MATERIAL SAFETY DATA SHEET

1. Product and Company Identification

Material name	**Copper-Aluminum Alloys**
Version #	04
CAS #	Mixture
Product use	Manufacturing
Manufacturer/Supplier	Stanford Advanced Materials 23661 Birtcher Dr. Lake Forest, CA 92630 Telephone +1 (949) 407-8904
Emergency	+1 (949) 407-8904

2. Hazards Identification

Physical state	Solid.
Appearance	Shapes, Solids, Tubes & Turnings.
Emergency overview	WARNING Harmful if inhaled or swallowed. Possible reproductive hazard - contains material that may cause adverse reproductive effects. Possible cancer hazard - may cause cancer based on animal data. May cause allergic respiratory and skin reactions. Dusts may irritate the respiratory tract, skin and eyes. Warning: May Form Combustible (Explosive) Dust - Air Mixtures
OSHA regulatory status	This product is considered hazardous under 29 CFR 1910.1200 (Hazard Communication).
Potential health effects	
Routes of exposure	Inhalation. Skin contact. Eye contact. Ingestion.
Eyes	Acute exposure to cobalt metal, dust, and fume may cause irritation of skin and eyes. Molten material will produce thermal burns. Elevated temperatures or mechanical action may form dust and fumes which may be irritating to the eyes.
Skin	Dust may irritate skin. May cause allergic skin reaction. Acute exposure to cobalt metal, dust, and fume may cause irritation of skin and eyes. In sensitized individuals, exposure causes an asthma-like attack, with wheezing, bronchospasm, and dyspnea. Hot or molten material may produce thermal burns. Workers allergic to nickel may develop eczema or rashes.
Inhalation	Harmful if inhaled. May cause allergic respiratory reaction. In sensitized individuals, exposure causes an asthma-like attack, with wheezing, bronchospasm, and dyspnea. Elevated temperatures or mechanical action may form dust and fumes which may be irritating to mucous membranes and respiratory tract.
Ingestion	Not relevant, due to the form of the product in its manufactured and shipped state. However, harmful if swallowed.
Target organs	Lungs. Reproductive system. Respiratory system.
Chronic effects	Heating above the melting point releases metallic oxides which may cause metal fume fever by inhalation. The symptoms are shivering, fever, malaise and muscular pain. Lead is accumulated in the body and may cause damage to the brain and nervous system after prolonged exposure. May adversely affect the developing fetus based on animal data. Exposure to manganese fume/dust can affect the central nervous system (apathy, drowsiness, weakness and other chronic symptoms such as postural tremors). Contains nickel, which can cause lung or nasal cancer. Long-term breathing of this material may cause chronic lung disease. Prolonged and repeated overexposure to dust and fumes can lead to benign pneumoconiosis (stannosis). The effects might be delayed.

Signs and symptoms Irritation of nose and throat. Irritation of eyes and mucous membranes. Coughing. Shortness of breath. Wheezing. Sensitization. The principal symptoms of lead poisoning are gastro-intestinal or central nervous system disturbances and anemia.

Potential environmental effects Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

3. Composition / Information on Ingredients

Components	CAS #	Percent
Copper	7440-50-8	58-94.5
Aluminum	7429-90-5	0.25-16
Nickel	7440-02-0	0-5.5
Manganese	7439-96-5	0.3-3.5
Lead	7439-92-1	0-3.0
Cobalt	7440-48-4	0-2.5
Silicon	7440-21-3	0-1.5

Composition comments All concentrations are in percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume. The alloy contains additional alloying elements at concentrations below disclosure requirements. At temperatures above the melting point the alloys may liberate fumes containing oxides of alloying elements.

4. First Aid Measures

First aid procedures

Eye contact Do not rub eyes. Remove any contact lenses. Flush eyes thoroughly with water, taking care to rinse under eyelids. If irritation persists, continue flushing for 15 minutes, rinsing from time to time under eyelids. If discomfort continues, consult a physician.

Skin contact Contact with dust: Wash skin with soap and water. In case of allergic reaction or other skin disorders: Seek medical attention and bring along these instructions. In case of contact with hot or molten product, cool rapidly with water and seek immediate medical attention. Do not attempt to remove molten product from skin because skin will tear easily. Cuts or abrasions should be treated promptly with thorough cleansing of the affected area.

Inhalation In case of exposure to fumes or particulates: Get medical attention if discomfort persists.

Ingestion Rinse mouth thoroughly if dust is ingested. Only induce vomiting at the instruction of medical personnel. Get medical attention if any discomfort continues.

Notes to physician Treat symptomatically. Symptoms may be delayed.

General advice Get medical attention if any discomfort develops. Seek medical attention for all burns, regardless how minor they may seem. Show this safety data sheet to the doctor in attendance.

5. Fire Fighting Measures

Flammable properties Solid metal is not flammable; however, finely divided metallic dust or powder may form an explosive mixture with air. In a fire, nickel may form nickel carbonyl, a highly toxic substance and known carcinogen.

Extinguishing media

Suitable extinguishing media Special powder against metal fires. Dry sand.

Unsuitable extinguishing media Do not use water or halogenated extinguishing media. Do not use water on molten metal: Explosion hazard could result.

Protection of firefighters

Specific hazards arising from the chemical During fire, gases hazardous to health may be formed.

Protective equipment and precautions for firefighters Self-contained breathing apparatus and full protective clothing must be worn in case of fire. Selection of respiratory protection for fire fighting: follow the general fire precautions indicated in the workplace.

Fire fighting equipment/instructions Move containers from fire area if you can do it without risk.

Hazardous combustion products Metal oxides.

6. Accidental Release Measures

Personal precautions Ensure adequate ventilation. Avoid inhalation of dust and contact with skin and eyes. Wear protective clothing as described in Section 8 of this safety data sheet.

Environmental precautions Avoid release to the environment. Do not contaminate water.

Methods for containment Not applicable.

Methods for cleaning up Avoid dust formation. Allow spilled material to solidify and scrape up with shovels into a suitable container for recycle or disposal. Collect dust using a vacuum cleaner equipped with HEPA filter. If not possible, gently moisten dust before it is collected with shovel, broom or the like. The vacuum cleaner should be explosion-proofed. This material and its container must be disposed of as hazardous waste.

Other information Clean up in accordance with all applicable regulations.

7. Handling and Storage

Handling Follow special national provisions related to work with lead and its compounds. Pregnant women should not work with the product, if there is the least risk of lead exposure. Welding, burning, sawing, brazing, grinding or machining operations may generate fumes and dusts of metal oxides. Provide adequate ventilation. Avoid contact with sharp edges and hot surfaces. Avoid inhalation of dust and contact with skin and eyes. Avoid generation and spreading of dust and fumes. Avoid contact with hot or molten material. Dust clouds may be explosive under certain conditions. Take precautionary measures against static discharges when there is a risk of dust explosion. Use explosion-proof electrical equipment if airborne dust levels are high. To prevent and minimize fire or explosion risk from static accumulation and discharge, effectively bond and/or ground product transfer system. Wear appropriate personal protective equipment. Do not use water on molten metal. Do not eat, drink or smoke when using the product. Keep the workplace clean. Observe good industrial hygiene practices.

Storage Keep dry. Store away from incompatible materials.

8. Exposure Controls / Personal Protection

Occupational exposure limits

US. ACGIH Threshold Limit Values

Components	Type	Value	Form
Aluminum (7429-90-5)	TWA	1 mg/m3	Respirable fraction.
Cobalt (7440-48-4)	TWA	0.02 mg/m3	
Copper (7440-50-8)	TWA	0.2 mg/m3	Fume.
		1 mg/m3	Dust and mist.
Lead (7439-92-1)	TWA	0.05 mg/m3	
Manganese (7439-96-5)	TWA	0.2 mg/m3	
Nickel (7440-02-0)	TWA	1.5 mg/m3	Inhalable fraction.

US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

Components	Type	Value	Form
Aluminum (7429-90-5)	PEL	5 mg/m3	Respirable dust.
		15 mg/m3	Total dust.
Cobalt (7440-48-4)	PEL	0.1 mg/m3	Dust and fume.
Copper (7440-50-8)	PEL	1 mg/m3	Dust and mist.
		0.1 mg/m3	Fume.
Lead (7439-92-1)	TWA	0.05 mg/m3	
Manganese (7439-96-5)	Ceiling	5 mg/m3	Fume.
Nickel (7440-02-0)	PEL	1 mg/m3	
Silicon (7440-21-3)	PEL	15 mg/m3	Total dust.
		5 mg/m3	Respirable fraction.

Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2)

Components	Type	Value	Form
Aluminum (7429-90-5)	TWA	10 mg/m3	Dust.
		5 mg/m3	Pyrophoric powder.
Cobalt (7440-48-4)	TWA	0.02 mg/m3	
Copper (7440-50-8)	TWA	0.2 mg/m3	Fume.
		1 mg/m3	Dust and mist.
Lead (7439-92-1)	TWA	0.05 mg/m3	
Manganese (7439-96-5)	TWA	0.2 mg/m3	

Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2)

Components	Type	Value	Form
Nickel (7440-02-0)	TWA	1.5 mg/m3	

Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended)

Components	Type	Value	Form
Aluminum (7429-90-5)	TWA	1 mg/m3	Respirable.
Cobalt (7440-48-4)	TWA	0.02 mg/m3	
Copper (7440-50-8)	TWA	0.2 mg/m3	Fume.
		1 mg/m3	Dust and mist.
Lead (7439-92-1)	TWA	0.05 mg/m3	
Manganese (7439-96-5)	TWA	0.2 mg/m3	
Nickel (7440-02-0)	TWA	0.05 mg/m3	

Canada. Ontario OELs. (Ministry of Labor - Control of Exposure to Biological or Chemical Agents)

Components	Type	Value	Form
Aluminum (7429-90-5)	TWA	10 mg/m3	Dust.
		5 mg/m3	Welding fume.
Cobalt (7440-48-4)	TWA	0.02 mg/m3	Dust and fume.
Copper (7440-50-8)	TWA	1 mg/m3	Dust and mist.
		0.2 mg/m3	Fume.
Lead (7439-92-1)	TWA	0.05 mg/m3	
Manganese (7439-96-5)	TWA	0.2 mg/m3	
Nickel (7440-02-0)	TWA	1 mg/m3	Inhalable
Silicon (7440-21-3)	TWA	10 mg/m3	Total dust.

Canada. Quebec OELS. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment)

Components	Type	Value	Form
Aluminum (7429-90-5)	TWA	5 mg/m3	Welding fume.
		10 mg/m3	
Cobalt (7440-48-4)	TWA	0.02 mg/m3	
Copper (7440-50-8)	TWA	1 mg/m3	Dust and mist.
		0.2 mg/m3	Fume.
Lead (7439-92-1)	TWA	0.05 mg/m3	
Manganese (7439-96-5)	STEL	3 mg/m3	Fume.
	TWA	5 mg/m3	Dust.
		1 mg/m3	Fume.
Nickel (7440-02-0)	TWA	1 mg/m3	
Silicon (7440-21-3)	TWA	10 mg/m3	Total dust.

Mexico. Occupational Exposure Limit Values

Components	Type	Value	Form
Aluminum (7429-90-5)	TWA	5 mg/m3	Pyrophoric powder.
		10 mg/m3	Dust.
		5 mg/m3	Welding fume.
Cobalt (7440-48-4)	TWA	0.1 mg/m3	Dust and fume.
Copper (7440-50-8)	STEL	2 mg/m3	Dust and mist.
		2 mg/m3	Fume.
	TWA	1 mg/m3	Dust and mist.
		0.2 mg/m3	Fume.
Lead (7439-92-1)	TWA	0.15 mg/m3	Dust and fume.
Manganese (7439-96-5)	STEL	3 mg/m3	Fume.
	TWA	1 mg/m3	Fume.
		0.2 mg/m3	
Nickel (7440-02-0)	TWA	1 mg/m3	
Silicon (7440-21-3)	STEL	20 mg/m3	
	TWA	10 mg/m3	

Engineering controls

Provide adequate ventilation. Observe Occupational Exposure Limits and minimize the risk of inhalation of dust. Ventilate as needed to control airborne dust. Use explosion-proof ventilation equipment if airborne dust levels are high. Special ventilation should be used to convey finely divided metallic dust generated by grinding, sawing etc., in order to eliminate explosion hazards. Follow the schedule for work place measurements when working with lead and its compounds.

Personal protective equipment

Eye / face protection	Wear dust-resistant safety goggles where there is danger of eye contact. In addition to safety glasses or goggles, a welding helmet with appropriate shaded shield is required during welding, burning, or brazing. A face shield is recommended, in addition to safety glasses or goggles, during sawing, grinding, or machining.
Skin protection	Wear suitable protective gloves to prevent cuts and abrasions. When material is heated, wear gloves to protect against thermal burns. Suitable gloves can be recommended by the glove supplier. Wear suitable protective clothing.
Respiratory protection	When engineering controls are not sufficient to lower exposure levels below the applicable exposure limit, use a NIOSH approved respirator for dusts. A respiratory protection program that meets OSHA's 29 CFR 1910.134 and ANSI Z88.2 requirements must be followed whenever work place conditions warrant a respirator's use. Seek advice from local supervisor. In case of inadequate ventilation or risk of inhalation of dust, use suitable respiratory equipment with particle filter.
General hygiene considerations	Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Private clothes and working clothes should be kept separately. Contaminated uniforms should be laundered separately from other clothing to prevent potential cross-contamination. If possible, an industrial laundry service should be used to eliminate the possibility of contaminating the home environment. Handle in accordance with good industrial hygiene and safety practices. Observe any medical surveillance requirements.

9. Physical & Chemical Properties

Appearance	Shapes, Solids, Tubes & Turnings.
Color	Yellow.
Odor	None.
Odor threshold	Not available.
Physical state	Solid.
Form	Solid. Shapes, Solids, Tubes & Turnings.
pH	Not available.
Melting point	Not available.
Freezing point	Not available.
Boiling point	Not available.
Flash point	Not available.
Evaporation rate	Not available.
Flammability limits in air, upper, % by volume	Not available.
Flammability limits in air, lower, % by volume	Not available.
Vapor pressure	Not available.
Vapor density	Not available.
Specific gravity	Not available.
Solubility (water)	Insoluble.
Partition coefficient (n-octanol/water)	Not available.
Auto-ignition temperature	Not available.
Decomposition temperature	Not available.

10. Chemical Stability & Reactivity Information

Chemical stability	Massive metal is stable and non reactive under normal conditions of use, storage and transport.
Conditions to avoid	Contact with incompatible materials. Avoid dust formation. Dust clouds may be explosive under certain conditions.
Incompatible materials	Acids. Ammonium nitrate. Fluoride. Halogens. Nitrates. Phosphorus. Strong oxidizing agents. Sulphur.
Hazardous decomposition products	Welding, burning, sawing, brazing, grinding or machining operations may generate dusts and fumes of metal oxides. Lead oxide fumes may be formed at elevated temperatures.

Possibility of hazardous reactions	Hazardous polymerization does not occur. Contact with acids will release flammable hydrogen gas. Hot molten material will react violently with water resulting in spattering and fuming.

11. Toxicological Information

Toxicological data

Components	Test Results
Silicon (7440-21-3)	Acute Oral LD50 Rat: 3150 mg/kg

Acute effects	Harmful if inhaled or swallowed. Dusts may irritate the respiratory tract, skin and eyes. High concentrations of freshly formed fumes/dusts of metal oxides can produce symptoms of metal fume fever. Acute exposure to cobalt metal, dust, and fume may cause irritation of skin and eyes. In sensitized individuals, exposure causes an asthma-like attack, with wheezing, bronchospasm, and dyspnea. Ingestion of cobalt may cause nausea, vomiting, diarrhea, and a sensation of hotness.
Local effects	May cause irritation through mechanical abrasion.
Sensitization	May cause allergic respiratory and skin reactions.
Chronic effects	May adversely affect the developing fetus based on animal data. Chronic exposure to breathing low levels of manganese dust or fume over a long period of time can result in “manganism,” a disease of the central nervous system similar to Parkinson’s Disease, gait impairment, muscle spasms and behavioral changes. Repeated overexposure to manganese over time may adversely affect the male reproductive system and central nervous system. Prolonged and repeated overexposure to dust and fumes can lead to benign pneumoconiosis (stannosis). Chronic inhalation of metallic oxide dust/fume may cause metal fume fever. Lead may produce maternal toxicity, toxicity to the fetus, and adverse effects to blood, bone marrow, central/peripheral nervous systems, kidney, liver, and reproductive system.
Carcinogenicity	Possible cancer hazard - may cause cancer based on animal data.

ACGIH Carcinogens

Aluminum (CAS 7429-90-5)	A4 Not classifiable as a human carcinogen.
Cobalt (CAS 7440-48-4)	A3 Confirmed animal carcinogen with unknown relevance to humans.
Lead (CAS 7439-92-1)	A3 Confirmed animal carcinogen with unknown relevance to humans.
Nickel (CAS 7440-02-0)	A5 Not suspected as a human carcinogen.

IARC Monographs. Overall Evaluation of Carcinogenicity

Cobalt (CAS 7440-48-4)	2B Possibly carcinogenic to humans.
Lead (CAS 7439-92-1)	2B Possibly carcinogenic to humans.
Nickel (CAS 7440-02-0)	2B Possibly carcinogenic to humans.

US NTP Report on Carcinogens: Anticipated carcinogen

Lead (CAS 7439-92-1)	Anticipated carcinogen.
Nickel (CAS 7440-02-0)	Anticipated carcinogen.

US NTP Report on Carcinogens: Known carcinogen

Nickel (CAS 7440-02-0)	Known carcinogen.

Epidemiology	Based on epidemiological studies, pre-existing pulmonary disorders may be aggravated by prolonged exposure to high concentrations of metal dust or fumes. Pre-existing skin conditions including dermatitis might be aggravated by exposure to this product.
Mutagenicity	Suspected of causing genetic defects.
Neurological effects	Exposure to manganese fume/dust can affect the central nervous system (apathy, drowsiness, weakness and other chronic symptoms such as postural tremors).
Reproductive effects	Possible reproductive hazard that may cause adverse reproductive effects based on animal data. In experimental animal studies, cobalt produces adverse developmental effects at doses that produce maternal toxicity. There are no human data on cobalt exposure during pregnancy. Nickel: Has shown teratogenic effects in laboratory animals.
Teratogenicity	Nickel: Has shown teratogenic effects in laboratory animals.
Symptoms and target organs	Irritation of nose and throat. Irritation of eyes and mucous membranes. Coughing. Shortness of breath. Wheezing. Sensitization. The principal symptoms of lead poisoning are gastro-intestinal or central nervous system disturbances and anemia.
Further information	Lead is accumulated in the body and may cause damage to the brain and nervous system after prolonged exposure. Welding or plasma arc cutting of metal and alloys can generate ozone, nitric oxides and ultraviolet radiation. Ozone overexposure may result in mucous membrane irritation or pulmonary discomfort. UV radiation can cause skin erythema and welders flash.

12. Ecological Information

Ecotoxicological data

Components	Test Results
Lead (7439-92-1)	LC50 Rainbow trout, donaldson trout (Oncorhynhus mykiss): 1.17 mg/l 96 Hours

Ecotoxicity	Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
Persistence and degradability	The product is not biodegradable.
Bioaccumulation / Accumulation	The product contains potentially bioaccumulating substances.
Partition coefficient (n-octanol/water)	Not available.
Mobility in environmental media	Alloys in massive forms are not mobile in the environment.

13. Disposal Considerations

Waste codes	Not regulated.
Disposal instructions	This material and its container must be disposed of as hazardous waste. Dispose in accordance with all applicable regulations.
Waste from residues / unused products	Recover and recycle, if practical. Solid metal and alloys in the form of particles may be reactive. Its hazardous characteristics, including fire and explosion, should be determined prior to disposal.
Contaminated packaging	Not applicable.

14. Transport Information

DOT

Basic shipping requirements:	
UN number	UN3077
Proper shipping name	Environmentally hazardous substances, solid, n.o.s. (Lead RQ = 393 LBS)
Hazard class	9
Packing group	III
Labels required	9
Additional information:	
Special provisions	8, 146, B54, IB8, IP3, N20, T1, TP33
Packaging exceptions	155
Packaging non bulk	213
Packaging bulk	240
ERG number	171

IATA

Basic shipping requirements:	
UN number	3077
Proper shipping name	Environmentally hazardous substance, solid, n.o.s. (Lead)
Hazard class	9
Packing group	III
Labels required	9
Additional information:	
ERG code	9L

IMDG

Basic shipping requirements:	
UN number	3077
Proper shipping name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Lead)
Hazard class	9
Packing group	III
Environmental hazards	
Marine pollutant	Yes
EmS No.	F-A, S-F
Labels required	9

TDG

Basic shipping requirements:

Proper shipping name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Lead)
Hazard class	9
UN number	UN3077
Packing group	III
Marine pollutant	Yes
Additional information:	
Special provisions	16
Basic shipping requirements:	
Labels required	9

15. Regulatory Information

US federal regulations This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.
All components are on the U.S. EPA TSCA Inventory List.

TSCA Section 12(b) Export Notification(40 CFR 707, Subpt. D)

Not regulated.

US EPCRA (SARA Title III) Section 313 - Toxic Chemical: De minimis concentration

Aluminum (CAS 7429-90-5)	1.0 %
Cobalt (CAS 7440-48-4)	0.1 %
Copper (CAS 7440-50-8)	1.0 %
Lead (CAS 7439-92-1)	0.1 % Substance is not eligible for the de minimis exemption except for the purposes of supplier notification requirements.
Manganese (CAS 7439-96-5)	1.0 %
Nickel (CAS 7440-02-0)	0.1 %

US EPCRA (SARA Title III) Section 313 - Toxic Chemical: Reportable threshold

Lead (CAS 7439-92-1)	100 LBS

US EPCRA (SARA Title III) Section 313 - Toxic Chemical: Listed substance

Aluminum (CAS 7429-90-5)	Listed.
Copper (CAS 7440-50-8)	Listed.
Lead (CAS 7439-92-1)	Listed.
Manganese (CAS 7439-96-5)	Listed.
Nickel (CAS 7440-02-0)	Listed.

CERCLA (Superfund) reportable quantity (lbs) (40 CFR 302.4)

Copper: 5000
Nickel: 100
Lead: 10

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories	Immediate Hazard - Yes Delayed Hazard - Yes Fire Hazard - No Pressure Hazard - No Reactivity Hazard - No
Section 302 extremely hazardous substance (40 CRF 355, Appendix A)	No
Section 311/312 (40 CFR 370)	Yes
Drug Enforcement Administration (DEA) (21 CFR 1308.11-15)	Not controlled
Canadian regulations	This product has been classified in accordance with hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations.
WHMIS status	Controlled
WHMIS classification	D2A - Other Toxic Effects-VERY TOXIC D2B - Other Toxic Effects-TOXIC

WHMIS labeling

Inventory status

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	Yes
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	Yes
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	No
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)

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

US - California Hazardous Substances (Director's): Listed substance

Aluminum (CAS 7429-90-5)	Listed.
Cobalt (CAS 7440-48-4)	Listed.
Copper (CAS 7440-50-8)	Listed.
Lead (CAS 7439-92-1)	Listed.
Manganese (CAS 7439-96-5)	Listed.
Nickel (CAS 7440-02-0)	Listed.

US - California Proposition 65 - Carcinogens & Reproductive Toxicity (CRT): Listed substance

Cobalt (CAS 7440-48-4)	Listed.
Lead (CAS 7439-92-1)	Listed.
Nickel (CAS 7440-02-0)	Listed.

US - California Proposition 65 - CRT: Listed date/Carcinogenic substance

Cobalt (CAS 7440-48-4)	Listed: July 1, 1992 Carcinogenic.
Lead (CAS 7439-92-1)	Listed: October 1, 1992 Carcinogenic.
Nickel (CAS 7440-02-0)	Listed: October 1, 1989 Carcinogenic.

US - California Proposition 65 - CRT: Listed date/Developmental toxin

Lead (CAS 7439-92-1)	Listed: February 27, 1987 Developmental toxin.

US - California Proposition 65 - CRT: Listed date/Female reproductive toxin

Lead (CAS 7439-92-1)	Listed: February 27, 1987 Female reproductive toxin.

US - California Proposition 65 - CRT: Listed date/Male reproductive toxin

Lead (CAS 7439-92-1)	Listed: February 27, 1987 Male reproductive toxin.

US - Massachusetts RTK - Substance: Listed substance

Aluminum (CAS 7429-90-5)	Listed.
Cobalt (CAS 7440-48-4)	Listed.
Copper (CAS 7440-50-8)	Listed.
Lead (CAS 7439-92-1)	Listed.
Manganese (CAS 7439-96-5)	Listed.
Nickel (CAS 7440-02-0)	Listed.
Silicon (CAS 7440-21-3)	Listed.

US - New Jersey Community RTK (EHS Survey): Reportable threshold

Aluminum (CAS 7429-90-5)	500 LBS
Copper (CAS 7440-50-8)	500 LBS
Lead (CAS 7439-92-1)	500 LBS
Manganese (CAS 7439-96-5)	500 LBS
Nickel (CAS 7440-02-0)	500 LBS

US - New Jersey RTK - Substances: Listed substance

Aluminum (CAS 7429-90-5)	Listed.
Copper (CAS 7440-50-8)	Listed.
Lead (CAS 7439-92-1)	Listed.
Manganese (CAS 7439-96-5)	Listed.
Nickel (CAS 7440-02-0)	Listed.
Silicon (CAS 7440-21-3)	Listed.

US - Pennsylvania RTK - Hazardous Substances: All compounds of this substance are considered environmental hazards

Cobalt (CAS 7440-48-4)	LISTED
Copper (CAS 7440-50-8)	LISTED
Lead (CAS 7439-92-1)	LISTED
Manganese (CAS 7439-96-5)	LISTED
Nickel (CAS 7440-02-0)	LISTED

US - Pennsylvania RTK - Hazardous Substances: Listed substance

Aluminum (CAS 7429-90-5)	Listed.
Cobalt (CAS 7440-48-4)	Listed.
Copper (CAS 7440-50-8)	Listed.
Lead (CAS 7439-92-1)	Listed.
Manganese (CAS 7439-96-5)	Listed.
Nickel (CAS 7440-02-0)	Listed.
Silicon (CAS 7440-21-3)	Listed.

US - Pennsylvania RTK - Hazardous Substances: Special hazard

Nickel (CAS 7440-02-0)	Special hazard.

16. Other Information

Recommended use
Manufacturing

Recommended restrictions
Use in accordance with supplier's recommendations.

Other information
None known.

HMIS® ratings
Health: 2*
Flammability: 0
Physical hazard: 0
Personal protection: X

NFPA ratings
Health: 2
Flammability: 0
Instability: 0

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