

**Mueller Brass Co.**  
**Safety Data Sheet**  
*Brass (Alloy C48500/ C66800/ C67300/ C67410/ C67600)*

**Section 1 – Product / Supplier Information**

**Product Name** *Brass (Alloy C48500/ C66800/ C67300/ C67410/ 67600/67676)*

**Manufacturer Information**

Mueller Brass Co.  
2199 Lapeer Avenue  
Port Huron, MI 48060

Phone: 810-966-0236

**Section 2 – Hazard Identification**

**General Hazard Statement:** Solid metallic products are generally classified as “articles” and do not constitute a hazardous materials in solid form under the definitions of the OSHA Hazard Communication Standard (29 CFR 1910.1200). Any articles manufactured from these solid products would be generally classified as non-hazardous. However some hazardous elements contained in these products can be emitted under certain processing conditions such as but not limited to: burning, melting, cutting, sawing, brazing, grinding, machining, milling, and welding. **The following classification information is for the hazardous elements which may be released during certain processing.**

**GHS Classification:**

Serious Eye Damage/Irritation - Category 2B  
Respiratory Sensitizer - Category 1  
Skin Irritation - Category 2  
Germ Cell Mutagenicity - Category 2  
Carcinogenicity - Category 2  
Toxic to reproduction - Category 1A  
Specific target organ toxicity - Repeated exposure - Category 1 (respiratory system)  
Hazardous to aquatic environment - Acute Hazard - Category 1  
Hazardous to aquatic environment - Chronic Hazard - Category 1

**GHS LABEL ELEMENTS**

**Symbol(s)**



**Signal Word**  
**Danger**

**Hazard Statements**

Causes eye irritation  
May cause allergy or asthma symptoms or breathing difficulties if inhaled  
May cause an allergic skin reaction  
Suspected of causing genetic defects Suspected of causing cancer  
Causes damage to organs (kidneys, respiratory system)  
Causes damage to organs through prolonged or repeated exposure (respiratory system)  
Very toxic to aquatic life

**Mueller Brass Co.**  
**Safety Data Sheet**  
**Brass (Alloy C48500/ C66800/ C67300/ C67410/ C67600)**

Very toxic to aquatic life with long lasting effects

**Precautionary Statements**

**Prevention**

Do not breathe dust/fume/gas/mist/vapors/spray  
In case of inadequate ventilation wear respiratory protection  
Contaminated work clothing should not be allowed out of the workplace.  
Wash hands thoroughly after handling  
Wear protective gloves  
Use personal protective equipment as required  
Do not eat, drink or smoke when using this product.  
Avoid release to the environment

**Storage**

Store locked up

**Disposal**

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

**Section 3 – Composition/Information on Ingredients**

CAS #	Component	Percent
7440-50-8	Copper	55 – 63
7440-66-6	Zinc	32 – 36
7439-92-1	Lead	0.40 – 3.0
7440-02-0	Nickel	0.25 (max)
7440-21-3	Silicon	0.5 – 1.5
7439-96-5	Manganese	2.0 – 3.5

The above listing is a summary of elements used in alloying brass. Various grades will contain different combinations of these elements. Other trace elements may also be present in minute amounts. These small quantities (less than 0.1%) are frequently referred to as “trace” or “residual” elements; generally they originate in the raw material used. Such elements would include nitrogen (N), oil mist (mineral<sup>1</sup>), oxygen (O), and silver (Ag). Various byproducts of processing from these trace elements may include nitric oxide, nitrogen dioxide, and ozone, and these byproducts may also be considered trace. If listed in the above table, the ingredient is considered to be a component rather than trace.

**Footnotes:**

1. The roll may have a light coating of oil to prevent corrosion.

**Section 4 – First Aid Measures**

The following information is for the hazardous elements which may be released during certain processing (See Section 2)

**Eyes**

Immediately flush with plenty of water. After initial flushing, remove any contact lenses and continue flushing for at least 15 minutes. Keep eye wide open while rinsing. Consult a physician.

**Skin**

Wash skin with soap and water. In the case of skin irritation or allergic reactions see a physician.

**Ingestion**

Do NOT induce vomiting. Call a physician or Poison Control Center immediately. Drink plenty of water. Never give anything by mouth to an unconscious person.

**Mueller Brass Co.**  
**Safety Data Sheet**  
**Brass (Alloy C48500/ C66800/ C67300/ C67410/ C67600)**

**Inhalation**

Move to fresh air. If breathing is difficult, give oxygen. If not breathing, give artificial respiration. Consult a physician.

**Section 5 – Firefighting Measures**

The following information is for the hazardous elements which may be released during certain processing (See Section 2)

**General Fire Hazards**

See Section 9 for Flammability Properties. This product does not present fire or explosion hazards as shipped. Small chips, fines, and dust from processing may be readily ignitable.

**Hazardous Combustion Products**

Thermal decomposition can lead to release of irritating gases and vapors. In the event of fire and/or explosion do not breathe fumes. May cause sensitization by inhalation and skin contact.

**Extinguishing Media**

Class D extinguishing agents on fines, dust or molten metal. Use coarse water spray on chips and fines.

**Unsuitable Extinguishing Media**

DO NOT use halogenated extinguishing agents on small chips or fines. DO NOT use water for fires involving molten metal. These fire extinguishing agents will react with burning material.

**Fire Fighting Equipment/Instructions**

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

**Section 6 – Accidental Release Measures**

The following information is for the hazardous elements which may be released during certain processing (See Section 2)

**Recovery and Neutralization**

Avoid dust formation. Collect scrap for recycling.

**Materials and Methods for Clean-Up**

If product is molten, contain the flow using dry sand or salt flux as a dam. All tools and containers which come in contact with molten metal must be preheated or specially coated and rust free. Allow the spill to cool before remelting as scrap.

**Personal Precautions and Protective Equipment**

Wear appropriate protective clothing and respiratory protection for the situation.

**Environmental Precautions**

Prevent further leakage or spillage if safe to do so. Prevent product from entering drains. Do not flush into surface water or sanitary sewer system.

**Prevention of Secondary Hazards**

None

**Section 7 – Handling and Storage**

The following information is for the hazardous elements which may be released during certain processing (See Section 2)

**Handling Procedures**

Avoid contact with skin, eyes and clothing. Wear personal protective equipment. Avoid dust formation. Keep material dry.

**Mueller Brass Co.**  
**Safety Data Sheet**  
**Brass (Alloy C48500/ C66800/ C67300/ C67410/ C67600)**

Avoid contact with sharp edges or heated material.

### Storage Procedures

Keep container tightly closed in a dry and well-ventilated place.

### Incompatibilities

See Section 10

## Section 8 – Exposure Controls/Personal Protection

The following information is for the hazardous elements which may be released during certain processing (See Section 2)

### Component Exposure Limits

#### Copper (7440-50-8)

ACGIH: 0.2 mg/m<sup>3</sup> TWA (fume)  
OSHA: 1.0 mg/m<sup>3</sup> TWA (dust, mist, as Cu) 0.1 mg/m<sup>3</sup> TWA (fume)  
NIOSH: 1 mg/m<sup>3</sup> TWA (dust and mist); 0.1 mg/m<sup>3</sup> TWA (fume)

#### Lead (7439-92-1)

ACGIH: 0.05 mg/m<sup>3</sup> TWA  
OSHA: 30 µg/m<sup>3</sup> Action Level (Poison, See 29 CFR 1910.1025); 50 µg/m<sup>3</sup> TWA  
NIOSH: 0.050 mg/m<sup>3</sup> TWA

#### Nickel (7440-02-0)

ACGIH: 1.5 mg/m<sup>3</sup> TWA (inhalable fraction)  
OSHA: 1 mg/m<sup>3</sup> TWA  
NIOSH: 0.015 mg/m<sup>3</sup> TWA

#### Manganese (7439-96-5)

ACGIH: 0.2 mg/m<sup>3</sup> TWA  
OSHA: 1 mg/m<sup>3</sup> TWA (fume) 3 mg/m<sup>3</sup> STEL (fume) 5 mg/m<sup>3</sup> Ceiling  
NIOSH: 1 mg/m<sup>3</sup> TWA (fume) 3 mg/m<sup>3</sup> STEL

#### Silicon (7440-21-3)

OSHA: 10 mg/m<sup>3</sup> TWA (total dust); 5 mg/m<sup>3</sup> TWA (respirable fraction)  
NIOSH: 10 mg/m<sup>3</sup> TWA (total dust); 5 mg/m<sup>3</sup> TWA (respirable dust)

### Engineering Measures

Where feasible, enclose processes to prevent dust dispersion into the work area. Provide local exhaust when possible, and general ventilation as necessary, to keep airborne concentrations below exposure limits and as low as possible.

### Personal Protective Equipment

#### Respiratory

If exposure limits are exceeded or irritation is experienced, NIOSH/MSHA approved respiratory protection should be worn. Positive-pressure supplied air respirators may be required for high airborne contaminant concentrations. Respiratory protection must be provided in accordance with current local regulations.

#### Hands

Use impervious gloves such as neoprene, nitrile, or rubber for hand protection.

**Mueller Brass Co.**  
**Safety Data Sheet**  
**Brass (Alloy C48500/ C66800/ C67300/ C67410/ C67600)**

**Eyes**

Wear safety glasses with side shields and/or goggles as necessary to prevent dust from entering eyes.

**Skin and Body**

Use body protection appropriate for task.

**Hygiene Measures**

Do not breathe vapors/dust. When using, do not eat, drink or smoke. Provide regular cleaning of equipment, work area and clothing. Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product. Keep away from food, drink and animal feeding stuffs.

**Section 9 – Physical and Chemical Properties**

<b>Appearance:</b>	Yellow-Brown Metal	<b>Odor:</b>	None
<b>Physical State:</b>	Solid	<b>pH:</b>	NA
<b>Vapor Pressure:</b>	ND	<b>Vapor Density:</b>	ND
<b>Boiling Point:</b>	ND	<b>Melting Point:</b>	866-1038 (°C) / 1590-1900 (°F)
<b>Solubility (H<sub>2</sub>O):</b>	Insoluble	<b>Specific Gravity:</b>	ND
<b>Evaporation Rate:</b>	ND	<b>VOC:</b>	ND
<b>Octanol/H<sub>2</sub>O Coeff.:</b>	ND	<b>Flash Point:</b>	NA
<b>Flash Point Method:</b>	NA	<b>Upper Flammability Limit (UFL):</b>	NA
<b>Lower Flammability Limit (LFL):</b>	NA	<b>Burning Rate:</b>	NA
<b>Auto Ignition:</b>	NA		

**Section 10 – Stability and Reactivity**

The following information is for the hazardous elements which may be released during certain processing (See Section 2)

**Chemical Stability**

Stable under recommended storage conditions.

**Hazardous Reaction Potential**

Will not occur.

**Conditions to Avoid**

Dust formation. Heat, flames and sparks. Protect from water.

**Incompatible Products**

Acids. Alkalis. Water. Halogenated compounds. Metal oxides.

**Hazardous Decomposition Products**

Toxic metal oxides and carbon and nitrogen oxides may be produced during a fire involving metal alloys. Alloys with nickel may also produce poisonous nickel carbonyl.

**Section 11 – Toxicological Information**

The following information is for the hazardous elements which may be released during certain processing (See Section 2)

**Acute Toxicity**

**Mueller Brass Co.**  
**Safety Data Sheet**  
*Brass (Alloy C48500/ C66800/ C67300/ C67410/ C67600)*

**Component Analysis - LD50/LC50**

**Nickel (7440-02-0)**

Oral LD50 Rat >9000 mg/kg

**Manganese (7439-96-5)**

Oral LD50 Rat 9 g/kg

**Silicon (7440-21-3)**

Oral LD50 Rat 3160 mg/kg

**Skin**

Contact with dust can cause mechanical irritation or drying of the skin. Contact with oils from processing may cause irritation. Prolonged skin contact may defat the skin and produce dermatitis. Repeated or prolonged skin contact may cause allergic reactions with susceptible persons.

**Eye**

Dust contact with the eyes can lead to mechanical irritation.

**Ingestion**

May be harmful if swallowed. May cause additional affects as listed under "Inhalation".

**Inhalation**

May be harmful if inhaled. Inhalation of dust in high concentration may cause irritation of respiratory system.

**Respiratory Organs Sensitization/Skin Sensitization**

May cause an allergic skin reaction

**Generative Cell Mutagenicity**

Suspected of causing genetic defects

**Carcinogenicity**

**A: General Product Information**

Suspected of causing cancer.

**B: Component Carcinogenicity**

**Lead (7439-92-1)**

ACGIH: A3 - Confirmed Animal Carcinogen with Unknown Relevance to Humans

OSHA: 30 µg/m<sup>3</sup> Action Level (Poison, See 29 CFR 1910.1025); 50 µg/m<sup>3</sup> TWA

NTP: Reasonably Anticipated To Be A Human Carcinogen (Possible Select Carcinogen)

IARC: Monograph 87 [2006] (evaluates inorganic lead compounds as Group 2A and organic lead compounds as Group 3) (Group 2A (probably carcinogenic to humans))

**Nickel (7440-02-0)**

ACGIH: A5 - Not Suspected as a Human Carcinogen

NIOSH: potential occupational carcinogen

NTP: Reasonably Anticipated To Be A Human Carcinogen (Possible Select Carcinogen)

IARC: Monograph 49 [1990]; Supplement 7 [1987] (Group 2B (possibly carcinogenic to humans))

**Reproductive Toxicity**

Lead may damage the reproductive system and cause developmental damage.

**Specified Target Organ General Toxicity: Single Exposure**

Causes damage to organs (kidneys, respiratory system)

**Mueller Brass Co.**  
**Safety Data Sheet**  
*Brass (Alloy C48500/ C66800/ C67300/ C67410/ C67600)*

**Specified Target Organ General Toxicity: Repeated Exposure**

May cause damage to organs through prolonged or repeated exposure (respiratory system). Repeated contact may cause allergic reactions in very susceptible persons. Avoid repeated exposure. Prolonged exposure may cause chronic effects. Repeated or prolonged skin contact may cause skin irritation and/or dermatitis and sensitization of susceptible persons. May cause adverse effects on the bone marrow and blood-forming system. May cause adverse liver effects.

Elevated temperature processing such as welding and plasma arc cutting may release hazardous fumes. Overexposure to metal fumes may cause pulmonary edema (fluid in the lungs) and methemoglobinemia. May also cause pulmonary fibrosis and lung cancer. Lead compounds may be absorbed by ingestion, by inhalation and through the skin. Lead may damage kidney function, the blood forming system and the reproductive system. Inorganic lead compounds can cause developmental damage.

**Aspiration Respiratory Organs Hazard**

**Section 12 – Ecological Information**

The following information is for the hazardous elements which may be released during certain processing (See Section 2)

**Ecotoxicity**

**A: General Product Information**

Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

**B: Component Analysis - Ecotoxicity - Aquatic Toxicity**

**Copper (7440-50-8)**

<b>Test &amp; Species</b>	<b>Conditions</b>
96 Hr LC50 Pimephales promelas	0.0068 - 0.0156 mg/L
96 Hr LC50 Pimephales promelas	<0.3 mg/L [static]
96 Hr LC50 Pimephales promelas	0.2 mg/L
96 Hr LC50 Oncorhynchus mykiss	[flow- 0.052 mg/L
96 Hr LC50 Lepomis macrochirus	[flow- through] 1.25 mg/L [static]
96 Hr LC50 Cyprinus carpio	0.3 mg/L
96 Hr LC50 Cyprinus carpio	[semi- static] 0.8 mg/L [static]
96 Hr LC50 Poecilia reticulata	0.112 mg/L
72 Hr EC50	[flow- through] 0.0426 - 0.0535
Pseudokirchneriella subcapitata	mg/L [static]
96 Hr EC50	0.031 - 0.054 mg/L
Pseudokirchneriella subcapitata	[static]
48 Hr EC50 Daphnia magna	0.03 mg/L [Static]

**Zinc (7440-66-6)**

<b>Test &amp; Species</b>	<b>Conditions</b>
96 Hr LC50 Pimephales promelas	2.16-3.05 mg/L
	[flow-through]
96 Hr LC50 Pimephales promelas	0.211-0.269 mg/L
	[semi-static]
96 Hr LC50 Pimephales promelas	2.66 mg/L [static]
96 Hr LC50 Cyprinus carpio	30 mg/L
96 Hr LC50 Cyprinus carpio	0.45 mg/L
	[semi- static]
96 Hr LC50 Cyprinus carpio	7.8 mg/L [static]
96 Hr LC50 Lepomis macrochirus	3.5 mg/L [static]

# Mueller Brass Co.

## Safety Data Sheet

Brass (Alloy C48500/ C66800/ C67300/ C67410/ C67600)

96 Hr LC50 Oncorhynchus mykiss	0.24 mg/L [flow- through]
96 Hr LC50 Oncorhynchus mykiss	0.59 mg/L [semi- static]
96 Hr LC50 Oncorhynchus mykiss	0.41 mg/L [static]
96 Hr EC50	0.11 - 0.271 mg/L
Pseudokirchneriella subcapitata	[static]
72 Hr EC50	0.09 - 0.125 mg/L
Pseudokirchneriella subcapitata	[static]
48 Hr EC50 Daphnia magna	0.139 - 0.908 mg/L [Static]

### Lead (7439-92-1)

#### Test & Species

96 Hr LC50 Cyprinus carpio

96 Hr LC50 Oncorhynchus mykiss

96 Hr LC50 Oncorhynchus mykiss

48 Hr EC50 water flea

#### Conditions

0.44 mg/L

[semi- static]

1.17 mg/L

[flow- through]

1.32 mg/L [static]

600 µg/L

### Nickel (7440-02-0)

#### Test & Species

96 Hr LC50 Brachydanio rerio

96 Hr LC50 Cyprinus carpio

96 Hr LC50 Cyprinus carpio

72 Hr EC50

Pseudokirchneriella subcapitata

96 Hr EC50

Pseudokirchneriella subcapitata

48 Hr EC50 Daphnia magna

48 Hr EC50 Daphnia magna

#### Conditions

>100 mg/L

1.3 mg/L

[semi- static]

10.4 mg/L [static]

0.18 mg/L

0.174 - 0.311 mg/L

[static]

>100 mg/L

1 mg/L [Static]

### Persistence/Degradability

Metal powders may cause ecological damage through silting or sedimentation effect in water depriving organisms of habitat and mobility, and/or fouling of gills, lungs and skin thus limiting oxygen uptake.

### Bioaccumulation

Metal powders in water or soil may form metal oxides or other metal compounds that could become bioavailable and harm aquatic or terrestrial organisms.

### Mobility in Soil

Metal powder would be relatively immobile in soils but some metal compounds may be transported with ground water.

## Section 13 – Disposal Considerations

The following information is for the hazardous elements which may be released during certain processing (See Section 2)

### Waste Disposal Instructions

See Section 7 for Handling Procedures.

See Section 8 for Personal Protective Equipment recommendations.



**Mueller Brass Co.**  
**Safety Data Sheet**  
*Brass (Alloy C48500/ C66800/ C67300/ C67410/ C67600)*

**Disposal of Contaminated Containers or Packaging**

Dispose in accordance with Federal, state and local regulations

**Section 14 – Transport Information**

The following information is for the hazardous elements which may be released during certain processing (See Section 2)

**Component Marine Pollutants**

This material contains one or more of the following chemicals required by US DOT to be identified as marine pollutants.

Component	CAS #	
Copper	7440-50-8	DOT regulated severe marine pollutant (powder)

**DOT Information**

Shipping Name: Not Regulated

**IATA Information**

Shipping Name: Not Regulated

**ICAO Information**

Shipping Name: Not Regulated

**IMDG Information**

Shipping Name: Not Regulated

**Section 15 – Regulatory Information**

**Regulatory Information**

**A: Component Analysis**

This material contains one or more of the following chemicals required to be identified under SARA Section 302 (40 CFR 355 Appendix A), SARA Section 313 (40 CFR 372.65) and/or CERCLA (40 CFR 302.4).

**Copper (7440-50-8)**

SARA 313: 1.0 % de minimis concentration

CERCLA: 5000 lb final RQ (no reporting of releases of this hazardous substance is required if the diameter of the pieces of the solid metal released is >100 µm);

**Zinc (7440-66-6)**

SARA 313: 1.0 % de minimis concentration (dust or fume only)

CERCLA: 1000 lb final RQ (no reporting of releases of this hazardous substance is required if the diameter of the pieces of the solid metal released is >100 µm)

**Lead (7439-92-1)**

SARA 313: 0.1 % Supplier notification limit; 0.1 % de minimis concentration (when contained in stainless steel, brass, or bronze)

CERCLA: 10 lb final RQ (no reporting of releases of this hazardous substance is required if the diameter of the pieces of the solid metal released is >100 µm);

**Nickel (7440-02-0)**

SARA 313: 0.1 % de minimis concentration

CERCLA: 100 lb final RQ (no reporting of releases of this hazardous substance is required if the diameter of the pieces of the solid metal released is >100 µm);

**Manganese (7439-96-5)**

SARA 313: 1.0 % de minimis concentration

**Mueller Brass Co.**  
**Safety Data Sheet**  
*Brass (Alloy C48500/ C66800/ C67300/ C67410/ C67600)*

**B: Component Marine Pollutants**

This material contains one or more of the following chemicals required by US DOT to be identified as marine pollutants.

**Copper (7440-50-8)**


55-96 DOT regulated severe marine pollutant (powder)

**State Regulations**

**A: Component Analysis - State**

The following components appear on one or more of the following state hazardous substances lists:

Component	CAS	CA	MA	MN	NJ	PA	RI
Copper	7440-50-8	Yes	Yes	Yes	Yes	Yes	Yes
Zinc	7440-66-6	Yes	Yes	No	Yes	Yes	Yes
Lead	7439-92-1	Yes	Yes	Yes	Yes	Yes	No
Nickel	7440-02-0	Yes	Yes	Yes	Yes	Yes	Yes
Manganese	7439-96-5	Yes	Yes	Yes	Yes	Yes	Yes
Silicon	7440-21-3	No	Yes	Yes	Yes	Yes	Yes

 **WARNING** - This product can expose you to chemicals including lead which is 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](http://www.P65Warnings.ca.gov).

**Component Analysis - WHMIS IDL**

The following components are identified under the Canadian Hazardous Products Act Ingredient Disclosure List:

Component	CAS #	Minimum Concentration
Copper	7440-50-8	1 %
Lead	7439-92-1	0.1 %
Nickel	7440-02-0	0.1 %
Manganese	7439-96-5	1 %

**Additional Regulatory Information**

**Component Analysis – Inventory**

Component	CAS #	TSCA	CAN	EEC	REACH
Copper	7440-50-8	Yes	DSL	EINECS	NA
Zinc	7440-66-6	Yes	DSL	EINECS	NA
Lead	7439-92-1	Yes	DSL	EINECS	SVHC
Nickel	7440-02-0	Yes	DSL	EINECS	NA
Manganese	7439-96-5	Yes	DSL	EINECS	NA
Silicon	7440-21-3	Yes	DSL	EINECS	NA

**Section 16 - Other Information**

**Key/Legend**

ACGIH = American Conference of Governmental Industrial Hygienists; DOT = Department of Transportation; DSL = Domestic Substances List; EEC = European Economic Community; EINECS = European Inventory of Existing Commercial Chemical Substances; EU = European Union; IARC = International Agency for Research on Cancer; IMO = International Maritime Organization; IATA = International Air Transport Association; NDSL = Non-Domestic Substances List; NTP = National Toxicology Program; TLV = Threshold Limit Value; TWA = Time Weighted Average; NIOSH = National Institute of Occupational Safety and Health; OSHA = Occupational Safety and Health Administration; IMDG = International Maritime Dangerous Goods Code; IATA = International Air Transport Association

***Mueller Brass Co.***  
***Safety Data Sheet***  
***Brass (Alloy C48500/ C66800/ C67300/ C67410/ C67600)***

**Literature References**

None

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