<td>PEL</td>
<td>1 mg/m³</td>
<td>Fume.</td>
</tr>
<tr>
<td>Tin (CAS 7440-31-5)</td>
<td>PEL</td>
<td>2 mg/m³</td>
<td></td>
</tr>
</tbody>
</table>

**US. ACGIH Threshold Limit Values**

<table>
<thead>
<tr>
<th>Components</th>
<th>Type</th>
<th>Value</th>
<th>Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>Copper (CAS 7440-50-8)</td>
<td>TWA</td>
<td>1 mg/m³</td>
<td>Dust and mist.</td>
</tr>
<tr>
<td>Lead (CAS 7439-92-1)</td>
<td>TWA</td>
<td>0.2 mg/m³</td>
<td>Fume.</td>
</tr>
<tr>
<td>Nickel (CAS 7440-02-0)</td>
<td>TWA</td>
<td>1.5 mg/m³</td>
<td>Inhalable fraction.</td>
</tr>
<tr>
<td>Tin (CAS 7440-31-5)</td>
<td>TWA</td>
<td>2 mg/m³</td>
<td></td>
</tr>
</tbody>
</table>

**US. NIOSH: Pocket Guide to Chemical Hazards**

<table>
<thead>
<tr>
<th>Components</th>
<th>Type</th>
<th>Value</th>
<th>Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>Copper (CAS 7440-50-8)</td>
<td>REL</td>
<td>1 mg/m³</td>
<td>Dust and mist.</td>
</tr>
<tr>
<td>Lead (CAS 7439-92-1)</td>
<td>REL</td>
<td>0.05 mg/m³</td>
<td></td>
</tr>
<tr>
<td>Nickel (CAS 7440-02-0)</td>
<td>REL</td>
<td>0.015 mg/m³</td>
<td></td>
</tr>
<tr>
<td>Tin (CAS 7440-31-5)</td>
<td>REL</td>
<td>2 mg/m³</td>
<td></td>
</tr>
</tbody>
</table>

Biological limit values

**US. ACGIH. BEIs. Biological Exposure Indices**

<table>
<thead>
<tr>
<th>Components</th>
<th>Value</th>
<th>Determinant</th>
<th>Sampling Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lead (CAS 7439-92-1)</td>
<td>300 µg/l</td>
<td>Lead</td>
<td>*</td>
</tr>
</tbody>
</table>

* - For sampling details, please see the source document.

**Exposure guidelines**

Follow standard monitoring procedures.

**Appropriate engineering controls**

Provide adequate ventilation. Observe Occupational Exposure Limits and minimize the risk of inhalation of dust. Ventilate as needed to control airborne dust. Use explosion-proof ventilation equipment if airborne dust levels are high. Special ventilation should be used to convey finely divided metallic dust generated by grinding, sawing etc., in order to eliminate explosion hazards. Follow the schedule for work place measurements when working with lead and its compounds.

**Individual protection measures, such as personal protective equipment**

**Eye/face protection**

Wear dust-resistant safety goggles where there is danger of eye contact. In addition to safety glasses or goggles, a welding helmet with appropriate shaded shield is required during welding, burning, or brazing. A face shield is recommended, in addition to safety glasses or goggles, during sawing, grinding, or machining.
Skin protection

Wear suitable protective gloves to prevent cuts and abrasions. When material is heated, wear gloves to protect against thermal burns. Suitable gloves can be recommended by the glove supplier.

Other

Respiratory protection

In case of inadequate ventilation or risk of inhalation of dust, use suitable respiratory equipment with particle filter. When engineering controls are not sufficient to lower exposure levels below the applicable exposure limit, use a NIOSH approved respirator for dusts. A respiratory protection program that meets OSHA's 29 CFR 1910.134 and ANSI Z88.2 requirements must be followed whenever work place conditions warrant a respirator's use. Seek advice from local supervisor.

Thermal hazards

Wear appropriate thermal protective clothing, when necessary.

General hygiene considerations

Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Private clothes and working clothes should be kept separately. Contaminated uniforms should be laundered separately from other clothing to prevent potential cross-contamination. If possible, an industrial laundry service should be used to eliminate the possibility of contaminating the home environment. Handle in accordance with good industrial hygiene and safety practices. Observe any medical surveillance requirements.

9. Physical and chemical properties

Appearance

Tubes, Solids & Turnings.

Physical state

Solid.

Form

Tubes, Solids & Turnings.

Color

Yellow.

Odor

None.

Odor threshold

Not available.

pH

Not available.

Melting point/freezing point

1725.8 °F (941 °C)

Initial boiling point and boiling range

Not available.

Flash point

Not available.

Evaporation rate

Not available.

Flammability (solid, gas)

Not applicable.

Upper/lower flammability or explosive limits

Flammability limit - lower (%)

Not available.

Flammability limit - upper (%)

Not available.

Explosive limit - lower (%)

Not available.

Explosive limit - upper (%)

Not available.

Vapor pressure

Not available.

Vapor density

Not available.

Relative density

8.5

Solubility(ies)

Insoluble in water.

Partition coefficient (n-octanol/water)

Not available.

Auto-ignition temperature

Not available.

Decomposition temperature

Not available.

Viscosity

Not available.

Other information

Bulk density

0.304 lb/in³

10. Stability and reactivity

Reactivity

Stable at normal conditions.

Chemical stability

Stable at normal conditions. Massive metal is stable and non reactive under normal conditions of use, storage and transport.

Possibility of hazardous reactions

Hazardous polymerization does not occur. Hot molten material will react violently with water resulting in spattering and fuming.

Conditions to avoid

Contact with incompatible materials. Contact with acids will release flammable hydrogen gas. Avoid dust formation. Dust clouds may be explosive under certain conditions.
Incompatible materials

Hazardous decomposition products
Welding, burning, sawing, brazing, grinding or machining operations may generate dusts and fumes of metal oxides. Lead oxide fumes may be formed at elevated temperatures.

11. Toxicological information

Information on likely routes of exposure

Ingestion
Not relevant, due to the form of the product. However, ingestion of dusts generated during working operations may cause nausea and vomiting.

Inhalation
May cause respiratory tract irritation. Elevated temperatures or mechanical action may form dust and fumes which may be irritating to the mucous membranes and respiratory tract.

Skin contact
May cause an allergic skin reaction. Hot or molten material may produce thermal burns. Workers allergic to nickel may develop eczema or rashes.

Eye contact
Molten material will produce thermal burns. Elevated temperatures or mechanical action may form dust and fumes which may be irritating to the eye.

Symptoms related to the physical, chemical and toxicological characteristics
May cause irritation to mucous membranes. May cause skin and eye irritation. Coughing. Shortness of breath. Wheezing. The principal symptoms of lead poisoning are gastro-intestinal or central nervous system disturbances and anemia. Sensitization.

Information on toxicological effects

Acute toxicity
High concentrations of freshly formed fumes/dusts of metal oxides can produce symptoms of metal fume fever. Acute exposure to dust, and fume may cause irritation of skin and eyes. In sensitized individuals, exposure causes an asthma-like attack, with wheezing, bronchospasm, and dyspnea.

Skin corrosion/irritation
Elevated temperatures or mechanical action may form dust and fumes which may be irritating to the eye, mucous membranes and respiratory tract. Hot or molten material may produce thermal burns.

Serious eye damage/eye irritation
Dust from machining operation in the eyes may cause irritation.

Respiratory sensitization
Not classified.

Skin sensitization
Frequent or prolonged contact may defat and dry the skin, leading to discomfort and dermatitis. May cause allergic skin reaction.

Germ cell mutagenicity
No data available.

Carcinogenicity
Possible cancer hazard - may cause cancer based on animal data.

IARC Monographs. Overall Evaluation of Carcinogenicity

<table>
<thead>
<tr>
<th>Substance</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lead (CAS 7439-92-1)</td>
<td>2B Possibly carcinogenic to humans.</td>
</tr>
<tr>
<td>Nickel (CAS 7440-02-0)</td>
<td>1 Carcinogenic to humans.</td>
</tr>
</tbody>
</table>

NTP Report on Carcinogens

<table>
<thead>
<tr>
<th>Substance</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nickel (CAS 7440-02-0)</td>
<td>Known To Be Human Carcinogen.</td>
</tr>
<tr>
<td></td>
<td>Reasonably Anticipated to be a Human Carcinogen.</td>
</tr>
</tbody>
</table>

Reproductive toxicity
Nickel: Has shown teratogenic effects in laboratory animals. Lead is a teratogen. Elevated lead exposure of either parent before pregnancy may increase the changes of miscarriage or birth defects. Continuous exposure may result in decreased fertility. Exposure of the mother during pregnancy may cause birth defects.

Specific target organ toxicity - single exposure
Not available.

Specific target organ toxicity - repeated exposure
Causes damage to the following organs through prolonged or repeated exposure: Lung. Central nervous system.

Aspiration hazard
Not available.

Chronic effects
Danger of cumulative effects. Prolonged and repeated overexposure to dust and fumes can lead to benign pneumoconiosis (stannosis). Chronic inhalation of metallic oxide dust/fume may cause metal fume fever. Lead may produce maternal toxicity, toxicity to the fetus, and adverse effects to blood, bone marrow, central/peripheral nervous systems, kidney, liver, and reproductive system.

Further information
Lead is accumulated in the body and may cause damage to the brain and nervous system after prolonged exposure. Welding or plasma arc cutting of metal and alloys can generate ozone, nitric oxides and ultraviolet radiation. Ozone overexposure may result in mucous membrane irritation or pulmonary discomfort. UV radiation can cause skin erythema and welders flash.

12. Ecological information

Ecotoxicity
Harmful to aquatic life with long lasting effects.
Components Test Results

<table>
<thead>
<tr>
<th>Species</th>
<th>Lead (CAS 7439-92-1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>LC50</td>
<td>Rainbow trout, donaldson trout (Oncorhynhus mykiss)</td>
</tr>
<tr>
<td>1.17 mg/l, 96 Hours</td>
<td></td>
</tr>
</tbody>
</table>

### Persistence and degradability
The product is not biodegradable.

### Bioaccumulative potential
The product contains potentially bioaccumulating substances.

### Mobility in soil
Alloys in massive forms are not mobile in the environment.

### Mobility in general
Alloys in massive forms are not mobile in the environment.

### Other adverse effects
An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.

### 13. Disposal considerations

#### Disposal instructions
This material and its container must be disposed of as hazardous waste. Dispose in accordance with all applicable regulations.

#### Local disposal regulations
Dispose in accordance with all applicable regulations.

#### Hazardous waste code
Z110: Inorganic compounds n.o.s.

#### Waste from residues / unused products
Recover and recycle, if practical. Solid metal and alloys in the form of particles may be reactive. Its hazardous characteristics, including fire and explosion, should be determined prior to disposal.

#### Contaminated packaging
Not applicable.

### 14. Transport information

#### DOT
Not regulated as a hazardous material by DOT.

#### IATA
Not regulated as a dangerous good.

#### IMDG
Not regulated as a dangerous good.

#### Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code
No information available.

### 15. Regulatory information

#### US federal regulations
This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

- **TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)**
  Not regulated.

  Lead (CAS 7439-92-1) 29 CFR 1910.1025

- **CERCLA Hazardous Substance List (40 CFR 302.4)**
  Copper (CAS 7440-50-8) LISTED
  Lead (CAS 7439-92-1) LISTED
  Nickel (CAS 7440-02-0) LISTED
  Zinc (CAS 7440-66-6) LISTED

- **Superfund Amendments and Reauthorization Act of 1986 (SARA)**
  Hazard categories
  Immediate Hazard - Yes
  Delayed Hazard - Yes
  Fire Hazard - No
  Pressure Hazard - No
  Reactivity Hazard - No
  SARA 302 Extremely hazardous substance
  No
  SARA 311/312 Hazardous chemical
  Yes

- **Other federal regulations**
  Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List
  Lead (CAS 7439-92-1)
  Nickel (CAS 7440-02-0)
  Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)
  Not regulated.
  Safe Drinking Water Act (SDWA)
  Not regulated.
Drug Enforcement Administration (DEA). List 2, Essential Chemicals (21 CFR 1310.02(b) and 1310.04(f)(2) and Chemical Code Number
Not listed.

Drug Enforcement Administration (DEA). List 1 & 2 Exempt Chemical Mixtures (21 CFR 1310.12(c))
Not regulated.

DEA Exempt Chemical Mixtures Code Number
Not regulated.

Food and Drug Administration (FDA)

US state regulations
WARNING: This product contains chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.

US. Massachusetts RTK - Substance List
Copper (CAS 7440-50-8)
Lead (CAS 7439-92-1)
Nickel (CAS 7440-02-0)
Tin (CAS 7440-31-5)
Zinc (CAS 7440-66-6)

US. New Jersey Worker and Community Right-to-Know Act
Copper (CAS 7440-50-8) 500 LBS
Lead (CAS 7439-92-1) 500 LBS
Nickel (CAS 7440-02-0) 500 LBS
Zinc (CAS 7440-66-6) 500 LBS

US. Pennsylvania RTK - Hazardous Substances
Copper (CAS 7440-50-8)
Lead (CAS 7439-92-1)
Nickel (CAS 7440-02-0)
Tin (CAS 7440-31-5)
Zinc (CAS 7440-66-6)

US. Rhode Island RTK
Copper (CAS 7440-50-8)
Lead (CAS 7439-92-1)
Nickel (CAS 7440-02-0)
Tin (CAS 7440-31-5)
Zinc (CAS 7440-66-6)

US. California Proposition 65
US - California Proposition 65 - Carcinogens & Reproductive Toxicity (CRT): Listed substance
Lead (CAS 7439-92-1)
Nickel (CAS 7440-02-0)

International Inventories
Country(s) or region | Inventory name | On inventory (yes/no)*
--- | --- | ---
Australia | Australian Inventory of Chemical Substances (AICS) | Yes
Canada | Domestic Substances List (DSL) | Yes
Canada | Non-Domestic Substances List (NDSL) | No
China | Inventory of Existing Chemical Substances in China (IECSC) | Yes
Europe | European Inventory of Existing Commercial Chemical Substances (EINECS) | Yes
Europe | European List of Notified Chemical Substances (ELINCS) | No
Japan | Inventory of Existing and New Chemical Substances (ENCS) | No
Korea | Existing Chemicals List (ECL) | Yes
New Zealand | New Zealand Inventory | Yes
Philippines | Philippine Inventory of Chemicals and Chemical Substances (PICCS) | Yes
United States & Puerto Rico | Toxic Substances Control Act (TSCA) Inventory | Yes

*A “Yes” indicates this product complies with the inventory requirements administered by the governing country(s)

16. Other information, including date of preparation or last version
Issue date | June 01, 2015
Version # | 1.0
Further information | Not available.
References
HSDB® - Hazardous Substances Data Bank
IARC Monographs. Overall Evaluation of Carcinogenicity
National Toxicology Program (NTP) Report on Carcinogens
ACGIH Documentation of the Threshold Limit Values and Biological Exposure Indices

Disclaimer
The information in this MSDS was obtained from industry sources that we believe to be reliable. However, the information is provided without any representation or warranty, expressed or implied regarding the accuracy or correctness. The conditions or methods of handling, storage, use, and disposal of the product are beyond our control and may be beyond our knowledge. For this and other reasons, we do not assume responsibility and expressly disclaim liability for loss, damage, or expense arising out of or in any way connected with the handling, storage, use, or disposal of the product.