

SAFETY DATA SHEET



Aluminum Extrusions, Billets or Logs

Section 1. Identification

Product identifier : Aluminum Extrusions, Billets or Logs
Product code : Not available.
Other means of identification : 6XXX Series Alloys including: 6005, 6005A, 6060, 6061, 6063, 6082, 6105, 6181, 6351, 6360, 6463; Aluminum; Wrought Aluminum Products
Product type : Massive metal.
Not hazardous in solid form. If dust or fumes are generated during processing (e.g., brazing, cutting, grinding, sawing, and welding) hazardous chemicals could be released.

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

Product use : Various extruded and/or fabricated aluminum parts, products and cast billet.
Area of application : Industrial applications.

Manufacturer : **Bonnell Aluminum, Inc.**
25 Bonnell Street, Newnan, GA 30263

Website: BonnellAluminum.com
Telephone no.: (770) 254-2020

Emergency telephone number (with hours of operation) : Chemtrec (North America): 1-800-424-9300 (24 hours)

Section 2. Hazard identification

This product, under the normal conditions of use, meets the definition of an "ARTICLE".
If dust or fumes are generated during processing (e.g., brazing, cutting, grinding, sawing, and welding) hazardous chemicals could be released.

Classification of the substance or mixture : Not classified.

GHS label elements

Signal word : No signal word.
Hazard statements : No known significant effects or critical hazards.

Precautionary statements

Prevention : P201 - Obtain special instructions before use.
P280 - Wear protective gloves, protective clothing and eye or face protection.
P260 - Do not breathe dust.

Response : Not applicable.

Storage : Not applicable.

Disposal : P501 - Dispose of contents and container in accordance with all local, regional, national and international regulations.

Section 2. Hazard identification

Other hazards which do not result in classification : Danger.

If dust or fumes are generated during processing (e.g., brazing, cutting, grinding, sawing, and welding) hazardous chemicals could be released.

May cause an allergic skin reaction.

Suspected of causing cancer.

May damage fertility or the unborn child.

May cause harm to breast-fed children.

May cause damage to organs through prolonged or repeated exposure.

Section 3. Composition/information on ingredients

Substance/mixture : Mixture

Other means of identification : 6XXX Series Alloys including: 6005, 6005A, 6060, 6061, 6063, 6082, 6105, 6181, 6351, 6360, 6463; Aluminum; Wrought Aluminum Products

Ingredient name	Other names	% (w/w)	Identifiers
<input checked="" type="checkbox"/> Aluminum, non flammable solid	-	≥80	CAS: 7429-90-5
<input type="checkbox"/> magnesium, non flammable solid	-	≥1 - ≤5	CAS: 7439-95-4
<input type="checkbox"/> zinc	-	≥1 - ≤5	CAS: 7440-66-6
<input type="checkbox"/> silicon	-	≥1 - ≤5	CAS: 7440-21-3
<input type="checkbox"/> Manganese	-	≥1 - ≤5	CAS: 7439-96-5
<input type="checkbox"/> iron	-	≥0.5 - ≤1.5	CAS: 7439-89-6
<input type="checkbox"/> Copper	-	≥0.5 - ≤1.5	CAS: 7440-50-8
<input type="checkbox"/> chromium	-	≥0.1 - ≤1	CAS: 7440-47-3
<input type="checkbox"/> lead	-	≥0.1 - ≤1	CAS: 7439-92-1
<input type="checkbox"/> titanium	-	≥0.1 - ≤1	CAS: 7440-32-6
<input type="checkbox"/> nickel	-	≥0.1 - ≤1	CAS: 7440-02-0

Ranges if listed above for hazardous ingredient(s) are prescribed ranges. The actual concentration(s) or actual concentration range(s) are being withheld as a trade secret.

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First-aid measures

This product, under the normal conditions of use, meets the definition of an "ARTICLE".

If dust or fumes are generated during processing (e.g., brazing, cutting, grinding, sawing, and welding) hazardous chemicals could be released.

Description of necessary first aid measures

Eye contact : Get medical attention if any damage to the eye is caused by the metal.

Inhalation : Not applicable.

Skin contact : Flush contaminated skin with plenty of water. Cuts should be treated promptly and covered.

Ingestion : Not applicable.

Most important symptoms/effects, acute and delayed

Potential acute health effects

Eye contact : Not applicable.

Inhalation : Not applicable.

Skin contact : No known significant effects or critical hazards.

Ingestion : Not applicable.

Section 4. First-aid measures

Over-exposure signs/symptoms

- Eye contact** : No specific data.
- Inhalation** : No specific data.
- Skin contact** : No specific data.
- Ingestion** : No specific data.

Indication of immediate medical attention and special treatment needed, if necessary

- Notes to physician** : In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.
- Specific treatments** : No specific treatment.
- Protection of first-aiders** : No action shall be taken involving any personal risk or without suitable training.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

This product, under the normal conditions of use, meets the definition of an "ARTICLE".
If dust or fumes are generated during processing (e.g., brazing, cutting, grinding, sawing, and welding) hazardous chemicals could be released.

Extinguishing media

- Suitable extinguishing media** : Use approved Class D extinguisher or smother with dry sand, dry clay or dry ground limestone.
- Unsuitable extinguishing media** : Do not use water jet. Halogen (HCFC) extinguisher.

Specific hazards arising from the chemical : No specific fire or explosion hazard.

- Hazardous thermal decomposition products** : Decomposition products may include the following materials:
carbon dioxide
carbon monoxide
nitrogen oxides
metal oxide/oxides
Halides
hydrogen cyanide
hydrogen chloride

Special protective actions for fire-fighters : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.

Special protective equipment for fire-fighters : No special protection is required.

Remark : Solid.: Non-combustible. Not considered to be a product presenting a risk of explosion.
Material in powder form, capable of creating a dust explosion.
Molten material reacts violently with water and can react with aluminum, tin, zinc and their alloys to generate flammable and explosive hydrogen gas.

Section 6. Accidental release measures

This product, under the normal conditions of use, meets the definition of an "ARTICLE".
If dust or fumes are generated during processing (e.g., brazing, cutting, grinding, sawing, and welding) hazardous chemicals could be released.

Personal precautions, protective equipment and emergency procedures

- For non-emergency personnel** : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Put on appropriate personal protective equipment.
- For emergency responders** : If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Environmental precautions : No specific hazard.

Methods and materials for containment and cleaning up

- Small spill** : Restack safely. Take care with items that are sharp or heavy or hot. Aluminum does not change color or glow when hot/heated.
- Large spill** : Restack safely. Take care with items that are sharp or heavy or hot. Aluminum does not change color or glow when hot/heated. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Section 7. Handling and storage

This product, under the normal conditions of use, meets the definition of an "ARTICLE".
If dust or fumes are generated during processing (e.g., brazing, cutting, grinding, sawing, and welding) hazardous chemicals could be released.

Precautions for safe handling

- Protective measures** : Put on appropriate personal protective equipment (see Section 8). Take care with items that are sharp or heavy or hot.
- Advice on general occupational hygiene** : Workers should wash hands and face before eating, drinking and smoking. See also Section 8 for additional information on hygiene measures.

Conditions for safe storage, including any incompatibilities : Store in accordance with local regulations. See Section 10 for incompatible materials before handling or use.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

Ingredient name	Exposure limits
Aluminum, non flammable solid	<p>CA Saskatchewan Provincial (Canada, 4/2021) [Aluminum pyro powders and metal dust]</p> <p>STEL 15 minutes: 20 mg/m³ (measured as Al). Form: metal dust. STEL 15 minutes: 10 mg/m³ (measured as Al). Form: pyro powder. TWA 8 hours: 10 mg/m³ (measured as Al). Form: metal dust. TWA 8 hours: 5 mg/m³ (measured as Al). Form: pyro powder.</p> <p>CA British Columbia Provincial (Canada, 3/2025) [aluminum metal and insoluble</p>

Section 8. Exposure controls/personal protection

silicon

compounds]

TWA 8 hours: 1 mg/m³. Form: respirable.
CA Ontario Provincial (Canada, 6/2019)

[Aluminum metal and insoluble compounds]

TWA 8 hours: 1 mg/m³. Form: respirable particulate matter.

CA Quebec Provincial (Canada, 2/2024) [aluminum and its compounds]

TWAEV 8 hours: 5 mg/m³. Form: respirable aerosol fraction.

CA Alberta Provincial (Canada, 3/2023)

OEL 8 hours: 10 mg/m³. Form: metal dust.

CA Saskatchewan Provincial (Canada, 4/2021)

STEL 15 minutes: 20 mg/m³.

TWA 8 hours: 10 mg/m³.

CA British Columbia Provincial (Canada, 3/2025) [particles (insoluble or poorly soluble) not otherwise classified] Notes:

The 8-hour TWA listed in the Table is for the total dust. The substance also has an 8-hour TWA of 3 mg/m³ for the respirable fraction.

TWA 8 hours: 10 mg/m³. Form: total dust.

TWA 8 hours: 3 mg/m³. Form: respirable fraction.

CA Quebec Provincial (Canada, 2/2024)

TWAEV 8 hours: 10 mg/m³. Form: total particulate matter.

CA Saskatchewan Provincial (Canada, 4/2021) [Manganese and inorganic compounds]

STEL 15 minutes: 0.6 mg/m³ (measured as Mn).

TWA 8 hours: 0.2 mg/m³ (measured as Mn).

CA British Columbia Provincial (Canada, 3/2025) [manganese - elemental & inorganic compounds] Repr.

TWA 8 hours: 0.1 mg/m³ (as Mn). Form: inhalable.

TWA 8 hours: 0.02 mg/m³ (as Mn). Form: respirable.

CA Ontario Provincial (Canada, 6/2019) [Manganese elemental and inorganic compounds]

TWA 8 hours: 0.2 mg/m³ (as Mn).

CA Quebec Provincial (Canada, 2/2024) [Manganese- fumes, dusts and compounds]

TWAEV 8 hours: 0.2 mg/m³ (as Mn). Form: inhalable aerosol fraction.

TWAEV 8 hours: 0.05 mg/m³ (as Mn).

Form: respirable aerosol fraction.

CA Alberta Provincial (Canada, 3/2023) [Manganese, elemental & inorganic

Manganese

Section 8. Exposure controls/personal protection

Copper

compounds]OEL 8 hours: 0.2 mg/m³ (as Mn).**CA Saskatchewan Provincial (Canada, 4/2021)**STEL 15 minutes: 3 mg/m³ (measured as Cu). Form: dust and mist.STEL 15 minutes: 0.6 mg/m³ (measured as Cu). Form: Fume.TWA 8 hours: 1 mg/m³ (measured as Cu). Form: dust and mist.TWA 8 hours: 0.2 mg/m³ (measured as Cu). Form: Fume.**CA British Columbia Provincial (Canada, 3/2025) [copper (fume)]**TWA 8 hours: 0.2 mg/m³ (as Cu). Form: fume.**CA British Columbia Provincial (Canada, 3/2025) [copper (dusts and mists)]**TWA 8 hours: 1 mg/m³ (as Cu). Form: dusts and mists.**CA Ontario Provincial (Canada, 6/2019)**TWA 8 hours: 1 mg/m³ (as Cu). Form: dust and mists.TWA 8 hours: 0.2 mg/m³ (as Cu). Form: fume.**CA Quebec Provincial (Canada, 2/2024) [Copper, fume]**TWA EV 8 hours: 0.2 mg/m³ (as Cu). Form: fume.**CA Quebec Provincial (Canada, 2/2024) [Copper, dusts & mists]**TWA EV 8 hours: 1 mg/m³ (as Cu). Form: dusts & mists.**CA Alberta Provincial (Canada, 3/2023) [Copper (fume)]**OEL 8 hours: 0.2 mg/m³. Form: fume.**CA Alberta Provincial (Canada, 3/2023) [Copper (dust/mists)]**OEL 8 hours: 1 mg/m³ (as Cu). Form: dusts and mists.

chromium

CA Saskatchewan Provincial (Canada, 4/2021) [Chromium (III) metal and inorganic compounds]STEL 15 minutes: 1.5 mg/m³ (measured as Cr).TWA 8 hours: 0.5 mg/m³ (measured as Cr).**CA British Columbia Provincial (Canada, 3/2025)**TWA 8 hours: 0.5 mg/m³ (as Cr(0)). Form: Inhalable.**CA Ontario Provincial (Canada, 6/2019) [Chromium and inorganic compounds, Metal and Cr III compounds]**TWA 8 hours: 0.5 mg/m³ (as Cr).**CA Quebec Provincial (Canada, 2/2024)**TWA EV 8 hours: 0.5 mg/m³. Form: inhalable aerosol fraction.

Section 8. Exposure controls/personal protection

lead

CA Alberta Provincial (Canada, 3/2023)
[Chromium Metal and Cr III compounds]
 OEL 8 hours: 0.5 mg/m³ (as Cr).

CA Saskatchewan Provincial (Canada, 4/2021) **[Lead and inorganic compounds]**
 STEL 15 minutes: 0.15 mg/m³ (measured as Pb).

TWA 8 hours: 0.05 mg/m³ (measured as Pb).

CA British Columbia Provincial (Canada, 3/2025) Carc 2B, Repr.

TWA 8 hours: 0.05 mg/m³ (as Pb).

CA Ontario Provincial (Canada, 6/2019)
[Elemental lead, inorganic compounds of lead]

TWA 8 hours: 0.05 mg/m³ (as Pb).

CA Quebec Provincial (Canada, 2/2024)
[Lead and inorganic compounds, dusts and fumes] C3.

TWAEV 8 hours: 0.05 mg/m³ (as Pb).

CA Alberta Provincial (Canada, 3/2023)
[Lead elemental & inorganic compounds]

OEL 8 hours: 0.05 mg/m³ (as Pb).

nickel

CA Saskatchewan Provincial (Canada, 4/2021)

STEL 15 minutes: 3 mg/m³. Form: inhalable fraction.

TWA 8 hours: 1.5 mg/m³. Form: inhalable fraction.

CA British Columbia Provincial (Canada, 3/2025) **[nickel - insoluble inorganic compounds]** Carc 1A, Carc 1.

TWA 8 hours: 0.05 mg/m³ (as Ni).

CA British Columbia Provincial (Canada, 3/2025) **[nickel - elemental, soluble inorganic compounds]** Carc 1, Carc 2B.

TWA 8 hours: 0.05 mg/m³ (as Ni).

CA Ontario Provincial (Canada, 6/2019)

TWA 8 hours: 1 mg/m³. Form: inhalable particulate matter.

CA Quebec Provincial (Canada, 2/2024)
[nickel and inorganic compounds - metal]

TWAEV 8 hours: 1.5 mg/m³. Form: inhalable aerosol fraction.

CA Alberta Provincial (Canada, 3/2023)

OEL 8 hours: 1.5 mg/m³.

Biological exposure indices

None known.

Appropriate engineering controls : No special ventilation requirements.

Environmental exposure controls : Not applicable.

Section 8. Exposure controls/personal protection

Individual protection measures

- Hygiene measures** : Wash thoroughly after handling.
- Eye/face protection** : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: safety glasses with side-shields.
- Skin protection**
- Hand protection** : Use strong, cut-resistant gloves suitable for handling metals.
- Body protection** : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
- Other skin protection** : Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
- Respiratory protection** : Not applicable.

Section 9. Physical and chemical properties

The conditions of measurement of all properties are at standard temperature and pressure unless otherwise indicated.

Appearance

- Physical state** : Solid. [Various]
- Color** : Gray. / Silver.
- Odor** : Odorless.
- Odor threshold** : Not available.
- Melting point and freezing point** : 593 to 704°C (1099.4 to 1299.2°F)
- Boiling point or initial boiling point and boiling range** : Not available.
- Evaporation rate** : Not applicable.
- Flammability** : Not available.
- Lower and upper explosion limit or lower and upper flammability limit** : Not applicable.
- Flash point** : Not applicable.
- Auto-ignition temperature** : Not applicable.
- Decomposition temperature** : Not available.
- pH** : Not applicable.
- Viscosity** : Dynamic (room temperature): Not applicable.
Kinematic (room temperature): Not applicable.
Kinematic (40°C (104°F)): Not applicable.
- Solubility** : Not available.
- Partition coefficient — n-octanol/water (logarithmic value)** : Not applicable.
- Vapor pressure** : Not applicable.
- Density** : 2.69 to 2.74 g/cm³
- Relative density** : 2.5 to 2.9

Section 9. Physical and chemical properties

Relative vapor density	: Not applicable.
Particle characteristics	
Median particle size	: Not available.
Other information	
Physical/chemical properties comments	: No additional information.

Section 10. Stability and reactivity

Reactivity	: No specific test data related to reactivity available for this product or its ingredients.
Chemical stability	: The product is stable.
Possibility of hazardous reactions	: Under normal conditions of storage and use, hazardous reactions will not occur. Under normal conditions of storage and use, hazardous polymerization will not occur.
Conditions to avoid	: Avoid dust generation.
Incompatible materials	: Molten aluminum is reactive with water. Aluminum particles are reactive or incompatible with water, humidity, strong alkalis, strong acids, halogenated acids and strong oxidizing materials.
Hazardous decomposition products	: Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	
silicon	Rat - Oral - LD50 3160 mg/kg	
Manganese	Rat - Oral - LD50 9 g/kg	
	Rat - Inhalation - LC50 Dusts and mists 5.14 mg/l [4 hours]	OECD [Acute Inhalation Toxicity-Fixed Dose Procedure]
iron	Rat - Oral - LD50 750 mg/kg	<u>Toxic effects</u> : Blood - Changes in serum composition (e.g., TP, bilirubin, cholesterol) Enzyme inhibition, induction, or change in blood or tissue levels - Transaminases
Copper	Rat - Male, Female - Inhalation - LC50 Dusts and mists >5.11 mg/l [4 hours]	OECD [Acute Inhalation Toxicity]
lead	Rat - Male, Female - Oral - LD50 >2000 mg/kg	OECD [Acute Oral toxicity - Acute Toxic Class Method]
	Rat - Male, Female - Dermal - LD50 >2000 mg/kg	OECD [Acute Dermal Toxicity]
	Rat - Male, Female - Inhalation -	OECD [Acute Inhalation Toxicity]

Section 11. Toxicological information

nickel

LC50 Dusts and mists

>5.05 mg/l [4 hours]

Rat - Oral - LD50

>2000 mg/kg

Conclusion/Summary [Product] : Not available.

Skin corrosion/irritation

Product/ingredient name

Manganese

Result

Rabbit - Skin - Mild irritant

Duration of treatment/exposure: 24 hours

Amount/concentration applied: 500 mg

Conclusion/Summary [Product] : Not available.

Serious eye damage/eye irritation

Product/ingredient name

silicon

Manganese

Result

Rabbit - Eyes - Mild irritant

Amount/concentration applied: 3 mg

Rabbit - Eyes - Mild irritant

Duration of treatment/exposure: 24 hours

Amount/concentration applied: 500 mg

Conclusion/Summary [Product] : Not available.

Respiratory corrosion/irritation

Conclusion/Summary [Product] : Not available.

Respiratory or skin sensitization

Skin

Conclusion/Summary [Product] : Dust : May cause sensitization by skin contact.

Respiratory

Conclusion/Summary [Product] : Not available.

Germ cell mutagenicity

Conclusion/Summary [Product] : Not available.

Carcinogenicity

Conclusion/Summary [Product] : Contains material which can cause cancer.
Dust (prolonged exposure): Can cause cancer.

Section 11. Toxicological information

Classification

Product/ingredient name	IARC	NTP	ACGIH
<input checked="" type="checkbox"/> Aluminum, non flammable solid	-	-	A4
<input checked="" type="checkbox"/> Manganese	-	-	A4
<input checked="" type="checkbox"/> chromium	3	-	-
<input checked="" type="checkbox"/> lead	2B	Reasonably anticipated to be a human carcinogen.	A3
<input checked="" type="checkbox"/> nickel	2B	Reasonably anticipated to be a human carcinogen.	A5

Reproductive toxicity

Conclusion/Summary [Product] : Contains material which can impair fertility.
Dust (prolonged exposure): Possible risk of impaired fertility.

Specific target organ toxicity (single exposure)

Not available.

Specific target organ toxicity (repeated exposure)

Product/ingredient name	Result
<input checked="" type="checkbox"/> Manganese	SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) (brain, lungs) - Category 1
lead	SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) (blood system, central nervous system (CNS), kidneys) (inhalation) - Category 1
nickel	SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) (respiratory tract) (inhalation) - Category 1

Aspiration hazard

Not available.

Information on the likely routes of exposure

Not available.

Potential acute health effects

Eye contact	: Not applicable.
Inhalation	: Not applicable.
Skin contact	: <input checked="" type="checkbox"/> No known significant effects or critical hazards.
Ingestion	: Not applicable.

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact	: No specific data.
Inhalation	: <input checked="" type="checkbox"/> No specific data.
Skin contact	: <input checked="" type="checkbox"/> No specific data.
Ingestion	: <input checked="" type="checkbox"/> No specific data.

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Section 11. Toxicological information

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Long term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Potential chronic health effects

Conclusion/Summary [Product] : Contains material that may cause target organ damage, based on animal data.
Dust : May cause damage to organs through prolonged or repeated exposure.

General : No known significant effects or critical hazards.

Carcinogenicity : No known significant effects or critical hazards.

Mutagenicity : No known significant effects or critical hazards.

Reproductive toxicity : No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

Product/ingredient name	Oral (mg/kg)	Dermal (mg/kg)	Inhalation (gases) (ppm)	Inhalation (vapors) (mg/l)	Inhalation (dusts and mists) (mg/l)
silicon	3160	N/A	N/A	N/A	N/A
Manganese	9000	N/A	N/A	N/A	5.14
iron	750	N/A	N/A	N/A	N/A
Copper	500	N/A	N/A	N/A	N/A
lead	2500	2500	N/A	N/A	N/A
nickel	2500	N/A	N/A	N/A	N/A

Section 12. Ecological information

Toxicity

Product/ingredient name

Aluminum, non flammable solid

Result

Acute - LC50 - Fresh water

Fish - Rainbow trout, donaldson trout - *Oncorhynchus mykiss* - Embryo
120 µg/l [96 hours]

Effect: Mortality

Chronic - NOEC - Fresh water

Aquatic plants - Coontail - *Ceratophyllum demersum*
Weight: 3.5 g
9 mg/l [3 days]

Effect: Enzymes

Acute - LC50 - Fresh water

Daphnia - Water flea - *Daphnia magna*

Effect: Mortality

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zinc	38 mg/l [48 hours]	
	Chronic - NOEC - Fresh water	<u>Effect</u> : Accumulation
	Fish - common carp - <i>Cyprinus carpio</i>	
	<u>Age</u> : 13 months; <u>Size</u> : 10.5 cm;	
	<u>Weight</u> : 27.8 g	
	2.6 µg/l [4 weeks]	
	Acute - LC50 - Marine water	<u>Effect</u> : Mortality
	Fish - Mudskipper - <i>Periophthalmus waltoni</i> - Adult	
	12.21 µg/l [96 hours]	
	Chronic - EC10	<u>Effect</u> : Reproduction OECD
Daphnia - Water flea - <i>Daphnia magna</i> - Neonate		
<u>Age</u> : <24 hours		
6.3 µg/l [21 days]		
Acute - EC50 - Fresh water	<u>Effect</u> : Intoxication US EPA	
Crustaceans - Water flea - <i>Ceriodaphnia dubia</i> - Neonate		
<u>Age</u> : <24 hours		
34 µg/l [48 hours]		
Acute - EC50	<u>Effect</u> : Population	
Algae - Green algae - <i>Raphidocelis subcapitata</i>		
0.005 mg/l [72 hours]		
Chronic - EC10 - Fresh water	<u>Effect</u> : Population OECD	
Algae - Green algae - <i>Raphidocelis subcapitata</i> - Exponential growth phase		
27.3 µg/l [72 hours]		
Manganese	Acute - EC50 - Fresh water	<u>Effect</u> : Growth
	Aquatic plants - Duckweed - <i>Lemna minor</i>	
	31 mg/l [4 days]	
	Acute - LC50 - Fresh water	<u>Effect</u> : Mortality
	Fish - Fathead minnow - <i>Pimephales promelas</i>	
	28 mg/l [96 hours]	
	Acute - LC50 - Fresh water	<u>Effect</u> : Mortality
	Daphnia - Water flea - <i>Daphnia magna</i>	
	29 mg/l [48 hours]	
	Chronic - NOEC - Fresh water	OECD [Daphnia Magna Reproduction Test]
Daphnia - <i>Ceriodaphnia dubia</i>		
1.7 mg/l [8 days]		
iron	Acute - LC50 - Marine water	<u>Effect</u> : Mortality
	Crustaceans - Common shrimp, sand shrimp - <i>Crangon crangon</i>	
	33 to 100 mg/l [48 hours]	
	Acute - EC50 - Fresh water	<u>Effect</u> : Growth
	Aquatic plants - Duckweed - <i>Lemna minor</i>	
	3700 µg/l [4 days]	
	Chronic - NOEC - Marine water	<u>Effect</u> : Population
	Algae - Dinoflagellate - <i>Glenodinium halli</i>	
	100 mg/l [72 hours]	
	Acute - LC50 - Marine water	<u>Effect</u> : Mortality
Fish - Mudskipper - <i>Periophthalmus</i>		

Section 12. Ecological information

	<i>waltoni</i> - Adult 6.48 µg/l [96 hours]	
Copper	<p>Acute - LC50 - Marine water Crustaceans - Scud Order - <i>Amphipoda</i> - Adult <u>Size</u>: 9 mm 0.072 µg/l [48 hours]</p> <p>Chronic - NOEC - Marine water Algae - Diatom - <i>Nitzschia closterium</i> - Exponential growth phase 2.5 µg/l [72 hours]</p> <p>Chronic - NOEC - Fresh water Fish - Nile tilapia - <i>Oreochromis niloticus</i> - Juvenile (Fledgling, Hatchling, Weanling) <u>Weight</u>: 8.3 g 0.8 µg/l [6 weeks]</p> <p>Acute - LC50 - Marine water Fish - Mudskipper - <i>Periophthalmus waltoni</i> - Adult 7.56 µg/l [96 hours]</p> <p>Chronic - NOEC - Fresh water Daphnia - Water flea - <i>Daphnia magna</i> 2 µg/l [21 days]</p> <p>Acute - IC50 - Fresh water Algae - Green algae - <i>Raphidocelis subcapitata</i> - Exponential growth phase 13 µg/l [72 hours]</p>	<p><u>Effect</u>: Mortality</p> <p><u>Effect</u>: Population</p> <p><u>Effect</u>: Biochemistry</p> <p><u>Effect</u>: Mortality</p> <p><u>Effect</u>: Mortality</p> <p><u>Effect</u>: Population</p>
chromium	<p>Acute - LC50 - Fresh water Daphnia - Water flea - <i>Daphnia magna</i> <u>Age</u>: <24 hours 22 µg/l [48 hours]</p> <p>Chronic - NOEC - Marine water Algae - Dinoflagellate - <i>Glenodinium halli</i> 50 mg/l [72 hours]</p> <p>Chronic - NOEC - Fresh water Fish - common carp - <i>Cyprinus carpio</i> <u>Age</u>: 13 months; <u>Size</u>: 10.5 cm; <u>Weight</u>: 27.8 g 0.19 µg/l [4 weeks]</p> <p>Acute - EC50 - Marine water Algae - Diatom Division - <i>Bacillariophyta</i> 0.2 ppm [72 hours]</p> <p>Acute - LC50 - Fresh water Fish - American Eel - <i>Anguilla rostrata</i> 13.9 ppm [96 hours]</p> <p>Chronic - NOEC - Fresh water Daphnia - Water flea - <i>Daphnia magna</i> - Neonate <u>Age</u>: 24 to 48 hours 5 ppb [21 days]</p>	<p><u>Effect</u>: Mortality</p> <p><u>Effect</u>: Population</p> <p><u>Effect</u>: Accumulation</p> <p><u>Effect</u>: Population</p> <p><u>Effect</u>: Mortality</p> <p><u>Effect</u>: Growth</p>
lead	Acute - LC50 - Fresh water Crustaceans - Water flea -	<u>Effect</u> : Mortality

Section 12. Ecological information

	<i>Ceriodaphnia reticulata</i>	
	<u>Age</u> : <4 hours	
	530 µg/l [48 hours]	
	Acute - LC50 - Fresh water	<u>Effect</u> : Mortality
	Fish - common carp - <i>Cyprinus carpio</i>	
	- Juvenile (Fledgling, Hatchling, Weanling)	
	<u>Size</u> : 3.5 cm	
	0.44 ppm [96 hours]	
	Chronic - NOEC - Fresh water	<u>Effect</u> : Accumulation
	Fish - common carp - <i>Cyprinus carpio</i>	
	<u>Age</u> : 13 months; <u>Size</u> : 10.5 cm;	
	<u>Weight</u> : 27.8 g	
	0.03 µg/l [4 weeks]	
	Acute - EC50 - Fresh water	<u>Effect</u> : Population OECD
	Algae - Green algae - <i>Raphidocelis subcapitata</i> - Exponential growth phase	
	20.5 µg/l [72 hours]	
	Chronic - EC10 - Fresh water	<u>Effect</u> : Population OECD
	Algae - Green algae - <i>Raphidocelis subcapitata</i> - Exponential growth phase	
	3.9 µg/l [72 hours]	
nickel	Acute - EC50 - Fresh water	<u>Effect</u> : Growth
	Aquatic plants - Duckweed - <i>Lemna minor</i>	
	450 µg/l [4 days]	
	Chronic - NOEC - Marine water	<u>Effect</u> : Population
	Algae - Dinoflagellate - <i>Glenodinium halli</i>	
	100 mg/l [72 hours]	
	Chronic - NOEC - Fresh water	<u>Effect</u> : Accumulation
	Fish - common carp - <i>Cyprinus carpio</i>	
	<u>Age</u> : 13 months; <u>Size</u> : 10.5 cm;	
	<u>Weight</u> : 27.8 g	
	3.5 µg/l [4 weeks]	
	Acute - LC50 - Fresh water	<u>Effect</u> : Mortality US EPA, OECD
	Crustaceans - Water flea - <i>Ceriodaphnia dubia</i> - Juvenile (Fledgling, Hatchling, Weanling)	
	<u>Age</u> : 2 to 8 hours	
	34.6 µg/l [48 hours]	
	Chronic - EC10	<u>Effect</u> : Reproduction OECD
	Daphnia - Water flea - <i>Daphnia magna</i> - Neonate	
	<u>Age</u> : <24 hours	
	6.9 µg/l [21 days]	
	Acute - LC50 - Fresh water	<u>Effect</u> : Mortality
	Fish - Indian catfish - <i>Heteropneustes fossilis</i>	
	47.5 ng/l [96 hours]	

Conclusion/Summary [Product] : Not available.

Section 12. Ecological information

Persistence and degradability

Conclusion/Summary [Product] : Not available.

Bioaccumulative potential

Product/ingredient name	LogP _{ow}	BCF	Potential
silicon	57 to 77	-	High

Mobility in soil

Soil/Water partition coefficient : Not available.

Other adverse effects

No known significant effects or critical hazards.

Section 13. Disposal considerations

This product, under the normal conditions of use, meets the definition of an "ARTICLE".
If dust or fumes are generated during processing (e.g., brazing, cutting, grinding, sawing, and welding) hazardous chemicals could be released.

Disposal methods : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Empty containers or liners may retain some product residues. Reuse or recycle material whenever possible. If reuse or recycling is not possible, disposal must be made in accordance with local and governmental regulations.

Section 14. Transport information

	TDG Classification	DOT Classification	IMDG	IATA
UN number	Not regulated.	Not regulated.	Not regulated.	Not regulated.
UN proper shipping name	-	-	-	-
Transport hazard class(es)	-	-	-	-
Packing group	-	-	-	-
Environmental hazards	No.	No.	No.	No.

Additional information

Section 14. Transport information

DOT Classification : **Reportable quantity** 2500 lbs / 1135 kg. Package sizes shipped in quantities less than the product reportable quantity are not subject to the RQ (reportable quantity) transportation requirements.

Remarks Not Applicable when shipped as massive solid metal.

Special precautions for user : Not Applicable when shipped as massive solid metal.

Section 15. Regulatory information

Canadian lists

Canadian NPRI : The following components are listed: aluminum (fume or dust only); zinc (and its compounds); manganese (and its compounds); copper (and its compounds); lead (and its compounds)

CEPA Toxic substances : None of the components are listed.

Canada inventory : All components are listed or exempted.

International regulations

Chemical Weapon Convention List Schedules I, II & III Chemicals

Not listed.

Montreal Protocol

Not listed.

Stockholm Convention on Persistent Organic Pollutants

Not listed.

Rotterdam Convention on Prior Informed Consent (PIC)

Not listed.

UNECE Aarhus Protocol on POPs and Heavy Metals

Ingredient name	List name	Status
Lead (Pb)	Heavy metals - Annex 1	Listed

Section 16. Other information

History

Date of issue/Date of revision : 27/02/2026

Date of previous issue : 25/03/2020

Version : 2

Prepared by : Sphera Solutions

Key to abbreviations :

- ATE = Acute Toxicity Estimate
- BCF = Bioconcentration Factor
- DOT = Department of Transportation
- GHS = Globally Harmonized System of Classification and Labelling of Chemicals
- HPR = Hazardous Products Regulations
- IATA = International Air Transport Association
- IBC = Intermediate Bulk Container
- IMDG = International Maritime Dangerous Goods
- IMO = International Maritime Organization
- LogPow = logarithm of the octanol/water partition coefficient
- MARPOL = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)
- N/A = Not available
- SGG = Segregation Group

Date of issue/Date of revision : 27/02/2026 **Date of previous issue** : 25/03/2020 **Version** : 2 17/18

Section 16. Other information

TDG = Transportation of Dangerous Goods

UN = United Nations

Procedure used to derive the classification

Classification	Justification
Not classified.	

References

: HPR = Hazardous Products Regulations

✔ Indicates information that has changed from previously issued version.

Notice to reader

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