MATERIAL SAFETY DATA SHEET

SECTION I GENERAL INFORMATION

A. Material Name: Cast Copper Alloy Fittings

Other Names: Red bronze, brass castings  Chemical Family: Copper

B. Manufacturer: NIBCO INC.  Telephone: 574-295-3000
1516 Middlebury Street  For chemical emergency - spill, leak,
P.O. Box 1167 fire exposure or accident, call:
Elkhart, IN 46515 CHEMTEL 1-800-255-3924 day or night

SECTION II HAZARDOUS INGREDIENTS

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>CAS #</th>
<th>Weight %</th>
<th>ACGIH TLV</th>
<th>OSHA PEL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Antimony</td>
<td>74470-36-0</td>
<td>0.0-0.25</td>
<td>0.5 mg/m³</td>
<td>0.5 mg/m³</td>
</tr>
<tr>
<td>Bismuth</td>
<td>7440-69--9</td>
<td>0.0-0.10</td>
<td>None established</td>
<td>None established</td>
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<tr>
<td>Copper</td>
<td>7440-50-8</td>
<td>78-82</td>
<td>0.2 mg/m³ fume</td>
<td>0.1 mg/m³ fume</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>1 mg/m³ dust</td>
<td>1 mg/m³ dust</td>
</tr>
<tr>
<td>Iron</td>
<td>7439-89-6</td>
<td>0-0.4</td>
<td>5 mg/m³ iron oxide fume (as Fe)</td>
<td>10 mg/m³ iron oxide fume (as Fe)</td>
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<tr>
<td>Lead</td>
<td>7439-92-1</td>
<td>6.0-8.0</td>
<td>0.15 mg/m³</td>
<td>0.05 mg/m³</td>
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<tr>
<td>Nickel</td>
<td>7440-02-0</td>
<td>0.0-1.0</td>
<td>1 mg/m³</td>
<td>1 mg/m³</td>
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<tr>
<td>Phosphorus</td>
<td>7723-14-0</td>
<td>0.0-0.02</td>
<td>0.1 mg/m³</td>
<td>0.1 mg/m³</td>
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<tr>
<td>Sulfur</td>
<td>7704-34-9</td>
<td>0.0-0.08</td>
<td>None established</td>
<td>None established</td>
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<tr>
<td>Tin</td>
<td>7440-31-5</td>
<td>2.3-3.5</td>
<td>2 mg/m³</td>
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<tr>
<td>Zinc</td>
<td>7440-66-6</td>
<td>7.0-10.0</td>
<td>5 mg/m³ fume (as ZnO)</td>
<td>5 mg/m³ fume (as ZnO)</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>10 mg/m³ dust (total, as ZnO)</td>
<td>5 mg/m³ dust (respirable, as ZnO)</td>
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<td></td>
<td></td>
<td>15 mg/m³ dust (total, as ZnO)</td>
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KNOWN HAZARDS UNDER 29 CFR 1910.1200

<table>
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<tr>
<th></th>
<th>Yes</th>
<th>No</th>
<th>Yes</th>
<th>No</th>
<th>Yes</th>
<th>No</th>
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<tbody>
<tr>
<td>Combustible Liquid</td>
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<tr>
<td>Flammable Material</td>
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<tr>
<td>Pyrophoric Material</td>
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<tr>
<td>Explosive Material</td>
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<tr>
<td>Unstable Material</td>
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<tr>
<td>Water Reactive Mat.</td>
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<tr>
<td>Skin Hazard</td>
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<td>Oxidizer</td>
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<tr>
<td>Organic Peroxide</td>
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<td>Corrosive Material</td>
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<td>Compressed Gas</td>
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<td>Sensitizer</td>
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<td>Carcinogen</td>
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<td>Reproductive Toxin</td>
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<tr>
<td>Blood Toxin</td>
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<td>Nervous Sys. Toxin</td>
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<tr>
<td>Lung Toxin</td>
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<td>Liver Toxin</td>
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<tr>
<td>Kidney Toxin</td>
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</tbody>
</table>

Comments: The following ingredients must be reported under section 313 of SARA - antimony, copper, lead, phosphorus, zinc.
## SECTION II
### HAZARDOUS INGREDIENTS (CONTINUED)

<table>
<thead>
<tr>
<th>DOT HAZARD CLASS: N/A</th>
<th>DOT SHIPPING NAME: N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>HEALTH:</td>
<td>HMIS: 0</td>
</tr>
<tr>
<td>FLAMMABILITY:</td>
<td>NFPA: 0</td>
</tr>
<tr>
<td>REACTIVITY:</td>
<td>HAZARD RATING: 0</td>
</tr>
<tr>
<td>PROTECTIVE EQUIPMENT:</td>
<td>-</td>
</tr>
</tbody>
</table>

**DOT HAZARD CLASS: N/A**

**DOT SHIPPING NAME: N/A**

**HEALTH:**

- Minimal

**FLAMMABILITY:**

- Slight

**REACTIVITY:**

- Serious

**PROTECTIVE EQUIPMENT:**

- Severe

**SHIPPING I.D. NUMBER: N/A**

## SECTION III
### PHYSICAL DATA

- **Melting Point:** 1840 ºF
- **Vapor Pressure (mm Hg):** N/A
- **Boiling Point:** N/A
- **Vapor Density (AIR=1):** N/A
- **Specific Gravity (H2O=1):** 8.7
- **Solubility in Water:** Insoluble
- **Appearance and Odor:** Orange-red (copper) solid with no odor

## SECTION IV
### FIRE AND EXPLOSION HAZARD DATA

- **Flash Point (method used):** N/A
- **LEL:** N/A
- **UEL:** N/A
- **Extinguishing Media:** N/A
- **Special Fire fighting Procedures:** Castings will not burn or explode.
- **Unusual Fire and Explosion Hazards:** N/A

## SECTION V
### REACTIVITY DATA

**A. Stability**

- Stable
- Unstable
- Conditions to Avoid: N/A

**B. Hazardous Polymerization**

- May Occur
- Will Not Occur
- Conditions to Avoid: N/A

**C. Incompatible Materials:** None known

**D. Hazardous Decomposition Products:** N/A
SECTION VI HEATH HAZARD DATA

Route(s) of Entry: ☒ Inhalation ☒ Ingestion ☐ Skin

Health Hazards (Acute and Chronic):
Fittings as received do not present an inhalation, ingestion, skin contact or eye contact hazard. Listed hazards may result from remelting, soldering or brazing.

A. Metals:

Antimony: Most antimony compounds are poisons by ingestion, inhalation, and intraperitoneal routes. Antimony compounds irritate the skin and mucous membranes.

Bismuth: Bismuth and its compounds can cause kidney damage, although the degree of such damage is usually mild.

Copper: Exposure to fumes or dusts may produce “metal fume fever” with flu-like symptoms including: fever, chills, aches, dry throat and nausea. Other symptoms of overexposure may include metallic taste, discoloration of the skin or hair and irritation of eyes, nose or throat.

Iron: Exposure to iron oxide fumes or dusts has not been linked to illness but prolonged exposure may produce siderosis, or “iron pigmentation” of the lungs, which may appear on X-rays.

Lead: Suspected carcinogen. Poison by ingestion. Moderately toxic by intraperitoneal route. Human systemic effects by ingestion and inhalation: loss of appetite, anemia, malaise, insomnia, headache, irritability, muscle and joint pains, tremors, flaccid paralysis without anesthesia, hallucinations, and distorted perceptions, muscle weakness, gastritis and liver changes. The major organ systems affected are the nervous system, blood system, and kidneys. Low levels of lead impair neurotransmission and immune system function and may increase systolic blood pressure. Reversible kidney damage can occur from acute exposure. Chronic exposure can lead to irreversible vascular sclerosis, tubular cell atrophy, interstitial fibrosis and glomerular sclerosis. Severe toxicity can cause sterility, abortion, and neonatal mortality and morbidity. An experimental teratogen. Experimental reproductive effects. Human mutation data reported.

Nickel: Elemental nickel has been identified as a possible carcinogen. The fume is a respiratory irritant and may cause respiratory diseases. Skin contact may cause an allergic reaction.

Phosphorus: Phosphorus is a human poison by ingestion. Chronic exposure by inhalation or ingestion can cause anemia, gastrointestinal effects and brittleness of the long bones leading to spontaneous fractures.

Sulfur: Sulfur is a poison by ingestion, intravenous and intraperitoneal routes. It is a human eye irritant. Chronic exposure can cause irritation of the mucous membranes.

Tin: Tin may cause irritation of the eyes, nose, throat and skin.

Zinc: Exposure to zinc oxide fumes or dusts may produce “metal fume fever” with flu-like symptoms including: fever, chills, aches, dry throat and nausea. Other symptoms of overexposure may include metallic taste, discoloration of the skin or hair and irritation of eyes, nose or throat.

B. Other Constituents:
Not applicable.

C. Carcinogenicity: ☒ NTP ☒ IARC ☐ OSHA
According to the NTP, elemental nickel is a substance that may reasonably be anticipated to be a carcinogen. Elemental nickel is classified by IARC in group 2B as possibly carcinogenic to humans based on limited evidence of carcinogenicity to humans in the absence of sufficient evidence of carcinogenicity in experimental animals.

Lead is classified by IARC in group 2B as possibly carcinogenic to humans based on limited evidence of carcinogenicity to humans in the absence of sufficient evidence of carcinogenicity in experimental animals.
SECTION VI CONT’D

D. Emergency First Aid:
Not applicable to finished fittings.

SECTION VII SPILL OR LEAK PROCEDURES

A. Special Handling or Storage:
Keep dry if metal is to be remelted.

B. Spill or Leak Containment:
Recover solid material, no environmental hazard anticipated.

C. Waste Disposal:
Recycle where possible, consult state and federal regulations for landfill disposal.

D. Other Precautions:
None.

SECTION VIII SPECIAL PROTECTION INFORMATION

A. Respiratory Protection (specify type): NIOSH approved for toxic dust/ fumes when remelting, soldering, or brazing

B. Ventilation: ☐ Local Exhaust ☐ Mechanical (General)
Other (specify): N/A

C. Eye Protection: ☒ Yes ☐ No Type: glasses or googles when soldering or brazing

D. Protective Gloves: ☐ Yes ☒ No Type: ________________

E. Other Protective Equipment or Clothing: ☐ Yes ☒ No
Type: N/A

F. Special Precautions or Work Practices: N/A

DISCLAIMER OF LIABILITY

The information in this MSDS was obtained from sources which we believe are reliable. However, the information is provided without any warranty, express or implied, regarding its 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.
PRODUCT NAME: Red Brass Fittings
MSDS No: FP-4

Refer to Material Safety Data Sheet for more information

NIBCO INC.
1516 Middlebury St.
P.O. BOX 1167
ELKHART, IN 46516
574-295-3000

NFPA RATING AS SHIPPED

FIRE HAZARD
4. EXTREMELY DANGEROUS AND EXPLOSION HAZARD
3. FIRE AND EXPLOSION HAZARD
2. WILL BURN AT TEMPS ABOVE 100 °F
1. WILL BURN AT TEMPS ABOVE 200 °F
0. WILL NOT BURN

HEALTH HAZARD
4. EXTREME HAZARD - AVOID CONTACT OR BREATHING VAPOR
3. SEVERE HAZARD - USE SPECIAL CLOTHING AND MASKS
2. HAZARDOUS - USE MASKS OR SPECIAL VENTILATION
1. SLIGHTLY HAZARDOUS - IRRITATING
0. NORMAL MATERIAL

REACTIVITY HAZARD
4. EXTREME HAZARD - VACATE AREA IN CASE OF FIRE
3. SEVERE EXPLOSION HAZARD
2. VIOLENT CHEMICAL CHANGE POSSIBLE
1. UNSTABLE IF HEATED
0. NORMALLY STABLE

CAUTION!
Welding, cutting or remelting of this product may generate toxic fumes or dust. Refer to MSDS and health hazards and target organ effects listed below.

INGREDIENTS
Iron, silicon, manganese. See Material Safety data Sheet for a listing of minor ingredients.

STORAGE AND HANDLING
Material should be kept dry if it is to be melted to prevent steam explosion.

SARA SECT. 313 NOTIFICATION
Aluminum, chromium, copper, nickel, manganese.

HEALTH HAZARDS
☐ TOXIC
☐ HIGHLY TOXIC
☐ REPRODUCTIVE TOXIC
☐ IRRITANT
☐ CORROSIVE
☐ SENSITIZER
☐ CARCINOGEN
☐ NO KNOWN EFFECTS

IMMEDIATE AND DELAYED HEALTH EFFECTS
☐ HEPATOXINS (LIVER DAMAGE) - jaundice, liver enlargement
☐ NEPHROTOXINS (KIDNEY DAMAGE) - edema, proteinuria
☐ NEUROTOXINS (NERVOUS SYSTEM DAMAGE) - narcosis, behavioral changes, decrease in motor functions
☐ HEMATOPOIETICS (BLOOD DAMAGE) - cyanosis, unconsciousness
☐ PULMONARY DYSFUNCTIONS (Lung Damage) - shortness of breath, chest tightness, cough
☐ REPRODUCTIVE TOXINS - birth defects, sterility
☐ CUTANEOUS HAZARDS - skin damage, rashes, irritation, defatting of skin
☐ EYE HAZARDS - impaired vision, conjunctivitis, corneal damage
☐ NONE - no known immediate or delayed effects