

**Brass and Copper Alloys Brass, Bronze, Copper, Copper-Nickel**

SDS Revision Date: 01/14/2016

	STOT SE 3;H335 Skin Irrit. 2;H315 Skin Sens. 1;H317	
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In accordance with paragraph (i) of §1910.1200, the specific chemical identity and/or exact percentage (concentration) of composition has been withheld as a trade secret.

[1] Substance classified with a health or environmental hazard.

[2] Substance with a workplace exposure limit.

[3] PBT-substance or vPvB-substance.

\*The full texts of the phrases are shown in Section 16.

**4. First aid measures**

**4.1. Description of first aid measures**

- General** In all cases of doubt, or when symptoms persist, seek medical attention. Never give anything by mouth to an unconscious person.
- Inhalation** Remove to fresh air, keep patient warm and at rest. If breathing is irregular or stopped, give artificial respiration. If unconscious place in the recovery position and obtain immediate medical attention. Give nothing by mouth.
- Eyes** Irrigate copiously with clean water for at least 15 minutes, holding the eyelids apart and seek medical attention.
- Skin** Remove contaminated clothing. Wash skin thoroughly with soap and water or use a recognized skin cleanser.
- Ingestion** If swallowed obtain immediate medical attention. Keep at rest. Do NOT induce vomiting.

**4.2. Most important symptoms and effects, both acute and delayed**

**Overview** Brass and copper alloys in their solid state present no inhalation, ingestion or contact health hazard. However, inhaling dusts, fumes or mists which may be generated during certain manufacturing procedures (burning, melting, welding, sawing, brazing, grinding and machining) may be hazardous to your health. Dusts may also be irritating to the unprotected skin or eyes.

**ACUTE EFFECTS:** Excessive exposure to dusts / fumes may cause irritation of eyes, nose or throat. Inhalation of dusts / fumes may result in metal fume fever (metallic taste in mouth, dryness and irritation of throat, chills and fever).

**CHRONIC EFFECTS:** Prolonged inhalation of fumes or dusts may cause a variety of adverse health effects to the respiratory system, including (but not necessarily limited to) lesions of the mucous membrane, bronchitis, pneumonia and cancers of the nasal cavity and respiratory tract.

**POTENTIAL HEALTH EFFECTS/MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE:** Any pre-existing chronic respiratory condition (asthma, chronic bronchitis, emphysema).

**ROUTES OF ENTRY:** Inhalation (dusts / fumes / mists), Contact with Skin and Eyes (dusts / mists), Ingestion (dusts).

Possible cancer hazard. Contains an ingredient which may cause cancer based on animal data (See Section 3 and Section 15 for each ingredient). Risk of cancer depends on duration and level of exposure.

See section 2 for further details.

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<b>Inhalation</b>	Harmful if inhaled. May cause allergy or asthma symptoms of breathing difficulties if inhaled.
<b>Skin</b>	May cause an allergic skin reaction. Causes mild skin irritation. (Not adopted by US OSHA)

**5. Fire-fighting measures****5.1. Extinguishing media**

Use what is appropriate for surrounding fire.

**5.2. Special hazards arising from the substance or mixture**

Hazardous decomposition: No hazardous decomposition data available.

Avoid breathing dust / fume / gas / mist / vapors / spray.

Do not get in eyes, on skin, or on clothing.

**5.3. Advice for fire-fighters**

Nonflammable at low temperatures, but will burn at high temperatures.

ERG Guide No. ----

**6. Accidental release measures****6.1. Personal precautions, protective equipment and emergency procedures**

Put on appropriate personal protective equipment (see section 8).

**6.2. Environmental precautions**

Do not allow spills to enter drains or waterways.

Use good personal hygiene practices. Wash hands before eating, drinking, smoking or using toilet. Promptly remove soiled clothing and wash thoroughly before reuse.

**6.3. Methods and material for containment and cleaning up**

No special procedures needed.

**7. Handling and storage****7.1. Precautions for safe handling**

Minimize activities which may generate dusts, mists or fumes. Keep areas well ventilated. Use suitable equipment to move materials.

See section 2 for further details. - [Prevention]:

**7.2. Conditions for safe storage, including any incompatibilities**

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Handle containers carefully to prevent damage and spillage.

Incompatible materials: Strong Acids (such as Sulfuric, Hydrochloric, Nitric).

See section 2 for further details. - [Storage]:

**7.3. Specific end use(s)**

No data available.

**8. Exposure controls and personal protection**

**8.1. Control parameters**

**Exposure**

CAS No.	Ingredient	Source	Value
0007429-90-5	Aluminum (Al)	OSHA	TWA 15 mg/m3 (total) TWA 5 mg/m3 (resp)
		ACGIH	TWA: 1.0 mg/m3 Revised 2008,
		NIOSH	TWA 10 mg/m3 (total) TWA 5 mg/m3 (resp)
		Supplier	No Established Limit
0007439-89-6	Iron	OSHA	No Established Limit
		ACGIH	No Established Limit
		NIOSH	No Established Limit
		Supplier	No Established Limit
0007439-92-1	Lead Compounds (as Pb)	OSHA	[1910.1025] TWA 0.050 mg/m3
		ACGIH	TWA: 0.05 mg/m3 R, 2B, 2A
		NIOSH	TWA (8-hour) 0.050 mg/m3
		Supplier	No Established Limit
0007439-96-5	Manganese compounds (as Mn)	OSHA	C 5 mg/m3 *See specific listings for specific compounds.
		ACGIH	TWA: 0.2 mg/m3 R
		NIOSH	TWA 1 mg/m3 ST 3 mg/m3 *See specific listings for specific compounds.
		Supplier	No Established Limit
0007440-02-0	Nickel	OSHA	TWA 1 mg/m3 [*Note: The PEL does not apply to Nickel carbonyl.]
		ACGIH	Insoluble TWA: 0.05 mg/m3 A1, 1, (I) Soluble TWA: 0.05 mg/m3 A1, 1, 2B, (I)
		NIOSH	Ca TWA 0.015 mg/m3 [*Note: The REL does not apply to Nickel carbonyl.]
		Supplier	No Established Limit
0007440-21-3	Silicon	OSHA	TWA 15 mg/m3 (total) TWA 5 mg/m3 (resp)
		ACGIH	No Established Limit



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		NIOSH	TWA 10 mg/m <sup>3</sup> (total) TWA 5 mg/m <sup>3</sup> (resp)
		Supplier	No Established Limit
0007440-31-5	Tin	OSHA	TWA 2 mg/m <sup>3</sup> [*Note: PEL also applies to other inorganic tin compounds (as Sn) except tin oxides.]
		ACGIH	TWA: 2 mg/m <sup>3</sup> (Oxide and inorganic compounds, except tin hydride) TWA: 0.2, STEL 0.1 mg/m <sup>3</sup> (Tin - Organic Compounds)
		NIOSH	TWA 2 mg/m <sup>3</sup> [*Note: The REL also applies to other inorganic tin compounds (as Sn) except tin oxides.]
		Supplier	No Established Limit
0007440-41-7	Beryllium	OSHA	TWA 0.002 mg/m <sup>3</sup> C 0.005 mg/m <sup>3</sup> (30 minutes), with a maximum peak of 0.025 mg/m <sup>3</sup>
		ACGIH	TWA: 0.002 mg/m <sup>3</sup> STEL: 0.01 mg/m <sup>3</sup> Skin, SA1, 1, Revised 2009; 2010,
		NIOSH	Ca C 0.0005 mg/m <sup>3</sup>
		Supplier	No Established Limit
0007440-48-4	Cobalt compounds (as Co)	OSHA	TWA 0.1 mg/m <sup>3</sup>
		ACGIH	TWA: 0.02 mg/m <sup>3</sup> 2B
		NIOSH	TWA 0.05 mg/m <sup>3</sup>
		Supplier	No Established Limit
0007440-50-8	Copper	OSHA	TWA 1 mg/m <sup>3</sup> [*Note: The PEL also applies to other copper compounds (as Cu) except copper fume.]
		ACGIH	TWA: 0.2 mg/m <sup>3</sup> (fume) 1 mg/m <sup>3</sup> (dusts and mists)
		NIOSH	TWA 1 mg/m <sup>3</sup> [*Note: The REL also applies to other copper compounds (as Cu) except Copper fume.]
		Supplier	No Established Limit
0007440-66-6	Zinc powder (stabilized)	OSHA	No Established Limit
		ACGIH	No Established Limit
		NIOSH	No Established Limit
		Supplier	No Established Limit

The exposure limits for nuisance dust are: OSHA PEL: 15 mg/m<sup>3</sup> (50 mppcf\*) TWA, ACGIH 10 mg/m<sup>3</sup>.

#### Carcinogen Data

CAS No.	Ingredient	Source	Value
0007429-90-5	Aluminum (Al)	OSHA	Select Carcinogen: No
		NTP	Known: No; Suspected: No
		IARC	Group 1: No; Group 2a: No; Group 2b: No; Group 3: No; Group 4: No;
0007439-89-6	Iron	OSHA	Select Carcinogen: No
		NTP	Known: No; Suspected: No
		IARC	Group 1: No; Group 2a: No; Group 2b: No; Group 3: No; Group 4: No;
0007439-92-1	Lead Compounds (as Pb)	OSHA	Select Carcinogen: Yes
		NTP	Known: No; Suspected: Yes
		IARC	Group 1: No; Group 2a: No; Group 2b: Yes; Group 3: No; Group 4: No;
0007439-96-5	Manganese compounds (as Mn)	OSHA	Select Carcinogen: No



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		NTP	Known: No; Suspected: No
		IARC	Group 1: No; Group 2a: No; Group 2b: No; Group 3: No; Group 4: No;
0007440-02-0	Nickel	OSHA	Select Carcinogen: Yes
		NTP	Known: Yes; Suspected: Yes
		IARC	Group 1: No; Group 2a: No; Group 2b: Yes; Group 3: No; Group 4: No;
0007440-21-3	Silicon	OSHA	Select Carcinogen: No
		NTP	Known: No; Suspected: No
		IARC	Group 1: No; Group 2a: No; Group 2b: No; Group 3: No; Group 4: No;
0007440-31-5	Tin	OSHA	Select Carcinogen: No
		NTP	Known: No; Suspected: No
		IARC	Group 1: No; Group 2a: No; Group 2b: No; Group 3: No; Group 4: No;
0007440-41-7	Beryllium	OSHA	Select Carcinogen: Yes
		NTP	Known: Yes; Suspected: Yes
		IARC	Group 1: Yes; Group 2a: No; Group 2b: No; Group 3: No; Group 4: No;
0007440-48-4	Cobalt compounds (as Co)	OSHA	Select Carcinogen: Yes
		NTP	Known: No; Suspected: No
		IARC	Group 1: No; Group 2a: No; Group 2b: Yes; Group 3: No; Group 4: No;
0007440-50-8	Copper	OSHA	Select Carcinogen: No
		NTP	Known: No; Suspected: No
		IARC	Group 1: No; Group 2a: No; Group 2b: No; Group 3: No; Group 4: No;
0007440-66-6	Zinc powder (stabilized)	OSHA	Select Carcinogen: No
		NTP	Known: No; Suspected: No
		IARC	Group 1: No; Group 2a: No; Group 2b: No; Group 3: No; Group 4: No;

8.2. Exposure controls

**Respiratory**

Wear NIOSH approved dust / mist / fume respirator when welding or burning this metal.

**Eyes**

Face shields (welding or burning), Safety glasses (cutting or grinding).

**Skin**

Use appropriate protective clothing such as welding aprons and gloves when welding or burning.

**Engineering Controls**

Provide adequate ventilation. Where reasonably practicable this should be achieved by the use of local exhaust ventilation and good general extraction. If these are not sufficient to maintain concentrations of particulates and any vapor below occupational exposure limits suitable respiratory protection must be worn.

**Other Work Practices**

Use good personal hygiene practices. Wash hands before eating, drinking, smoking or using toilet. Promptly remove soiled clothing and wash thoroughly before reuse.

See section 2 for further details. - [Prevention]:

9. Physical and chemical properties

Appearance

Metal Solid

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Odor	Odorless
Odor threshold	Not determined
pH	Not Measured
Melting point / freezing point	Not Measured
Initial boiling point and boiling range	NA
Flash Point	Nonflammable
Evaporation rate (Ether = 1)	Not Measured
Flammability (solid, gas)	Not Applicable
Upper/lower flammability or explosive limits	<b>Lower Explosive Limit:</b> Not Measured <b>Upper Explosive Limit:</b> Not Measured
Vapor pressure (Pa)	NA
Vapor Density	NA
Specific Gravity	7.78 - 8.94
Solubility in Water	Insoluble
Partition coefficient n-octanol/water (Log Kow)	Not Measured
Auto-ignition temperature	NA
Decomposition temperature	Not Measured
Viscosity (cSt)	Not Measured
<b>9.2. Other information</b>	
No other relevant information.	

**10. Stability and reactivity**

**10.1. Reactivity**

Hazardous Polymerization will not occur.

**10.2. Chemical stability**

Stable under normal circumstances.

**10.3. Possibility of hazardous reactions**

No data available.

**10.4. Conditions to avoid**

No data available.

**10.5. Incompatible materials**

Strong Acids (such as Sulfuric, Hydrochloric, Nitric).

**10.6. Hazardous decomposition products**

No hazardous decomposition data available.

**11. Toxicological information**

**Acute toxicity**



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Ingredient	Oral LD50, mg/kg	Skin LD50, mg/kg	Inhalation Vapor LC50, mg/L/4hr	Inhalation Dust/Mist LC50, mg/L/4hr	Inhalation Gas LC50, ppm
Copper - (7440-50-8)	2,500.00, Rat - Category: 5	>2,000.00, Rat - Category: 5	No data available	5.11, Rat - Category: NA	No data available
Zinc powder (stabilized) - (7440-66-6)	No data available	No data available	No data available	No data available	No data available
Nickel - (7440-02-0)	No data available	No data available	No data available	No data available	No data available
Aluminum (Al) - (7429-90-5)	No data available	No data available	No data available	No data available	No data available
Lead Compounds (as Pb) - (7439-92-1)	No data available	No data available	No data available	No data available	No data available
Tin - (7440-31-5)	No data available	No data available	No data available	No data available	No data available
Iron - (7439-89-6)	30,000.00, Rat - Category: NA	No data available	No data available	No data available	No data available
Manganese compounds (as Mn) - (7439-96-5)	9,000.00, Rat - Category: NA	500.00, Rabbit - Category: 3	19.00, Rat - Category: 4	No data available	No data available
Silicon - (7440-21-3)	No data available	No data available	No data available	No data available	No data available
Cobalt compounds (as Co) - (7440-48-4)	6,171.00, Rat - Category: NA	No data available	No data available	No data available	No data available
Beryllium - (7440-41-7)	No data available	No data available	No data available	No data available	No data available

Note: When no route specific LD50 data is available for an acute toxin, the converted acute toxicity point estimate was used in the calculation of the product's ATE (Acute Toxicity Estimate).

Classification	Category	Hazard Description
Acute toxicity (oral)	---	Not Applicable
Acute toxicity (dermal)	---	Not Applicable
Acute toxicity (inhalation)	4	Harmful if inhaled.
Skin corrosion/irritation	3	Causes mild skin irritation. (Not adopted by US OSHA)
Serious eye damage/irritation	---	Not Applicable
Respiratory sensitization	1	May cause allergy or asthma symptoms of breathing difficulties if inhaled.
Skin sensitization	1	May cause an allergic skin reaction.
Germ cell mutagenicity	---	Not Applicable
Carcinogenicity	1A	May cause cancer.
Reproductive toxicity	---	Not Applicable

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STOT-single exposure	---	Not Applicable
STOT-repeated exposure	1	Causes damage to organs through prolonged or repeated exposure.
Aspiration hazard	---	Not Applicable

**12. Ecological information**

**12.1. Toxicity**

Very toxic to aquatic life.

Toxic to aquatic life with long lasting effects.

No additional information provided for this product. See Section 3 for chemical specific data.

**Aquatic Ecotoxicity**

Ingredient	96 hr LC50 fish, mg/l	48 hr EC50 crustacea, mg/l	ErC50 algae, mg/l
Copper - (7440-50-8)	0.0103, Pimephales promelas	0.0025, Daphnia magna	0.018 (72 hr), Pseudokirchneriella subcapitata
Zinc powder (stabilized) - (7440-66-6)	0.182, Oncorhynchus tshawytscha	0.068, Daphnia magna	0.106 (72 hr), Pseudokirchneriella subcapitata
Nickel - (7440-02-0)	Not Available	Not Available	Not Available
Aluminum (Al) - (7429-90-5)	Not Available	Not Available	Not Available
Lead Compounds (as Pb) - (7439-92-1)	0.44, Cyprinus carpio	4.40, Daphnia magna	0.25 (72 hr), Scenedesmus subspicatus
Tin - (7440-31-5)	Not Available	Not Available	Not Available
Iron - (7439-89-6)	Not Available	Not Available	Not Available
Manganese compounds (as Mn) - (7439-96-5)	40.00, Daphnia magna	Not Available	Not Available
Silicon - (7440-21-3)	Not Available	Not Available	Not Available
Cobalt compounds (as Co) - (7440-48-4)	100.00, Danio rerio	Not Available	0.05 (72 hr), Pseudokirchneriella subcapitata
Beryllium - (7440-41-7)	Not Available	Not Available	Not Available

**12.2. Persistence and degradability**

There is no data available on the preparation itself.

**12.3. Bioaccumulative potential**

Not Measured

**12.4. Mobility in soil**

No data available.

**12.5. Results of PBT and vPvB assessment**

This product contains no PBT/vPvB chemicals.

**12.6. Other adverse effects**

No data available.



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**13. Disposal considerations**

**13.1. Waste treatment methods**

Observe all federal, state and local regulations when disposing of this substance.

**14. Transport information**

	<b>DOT (Domestic Surface Transportation)</b>	<b>IMO / IMDG (Ocean Transportation)</b>	<b>ICAO/IATA</b>
<b>14.1. UN number</b>	Not Applicable	Not Regulated	Not Regulated
<b>14.2. UN proper shipping name</b>	Not Regulated	Not Regulated	Not Regulated
<b>14.3. Transport hazard class(es)</b>	<b>DOT Hazard Class:</b> Not Applicable	<b>IMDG:</b> Not Applicable <b>Sub Class:</b> Not Applicable	<b>Air Class:</b> Not Applicable
<b>14.4. Packing group</b>	Not Applicable	Not Applicable	Not Applicable
<b>14.5. Environmental hazards</b>			
<b>IMDG</b>	Marine Pollutant: Yes; ( Zinc powder (stabilized) )		
<b>14.6. Special precautions for user</b>	No further information		

**15. Regulatory information**

<b>Regulatory Overview</b>	The regulatory data in Section 15 is not intended to be all-inclusive, only selected regulations are represented.
<b>Toxic Substance Control Act ( TSCA)</b>	All components of this material are either listed or exempt from listing on the TSCA Inventory.
<b>WHMIS Classification</b>	D2A
<b>US EPA Tier II Hazards</b>	<p style="text-align: right;">Fire: No</p> <p style="text-align: right;">Sudden Release of Pressure: No</p> <p style="text-align: right;">Reactive: No</p> <p style="text-align: right;">Immediate (Acute): Yes</p> <p style="text-align: right;">Delayed (Chronic): Yes</p>
<b>EPCRA 311/312 Chemicals and RQs (lbs):</b>	
	Beryllium ( 10.00)
	Copper ( 5,000.00)
	Lead Compounds (as Pb) ( 10.00)
	Nickel ( 100.00)
	Zinc powder (stabilized) ( 1,000.00)



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**EPCRA 302 Extremely Hazardous:**

Phosphorus

**EPCRA 313 Toxic Chemicals:**

Aluminum (Al)

Beryllium

Cobalt compounds (as Co)

Copper

Lead Compounds (as Pb)

Manganese compounds (as Mn)

Nickel

Zinc powder (stabilized)

**Proposition 65 - Carcinogens (>0.0%):**

Beryllium

Cobalt compounds (as Co)

Lead Compounds (as Pb)

Nickel

**Proposition 65 - Developmental Toxins (>0.0%):**

Lead Compounds (as Pb)

**Proposition 65 - Female Repro Toxins (>0.0%):**

Lead Compounds (as Pb)

**Proposition 65 - Male Repro Toxins (>0.0%):**

Lead Compounds (as Pb)

**New Jersey RTK Substances (>1%):**

Aluminum (Al)

Beryllium

Cobalt compounds (as Co)

Copper

Lead Compounds (as Pb)

Manganese compounds (as Mn)

Nickel

Silicon

Tin

Zinc powder (stabilized)

**Pennsylvania RTK Substances (>1%):**

Aluminum (Al)

Beryllium

Cobalt compounds (as Co)

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Copper  
Lead Compounds (as Pb)  
Manganese compounds (as Mn)  
Nickel  
Silicon  
Tin  
Zinc powder (stabilized)

**16. Other information**

The information and recommendations contained herein are based upon data believed to be correct. However, no guarantee or warranty of any kind, expressed or implied, is made with respect to the information contained herein. We accept no responsibility and disclaim all liability for any harmful effects which may be caused by exposure to our products. Customers/users of this product must comply with all applicable health and safety laws, regulations, and orders.

The full text of the phrases appearing in section 3 is:

H228 Flammable solid.

H261 In contact with water releases flammable gases.

H301 Toxic if swallowed.

H315 Causes skin irritation.

H317 May cause an allergic skin reaction.

H319 Causes serious eye irritation.

H330 Fatal if inhaled.

H334 May cause allergic or asthmatic symptoms or breathing difficulties if inhaled.

H335 May cause respiratory irritation.

H350 May cause cancer.

H350i May cause cancer if inhaled.

H351 Suspected of causing cancer.

H372 Causes damage to organs through prolonged or repeated exposure.

H400 Very toxic to aquatic life.

H410 Very toxic to aquatic life with long lasting effects.

H412 Harmful to aquatic life with long lasting effects.

H413 May cause long lasting harmful effects to aquatic life.

The information contained herein is furnished without warranty of any kind. The above information is believed to be correct but does not purport to be all inclusive and should be used only as a guide. Users should make independent determinations of the suitability and completeness of information from all sources to assure proper use and disposal of these materials and the safety and health of employees and customers.



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