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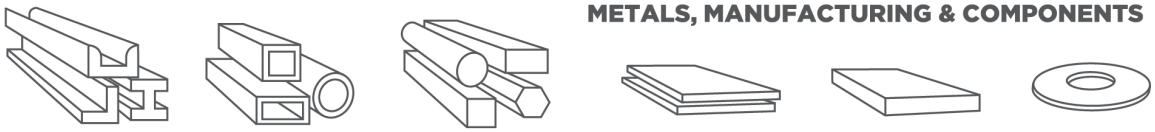
METALS, MANUFACTURING & COMPONENTS



Safety Data Sheet

Brass, Bronze & Copper

SECTION 1: Identification

1.1 Product identifier

Product name	Brass, Bronze & Copper

1.2 Other means of identification

Not available

1.3 Recommended use of the chemical and restrictions on use

Brass, Bronze & Copper Raw Materials & Components

1.4 Supplier's details

Name	Reliable Source, Inc.
Address	11109 Jasmine St Fontana, CA 92337 USA
Telephone	909-357-1211
Fax	909-357-1311
email	info@rsmetals.us

1.5 Emergency phone number(s)

909-357-1211 (business hours)

SECTION 2: Hazard identification

General hazard statement

The product as delivered does not present a health hazard. However, if user activities generate dust, fumes or mists during processing and handling (melting, welding, sawing, brazing, grinding and machining), it may become hazardous.

2.1 Classification of the substance or mixture

GHS classification in accordance with: (US) OSHA (29 CFR 1910.1200)

- Carcinogenicity, Cat. 1B
- Sensitization, respiratory, Cat. 1
- Sensitization, skin, Cat. 1
- Specific target organ toxicity (repeated exposure), Cat. 1
- Toxic to reproduction, Cat. 1A

- Toxic to reproduction, effects on or via lactation
- Acute toxicity, inhalation, Cat. 4

2.2 GHS label elements, including precautionary statements

Pictogram

Signal word **Danger**

Hazard statement(s)

H317	May cause an allergic skin reaction
H334	May cause allergy or asthma symptoms or breathing difficulties if inhaled
H350	May cause cancer
H360	May damage fertility or the unborn child
H362	May cause harm to breast-fed children
H372	Causes damage to organs through prolonged or repeated exposure
H332	Harmful if inhaled

Precautionary statement(s)

P201	Obtain special instructions before use.
P202	Do not handle until all safety precautions have been read and understood.
P260	Do not breathe dust/fume/gas/mist/vapors/spray.
P261	Avoid breathing dust/fume/gas/mist/vapors/spray.
P263	Avoid contact during pregnancy/while nursing.
P264	Wash thoroughly after handling.
P270	Do not eat, drink or smoke when using this product.
P272	Contaminated work clothing must not be allowed out of the workplace.
P280	Wear protective gloves/protective clothing/eye protection/face protection.
P284	In case of inadequate ventilation wear respiratory protection.
P301+P312	IF SWALLOWED: Call a POISON CENTER /doctor if you feel unwell
P302+P352	IF ON SKIN: Wash with plenty of water
P304+P340	IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P308+P313	IF exposed or concerned: Get medical advice/attention.
P314	Get medical advice/attention if you feel unwell.
P333+P313	If skin irritation or rash occurs: Get medical advice/attention.
P342+P311	If experiencing respiratory symptoms: Call a POISON CENTER/doctor
P363	Wash contaminated clothing before reuse.

2.3 Other hazards which do not result in classification

No data available

SECTION 3: Composition/information on ingredients

3.1 Substances

Not applicable.

3.2 Mixtures

Components

Component	Concentration
Copper (CAS no.: 7440-50-8)	**75 - 100 % (weight)**

CLASSIFICATIONS: Hazardous to the aquatic environment, long-term (chronic), Cat. 3; Hazardous to the aquatic environment, short-term (acute), Cat. 1.	
Zinc (CAS no.: 7440-66-6; EC no.: 231-175-3)	**10 - 25 % (weight)**
CLASSIFICATIONS: Hazardous to the aquatic environment, short-term (acute), Cat. 1; Hazardous to the aquatic environment, long-term (chronic), Cat. 1.	
NICKEL (CAS no.: 7440-02-0; EC no.: 231-111-4)	**10 - 25 % (weight)**
CLASSIFICATIONS: Carcinogenicity, Cat. 2; Specific target organ toxicity (repeated exposure), Cat. 1 ; Sensitization, skin, Cat. 1; Hazardous to the aquatic environment, long-term (chronic), Cat. 3.	
Aluminum (CAS no.: 7429-90-5; EC no.: 231-072-3)	**5 - 10 % (weight)**
CLASSIFICATIONS: Flammable solids, Cat. 1; Substances and mixtures which, in contact with water, emit flammable gases, Cat. 2.	
LEAD (CAS no.: 7439-92-1; EC no.: 231-100-4)	**1 - 5 % (weight)**
CLASSIFICATIONS: Toxic to reproduction, Cat. 1A; Lact.	
TIN (CAS no.: 7440-31-5)	**1 - 5 % (weight)**
CLASSIFICATIONS: No data available.	
IRON (CAS no.: 7439-89-6)	**1 - 5 % (weight)**
CLASSIFICATIONS: No data available.	
Manganese (CAS no.: 7439-96-5)	**1 - 5 % (weight)**
CLASSIFICATIONS: No data available.	
Silicon (CAS no.: 7440-21-3)	**1 - 5 % (weight)**
CLASSIFICATIONS: No data available.	
COBALT (CAS no.: 7440-48-4; EC no.: 231-158-0)	**1 - 5 % (weight)**
CLASSIFICATIONS: Sensitization, respiratory, Cat. 1; Sensitization, skin, Cat. 1; Hazardous to the aquatic environment, long-term (chronic), Cat. 4.	
Beryllium (CAS no.: 7440-41-7; EC no.: 231-150-7)	**1 - 5 % (weight)**
CLASSIFICATIONS: Carcinogenicity, Cat. 1B; Acute toxicity, inhalation, Cat. 2; Acute toxicity, oral, Cat. 3; Specific target organ toxicity (single exposure), Cat. 3; Specific target organ toxicity (repeated exposure), Cat. 1 ; Skin corrosion/irritation, Cat. 2; Serious eye damage/eye irritation, Cat. 2; Sensitization, skin, Cat. 1.	

SECTION 4: First-aid measures

4.1 Description of necessary first-aid measures

General advice	Consult a physician. Show this safety data sheet to the doctor in attendance. Move out of dangerous area.
If inhaled	If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.
In case of skin contact	Take off immediately all contaminated clothing. Rinse skin with water/shower for at least 15 minutes. Call a poison center or doctor if irritation develops or persists. Wash contaminated clothing before reuse.
In case of eye contact	Rinse cautiously with water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical attention/advice.
If swallowed	Rinse mouth. If vomiting occurs naturally, have victim lean forward to reduce the risk of aspiration. Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Call a poison center or doctor.

4.2 Most important symptoms/effects, acute and delayed
The most important known symptoms and effects are described in the labeling (see section 2) and/or in section 11

4.3 Indication of immediate medical attention and special treatment needed, if necessary
No data available.

SECTION 5: Fire-fighting measures

5.1 Suitable extinguishing media
Use alcohol-resistant foam, dry chemical or carbon dioxide.

5.2 Specific hazards arising from the chemical
Combustion products may contain metal oxides.

5.3 Special protective actions for fire-fighters
Wear self-contained breathing apparatus for firefighting if necessary.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures
Avoid actions that cause dust to become airborne. Do not breathe dust or mist. Avoid contact with skin. Wear appropriate personal protective equipment as described in Section 8.

6.2 Environmental precautions
Do not let product enter drains.

6.3 Methods and materials for containment and cleaning up
Pick up and arrange disposal without creating dust. Keep in suitable, closed containers for disposal.

Reference to other sections
For disposal see section 13.

SECTION 7: Handling and storage

7.1 Precautions for safe handling
Avoid dust, mist or fume formation. Ensure adequate ventilation. Wash hands before breaks and immediately after handling the product. Avoid contact with skin, eyes and clothing. Avoid ingestion and inhalation. For precautions see section 2.2.

7.2 Conditions for safe storage, including any incompatibilities
Normal temperatures and pressures do not affect the material. Keep in a dry and well-ventilated place.

Specific end use(s)
Apart from the uses mentioned in section 1 no other specific uses are stipulated.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

US OSHA Permissible Exposure Limits, Annotated Table Z-1, www.osha.gov:

	OSHA PEL (C) Ceiling	**Cal/OSHA PEL 8-hour TWA (ST) STEL (C) Ceiling**	**NIOSH REL Up to 10-hour TWA (ST) STEL (C) Ceiling**	**ACGIH® TLV® 8-hour TWA (ST) STEL (C) Ceiling**
Aluminum (CAS no.: 7429-90-5)				
Total dust	15 mg/m^3	10 mg/m^3	10 mg/m^3	
Respirable fraction	5 mg/m^3	5 mg/m^3	5 mg/m^3	1 mg/m^3

Tin inorganic compounds (except oxides) (CAS no.: 7440-31-5)	2 mg/m^3	2 mg/m^3; also tin oxide; except SnH_4	2 mg/m^3; except tin oxides	metal, oxide and inorganic compounds, except tin hydride: 2 mg/m^3
Lead inorganic (as Pb) (CAS no.: 7439-92-1) see 1910.1025		0.05 mg/m^3	0.05 mg/m^3	0.05 mg/m^3
Silicon (CAS no.: 7440-21-3)				
Total dust	15 mg/m^3	10 mg/m^3	10 mg/m^3	
Respirable fraction	5 mg/m^3	5 mg/m^3	5 mg/m^3	
Cobalt metal, dust, and fume (CAS no.: 7440-48-4)	0.1 mg/m^3	0.02 mg/m^3	0.05 mg/m^3	0.02 mg/m^3
Copper (CAS no.: 7440-50-8)				
Fume (as Cu)	0.1 mg/m^3	0.1 mg/m^3	0.1 mg/m^3	0.2 mg/m^3
Dusts and mists (as Cu)	1 mg/m^3	1 mg/m^3	1 mg/m^3	1 mg/m^3
Cotton dust	1 mg/m^3	1 mg/m^3 (in waste processing)	<0.200 mg/m^3	0.1 mg/m^3 (Thor.) (raw untreated)
Nickel, metal and insoluble compounds (as Ni) (CAS no.: 7440-02-0)	1 mg/m^3	metal 0.5 mg/m^3 insoluble 0.1 mg/m^3	Ca 0.015 mg/m^3	elemental: 1.5 mg/m^3 (IHL); insoluble inorganic compounds: 0.2 mg/m^3 (IHL)
Nickel, soluble compounds (as Ni) (CAS no.: 7440-02-0)	1 mg/m^3	0.05 mg/m^3	Ca 0.015 mg/m^3	soluble inorganic compounds: 0.1 mg/m^3 (IHL)
Manganese compounds and fume (CAS no.: 7439-96-5)	(C) 5 mg/m^3	0.2 mg/m^3	1 mg/m^3 (ST) 3 mg/m^3	0.02 mg/m^3 (resp.) 0.1 mg/m^3 (IHL) (for elemental and inorganic compounds)
Beryllium and beryllium compounds (CAS no.: 7440-41-7)	(C) 5 $\mu g/m^3$	0.2 $\mu g/m^3$ (ST) 2 $\mu g/m^3$ (C) 25 $\mu g/m^3$	Ca (C) 0.5 $\mu g/m^3$	0.05 $\mu g/m^3$ (IHL)

Abbreviations: C = Ceiling limit; Ca = Potential occupational carcinogens; CAS No. = Chemical Abstract Service Number; IHL = Inhalable; ppm = parts per million; STEL = Short Term Exposure Limit; Thor. = Thoracic fraction; TLV® = Threshold Limit Value; TWA – Time weighted average

8.2 Appropriate engineering controls

Use ventilation adequate to keep exposures (airborne levels of dust, fume, vapor, gas, etc.) below recommended exposure limits.

8.3 Individual protection measures, such as personal protective equipment (PPE)

Pictograms

Eye/face protection
When engaged in activities where ingredients could contact the eye, wear safety glasses with side shields or goggles. In extremely dusty environments and unpredictable environments, wear unvented or indirectly vented goggles to avoid eye irritation or injury. Wear face shield during welding or burning. Eye protection equipment must be tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU)

Skin protection
Wear protective gloves suitable for the material handled. Consult manufacturer specifications for further information.

Body protection
Wear protective clothing. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Respiratory protection
Avoid actions that cause dust exposure to occur. Use local or general ventilation to control exposures below applicable exposure limits. NIOSH or MSHA approved particulate filter respirators should be used in the context of respiratory protection program meeting the requirements of the OSHA respiratory protection standard [29 CFR 1910.134] to control exposures when ventilation or other controls are inadequate or discomfort or irritation is experienced. Respirator and/or filter cartridge selection should be based on American National Standards Institute (ANSI) Standards Z88.2 Practices for Respiratory Protection.

Thermal hazards
No data available.

Environmental exposure controls
Do not let product enter drains.

SECTION 9: Physical and chemical properties

Information on basic physical and chemical properties

Appearance/form (physical state, color, etc.)	Metal Solid
Odor	No odor
Odor threshold	No data available.
pH	No data available.
Melting point/freezing point	No data available.
Initial boiling point and boiling range	No data available.
Flash point	No data available.
Evaporation rate	No data available.
Flammability (solid, gas)	No data available.
Upper/lower flammability limits	No data available.
Upper/lower explosive limits	No data available.
Vapor pressure	No data available.
Vapor density	No data available.
Relative density	No data available.
Specific gravity	7.78 - 8.94
Solubility(ies)	No data available.
Partition coefficient: n-octanol/water	No data available.
Auto-ignition temperature	No data available.

Decomposition temperature	No data available.
Viscosity	No data available.
Explosive properties	No data available.
Oxidizing properties	No data available.

Other safety information
No data available.

SECTION 10: Stability and reactivity

10.1 Reactivity
The product is non-reactive under normal conditions of use, storage and transport.

10.2 Chemical stability
Stable under normal storage conditions.

10.3 Possibility of hazardous reactions
No data available.

10.4 Conditions to avoid
No data available

10.5 Incompatible materials
Strong acids

10.6 Hazardous decomposition products
No data available.

SECTION 11: Toxicological information

Information on toxicological effects

Acute toxicity
Harmful if inhaled

Components:

Copper (CAS no.: 7440-50-8):
LD50 – intraperitoneal – mouse:
Result: 3.5 mg/kg

IRON (CAS no.: 7439-89-6)
LD50 Oral - Rat
Result: 30000 mg/kg

Nickel (CAS no.: 7440-02-0):
LD50 Oral - Rat
Result: 9000 mg/kg

Manganese (CAS no.: 7439-96-5):
LD50 Oral - Rat
Result: 9000 mg/kg

COBALT (CAS no.: 7440-48-4):
LD50 Oral - Rat

Result: 6171 mg/kg

Skin corrosion/irritation
Based on available data, classification data are not met

Serious eye damage/irritation
Based on available data, classification data are not met

Respiratory or skin sensitization
May cause an allergic skin reaction. May cause allergy or asthma symptoms of breathing difficulties if inhaled.

Germ cell mutagenicity
Based on available data, classification data are not met

Carcinogenicity
May cause cancer

Components:

Nickel (CAS no.: 7440-02-0):
IARC: 2B - Possibly carcinogenic to humans
NTP: Reasonably anticipated to be Human Carcinogen

Beryllium (CAS no.: 7440-41-7):
IARC: 1: Carcinogenic to humans
NTP: Known to be human carcinogen

Reproductive toxicity
May damage fertility or the unborn child

STOT-single exposure
Based on available data, classification data are not met

STOT-repeated exposure
May cause damage to organs through prolonged or repeated exposure

Aspiration hazard
Based on available data, classification data are not met

Additional information
No data available.

SECTION 12: Ecological information

Toxicity
No data available on product

Components:

Manganese (CAS no.: 7439-96-5):
LC50 - Daphnia magna – 48h
Result: 29 mg/L

Nickel (CAS no.: 7440-02-0):
EC50 - Daphnia magna – 48h
Result: 1 mg/L

Copper (CAS no.: 7440-50-8):
LC50 - Daphnia magna – 48h
Result: 0.0504 mg/L

LEAD (CAS no.: 7439-92-1):
LC50 - Cyprinus carpio – 96h
Result: 0.44 mg/L

COBALT (CAS no.: 7440-48-4):
LC50 - Daphnia magna– 48h
Result: 4.4 mg/L

Persistence and degradability
No data available on product

Bioaccumulative potential
No data available on product

Mobility in soil
No data available.

Results of PBT and vPvB assessment
PBT/vPvB assessment not available as chemical safety assessment not required/not conducted

Other adverse effects
No data available.

SECTION 13: Disposal considerations

Disposal of the product
Disposal should be in accordance with applicable Federal, State and local laws and regulations. Local regulations may be more stringent than State or Federal requirements.

Disposal of contaminated packaging
Dispose of as unused product.

SECTION 14: Transport information

DOT (US)
Not dangerous goods

IMDG
Not dangerous goods

IATA
Not dangerous goods

SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations specific for the product in question

California Prop. 65 Components

WARNING! This product can expose you to chemicals including Nickel, Cobalt, Beryllium, Lead, which are known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.

Chemical name: Nickel (Metallic)
CAS number: 7440-02-0
10/01/1989 – Cancer

Chemical name: Nickel compounds
CAS number: 7440-02-0
05/07/2004 – Cancer

Chemical name: Beryllium and beryllium compounds
CAS number: 7440-41-7
10/01/1987 – Cancer

Chemical name: Cobalt Metal Powder
CAS number: 7440-48-4
07/01/1992 – Cancer

Chemical name: Lead and Lead Compounds
CAS number: 7439-92-1
10/01/1992 – Cancer
02/27/1987 - Developmental Toxicity
02/27/1987 - Female Reproductive Toxicity
02/27/1987 - Male Reproductive Toxicity

Massachusetts Right To Know Components

Aluminum (CAS no.: 7429-90-5)

TIN (CAS no.: 7440-31-5)

Zinc (CAS no.: 7440-66-6)

Manganese (CAS no.: 7439-96-5)

Copper (CAS no.: 7440-50-8)

Nickel (CAS no.: 7440-02-0)

LEAD (CAS no.: 7439-92-1)

Silicon (CAS no.: 7440-21-3)

COBALT (CAS no.: 7440-48-4)

Beryllium (CAS no.: 7440-41-7)

New Jersey Right To Know Components

Aluminum (CAS no.: 7429-90-5)

TIN (CAS no.: 7440-31-5)

Zinc (CAS no.: 7440-66-6)

Manganese (CAS no.: 7439-96-5)

Copper (CAS no.: 7440-50-8)

Nickel (CAS no.: 7440-02-0)

LEAD (CAS no.: 7439-92-1)

Silicon (CAS no.: 7440-21-3)

COBALT (CAS no.: 7440-48-4)

Beryllium (CAS no.: 7440-41-7)

Pennsylvania Right To Know Components

Aluminum (CAS no.: 7429-90-5)

TIN (CAS no.: 7440-31-5)

Zinc (CAS no.: 7440-66-6)

Manganese (CAS no.: 7439-96-5)

Copper (CAS no.: 7440-50-8)

Nickel (CAS no.: 7440-02-0)

LEAD (CAS no.: 7439-92-1)

Silicon (CAS no.: 7440-21-3)

COBALT (CAS no.: 7440-48-4)

Beryllium (CAS no.: 7440-41-7)

SARA 302 Components
Phosphorus.

SARA 311/312 Hazards
Acute Health Hazard, Chronic Health Hazard

SARA 313 Components
The following components are subject to reporting levels established by SARA Title III, Section 313:

Aluminum (fume or dust) (CAS no.: 7429-90-5)

Zinc (fume or dust) (CAS no.: 7440-66-6)

Manganese (CAS no.: 7439-96-5)

Copper (CAS no.: 7440-50-8)

Nickel (CAS no.: 7440-02-0)

LEAD (CAS no.: 7439-92-1)

COBALT (CAS no.: 7440-48-4)

Beryllium (CAS no.: 7440-41-7)

HMIS Rating

Brass, Bronze & Copper	
HEALTH	2
FLAMMABILITY	0
PHYSICAL HAZARD	0
PERSONAL PROTECTION	

NFPA Rating

SECTION 16: Other information

16.1 Further information/disclaimer

Date of issue: February 28, 2019.

DISCLAIMER: The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigation to determine the suitability of information for their particular purposes. All materials may present unknown hazards and should be used with caution. In no event shall we be held liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, whatsoever arising, even if we have been advised of the possibility of such damages.