

<i>Meets the Requirements of OSHA Standard 29 CFR 1910.1200 Hazard Communication and EPA Supplier Notification Requirements under Section 313 of the Emergency Planning and Community Right-to-Know Act.</i>	SAFETY DATA SHEET (SDS)	
	<b>ALUMINUM CASTINGS–203 SERIES</b>	
	SDS SC-000-051 Rev. 15	
	DATE ISSUED	
	05/31	

**SECTION 1—PRODUCT IDENTIFICATION & COMPANY INFORMATION**


<b>PRODUCT NAME</b>	
ALUMINUM CASTINGS–203 SERIES	
<b>OTHER DESIGNATIONS:</b> ASTM (American Society for Testing & Materials) Specification No's., (ACI (Alloy Casting Institute) Alloy Designations—Grades) None	
<b>PRODUCT IDENTIFICATION (Label Identifier)</b>	
<b>MANUFACTURER'S NAME</b>	<b>STREET ADDRESS</b>
<b>EMERGENCY TELEPHONE NO.</b>	<b>MAILING ADDRESS</b>
<b>TELEPHONE NO.</b>	<b>CITY, STATE, ZIP CODE, COUNTRY</b>
<b>FAX NO.</b>	<b>E-MAIL ADDRESS/WEBSITE</b>

<b>RECOMMENDED USE OF CHEMICAL AND RESTRICTIONS ON USE</b>
Solid casting; no restrictions on use

**SECTION 2—HAZARD IDENTIFICATION**

<b>CLASSIFICATION</b>
Castings are metal articles that do not present hazards in their original form.
<p>Grinding castings that have not been cleaned or that contain embedded sand may generate significant amounts of dust containing crystalline silica. Dust or fumes generated by machining, grinding, drilling, melting, casting, sawing, blasting, polishing, buffing, brazing, soldering, welding or thermal cutting of the casting may produce airborne contaminants. The following proposed classification and label elements are for the hazardous substances that could be released or generated from these processes.</p>

<b>CLASSIFICATION</b>	Acute Oral Toxicity, Category 4 (cobalt)	H300
	Acute Inhalation Toxicity – Dust and Mists, Category 1 (cobalt)	H330
	Serious Eye Damage/Eye Irritation, Category 2 (cobalt)	H319
	Skin Sensitizer, Category 1 (nickel, cobalt)	H317
	Carcinogen, Category 1 (respiratory tract) (nickel oxide, respirable crystalline silica)	H350
	Carcinogen, Category 1B (cobalt)	H350
	Specific Target Organ Toxicity - Single Exposure, Category 3 (central nervous system) (cobalt)	H336
	Specific Target Organ Toxicity - Repeated Exposure, Category 1 (respiratory tract) (nickel, respirable crystalline silica)	H370
	Specific Target Organ Toxicity - Repeated Exposure, Category 2 (central nervous system; liver, kidney) (manganese; cobalt)	H373

Acute Aquatic Toxicity, Category 1 (copper)		H400
<b>LABEL ELEMENTS</b>		
<b>Pictogram</b>		
<b>Signal Word</b>	<b>DANGER</b>	
<b>Hazard Statements</b>	H317	May cause an allergic skin reaction
	H319	Causes serious eye irritation
	H302	Harmful if swallowed
	H330	Fatal if inhaled
	H334	May cause allergy or asthma symptoms or breathing difficulties if inhaled
	H336	May cause drowsiness or dizziness
	H350	May cause cancer
	H370	May cause damage to organs through prolonged or repeated exposure
	H400	Very toxic to aquatic life
<b>Precautionary Statements</b>	P201	Obtain special instructions before use
	P202	Do not handle until all safety precautions have been read and understood
	P248	In case of inadequate ventilation, wear respiratory protection
	P260	Do not breathe dust/fume/gas/mist/vapors/spray
	P264	Wash face, hands, and any exposed skin thoroughly after using
	P270	Do not eat, drink or smoke when using this product
	P271	Use only outdoors or in well ventilated areas
	P272	Contaminated work clothing should not be allowed out of workplace
	P305	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
	P337	If eye irritation persists: Get medical advice/attention
	P308	If exposed or concerned: Get medical advice/attention
	P280	Wear protective gloves, protective clothing, eye protection and face protection
	P302	IF ON SKIN: Wash with plenty of water
	P332	If skin irritation or rash occurs: Get medical advice/attention
	P311	If experiencing respiratory problems, call a POISON CENTER/doctor
	P340	IF INHALED: Remove person to fresh air and keep comfortable for breathing
	P333	If skin irritation or rash occurs: Get medical advice/attention
	P301	IF SWALLOWED: Call a POISON CENTER or doctor if you feel unwell
	P330	Rinse mouth
	P362	Wash contaminated clothing before reuse
	P501	Dispose of contents in accordance with local and national regulations

**SECTION 3—COMPOSITION/INFORMATION ON INGREDIENTS**

CHEMICAL NAME/COMMON NAME/SYNONYM	Wt %	CAS NUMBER
Aluminum (Al)	balance	7429-90-5
Antimony (Sb)	0.20–0.30	7440-36-0
Cobalt (Co)	0.20–0.30	7440-48-4
Copper (Cu)	4.8–5.2	7440-50-8
Manganese (Mn)*	0.02–0.30	7439-96-5
Nickel (Ni)*	1.3–1.7	7440-02-0
Silica, crystalline (SiO <sub>2</sub> )**	***	***
Titanium (Ti)	0.15–0.25	7440-32-6
Zirconium (Zr)	0.10–0.30	7440-67-7

**NOTE**

\* When nickel; manganese is heated to high temperatures, such as those that occur in welding arcs or thermal cutting, it can form nickel; manganese oxides. In the product as sold, nickel; manganese is in the elemental form.

\*\* Castings that have not been cleaned may contain embedded sand containing crystalline silica. Respirable crystalline silica dust may be released during processing.

**SECTION 4—FIRST AID MEASURES**

**No first aid is likely to be needed when castings are handled as sold.**

The following first aid measures may be needed if processes such as machining, grinding, drilling, melting, casting, sawing, blasting, polishing, buffing, brazing, soldering, welding or thermal cutting are performed and produce dust and/or fumes.

<b>EYE CONTACT</b>	Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists, get medical advice/attention.
<b>SKIN CONTACT</b>	Wash thoroughly after handling. Wash with plenty of water. If irritation or rash occurs, get medical advice/attention. Remove contaminated clothing and wash before reuse.
<b>INHALATION</b>	Remove person to fresh air. If breathing is difficult, administer oxygen. If breathing has stopped, give artificial respiration. If exposed, concerned or feeling unwell get medical advice/attention.
<b>INGESTION</b>	NEVER give anything by mouth to an unconscious person. DO NOT INDUCE VOMITING. Give large quantities of water. If vomiting occurs keep airways, clear and give more water. Seek medical attention immediately.

**Most Important Symptoms & Effects, Both Acute and Delayed**

**No adverse effects are expected from handling castings as sold.**

Inhalation of fumes or dust from processes such as machining, grinding, drilling, melting, casting, sawing, blasting, polishing, buffing, brazing, soldering, welding or thermal cutting may cause irritation of the nose, throat or eyes. Nickel and respirable crystalline silica are listed in the National Toxicology Program (NTP) Annual Report on Carcinogens and the International Agency for Research on Cancer (IARC) Monographs as potential carcinogens. Respirable crystalline silica is considered carcinogen by the Occupational Safety & Health Administration (OSHA). IARC classifies cobalt as “possibly carcinogenic” to human. Nickel may cause skin sensitization. Manganese may cause damage to brain and nervous system through prolonged or repeated exposure. Respirable crystalline silica may cause lung effects, immune system effects and kidney effects. Exposure to cobalt may cause asthma and decreases in pulmonary function.

**Indication of Immediate Medical Attention and Special Treatment Needs**

None known

**SECTION 5—FIREFIGHTING MEASURES**

<b>Suitable Extinguishing Media</b>	Not applicable to metal castings. Use Class D extinguishing agents on fines, dust or molten metal. Use coarse water spray on chips and turnings. DO NOT USE halogenated extinguishing agents on small chips/fines.
<b>Special Hazards Arising from the Substance</b>	Non-combustible as supplied. Small chips, fine turnings and dust from processing may be readily ignitable.
<b>Combustion Products</b>	Non-combustible as supplied. Small chips, fine turnings and dust from processing may be readily ignitable.
<b>Special Protective Actions for Firefighters</b>	Not applicable

**SECTION 6—ACCIDENTAL RELEASE MEASURES**

<b>Personal Precautions, Protective Equipment and Emergency Procedures</b>	No special precautions necessary for the product as sold.
<b>Environmental Precautions</b>	Avoid releasing dust generated or collected from processing this casting into the environment. Report such spills as required by local and national regulations.
<b>Methods and Material for Containment and Clean-up</b>	Not applicable

**SECTION 7—HANDLING & STORAGE**

<b>Precautions for Safe Handling</b>	<p><b>No special requirements for the product as sold.</b></p> <p>The following precautions may be needed if processes such as machining, grinding, drilling, melting, casting, sawing, blasting, polishing, buffing, brazing, soldering, welding or thermal cutting are performed and produce dust and/or fumes: Avoid breathing fumes or dust. Use good housekeeping practices. Use adequate ventilation to control exposure to dusts and fumes below their applicable occupational exposure limits. Employee exposure should be assessed to determine what specific corrective actions may be needed when performing tasks that release dust or fumes. Take appropriate precautions to prevent fires and explosion when hot work is performed. Do not eat, smoke or drink when performing the tasks listed herein.</p>
<b>Conditions for Safe Storage, Including any Incompatibilities</b>	No special storage requirements.

**SECTION 8—EXPOSURE CONTROLS/ PERSONAL PROTECTION****OCCUPATIONAL EXPOSURE LIMITS- This product is an article as sold.**

Dust or fumes generated from machining, grinding, drilling, melting, casting, sawing, blasting, polishing, buffing, brazing, soldering, welding or thermal cutting of the product may produce contaminants with the following Occupational Exposure Limits (OELs):

<b>Ingredient</b>	<b>CAS #</b>	<b>FEDERAL OSHA PEL* (mg/m<sup>3</sup>)</b>	<b>ACGIH TLV® (mg/m<sup>3</sup>)</b>
<b>Aluminum Total dust Respirable Dust</b>	7429-90-5	15 (TWA) 5 (TWA)	NE 1 (TWA)(R)
<b>Antimony</b>	7440-36-0	0.5 (TWA)	0.5 (TWA)
<b>Cobalt</b>	7440-48-4	0.1(TWA) (as metal, dust, and fume)	0.02(TWA)(I) (as metal, dust, and fume)

<b>Copper Dust Fume</b>	7440-50-8	1 (TWA) 0.1 (TWA)	1 (TWA) 0.2 (TWA)
<b>Manganese**</b>	7439-96-5	5 (C)	0.02 (TWA)(R) 0.1 (TWA)(I)
<b>Nickel Elemental Soluble compounds Insoluble compounds (incl nickel oxide**)</b>	7440-02-0	1 (TWA) 1 (TWA) 1 (TWA)	1.5 (TWA)(I) 0.1 (TWA)(I) 0.2 (TWA)(I)
<b>Silica, crystalline***</b>	14808-60-7	0.05 (TWA)(R)	0.025 (TWA)(R)
<b>Titanium</b>	7440-32-6	NE	NE
<b>Zirconium</b>	7440-67-7	5 (TWA)	5 (TWA), 10 (STEL)

**NOTE:**

\* The following State OSHA Plans have adopted lower Permissible Exposure Limits (PELs) for some of the constituents in this product:

- California:** Aluminum metal and oxide, total dust 10 mg/m<sup>3</sup> (TWA). Aluminum welding fumes 5 mg/m<sup>3</sup> (TWA). Cobalt metal fume and dust 0.02 mg/m<sup>3</sup> (TWA). Manganese fume 0.2 mg/m<sup>3</sup> (TWA); 3 mg/m<sup>3</sup> (STEL). Nickel, metal 0.5 mg/m<sup>3</sup> (TWA); nickel, insoluble compounds 0.1 mg/m<sup>3</sup> (TWA); nickel, soluble compounds 0.05 mg/m<sup>3</sup> (TWA). Zirconium compounds 10 mg/m<sup>3</sup> (STEL).
- Minnesota:** Aluminum welding fumes 5 mg/m<sup>3</sup> (TWA). Cobalt metal, dust and fume 0.05 mg/m<sup>3</sup> (TWA). Manganese fume 1 mg/m<sup>3</sup> (TWA); 3 mg/m<sup>3</sup> (STEL). Total Welding fumes 5 mg/m<sup>3</sup> (TWA). Nickel, soluble compounds 0.1 mg/m<sup>3</sup> (TWA). Zirconium compounds 10 mg/m<sup>3</sup> (STEL).
- Michigan:** Aluminum welding fumes 5 mg/m<sup>3</sup> (TWA). Cobalt metal, dust and, fume 0.05 mg/m<sup>3</sup> (TWA). Magnesium oxide fume, total particulates 10 mg/m<sup>3</sup> (TWA). Manganese fume 1 mg/m<sup>3</sup> (TWA); 3 mg/m<sup>3</sup> (STEL). Nickel, soluble compounds 0.1 mg/m<sup>3</sup> (TWA). Zirconium compounds 10 mg/m<sup>3</sup> (STEL).
- Oregon:** Aluminum metal total dust 10 mg/m<sup>3</sup> (TWA).
- Washington:** Aluminum total particulate 10 mg/m<sup>3</sup> (TWA); 20 mg/m<sup>3</sup> (STEL); 10 mg/m<sup>3</sup> (STEL)(R). Aluminum welding fumes 5 mg/m<sup>3</sup> (TWA); 10 (STEL). Cobalt metal, fume and dust 0.05 mg/m<sup>3</sup> (TWA); 0.15 mg/m<sup>3</sup> (STEL). Manganese fume 1 mg/m<sup>3</sup> (TWA); 3 mg/m<sup>3</sup> (STEL). Total Welding fumes 5 mg/m<sup>3</sup> (TWA). Nickel, metal and insoluble compounds 3 mg/m<sup>3</sup> (STEL); Nickel, soluble compounds 0.1 mg/m<sup>3</sup> (TWA); 0.3 mg/m<sup>3</sup> (STEL). Zirconium compounds 10 mg/m<sup>3</sup> (STEL).

\*\* When nickel; manganese is heated to high temperatures, such as those that occur in welding arcs or thermal cutting, it can form nickel; manganese oxides. In the product as sold, nickel; manganese is in the elemental form.

\*\*\* Castings that have not been cleaned may contain embedded sand containing crystalline silica. Respirable crystalline silica dust may be released during processing.

**KEY TO EXPOSURE LIMIT ABBREVIATIONS**

ACGIH TLV = American Conference of Governmental Industrial Hygienists Threshold Limit Value® (2019)  
C = Ceiling Limit  
I = Inhalable fraction of particulate  
mg/m<sup>3</sup> = milligram of substance per cubic meter of air  
NE = None Established  
OSHA PEL = Occupational Health and Safety Administration Permissible Exposure Limit  
PNOR = Particles Not Otherwise Regulated  
R = Respirable fraction of particulate  
STEL = Short Term Exposure Limit  
TWA = Time Weighted Average

**APPROPRIATE ENGINEERING CONTROLS**

**As sold no special requirements are necessary.**

If processes such as machining, grinding, drilling, melting, casting, sawing, blasting, polishing, buffing, brazing, soldering, welding or thermal cutting are performed and produce dust and/or fumes, adequate ventilation should be used to control exposures to dusts and fumes below their applicable occupational exposure limits. Industrial hygiene sampling should be used to determine what specific corrective actions may be needed. Take appropriate precautions to prevent fires and explosion when hot work is performed. Do not eat, smoke or drink when performing the tasks listed above.

## **PERSONAL PROTECTIVE EQUIPMENT (PPE)**

### ***Eye Protection***

Wear safety glasses with side-shields if there is a risk of particles getting in eyes. Welding and thermal cutting of this product can generate ultraviolet and infrared radiation. Select appropriate welding shades to prevent eye injury.

### ***Skin Protection***

No chemical protective clothing is required. During use of this product, other hazards such as ultraviolet radiation, infrared radiation, hot metal and sparks may be generated. Use appropriate protective clothing and gloves for the application.

### ***Respiratory Protection***

**As sold, no respiratory protection is expected to be necessary.**

If processes such as machining, grinding, drilling, melting, casting, sawing, blasting, polishing, buffing, brazing, soldering, welding or thermal cutting are performed, dusts and fumes may be created. Respiratory protection may be necessary if the concentrations of the hazardous substances listed in the Table in Section (8) exceed the applicable occupational exposure limits. In these cases, a National Institute of Occupational Safety & Health (NIOSH) approved respirator should be selected based on the form and concentration of the contaminant in air.

## **SECTION 9—PHYSICAL & CHEMICAL PROPERTIES**

<b>APPEARANCE /PHYSICAL STATE</b> Solid, silver in color	<b>KINEMATIC VISCOSITY</b> Not applicable
<b>ODOR</b> None	<b>VAPOR DENSITY</b> Not applicable
<b>MELTING POINT/FREEZING POINT</b> Approximately 488-646°C (910-1195°F)	<b>SPECIFIC GRAVITY (relative density)</b> 2.56–2.64 g/cm <sup>3</sup> for aluminum
<b>BOILING POINT</b> 2326°C (4220°F) for aluminum	<b>VAPOR PRESSURE</b> Not applicable
<b>FLASH POINT</b> Not applicable for solid castings	<b>EVAPORATION RATE</b> Not applicable
<b>FLAMMABILITY</b> Not flammable	<b>SOLUBILITY</b> Insoluble
<b>UPPER AND LOWER FLAMMABILITY LIMITS</b> Not applicable for solid castings	<b>pH</b> Not applicable
<b>AUTO IGNITION TEMPERATURE</b> Not applicable	<b>ABSOLUTE VISCOSITY</b> Not applicable
<b>DECOMPOSITION TEMPERATURE</b> Not applicable	<b>PARTITION COEFFICIENT</b> Not applicable

## **SECTION 10—STABILITY & REACTIVITY**

<b>CHEMICAL STABILITY</b> Stable as sold.	<b>CONDITIONS TO AVOID</b> Not applicable to castings. Fine metal dust or powder produced by grinding or polishing aluminum metal can burn or explode and must be protected from ignition sources such as grinding sparks, etc.
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<b>REACTIVITY</b> Castings are not reactive. Under some conditions metal chips, fines and dust may be incompatible with water, halogenated solvents, strong oxidizers, acids and alkalis, and iron oxide and may ignite or explode.	<b>INCOMPATIBLE MATERIALS</b> Not applicable to castings.		
<b>HAZARDOUS DECOMPOSITION PRODUCTS</b> None	<b>POSSIBILITY OF HAZARDOUS REACTIONS</b> Not applicable to castings.		
<b>SECTION 11—TOXICOLOGICAL INFORMATION</b>			
<b>This product is an article as sold.</b>			
Dust or fumes generated from machining, grinding, drilling, melting, casting, sawing, blasting, polishing, buffing, brazing, soldering, welding or thermal cutting of the product may produce airborne contaminants that are hazardous. Information about these components is supplied.			
<b>ACUTE TOXICITY</b>			
<b>Component</b>	<b>LD50 Oral</b>	<b>LD50 Dermal</b>	<b>LC50 Inhalation</b>
Aluminum	Not Listed	Not Listed	Not Listed
Antimony	Not Listed	Not Listed	Not Listed
Cobalt	550 mg/kg (rat)	Not Listed	<0.05 mg/L (rat)
Copper	300–2,500 mg/kg (rat)	>2000 mg/kg (rat)	5.11 mg/L (rat)
Manganese	> 2000 mg/kg (rat)	Not Listed	> 5.14 mg/L (rat)
Nickel	>9000 mg/kg (rat)	Not Listed	Not Listed
Nickel oxide	>5000 mg/kg (rat)	Not Listed	Not Listed
Silica, crystalline	Not Listed	Not Listed	Not Listed
Titanium	>2000 mg/kg (rat)	Not Listed	Not Listed
Zirconium	Not Listed	Not Listed	Not Listed
<b>Key to abbreviations</b> LD50 = Lethal Dose of the substance at which 50% of the exposed population is killed within a given period of time. LC50 = Lethal Concentration of the substance at which 50% of the exposed population is killed within a given period of time.			
<b>SKIN CORROSION/IRRITATION</b> None expected.			
<b>SERIOUS EYE DAMAGE OR IRRITATION</b> <b>Cobalt:</b> Dusts and fumes containing cobalt can cause serious eye irritation			
<b>RESPIRATORY OR SKIN SENSITIZATION</b> <b>Cobalt:</b> May cause allergy or asthma symptoms or breathing difficulties if inhaled and may cause an allergic skin reaction. <b>Nickel:</b> After an individual becomes sensitized to nickel, dermal contact with a small amount of nickel or oral exposure to low doses of nickel can result in dermatitis.			
<b>GERM CELL MUTAGENICITY</b> <b>Cobalt:</b> In vitro tests have shown mutagenic effects. <b>Nickel:</b> Chromosomal aberrations and in vitro and in vivo testing has shown that nickel is genotoxic (ATSDR); data is insufficient for classification.			

## CARCINOGENICITY

**Aluminum:** Not listed by IARC, NTP or OSHA

**Antimony:** Not listed by IARC, NTP or OSHA

**Cobalt:** Has not been shown to be carcinogenic to humans. NTP does not recognize cobalt as an animal or human carcinogen. IARC classifies cobalt as “possibly carcinogenic” to human (Group 2B) based on animal studies. OSHA does not recognize cobalt as carcinogenic.

**Copper:** Not listed by IARC, NTP or OSHA

**Manganese:** Not listed by IARC, NTP or OSHA

**Nickel:** Listed by IARC (possibly carcinogenic to humans—Group 2BA) and NTP (known human carcinogen). The increased risk of lung and sinus cancer varies with the form of nickel. There is no evidence that metallic nickel is associated with nasal or lung cancer (ATSDR).

**Silica, Respirable Crystalline:** Listed as a carcinogen by IARC 1 (Carcinogenic to Humans), NTP (Known to be a human carcinogen) and OSHA. It can cause lung cancer.

**Titanium:** Not listed by IARC, NTP or OSHA

**Zirconium:** Not listed by IARC, NTP or OSHA

## REPRODUCTIVE TOXICITY

**Cobalt:** Developmental effects of cobalt in humans. Animal studies, via inhalation exposure, have reported testicular atrophy, a decrease in sperm motility, and a significant increase in the length of the estrus cycle, while oral studies have reported stunted growth and decreased survival of newborn pups. Effects do not meet criteria for classification.

**Nickel:** Effects on fertility but does not meet the GHS (Globally Harmonized System) criteria to be classified in this category.

## SPECIFIC TARGET ORGAN TOXICITY-SINGLE EXPOSURE (SE)

**Cobalt:** Single exposure to cobalt may cause drowsiness or dizziness.

**Copper:** There are reports of copper fume causing “metal fume fever” resulting in symptoms of a burning sensation, throat irritation, coughing, shortness of breath, nausea, aches and fever. These studies lack adequate exposure data and clear evidence that copper fumes caused metal fume fever is lacking. The data is inadequate for classification.

## SPECIFIC TARGET ORGAN TOXICITY-REPEATED EXPOSURE (RE)

**Aluminum:** Workers who breathe large amounts of aluminum dusts can have lung problems, such as coughing or changes that show up in chest X-rays (pneumoconiosis). Some workers who breathe aluminum-containing dusts or aluminum fumes have decreased performance in some tests that measure functions of the nervous system.

**Cobalt:** The effects of chronic occupational exposure to cobalt and cobalt compounds on the respiratory system in humans include respiratory irritation, diminished pulmonary function, wheezing and asthma. Gastrointestinal effects (nausea, vomiting, and diarrhea), effects on the blood, liver injury, and allergic dermatitis have also been reported in humans from oral exposure to cobalt.

**Manganese:** Inflammatory changes in the lung were found in monkeys exposed to manganese dioxide via inhalation for 10 months. At high exposure levels (greater than 5 mg/m<sup>3</sup>), manganism (chronic manganese poisoning) has been reported in workers. Symptoms of manganism include sleepiness, weakness in the legs, a mask-like facial appearance, emotional disturbances and a spastic gait. High levels of pneumonia have also been reported in workers inhaling large amounts of manganese dust and fume. In some studies, manganese has been associated with longer reaction times, hand steadiness and eye-hand coordination. Effects appear to be more pronounced with exposures to respirable sized particles. These effects result in a STOT-RE Category 2 classification.

**Nickel (elemental and nickel oxide):** Animal studies have shown lung changes and inflammation following inhalation exposure. Effects vary with the form of nickel used in the studies, animal species and route of administration. There have been case reports of occupational asthma, pulmonary fibrosis and pulmonary edema in workers however exposure data is lacking. The animal studies result in a STOT-RE Category 1 classification.

**Silica, Respirable Crystalline:** Prolonged and repeated exposure to respirable crystalline silica may cause silicosis. Respirable crystalline silica may also cause immune system effects and kidney effects.

## ASPIRATION HAZARD

Based on the physical form, the product is not expected to be an aspiration hazard.



**TERMS****OSHA—Occupational Safety & Health Administration**

Y = Listed as a Human Carcinogen

**NTP—National Toxicology Program**

K = Known to be a Human Carcinogen

R = Reasonably Anticipated to be a Human Carcinogen (RAHC)

**IARC—International Agency for Research on Cancer**

1 = Carcinogen to Humans

2A = Probably Carcinogenic to Humans

2B = Possibly Carcinogenic to Humans

3 = Unclassifiable as to Carcinogenicity in Humans

4 = Probably not Carcinogenic to Humans

**SECTION 12—ECOLOGICAL INFORMATION****ECOTOXICITY****Ecotoxicity is expected to be minimal since the product as sold is a solid with low water solubility.**

Dust generated and/or collected from further processing of the casting may be toxic to the environment. The following ecotoxicological information is for the hazardous substances that could be released and generated from these processes which are hazardous to aquatic organisms and may cause long-term adverse effects in the environment.

Component	Freshwater Algae	Freshwater Fish
Aluminum (7429-90-5)	Not listed	Not listed
Antimony (7440-36-0)	Not listed	Not listed
Cobalt (7440-48-4)	Not Listed	LC50: > 100 mg/L/96 h static ( <i>Brachydanio rerio</i> )
Copper (7400-50-8)	EC50: 0.031 - 0.054 mg/L, 96 h static ( <i>Pseudokirchneriella subcapitata</i> ) EC50: 0.0426 - 0.0535 mg/L, 72h static ( <i>Pseudokirchneriella subcapitata</i> )	LC50: = 0.112 mg/L, 96 h flow-through ( <i>Poecilia reticulata</i> ) LC50: 0.0068 - 0.0156 mg/L, 96 h ( <i>Pimephales promelas</i> ) LC50: < 0.3 mg/L, 96h static ( <i>Pimephales promelas</i> ) LC50: = 0.2 mg/L, 96h flow-through ( <i>Pimephales promelas</i> ) LC50: = 0.052 mg/L, 96 h flow-through ( <i>Oncorhynchus mykiss</i> ) LC50: = 1.25 mg/L, 96h static ( <i>Lepomis macrochirus</i> ) LC50: = 0.3 mg/L, 96 h semi-static ( <i>Cyprinus carpio</i> ) LC50: = 0.8 mg/L, 96 h static ( <i>Cyprinus carpio</i> )
Manganese (7439-96-5)	Not listed	Not listed
Nickel (7400-02-0)	EC50: 0.174 - 0.311 mg/L, 96 h static ( <i>Pseudokirchneriella subcapitata</i> ) EC50: = 0.18 mg/L, 72 h ( <i>Pseudokirchneriella subcapitata</i> )	LC50: = 10.4 mg/L, 96 h static ( <i>Cyprinus carpio</i> ) LC50: = 1.3 mg/L, 96 h semi-static ( <i>Cyprinus carpio</i> ) LC50: > 100 mg/L, 96 h ( <i>Brachydanio rerio</i> )
Nickel oxide (1313-99-1)	EC50: > 127.3 mg/L, 72 h ( <i>Pseudokirchneriella subcapitata</i> )	LC50: > 100 mg/L, 96h static ( <i>Brachydanio rerio</i> )
Silica, crystalline (14808-60-7)	Not listed	Not listed
Titanium (7440-32-6)	Not listed	Not listed
Zirconium (7440-67-7)	Not listed	Not listed

<b>PERSISTENCE AND DEGRADABILITY</b> Aluminum Castings-203 Series	Not applicable
<b>BIOACCUMULATION POTENTIAL</b> Aluminum Castings-203 Series	Not applicable
<b>MOBILITY IN SOIL</b> Aluminum Castings-203 Series	Not applicable
<b>OTHER ADVERSE EFFECTS</b> Aluminum Castings-203 Series	Avoid release to the environment

#### SECTION 13—DISPOSAL CONSIDERATIONS

Recover or recycle castings or dispose of according to federal, state and local regulations. Dust collected from product processing operations may be classified as a hazardous waste. Dispose of such dust in accordance with federal, state and local regulations.

#### SECTION 14—TRANSPORT INFORMATION

<b>UN NUMBER</b> Not regulated	<b>UN PROPER SHIPPING NAME</b> Not regulated
<b>DOT (US)</b> Not regulated	<b>TDG</b> Not regulated
<b>TRANSPORT HAZARD CLASS</b> Not regulated	<b>PACKING GROUP</b> Not regulated
<b>ENVIRONMENTAL HAZARDS</b> None	<b>TRANSPORT IN BULK (IMO instruments)</b> Not applicable
<b>SPECIAL PRECAUTIONS</b> Not applicable	<b>LABEL(S) REQUIRED?</b> No

#### SECTION 15—REGULATORY INFORMATION

**This product is an article as sold.**

If this product is further processed, the regulatory status of the components listed in the composition section of this sheet may be altered. The following regulatory information may not be complete and should not be relied upon as the sole source of information regarding regulatory responsibilities.

##### US-OSHA (Hazard Communication Standard)

Reference 29 CFR 1910.1200 and 1910.1000. A finished casting is an article as defined in the OSHA Hazard Communication Standard 29CFR 1910.1200 (c). Dust or fumes generated by cleaning, machining, grinding, or welding of the casting may produce airborne contaminants. These are listed in Section 8.

##### US-EPA (Toxic Substances Control Act-TSCA)

This product is an article as defined by Toxic Substances Control Act (TSCA) regulations and is exempt from TSCA Inventory listing requirements. All components of these products are on the TSCA inventory list or are excluded from it.

##### US-EPA (SARA Title III)

Releases to the environment of **Aluminum, Antimony, Cobalt, Copper, Manganese and Nickel** may be subject to reporting under Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372.

Substance	CAS #	CERCLA RQ* (lbs)	Section 313	NPRI Threshold Category	California Prop 65
Aluminum	7429-90-5	NA	313	1A	NA
Antimony	7440-36-0	5,000	313	1A	NA
Cobalt	7440-48-4	NA	313	1B	Carcinogen
Copper	7440-50-8	5,000	313	1A	NA

Manganese	7439-96-5	NA	313	1A	NA
Nickel	7440-02-0	100	313	1A	Carcinogen (metallic and oxide form)
Silica, crystalline	14808-60-7	NA	NA	NA	Carcinogen (respirable size)
Titanium	7440-32-6	NA	NA	NA	NA
Zirconium	7440-67-7	NA	NA	NA	NA

\* For metals listed under CERCLA (antimony, copper, nickel and zinc) no reporting of releases of the solid form is required if the mean diameter of the pieces of the solid metal released is greater than 100 micrometers (0.004 inches).

#### **NOTES**

**CAS =** Chemical Abstract Service Registry Number, a 7-digit identifier.

**CERCLA RQ =** Comprehensive Environmental Response, Compensation & Liability Act of 1980, Reportable Quantity. If a value is listed then releases of particles,  $\leq 100 \mu\text{m}$  in size, to the environment may require reporting under CERCLA Sections 102–103 (40 CFR Part 302).

**EINECS =** European Inventory of Existing Commercial Chemical Substances, a 7-digit identifier.

**NA =** Not Applicable.

**NPRI =** National Pollutant Release Inventory Threshold Category, if 1A or 1B is listed, may be subject to reporting under the Canadian Environmental Protection Act, 1999.

**Prop 65 =** Proposition 65, if listed in the table above: WARNING: This product contains chemicals known to the State of California to cause cancer.

**Section 313 =** if '313' is listed, may be subject to the reporting requirements found under Emergency Planning and Community Right-to-Know Act (EPCRA) Section 313 (40 CFR Part 372).

#### **CANADA-WHMIS (Workplace Hazardous Materials Information System)**

This SDS has been prepared according to the hazard criteria of the Controlled Product Regulations (CPR) and the SDS contains the information required by the CPR.

#### **CANADA DSL (Domestic Substance List) Inventory Status**

All components of these products are on the DSL Inventory.

#### **CEPA (Canadian Environmental Protection Act)**

Nickel is on the CEPA Priorities Substances Lists

#### **EINECS No. (European Inventory of Existing Commercial Chemical Substances)**

All components of these products are on the EINECS list.

#### **RoHS (Restriction of Certain Hazardous Substances) Compliance**

Castings comply with RoHS

#### **CALIFORNIA PROPOSITION 65 Compliance**

WARNING: This product contains or produces chemicals known to the State of California to cause cancer and birth defects (or other reproductive harm). (California Health & Safety Code 25248.5 et seq.)

#### **US STATE REGULATORY INFORMATION**

Some of the components listed in Section 3 may be covered under specific state regulations.

**SECTION 16—OTHER INFORMATION****SDS SHEET PREPARED BY**

Keramida Environmental, Inc. for American Foundry Society, Inc.

**DATE**


May 2019

**DISCLAIMER:**

The information provided in this SDS is correct to the best of our knowledge and judgment at the date of its publication. The information given is not necessarily fully adequate in every circumstance.

This SDS is intended to be used as a guide to the appropriate handling, storage, and use of this product by an adequately trained person. The American Foundry Society, Inc. is not responsible for the misuse, mishandling or improper storage of this material by the user.

The American Foundry Society, Inc. neither makes, nor offers, nor shall be held liable for any express or implied warranties, including any warranties of merchantability and fitness for a particular purpose with respect to the use of the information provided.

<b><u>PRODUCT IDENTIFIER</u></b>  SC-000-051 Rev. 15  ALUMINUM CASTINGS—203 SERIES	
<b><u>SUPPLIER IDENTIFICATION</u></b>  Company Name _____ Street Address _____ Mailing Address _____ City _____ State _____ Zip/Postal Code _____ Country _____ Emergency Phone Number _____ Other Info _____	<b><u>HAZARD PICTOGRAMS</u></b>  
<b><u>HAZARD STATEMENTS / PRECAUTIONARY STATEMENTS</u></b>  <p><b>*Castings do not present hazards in their original form.</b></p> <p>Grinding castings that have not been cleaned or that contain embedded sand may generate significant amounts of dust containing crystalline silica. Dust or fumes generated by machining, grinding, drilling, melting, casting, sawing, blasting, polishing, buffing, brazing, soldering, welding or thermal cutting of the casting may produce airborne contaminants. The following hazard and precautionary statements are for the hazardous substances that could be released or generated from these processes.</p> <ul style="list-style-type: none"> <li>• May cause an allergic skin reaction</li> <li>• Causes serious eye irritation</li> <li>• Harmful if swallowed</li> <li>• Fatal if inhaled</li> <li>• May cause allergy or asthma symptoms or breathing difficulties if inhaled</li> <li>• May cause drowsiness or dizziness</li> <li>• May cause cancer</li> <li>• May cause damage to organs through prolonged or repeated exposure</li> <li>• Very toxic to aquatic life</li> <li>• Obtain special instructions before use</li> <li>• Do not handle until all safety precautions have been read and understood</li> <li>• In case of inadequate ventilation, wear respiratory protection</li> <li>• Do not breath dust/fume/gas/mist/vapors/spray</li> <li>• Wash face, hands, and any exposed skin thoroughly after using</li> <li>• Do not eat, drink or smoke when using this product</li> <li>• Use only outdoors or in well ventilated areas</li> <li>• Contaminated work clothing should not be allowed out of workplace</li> <li>• IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing</li> <li>• If eye irritation persists: Get medical advice/attention</li> <li>• If exposed or concerned: Get medical advice/attention</li> <li>• Wear protective gloves, protective clothing, eye protection and face protection</li> <li>• IF ON SKIN: Wash with plenty of water</li> <li>• If skin irritation or rash occurs: Get medical advice/attention</li> <li>• If experiencing respiratory problems, call a POISON CENTER/doctor</li> <li>• IF INHALED: Remove person to fresh air and keep comfortable for breathing</li> <li>• If skin irritation or rash occurs: Get medical advice/attention</li> <li>• IF SWALLOWED: Call a POISON CENTER or doctor if you feel unwell</li> <li>• Rinse mouth</li> <li>• Wash contaminated clothing before reuse</li> <li>• Dispose of contents in accordance with local and national regulations</li> </ul>	
<b><u>OTHER INFORMATION</u></b> <ul style="list-style-type: none"> <li>• None</li> </ul>	