

Section 1: Identification of the Substance/Mixture and of the Company/Undertaking

1.1 Product identifier

Product Name • Aluminum Alloy and Castings

1.2 Relevant identified uses of the substance or mixture and uses advised against

Relevant identified use(s) • Aircraft Engine Blades and Vanes Industrial Gas Turbine Components for power generation

1.3 Details of the supplier of the safety data sheet

Manufacturer • PCC Structurals, Inc.
4600 SE Harney Drive
Portland, OR 97206
United States

1.4 Emergency telephone number

Manufacturer • 800-424-9300 - CHEMTREC

Section 2: Hazards Identification

EU/EEC

According to: Regulation (EC) No 1272/2008 (CLP)/REACH 1907/2006 [amended by 453/2010]

According to: EU Directive 67/548/EEC (DSD) or 1999/45/EC (DPD)

2.1 Classification of the substance or mixture

CLP • Products do not present an inhalation, ingestion or skin contact health hazard under normal handling and use as it is in a metallic form. However, processes such as welding, grinding, burning, melting, or otherwise generating dust, fumes and gases may present a health hazard.

- Reproductive Toxicity 1B - H360D
- Specific Target Organ Toxicity Single Exposure 2 - H371
- Hazardous to the aquatic environment Acute 1 - H400
- Hazardous to the aquatic environment Chronic 1 - H410

DSD/DPD • Toxic (T)
Substances Toxic To Reproduction - Category 2
Dangerous to the Environment (N)
R51, R53, R61

2.2 Label Elements

CLP

DANGER



Hazard statements • H360D - May damage the unborn child.
H371 - May cause damage to organs.

H400 - Very toxic to aquatic life
H410 - Very toxic to aquatic life with long lasting effects

Precautionary statements

Prevention • P201 - Obtain special instructions before use.
P202 - Do not handle until all safety precautions have been read and understood.
P260 - Do not breathe dust.
P264 - Wash thoroughly after handling.
P270 - Do not eat, drink or smoke when using this product.
P273 - Avoid release to the environment.
P281 - Use personal protective equipment as required.

Response • P309+P311 - IF exposed or if you feel unwell: Call a POISON CENTER or doctor/physician.
P391 - Collect spillage.

Storage/Disposal • P501 - Dispose of content and/or container in accordance with local, regional, national, and/or international regulations.

DSD/DPD



Risk phrases • R51 - Toxic to aquatic organisms.
R53 - May cause long-term adverse effects in the aquatic environment.
R61 - May cause harm to the unborn child.

Safety phrases • S45 - In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).
S53 - Avoid exposure - obtain special instructions before use.
S57 - Use appropriate containment to avoid environmental contamination.

2.3 Other Hazards

CLP • May form combustible dust concentrations in air.
According to Regulation (EC) No. 1272/2008 (CLP) this material is considered hazardous.

DSD/DPD • May form combustible dust concentrations in air.
According to European Directive 1999/45/EC this material is considered dangerous.

United States (US)

According to: OSHA 29 CFR 1910.1200 HCS

2.1 Classification of the substance or mixture

OSHA HCS 2012 • Products do not present an inhalation, ingestion or skin contact health hazard under normal handling and use as it is in a metallic form. However, processes such as welding, grinding, burning, melting, or otherwise generating dust, fumes and gases may present a health hazard.
Reproductive Toxicity 1B
Specific Target Organ Toxicity Repeated Exposure 1
Specific Target Organ Toxicity Repeated Exposure 2
Combustible Dust

2.2 Label elements

OSHA HCS 2012

DANGER



Hazard statements • May damage fertility or the unborn child.
Causes damage to organs through prolonged or repeated exposure.
May cause damage to organs through prolonged or repeated exposure.
May form combustible dust concentrations in air.

Precautionary statements

- Prevention** • Obtain special instructions before use.
Do not handle until all safety precautions have been read and understood.
Do not breathe dust.
Wash thoroughly after handling.
Do not eat, drink or smoke when using this product.
Wear protective gloves, clothing, and eye/face protection, .

Response • IF exposed or concerned: Get medical advice/attention.

Storage/Disposal • Dispose of content and/or container in accordance with local, regional, national, and/or international regulations.

2.3 Other hazards

OSHA HCS 2012 • Under United States Regulations (29 CFR 1910.1200 - Hazard Communication Standard), this product is considered hazardous.

Section 3 - Composition/Information on Ingredients

3.1 Substances

• Material does not meet the criteria of a substance.

3.2 Mixtures

Composition					
Chemical Name	Identifiers	%	LD50/LC50	Classifications According to Regulation/Directive	Comments
Aluminum	CAS:7429-90-5 EC Number:231-072-3	86.568% TO 99.4%	NDA	EU DSD/DPD: Annex VI, Table 3.2: F, R11; R15 EU CLP: Annex VI, Table 3.1: Flam. Sol. 1, H228; Water-react. 2, H261 OSHA HCS 2012: Flam. Sol. 1; Water-react. 2; Comb. Dust; STOT RE 1 (Lungs, Inhl)	NDA
Silicon	CAS:7440-21-3 EC Number:231-130-8	0% TO 7%	Ingestion/Oral-Rat LD50 • 3160 mg/kg	EU DSD/DPD: F, R11 EU CLP: Flam. Sol. 2, H228 OSHA HCS 2012: Flam. Sol. 2	NDA
Copper	CAS:7440-50-8 EC Number:231-159-6	0.1% TO 5%	NDA	EU DSD/DPD: Repr. Cat. 2, T, R61; N, R50/53 EU CLP: Repr. 1B, H360D (Orl); STOT SE 1, H370 (Kidney, Orl); STOT SE 3: Resp. Irrit., H335; STOT RE 2, H373 (Liver, Orl); Aquatic Acute 1, H400 (M=100); Aquatic Chronic 1, H410 (M=10) OSHA HCS 2012: Comb. Dust; Repr. 1B (Orl); STOT SE 1 (Kidney, Orl); STOT SE 3: Resp. Irrit.; STOT RE 2 (Liver, Orl)	NDA
Manganese	CAS:7439-96-5 EC Number:231-105-1	0.25% TO 0.6%	Ingestion/Oral-Rat LD50 • 9 g/kg	EU DSD/DPD: T, R48/23; Repr. Cat. 3, R63 EU CLP: STOT RE 1 (CNS), H372; Repr. 2, H361 OSHA HCS 2012: Eye Irrit. 2; Repr. 2; STOT RE 1 (CNS)	NDA
Magnesium	CAS:7439-95-4 EC Number:231-104-6 EU Index:012-001-00-3	0.25% TO 0.6%	NDA	EU DSD/DPD: Xi, R36/37 EU CLP: Eye Irrit. 2, H319; STOT SE 3: Resp. Irrit., H335 OSHA HCS 2012: Eye Irrit. 2; STOT SE 3: Resp. Irrit.	NDA
Zinc	CAS:7440-66-6 EC Number:231-175-3 EU Index:030-001-00-1	0% TO 0.05%	NDA	EU CLP: Community workplace exposure limit OSHA HCS 2012: Exposure limits	NDA

Nickel	CAS:7440-02-0 EC Number:231-111-4	0% TO 0.05%	NDA	EU CLP: Community workplace exposure limit OSHA HCS 2012: Exposure limits	NDA
Chromium	CAS:7440-47-3 EC Number:231-157-5	0% TO 0.05%	NDA	EU CLP: Community workplace exposure limit OSHA HCS 2012: Exposure limits	NDA
Beryllium	CAS:7440-41-7 EC Number:231-150-7 EU Index:004-001-00-7	0% TO 0.002%	NDA	EU CLP: Community workplace exposure limit OSHA HCS 2012: Exposure limits	NDA

See Section 16 for full text of H-statements and R-phrases.

Section 4 - First Aid Measures

4.1 Description of first aid measures

- Inhalation** • Move victim to fresh air. Give artificial respiration if victim is not breathing. Administer oxygen if breathing is difficult. If signs/symptoms continue, get medical attention.
- Skin** • In case of contact with substance, immediately flush skin with running water for at least 20 minutes. If skin irritation occurs: Get medical advice/attention.
- Eye** • In case of contact with substance, immediately flush eyes with running water for at least 20 minutes. If eye irritation persists: Get medical advice/attention.
- Ingestion** • Rinse mouth. Do not give anything by mouth to an unconscious person. Get medical attention if symptoms occur.

4.2 Most important symptoms and effects, both acute and delayed

- Refer to Section 11 - Toxicological Information.

4.3 Indication of any immediate medical attention and special treatment needed

- Notes to Physician** • All treatments should be based on observed signs and symptoms of distress in the patient. Consideration should be given to the possibility that overexposure to materials other than this product may have occurred.

Section 5 - Firefighting Measures

5.1 Extinguishing media

- Suitable Extinguishing Media** • Use special mixtures of dry chemical, or sand.

- Unsuitable Extinguishing Media** • Do not use water.

5.2 Special hazards arising from the substance or mixture

- Unusual Fire and Explosion Hazards** • Solid, massive form of material is not combustible. Fire and explosion hazards are moderate when material is in the form of dust and exposed to heat or flames, or by chemical reaction. Avoid generating dust; fine dust dispersed in air in sufficient concentrations, and in the presence of an ignition source is a potential dust explosion hazard.

- Hazardous Combustion Products** • No data available

5.3 Advice for firefighters

- Wear positive pressure self-contained breathing apparatus (SCBA). Structural firefighters' protective clothing will only provide limited protection.

Section 6 - Accidental Release Measures

6.1 Personal precautions, protective equipment and emergency procedures

Personal Precautions • Special precautions are not necessary for solid castings. If large quantities of dust are spilled: Ventilate enclosed areas. Wear appropriate personal protective equipment, avoid direct contact. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.

Emergency Procedures • Use normal clean up procedures. Contain spill and monitor for excessive dust accumulation. Avoid unnecessary personnel and equipment traffic in the spill area.

6.2 Environmental precautions

- Prevent entry into waterways, sewers, basements or confined areas.

6.3 Methods and material for containment and cleaning up

Containment/Clean-up Measures • Avoid generating dust.
Use clean nonsparking tools to collect material.
Carefully shovel or sweep up spilled material and place in suitable container.
Dust Deposits should not be allowed to accumulate on surfaces, as these may form an explosive mixture if they are released into the atmosphere in sufficient concentration.
Residues should be evaluated for metal leachability and consignable waste standards.
Do not use compressed air for cleanup.

6.4 Reference to other sections

- Refer to Section 8 - Exposure Controls/Personal Protection and Section 13 - Disposal Considerations.

Section 7 - Handling and Storage

7.1 Precautions for safe handling

Handling • Use only with adequate ventilation. Minimize dust generation and accumulation. Routine housekeeping should be instituted to ensure that dusts do not accumulate on surfaces. Dry powders can build static electricity charges when subjected to the friction of transfer and mixing operations. Provide adequate precautions, such as electrical grounding and bonding, or inert atmospheres. Wear appropriate personal protective equipment, avoid direct contact. Do not breathe dust or fumes. Avoid contact with skin, eyes or clothing. Wash thoroughly with soap and water after handling and before eating, drinking, or using tobacco.

7.2 Conditions for safe storage, including any incompatibilities

Storage • Store in a cool, dry place. Keep away from incompatible materials.

7.3 Specific end use(s)

- Refer to Section 1.2 - Relevant identified uses.

Section 8 - Exposure Controls/Personal Protection

8.1 Control parameters

Exposure Limits/Guidelines						
	Result	ACGIH	Europe	France	Germany DFG	Germany TRGS
Chromium (7440-47-3)	TWAs	0.5 mg/m ³ TWA	2 mg/m ³ TWA	2 mg/m ³ TWA [VME] (indicative limit)	Not established	2 mg/m ³ TWA AGW (inhalable fraction, exposure factor 1)
Silicon (7440-21-3)	TWAs	Not established	Not established	10 mg/m ³ TWA [VME]	Not established	Not established
Beryllium (7440-41-7)	TWAs	0.00005 mg/m ³ TWA (inhalable fraction)	Not established	0.002 mg/m ³ TWA [VME]	Not established	Not established
Nickel (7440-02-0)	TWAs	1.5 mg/m ³ TWA (inhalable fraction)	Not established	1 mg/m ³ TWA [VME]; 1 mg/m ³ TWA [VME] (metal gratings)	Not established	Not established
Zinc	Ceilings	Not established	Not established	Not established	0.4 mg/m ³ Peak	Not established

(7440-66-6)					(respirable fraction); 4 mg/m3 Peak (inhalable fraction)	
	MAKs	Not established	Not established	Not established	0.1 mg/m3 TWA MAK (respirable fraction); 2 mg/m3 TWA MAK (inhalable fraction)	Not established
Copper (7440-50-8)	STELs	Not established	Not established	2 mg/m3 STEL [VLCT] (dust, as Cu)	Not established	Not established
	TWAs	0.2 mg/m3 TWA (fume)	Not established	0.2 mg/m3 TWA [VME] (fume); 1 mg/m3 TWA [VME] (dust, as Cu)	Not established	Not established
	Ceilings	Not established	Not established	Not established	0.02 mg/m3 Peak (respirable fraction)	Not established
	MAKs	Not established	Not established	Not established	0.01 mg/m3 TWA MAK (including inorganic copper compounds, respirable fraction)	Not established
Manganese (7439-96-5)	TWAs	0.02 mg/m3 TWA (respirable fraction); 0.1 mg/m3 TWA (inhalable fraction)	Not established	1 mg/m3 TWA [VME] (fume, as Mn)	Not established	0.5 mg/m3 TWA AGW (The risk of damage to the embryo or fetus can be excluded when AGW and BGW values are observed, inhalable fraction)
	Ceilings	Not established	Not established	Not established	1.6 mg/m3 Peak (Ceiling factor 1 for Permanganates, inhalable fraction); 0.16 mg/m3 Peak (Ceiling factor 1 for Permanganates, respirable fraction)	Not established
	MAKs	Not established	Not established	Not established	0.2 mg/m3 TWA MAK (inhalable fraction); 0.02 mg/m3 TWA MAK (respirable fraction)	Not established
Aluminum (7429-90-5)	TWAs	1 mg/m3 TWA (respirable fraction)	Not established	10 mg/m3 TWA [VME] (metal); 5 mg/m3 TWA [VME] (dust)	Not established	Not established
	MAKs	Not established	Not established	Not established	4 mg/m3 TWA MAK (dust, inhalable fraction); 1.5 mg/m3 TWA MAK (dust, respirable fraction)	Not established

Exposure Limits/Guidelines (Con't.)

	Result	Italy	Mexico	NIOSH	OSHA	United Kingdom
Chromium (7440-47-3)	TWAs	0.5 mg/m3 TWA	0.5 mg/m3 TWA LMPE-PPT	0.5 mg/m3 TWA	1 mg/m3 TWA	0.5 mg/m3 TWA
	STELs	Not established	Not established	Not established	Not established	1.5 mg/m3 STEL (calculated)
Silicon (7440-21-3)	STELs	Not established	20 mg/m3 STEL [LMPE-CT]	Not established	Not established	30 ppm STEL (calculated, inhalable dust); 12 mg/m3 STEL (calculated, respirable dust)
	TWAs	Not established	10 mg/m3 TWA LMPE-PPT (inhalable fraction)	10 mg/m3 TWA (total dust); 5 mg/m3 TWA (respirable dust)	15 mg/m3 TWA (total dust); 5 mg/m3 TWA (respirable fraction)	10 mg/m3 TWA (inhalable dust); 4 mg/m3 TWA (respirable dust)

Beryllium (7440-41-7)	TWAs	Not established	0.002 mg/m ³ TWA LMPE-PPT	Not established	2 µg/m ³ TWA	0.002 mg/m ³ TWA
	STELs	Not established	Not established	Not established	Not established	0.006 mg/m ³ STEL (calculated)
	Ceilings	Not established	Not established	0.0005 mg/m ³ Ceiling	5 µg/m ³ Ceiling	Not established
Nickel (7440-02-0)	TWAs	Not established	1 mg/m ³ TWA LMPE-PPT	0.015 mg/m ³ TWA	1 mg/m ³ TWA	0.5 mg/m ³ TWA
	STELs	Not established	Not established	Not established	Not established	1.5 mg/m ³ STEL (calculated)
Copper (7440-50-8)	STELs	Not established	2 mg/m ³ STEL [LMPE-CT] (fume, as Cu); 2 mg/m ³ STEL [LMPE-CT] (dust and mist, as Cu)	Not established	Not established	0.6 mg/m ³ STEL (calculated, fume); 2 mg/m ³ STEL (dust and mist)
	TWAs	Not established	0.2 mg/m ³ TWA LMPE-PPT (fume, as Cu); 1 mg/m ³ TWA LMPE-PPT (dust and mist, as Cu)	1 mg/m ³ TWA (dust and mist); 0.1 mg/m ³ TWA (fume)	0.1 mg/m ³ TWA (fume); 1 mg/m ³ TWA (dust and mist)	1 mg/m ³ TWA (dust and mists); 0.2 mg/m ³ TWA (fume)
Manganese (7439-96-5)	STELs	Not established	3 mg/m ³ STEL [LMPE-CT] (fume, as Mn)	3 mg/m ³ STEL	Not established	1.5 mg/m ³ STEL (calculated)
	TWAs	Not established	0.2 mg/m ³ TWA LMPE-PPT; 1 mg/m ³ TWA LMPE-PPT (fume, as Mn)	1 mg/m ³ TWA (fume)	Not established	0.5 mg/m ³ TWA (as Mn)
	Ceilings	Not established	Not established	Not established	5 mg/m ³ Ceiling (fume)	Not established
Aluminum (7429-90-5)	TWAs	Not established	10 mg/m ³ TWA LMPE-PPT (dust)	10 mg/m ³ TWA (total dust); 5 mg/m ³ TWA (respirable dust)	15 mg/m ³ TWA (total dust); 5 mg/m ³ TWA (respirable fraction)	10 mg/m ³ TWA (inhalable dust); 4 mg/m ³ TWA (respirable dust)
	STELs	Not established	Not established	Not established	Not established	30 mg/m ³ STEL (calculated, inhalable dust); 12 mg/m ³ STEL (calculated, respirable dust)

Exposure Control Notations

United Kingdom

- Beryllium (7440-41-7): **Carcinogens:** (Capable of causing cancer and/or heritable genetic damage)
- Nickel (7440-02-0): **Skin:** (Potential for cutaneous absorption)

France

- Beryllium (7440-41-7): **Carcinogens:** (Carcinogen category 1B)
- Nickel (7440-02-0): **Carcinogens:** (Carcinogen category 2)

ACGIH

- Aluminum (7429-90-5): **Carcinogens:** (A4 - Not Classifiable as a Human Carcinogen)
- Beryllium (7440-41-7): **Carcinogens:** (A1 - Confirmed Human Carcinogen) | **Sensitizers:** (respiratory sensitizer)
- Chromium (7440-47-3): **Carcinogens:** (A4 - Not Classifiable as a Human Carcinogen)
- Manganese (7439-96-5): **Carcinogens:** (A4 - Not Classifiable as a Human Carcinogen)
- Nickel (7440-02-0): **Carcinogens:** (A5 - Not Suspected as a Human Carcinogen)

Germany DFG

- Aluminum (7429-90-5): **Pregnancy:** (classification not yet possible (respirable, inhalable, dust))
- Beryllium (7440-41-7): **Carcinogens:** (Category 1 (causes cancer in man)) | **Sensitizers:** (respiratory and skin sensitizer)
- Copper (7440-50-8): **Pregnancy:** (no risk to embryo/fetus if exposure limits adhered to)
- Manganese (7439-96-5): **Pregnancy:** (no risk to embryo/fetus if exposure limits adhered to (inhalable fraction, respirable fraction))
- Nickel (7440-02-0): **Carcinogens:** (Category 1 (causes cancer in man)) | **Sensitizers:** (respiratory and skin sensitizer (inhalable fraction, respiratory sensitization confirmed for water soluble Nickel compounds only))
- Zinc (7440-66-6): **Pregnancy:** (no risk to embryo/fetus if exposure limits adhered to (respirable fraction)); no risk to embryo/fetus if exposure limits adhered to (inhalable fraction))

Exposure Limits Supplemental

ACGIH

- Aluminum (7429-90-5): **TLV Basis - Critical Effects:** (pneumoconiosis; lower respiratory tract irritation; neurotoxicity)
- Beryllium (7440-41-7): **TLV Basis - Critical Effects:** (beryllium disease (berylliosis); beryllium sensitization)

- Chromium (7440-47-3): **TLV Basis - Critical Effects:** (skin and upper respiratory tract irritation)
- Copper (7440-50-8): **TLV Basis - Critical Effects:** (metal fume fever (fume))
- Manganese (7439-96-5): **TLV Basis - Critical Effects:** (CNS impairment)
- Nickel (7440-02-0): **TLV Basis - Critical Effects:** (dermatitis; pneumoconiosis)

8.2 Exposure controls

Engineering

Measures/Controls

- Good general ventilation should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. Ensure that dust handling systems (such as exhaust ducts, dust collectors, vessels and processing equipment) are designed in a manner to prevent the escape of dust into the work area (i.e., there is not leakage from the equipment). It is recommended that dust control equipment such as local exhaust ventilation and material transport systems involved in handling of this product contain explosion relief vents or an explosion suppression system or an oxygen-deficient environment. Use only appropriately classified electrical equipment.

Personal Protective Equipment

Respiratory

- For limited exposure use an N95 dust mask. For prolonged exposure use an air-purifying respirator with high efficiency particulate air (HEPA) filters. Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or symptoms are experienced.

Eye/Face

- Wear safety goggles.

Hands

- Wear appropriate gloves.

Skin/Body

- Wear long sleeves and/or protective coveralls.

Environmental

- Follow best practice for site management and disposal of waste.

Exposure Controls

Key to abbreviations

ACGIH = American Conference of Governmental Industrial Hygiene

MAK = Maximale Arbeitsplatz Konzentration is the maximum permissible concentration

NIOSH = National Institute of Occupational Safety and Health

OSHA = Occupational Safety and Health Administration

TLV = Threshold Limit Value determined by the American Conference of Governmental Industrial Hygienists (ACGIH)

TWA = Time-Weighted Averages are based on 8h/day, 40h/week exposures

STEL = Short Term Exposure Limits are based on 15-minute exposures

Section 9 - Physical and Chemical Properties

9.1 Information on Physical and Chemical Properties

Material Description			
Physical Form	Solid	Appearance/Description	Solid metal alloy.
Color	Data lacking	Odor	Data lacking
Odor Threshold	Data lacking		
General Properties			
Boiling Point	2326 C(4218.8 F) (for aluminum)	Melting Point/Freezing Point	488 to 646 C(910.4 to 1194.8 F)
Decomposition Temperature	Data lacking	pH	Data lacking
Specific Gravity/Relative Density	= 8.9 Water=1	Water Solubility	Negligible < 0.1 %
Viscosity	Data lacking	Explosive Properties	Data lacking
Oxidizing Properties:	Data lacking		
Volatility			
Vapor Pressure	Data lacking	Vapor Density	Data lacking
Evaporation Rate	Data lacking		
Flammability			
Flash Point	Data lacking	UEL	Data lacking
LEL	Data lacking	Autoignition	Data lacking

Flammability (solid, gas)	Data lacking		
Environmental			
Octanol/Water Partition coefficient	Data lacking		

9.2 Other Information

- No additional physical and chemical parameters noted.

Section 10: Stability and Reactivity

10.1 Reactivity

- Molten metal reacts violently with water. Store away from oxidizers, can react violently.

10.2 Chemical stability

- Stable under normal temperatures and pressures.

10.3 Possibility of hazardous reactions

- Hazardous polymerization will not occur.

10.4 Conditions to avoid

- Avoid generating dust.

10.5 Incompatible materials

- Material may be incompatible with acids, bases, and oxidizers.

10.6 Hazardous decomposition products

- No data available

Section 11 - Toxicological Information

11.1 Information on toxicological effects

		Components
Aluminum (86.568% TO 99.4%)	7429- 90-5	Multi-dose Toxicity: Inhalation-Man TClO • 4 mg/m ³ 1 Year(s)-Intermittent; <i>Lungs, Thorax, or Respiration:</i> Cough; Lungs, Thorax, or Respiration:Dyspnea; Nutritional and Gross Metabolic: <i>Gross Metabolite Changes:</i> Weight loss or decreased weight gain; Inhalation-Rat TClO • 206 mg/m ³ 5 Hour(s) 30 Day(s)-Intermittent; <i>Lungs, Thorax, or Respiration:</i> Fibrosis (interstitial); Endocrine: Hypoglycemia; Blood: Changes in serum composition (e.g., TP, bilirubin cholesterol)
Copper (0.1% TO 5%)	7440- 50-8	Acute Toxicity: Ingestion/Oral-Mouse TDLo • 108 mg/kg; <i>Behavioral:</i> Tremor; Gastrointestinal: Hypermotility, diarrhea; Gastrointestinal: Nausea or vomiting; Ingestion/Oral-Mouse TDLo • 158 mg/kg; <i>Kidney, Ureter, and Bladder:</i> Changes in tubules (including acute renal failure, acute tubular necrosis); Ingestion/Oral-Mouse TDLo • 232 mg/kg; <i>Kidney, Ureter, and Bladder:</i> Changes primarily in glomeruli; Blood: Changes in spleen; Blood: Changes in serum composition (e.g., TP, bilirubin cholesterol); Multi-dose Toxicity: Ingestion/Oral-Rabbit TDLo • 3 g/kg 60 Day(s)-Continuous; <i>Cardiac:</i> Other changes; Liver: Hepatitis (hepatocellular necrosis), zonal; Related to Chronic Data: Death in the Other Multiple Dose data type field; Reproductive: Ingestion/Oral-Rat TDLo • 152 mg/kg (22W pre); <i>Reproductive Effects:</i> Effects on Embryo or Fetus: Fetotoxicity (except death, e.g., stunted fetus); <i>Reproductive Effects:</i> Specific Developmental Abnormalities: Central nervous system; Ingestion/Oral-Rat TDLo • 1520 µg/kg (22W pre); <i>Reproductive Effects:</i> Specific Developmental Abnormalities: Musculoskeletal system; Ingestion/Oral-Rat TDLo • 1210 µg/kg (35W pre); <i>Reproductive Effects:</i> Effects on Fertility: Pre-implantation mortality; Reproductive Effects: Effects on Fertility: Post-implantation mortality; Tumorigen / Carcinogen: Ingestion/Oral-Mouse TDLo • 10.08 mg/kg 12 Week(s)-Continuous; <i>Tumorigenic:</i> Carcinogenic by RTECS criteria; Lungs, Thorax, or Respiration: Other changes
Manganese (0.25% TO 0.6%)	7439- 96-5	Acute Toxicity: Ingestion/Oral-Rat LD50 • 9 g/kg; Irritation: Eye-Rabbit • 500 mg 24 Hour(s) • Mild irritation; Skin-Rabbit • 500 mg 24 Hour(s) • Mild irritation; Reproductive: Ingestion/Oral-Rat TDLo • 90 mg/kg (18D post); <i>Reproductive Effects:</i> Effects on Newborn: Growth statistics (e.g., reduced weight gain); <i>Reproductive Effects:</i> Effects on Newborn: Biochemical and metabolic; <i>Reproductive Effects:</i> Effects on Newborn: Other postnatal measures or effects
Silicon (0% TO 7%)	7440- 21-3	Acute Toxicity: Ingestion/Oral-Rat LD50 • 3160 mg/kg; Irritation: Eye-Rabbit • 3 mg • Mild irritation

GHS Properties	Classification
Respiratory sensitization	EU/CLP•Data lacking OSHA HCS 2012•Data lacking
Serious eye damage/Irritation	EU/CLP•Data lacking OSHA HCS 2012•Data lacking
Acute toxicity	EU/CLP•Data lacking OSHA HCS 2012•Data lacking
Aspiration Hazard	EU/CLP•Data lacking OSHA HCS 2012•Data lacking
Carcinogenicity	EU/CLP•Data lacking OSHA HCS 2012•Data lacking
Skin corrosion/Irritation	EU/CLP•Data lacking OSHA HCS 2012•Data lacking
Skin sensitization	EU/CLP•Data lacking OSHA HCS 2012•Data lacking
STOT-RE	EU/CLP•Data lacking OSHA HCS 2012•Specific Target Organ Toxicity Repeated Exposure 1; Specific Target Organ Toxicity Repeated Exposure 2
STOT-SE	EU/CLP•Specific Target Organ Toxicity Single Exposure 2 OSHA HCS 2012•Data lacking
Toxicity for Reproduction	EU/CLP•Toxic to Reproduction 1B OSHA HCS 2012•Toxic to Reproduction 1B
Germ Cell Mutagenicity	EU/CLP•Data lacking OSHA HCS 2012•Data lacking

Potential Health Effects

Inhalation

Acute (Immediate)

- Exposure to dust may cause irritation. Processes such as cutting, grinding, crushing, or impact may result in generation of excessive amounts of airborne dusts in the workplace. Nuisance dust may affect the lungs but reactions are typically reversible.

Chronic (Delayed)

- Extended exposure to excessive concentrations of metal fumes and dusts can be associated with permanent changes in the lung function and pulmonary diseases.

Skin

Acute (Immediate)

- Exposure to dust may cause mechanical irritation.

Chronic (Delayed)

- No data available.

Eye

Acute (Immediate)

- Exposure to dust may cause mechanical irritation. Excessive concentrations of nuisance dust in the workplace may reduce visibility and may cause unpleasant deposits in eyes.

Chronic (Delayed)

- No data available.

Ingestion

Acute (Immediate)

- Excessive concentrations of nuisance dust in the workplace may cause mechanical irritation to mucous membranes. May affect the kidney. Symptoms may include but are not limited to fatigue, confusion, nausea, vomiting, shortness of breath, seizures, or a dramatic decrease in urine output and in some cases blood in the urine.

Chronic (Delayed)

- Repeated and prolonged exposure may affect the liver. Symptoms may include yellowing of the skin (jaundice), intense fatigue, loss of appetite, nausea, vomiting, and confusion.

Carcinogenic Effects

- This material contains components that may cause cancer, however based on regulatory criteria this material is not classified as a carcinogen.

Carcinogenic Effects

	CAS	IARC	NTP
Beryllium	7440-41-7	Group 1-Carcinogenic	Known Human Carcinogen
Nickel	7440-02-0	Group 2B-Possible Carcinogen	Reasonably Anticipated to be Human Carcinogen

Reproductive Effects • Repeated and prolonged exposure may cause reproductive effects.

Key to abbreviations

LD = Lethal Dose

TC = Toxic Concentration

D = Toxic Dose

Section 12 - Ecological Information

12.1 Toxicity

Aluminum Alloy and Castings					
Dosage	Species	Duration	Results	Exposure Conditions	Comments
0.0051 mg/L	Fish: Osteichthyes (Bony Fishes)	96 Hour(s)	LC50	NDA	Copper (7440-50-8)
0.001 mg/L	Crustacea: Ceriodaphnia dubia (Water Flea)	48 Hour(s)	EC50	NDA	Copper (7440-50-8)
0.0011 mg/L	Aquatic Plant(s): Chlorella sp. (Green Algae)	48 Hour(s)	EC50	NDA	Copper (7440-50-8)
0.0075 mg/L	Fish: Salmo trutta (Brown Trout)	7 Day(s)	NOEC	NDA	Copper (7440-50-8)
0.002 mg/L	Crustacea: Daphnia magna (Water Flea)	21 Day(s)	NOEC	NDA	Copper (7440-50-8)
0.01 mg/L	Aquatic Plant(s): Laminaria saccharina (Tangleweed, Brown Algae)	7 Day(s)	NOEC	NDA	Copper (7440-50-8)

• Very toxic to aquatic life. Very toxic to aquatic life with long lasting effects.

12.2 Persistence and degradability

• Material Data Lacking.

12.3 Bioaccumulative potential

• Material Data Lacking.

12.4 Mobility in Soil

• Material Data Lacking.

12.5 Results of PBT and vPvB assessment

• No PBT and vPvB assessment has been conducted.

12.6 Other adverse effects

• No studies have been found.

Section 13 - Disposal Considerations

13.1 Waste treatment methods

Product waste • Dispose of content and/or container in accordance with local, regional, national, and/or international regulations.

Packaging waste • Dispose of content and/or container in accordance with local, regional, national, and/or international regulations.

Section 14 - Transport Information

	14.1 UN number	14.2 UN proper shipping name	14.3 Transport hazard class(es)	14.4 Packing group	14.5 Environmental hazards
DOT	NDA	Not Regulated	NDA	NDA	NDA
IMO/IMDG	NDA	Not Regulated	NDA	NDA	NDA
IATA/ICAO	NDA	Not Regulated	NDA	NDA	NDA

14.6 Special precautions for user

• None specified.

14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code • Data lacking.

Section 15 - Regulatory Information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

SARA Hazard Classifications

• Acute, Chronic

State Right To Know				
Component	CAS	MA	NJ	PA
Aluminum	7429-90-5	Yes	Yes	Yes
Beryllium	7440-41-7	Yes	Yes	Yes
Chromium	7440-47-3	Yes	Yes	Yes
Copper	7440-50-8	Yes	Yes	Yes
Iron	7439-89-6	No	No	No
Magnesium	7439-95-4	Yes	Yes	Yes
Manganese	7439-96-5	Yes	Yes	Yes
Nickel	7440-02-0	Yes	Yes	Yes
Silicon	7440-21-3	Yes	Yes	Yes
Zinc	7440-66-6	Yes	Yes	Yes

Inventory				
Component	CAS	EU EINECS	EU ELNICS	TSCA
Aluminum	7429-90-5	Yes	No	Yes
Beryllium	7440-41-7	Yes	No	Yes
Chromium	7440-47-3	Yes	No	Yes
Copper	7440-50-8	Yes	No	Yes
Iron	7439-89-6	Yes	No	Yes
Magnesium	7439-95-4	Yes	No	Yes
Manganese	7439-96-5	Yes	No	Yes
Nickel	7440-02-0	Yes	No	Yes
Silicon	7440-21-3	Yes	No	Yes
Zinc	7440-66-6	Yes	No	Yes

Europe

Other

EU - CLP (1272/2008) - Annex VI - Table 3.2 - Classification

•Copper	7440-50-8	Not Listed
•Chromium	7440-47-3	Not Listed
•Manganese	7439-96-5	Not Listed
•Beryllium	7440-41-7	T; R25-48/23 T+; R26 Xi; R36/37/38 R43 Carc.Cat.2; R49
•Aluminum	7429-90-5	F; R11-15
•Nickel	7440-02-0	Carc.Cat.3; R40 R43 T; R48/23
•Silicon	7440-21-3	Not Listed
•Zinc	7440-66-6	Not Listed

•Iron	7439-89-6	Not Listed
•Magnesium	7439-95-4	F; R15-17(powder, pyrophoric)
EU - CLP (1272/2008) - Annex VI - Table 3.2 - Concentration Limits		
•Copper	7440-50-8	Not Listed
•Chromium	7440-47-3	Not Listed
•Manganese	7439-96-5	Not Listed
•Beryllium	7440-41-7	Not Listed
•Aluminum	7429-90-5	Not Listed
•Nickel	7440-02-0	Not Listed
•Silicon	7440-21-3	Not Listed
•Zinc	7440-66-6	Not Listed
•Iron	7439-89-6	Not Listed
•Magnesium	7439-95-4	Not Listed
EU - CLP (1272/2008) - Annex VI - Table 3.2 - Labelling		
•Copper	7440-50-8	Not Listed
•Chromium	7440-47-3	Not Listed
•Manganese	7439-96-5	Not Listed
•Beryllium	7440-41-7	T+ R:49-25-26-36/37/38-43-48/23 S:53-45
•Aluminum	7429-90-5	F R:11-15 S:(2)-7/8-43
•Nickel	7440-02-0	T R:40-43-48/23 S:(2)-36/37/39-45
•Silicon	7440-21-3	Not Listed
•Zinc	7440-66-6	Not Listed
•Iron	7439-89-6	Not Listed
•Magnesium	7439-95-4	F R:15-17 S:(2)-7/8-43 powder, pyrophoric
EU - CLP (1272/2008) - Annex VI - Table 3.2 - Notes - Substances and Preparations		
•Copper	7440-50-8	Not Listed
•Chromium	7440-47-3	Not Listed
•Manganese	7439-96-5	Not Listed
•Beryllium	7440-41-7	E
•Aluminum	7429-90-5	T
•Nickel	7440-02-0	S, 7
•Silicon	7440-21-3	Not Listed
•Zinc	7440-66-6	Not Listed
•Iron	7439-89-6	Not Listed
•Magnesium	7439-95-4	Not Listed
EU - CLP (1272/2008) - Annex VI - Table 3.2 - Safety Phrases		
•Copper	7440-50-8	Not Listed
•Chromium	7440-47-3	Not Listed
•Manganese	7439-96-5	Not Listed
•Beryllium	7440-41-7	S:53-45
•Aluminum	7429-90-5	S:(2)-7/8-43
•Nickel	7440-02-0	S:(2)-36/37/39-45
•Silicon	7440-21-3	Not Listed
•Zinc	7440-66-6	Not Listed
•Iron	7439-89-6	Not Listed
•Magnesium	7439-95-4	S:(2)-7/8-43 powder, pyrophoric

United States

Labor

U.S. - OSHA - Process Safety Management - Highly Hazardous Chemicals

•Copper	7440-50-8	Not Listed
•Chromium	7440-47-3	Not Listed
•Manganese	7439-96-5	Not Listed
•Beryllium	7440-41-7	Not Listed
•Aluminum	7429-90-5	Not Listed
•Nickel	7440-02-0	Not Listed
•Silicon	7440-21-3	Not Listed
•Zinc	7440-66-6	Not Listed
•Iron	7439-89-6	Not Listed

•Magnesium	7439-95-4	Not Listed
U.S. - OSHA - Specifically Regulated Chemicals		
•Copper	7440-50-8	Not Listed
•Chromium	7440-47-3	Not Listed
•Manganese	7439-96-5	Not Listed
•Beryllium	7440-41-7	Not Listed
•Aluminum	7429-90-5	Not Listed
•Nickel	7440-02-0	Not Listed
•Silicon	7440-21-3	Not Listed
•Zinc	7440-66-6	Not Listed
•Iron	7439-89-6	Not Listed
•Magnesium	7439-95-4	Not Listed

Environment

U.S. - CAA (Clean Air Act) - 1990 Hazardous Air Pollutants

•Copper	7440-50-8	Not Listed
•Chromium	7440-47-3	Not Listed
•Manganese	7439-96-5	Not Listed
•Beryllium	7440-41-7	Not Listed
•Aluminum	7429-90-5	Not Listed
•Nickel	7440-02-0	Not Listed
•Silicon	7440-21-3	Not Listed
•Zinc	7440-66-6	Not Listed
•Iron	7439-89-6	Not Listed
•Magnesium	7439-95-4	Not Listed

U.S. - CERCLA/SARA - Hazardous Substances and their Reportable Quantities

		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); 2270 kg 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)
•Copper	7440-50-8	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); 2270 kg 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)
•Chromium	7440-47-3	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); 2270 kg 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	Not Listed
•Beryllium	7440-41-7	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); 4.54 kg 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)
•Aluminum	7429-90-5	Not Listed
•Nickel	7440-02-0	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); 45.4 kg final RQ (no

•Silicon	7440-21-3	reporting of releases of this hazardous substance is required if the diameter of the pieces of the solid metal released is >100 µm) Not Listed
•Zinc	7440-66-6	454 kg 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); 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)
•Iron	7439-89-6	Not Listed
•Magnesium	7439-95-4	Not Listed
U.S. - CERCLA/SARA - Radionuclides and Their Reportable Quantities		
•Copper	7440-50-8	Not Listed
•Chromium	7440-47-3	Not Listed
•Manganese	7439-96-5	Not Listed
•Beryllium	7440-41-7	Not Listed
•Aluminum	7429-90-5	Not Listed
•Nickel	7440-02-0	Not Listed
•Silicon	7440-21-3	Not Listed
•Zinc	7440-66-6	Not Listed
•Iron	7439-89-6	Not Listed
•Magnesium	7439-95-4	Not Listed
U.S. - CERCLA/SARA - Section 302 Extremely Hazardous Substances EPCRA RQs		
•Copper	7440-50-8	Not Listed
•Chromium	7440-47-3	Not Listed
•Manganese	7439-96-5	Not Listed
•Beryllium	7440-41-7	Not Listed
•Aluminum	7429-90-5	Not Listed
•Nickel	7440-02-0	Not Listed
•Silicon	7440-21-3	Not Listed
•Zinc	7440-66-6	Not Listed
•Iron	7439-89-6	Not Listed
•Magnesium	7439-95-4	Not Listed
U.S. - CERCLA/SARA - Section 302 Extremely Hazardous Substances TPQs		
•Copper	7440-50-8	Not Listed
•Chromium	7440-47-3	Not Listed
•Manganese	7439-96-5	Not Listed
•Beryllium	7440-41-7	Not Listed
•Aluminum	7429-90-5	Not Listed
•Nickel	7440-02-0	Not Listed
•Silicon	7440-21-3	Not Listed
•Zinc	7440-66-6	Not Listed
•Iron	7439-89-6	Not Listed
•Magnesium	7439-95-4	Not Listed
U.S. - CERCLA/SARA - Section 313 - Emission Reporting		
•Copper	7440-50-8	1.0 % de minimis concentration
•Chromium	7440-47-3	1.0 % de minimis concentration
•Manganese	7439-96-5	1.0 % de minimis concentration
•Beryllium	7440-41-7	0.1 % de minimis concentration
•Aluminum	7429-90-5	1.0 % de minimis concentration (dust or fume only)
•Nickel	7440-02-0	0.1 % de minimis concentration

•Silicon	7440-21-3	Not Listed
•Zinc	7440-66-6	1.0 % de minimis concentration (dust or fume only)
•Iron	7439-89-6	Not Listed
•Magnesium	7439-95-4	Not Listed
U.S. - CERCLA/SARA - Section 313 - PBT Chemical Listing		
•Copper	7440-50-8	Not Listed
•Chromium	7440-47-3	Not Listed
•Manganese	7439-96-5	Not Listed
•Beryllium	7440-41-7	Not Listed
•Aluminum	7429-90-5	Not Listed
•Nickel	7440-02-0	Not Listed
•Silicon	7440-21-3	Not Listed
•Zinc	7440-66-6	Not Listed
•Iron	7439-89-6	Not Listed
•Magnesium	7439-95-4	Not Listed
U.S. - RCRA (Resource Conservation & Recovery Act) - Basis for Listing - Appendix VII		
•Copper	7440-50-8	Not Listed
•Chromium	7440-47-3	Included in waste streams: F032, F034, F035, F037, F038, F039
•Manganese	7439-96-5	Not Listed
•Beryllium	7440-41-7	Included in waste stream: F039
•Aluminum	7429-90-5	Not Listed
•Nickel	7440-02-0	Included in waste streams: F006, F039
•Silicon	7440-21-3	Not Listed
•Zinc	7440-66-6	Not Listed
•Iron	7439-89-6	Not Listed
•Magnesium	7439-95-4	Not Listed
U.S. - RCRA (Resource Conservation & Recovery Act) - Constituents for Detection Monitoring		
•Copper	7440-50-8	(total)
•Chromium	7440-47-3	(total)
•Manganese	7439-96-5	Not Listed
•Beryllium	7440-41-7	(total)
•Aluminum	7429-90-5	Not Listed
•Nickel	7440-02-0	(total)
•Silicon	7440-21-3	Not Listed
•Zinc	7440-66-6	(total)
•Iron	7439-89-6	Not Listed
•Magnesium	7439-95-4	Not Listed
U.S. - RCRA (Resource Conservation & Recovery Act) - D Series Wastes - Max Conc of Contaminants for the Toxic Characteristic		
•Copper	7440-50-8	Not Listed
•Chromium	7440-47-3	5.0 mg/L regulatory level
•Manganese	7439-96-5	Not Listed
•Beryllium	7440-41-7	Not Listed
•Aluminum	7429-90-5	Not Listed
•Nickel	7440-02-0	Not Listed
•Silicon	7440-21-3	Not Listed
•Zinc	7440-66-6	Not Listed
•Iron	7439-89-6	Not Listed
•Magnesium	7439-95-4	Not Listed
U.S. - RCRA (Resource Conservation & Recovery Act) - Hazardous Constituents - Appendix VIII to 40 CFR 261		
•Copper	7440-50-8	Not Listed
•Chromium	7440-47-3	hazardous constituent - no waste number
•Manganese	7439-96-5	Not Listed
•Beryllium	7440-41-7	waste number P015 (powder)
•Aluminum	7429-90-5	Not Listed
•Nickel	7440-02-0	hazardous constituent - no waste number

•Silicon	7440-21-3	Not Listed
•Zinc	7440-66-6	Not Listed
•Iron	7439-89-6	Not Listed
•Magnesium	7439-95-4	Not Listed

U.S. - RCRA (Resource Conservation & Recovery Act) - List for Hazardous Constituents

•Copper	7440-50-8	(total)
•Chromium	7440-47-3	(total)
•Manganese	7439-96-5	Not Listed
•Beryllium	7440-41-7	(total)
•Aluminum	7429-90-5	Not Listed
•Nickel	7440-02-0	(total)
•Silicon	7440-21-3	Not Listed
•Zinc	7440-66-6	(total)
•Iron	7439-89-6	Not Listed
•Magnesium	7439-95-4	Not Listed

U.S. - RCRA (Resource Conservation & Recovery Act) - P Series Wastes - Acutely Toxic Wastes

•Copper	7440-50-8	Not Listed
•Chromium	7440-47-3	Not Listed
•Manganese	7439-96-5	Not Listed
•Beryllium	7440-41-7	waste number P015 (powder)
•Aluminum	7429-90-5	Not Listed
•Nickel	7440-02-0	Not Listed
•Silicon	7440-21-3	Not Listed
•Zinc	7440-66-6	Not Listed
•Iron	7439-89-6	Not Listed
•Magnesium	7439-95-4	Not Listed

U.S. - RCRA (Resource Conservation & Recovery Act) - Phase 4 LDR Rule - Universal Treatment Standards

•Copper	7440-50-8	Not Listed
•Chromium	7440-47-3	2.77 mg/L (total, wastewater); 0.60 mg/L TCLP (total, nonwastewater)
•Manganese	7439-96-5	Not Listed
•Beryllium	7440-41-7	0.82 mg/L (wastewater); 1.22 mg/L TCLP (nonwastewater)
•Aluminum	7429-90-5	Not Listed
•Nickel	7440-02-0	3.98 mg/L (wastewater); 11.0 mg/L TCLP (nonwastewater)
•Silicon	7440-21-3	Not Listed
•Zinc	7440-66-6	2.61 mg/L (wastewater); 4.3 mg/L TCLP (nonwastewater)
•Iron	7439-89-6	Not Listed
•Magnesium	7439-95-4	Not Listed

U.S. - RCRA (Resource Conservation & Recovery Act) - TSD Facilities Ground Water Monitoring

•Copper	7440-50-8	(total)
•Chromium	7440-47-3	(total)
•Manganese	7439-96-5	Not Listed
•Beryllium	7440-41-7	(total)
•Aluminum	7429-90-5	Not Listed
•Nickel	7440-02-0	(total)
•Silicon	7440-21-3	Not Listed
•Zinc	7440-66-6	(total)
•Iron	7439-89-6	Not Listed
•Magnesium	7439-95-4	Not Listed

United States - California

Environment

U.S. - California - Proposition 65 - Carcinogens List

•Copper	7440-50-8	Not Listed
•Chromium	7440-47-3	Not Listed
•Manganese	7439-96-5	Not Listed
•Beryllium	7440-41-7	carcinogen, initial date 10/1/87

•Aluminum	7429-90-5	Not Listed
•Nickel	7440-02-0	carcinogen, initial date 10/1/89 (metallic)
•Silicon	7440-21-3	Not Listed
•Zinc	7440-66-6	Not Listed
•Iron	7439-89-6	Not Listed
•Magnesium	7439-95-4	Not Listed
U.S. - California - Proposition 65 - Developmental Toxicity		
•Copper	7440-50-8	Not Listed
•Chromium	7440-47-3	Not Listed
•Manganese	7439-96-5	Not Listed
•Beryllium	7440-41-7	Not Listed
•Aluminum	7429-90-5	Not Listed
•Nickel	7440-02-0	Not Listed
•Silicon	7440-21-3	Not Listed
•Zinc	7440-66-6	Not Listed
•Iron	7439-89-6	Not Listed
•Magnesium	7439-95-4	Not Listed
U.S. - California - Proposition 65 - Maximum Allowable Dose Levels (MADL)		
•Copper	7440-50-8	Not Listed
•Chromium	7440-47-3	Not Listed
•Manganese	7439-96-5	Not Listed
•Beryllium	7440-41-7	Not Listed
•Aluminum	7429-90-5	Not Listed
•Nickel	7440-02-0	Not Listed
•Silicon	7440-21-3	Not Listed
•Zinc	7440-66-6	Not Listed
•Iron	7439-89-6	Not Listed
•Magnesium	7439-95-4	Not Listed
U.S. - California - Proposition 65 - No Significant Risk Levels (NSRL)		
•Copper	7440-50-8	Not Listed
•Chromium	7440-47-3	Not Listed
•Manganese	7439-96-5	Not Listed
•Beryllium	7440-41-7	0.1 µg/day NSRL
•Aluminum	7429-90-5	Not Listed
•Nickel	7440-02-0	Not Listed
•Silicon	7440-21-3	Not Listed
•Zinc	7440-66-6	Not Listed
•Iron	7439-89-6	Not Listed
•Magnesium	7439-95-4	Not Listed
U.S. - California - Proposition 65 - Reproductive Toxicity - Female		
•Copper	7440-50-8	Not Listed
•Chromium	7440-47-3	Not Listed
•Manganese	7439-96-5	Not Listed
•Beryllium	7440-41-7	Not Listed
•Aluminum	7429-90-5	Not Listed
•Nickel	7440-02-0	Not Listed
•Silicon	7440-21-3	Not Listed
•Zinc	7440-66-6	Not Listed
•Iron	7439-89-6	Not Listed
•Magnesium	7439-95-4	Not Listed
U.S. - California - Proposition 65 - Reproductive Toxicity - Male		
•Copper	7440-50-8	Not Listed
•Chromium	7440-47-3	Not Listed
•Manganese	7439-96-5	Not Listed
•Beryllium	7440-41-7	Not Listed
•Aluminum	7429-90-5	Not Listed
•Nickel	7440-02-0	Not Listed
•Silicon	7440-21-3	Not Listed
•Zinc	7440-66-6	Not Listed
•Iron	7439-89-6	Not Listed
•Magnesium	7439-95-4	Not Listed

United States - Pennsylvania

Labor

U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List

•Copper	7440-50-8	(dust and fume)
•Chromium	7440-47-3	
•Manganese	7439-96-5	
•Beryllium	7440-41-7	(dust)
•Aluminum	7429-90-5	
•Nickel	7440-02-0	
•Silicon	7440-21-3	Not Listed
•Zinc	7440-66-6	
•Iron	7439-89-6	Not Listed
•Magnesium	7439-95-4	Not Listed

U.S. - Pennsylvania - RTK (Right to Know) - Special Hazardous Substances

•Copper	7440-50-8	Not Listed
•Chromium	7440-47-3	
•Manganese	7439-96-5	Not Listed
•Beryllium	7440-41-7	
•Aluminum	7429-90-5	Not Listed
•Nickel	7440-02-0	
•Silicon	7440-21-3	Not Listed
•Zinc	7440-66-6	Not Listed
•Iron	7439-89-6	Not Listed
•Magnesium	7439-95-4	Not Listed

15.2 Chemical Safety Assessment

- No Chemical Safety Assessment has been carried out.

15.3 Other Information

- WARNING: This product contains a chemical known to the State of California to cause cancer.

Section 16 - Other Information

Relevant Phrases (code & full text)

- H228 - Flammable solid
- H261 - In contact with water releases flammable gas
- H319 - Causes serious eye irritation
- H335 - May cause respiratory irritation
- H361 - Suspected of damaging fertility or the unborn child.
- H370 - Causes damage to organs.
- H372 - Causes damage to organs through prolonged or repeated exposure.
- H373 - May cause damage to organs through prolonged or repeated exposure.
- R11 - Highly flammable.
- R15 - Contact with water liberates extremely flammable gases.
- R36/37 - Irritating to eyes and respiratory system.
- R48/23 - Toxic: danger of serious damage to health by prolonged exposure through inhalation.
- R50/53 - Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
- R63 - Possible risk of harm to the unborn child.

Revision Date

- 14/August/2015

Preparation Date

- 01/May/2000

Disclaimer/Statement of Liability

- Although reasonable care has been taken to provide current and accurate information herein, PCC Structurals, Inc. extends no warranties, expressed or implied, makes no representations regarding the accuracy or completeness of the information and assumes no liability for any loss, damage, or injury of any kind which may result from or arise out of the use of or reliance on the information by any person. Responsibility for the compliance with federal, state, and local law and regulations concerning the use of this product rests solely upon the purchaser.

Key to abbreviations

NDA = No Data Available
