

Issuing Date 28-Nov-2013

Revision Date 11-Dec-2013

Revision Number 1

1. Identification of the substance/preparation and of the Company/undertaking

Product Identifier

Product Type Stellite - Welding rods
Product name STELLITE® 21 - ROD
Product code KSRC021 01 - ROD

Other means of identification

Synonyms No information available

Recommended use of the chemical and restrictions on use

Recommended Use Wear and Corrosion Resistant Welding Consumable. For use in industrial installations only.

Details of the Supplier of the Safety Data Sheet

Emergency Telephone Number

Prepared by Kennametal Inc. 1600 Technology Way Latrobe, PA 15650, USA
E-mail k-corp-product.safety@kennametal.com
Emergency Telephone Number CHEMTREC: +1-703-527-3887 (INTERNATIONAL)
1-800-424-9300 (NORTH AMERICA)

2. Hazards Identification

Classification

This product does not require a hazard communication label as it does not pose a hazard in the form delivered. Hazards can occur while using this product. Please read and follow the instructions of this SDS

Label Elements

Emergency Overview

Hazard Statements

- Harmful if swallowed
 - Fatal if inhaled
 - Causes serious eye irritation
- May cause allergy or asthma symptoms or breathing difficulties if inhaled
 - May cause cancer by inhalation
 - May cause an allergic skin reaction
 - May damage fertility or the unborn child
- Causes damage to organs through prolonged or repeated exposure
 - Very toxic to aquatic life
 - Very toxic to aquatic life with long lasting effects
 - Heating may cause a fire

Appearance solid metallic

Physical State solid

Odor odorless

Precautionary Statements - Prevention

Obtain special instructions before use
 Do not handle until all safety precautions have been read and understood
 Use personal protective equipment as required
 Wash face, hands and any exposed skin thoroughly after handling
 Do not eat, drink or smoke when using this product
 Do not breathe dust/fume/gas/mist/vapors/spray
 Use only outdoors or in a well-ventilated area
 Wear respiratory protection
 In case of inadequate ventilation wear respiratory protection
 Contaminated work clothing should not be allowed out of the workplace
 Wear protective gloves/protective clothing/eye protection/face protection

Precautionary Statements - Response

IF exposed or concerned: Get medical advice/attention
 Specific treatment is urgent (see supplemental first aid instructions on this label)

Eyes

IF IN EYES: 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

Skin

IF ON SKIN: Wash with plenty of soap and water
 If skin irritation or rash occurs: Get medical advice/attention
 Wash contaminated clothing before reuse

Inhalation

IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
 Immediately call a POISON CENTER or doctor/physician

Ingestion

IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell
 Rinse mouth

Precautionary Statements - Storage Store locked up. Store in a well-ventilated place. Keep container tightly closed.

Precautionary Statements - Disposal Dispose of contents/container to an approved waste disposal plant.

Hazards not otherwise classified (HNOC)

Welding Hazards

CAUTION. Welding will create fumes which may be toxic. If welding is performed on plated or coated materials such as galvanised or painted steel, excessive fume may be produced which contains additional hazardous components, and may result in metal fume fever or other health effects. Radiation from the welding arc can cause burns to the skin and damage to the eyes. The product and work surface will be hot during and after welding. Electric shock can KILL. Arc Rays can injure eyes and burn skin.

OTHER INFORMATION

May be harmful if swallowed. Causes mild skin irritation. Very toxic to aquatic life with long lasting effects. Very toxic to aquatic life.

Unknown Aquatic Toxicity

37.65% of the mixture consists of ingredient(s) of unknown toxicity

3. Composition/Information on Ingredients

Chemical name	Formula	CAS-No	weight-%	GHS Classification
---------------	---------	--------	----------	--------------------

Cobalt	Co	7440-48-4	> 50	Acute oral 4 (H302) Acute dust/mist 1 (H330) Eye damage 2 (H319) Resp. Sens. 1B (H334) Skin Sens. 1 (H317) Carc. 1B (H350i) Repro. tox. 2 (H361f) Aquatic Acute 1 M=10 (H400) Aquatic Chronic 1 (H410) M=1
Chromium	Cr	7440-47-3	25 - 50	
Molybdenum	Mo	7439-98-7	5 - 10	
Nickel	Ni	7440-02-0	2.5 - 3	STOT RE 1 (H372) S,7 Carc. 2 (H351) S,7 Skin Sens. 1 (H317) S,7 Aquatic Chronic 3 (H412)
Iron	Fe	7439-89-6	1 - 2.5	
Silicon Metal	Si	7440-21-3	0.1 - 1	
Manganese	Mn	7439-96-5	0.1 - 1	
Carbon	C	7440-44-0	0.1 - 1	
Tungsten	W	7440-33-7	0.1 - 1	

Full text of H-Statements referred to under sections 2 and 3

- H302 - Harmful if swallowed
- H317 - May cause an allergic skin reaction
- H319 - Causes serious eye irritation
- H330 - Fatal if inhaled
- H334 - May cause allergy or asthma symptoms or breathing difficulties if inhaled
- H350i - May cause cancer if inhaled
- H351 - Suspected of causing cancer if inhaled
- H361f - Suspected of damaging fertility
- H372 - Causes damage to the following organs through prolonged or repeated exposure if inhaled:
Lungs
- H400 - Very toxic to aquatic life
- H410 - Very toxic to aquatic life with long lasting effects
- H412 - Harmful to aquatic life with long lasting effects

4. First aid measures

FIRST AID MEASURES

- General advice** If symptoms persist, call a physician. Do not breathe dust/fume/gas/mist/vapors/spray. Do not get in eyes, on skin, or on clothing. In case of accident or unwellness, seek medical advice immediately (show directions for use or safety data sheet if possible).
- Eye Contact** Keep eye wide open while rinsing. If symptoms persist, call a physician. Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes.
- Skin contact** Consult a physician if necessary. Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes. Wash off immediately with soap and plenty of water.
- Inhalation** Move to fresh air. If breathing is irregular or stopped, administer artificial respiration. Oxygen or artificial respiration if needed. Get medical attention. Avoid direct contact with skin. Use barrier to give mouth-to-mouth resuscitation.
- Ingestion** Do NOT induce vomiting. Drink plenty of water. If symptoms persist, call a physician. Rinse mouth.
- Self-protection of the first aider** Self-protection of the first aider. Wear suitable gloves.

Most important symptoms and effects, both acute and delayed

Most important symptoms and effects, both acute and delayed May cause allergy or asthma symptoms or breathing difficulties if inhaled. CNS and psychiatric effects, Parkinson-like symptoms. Languor, sleepiness and weakness in legs. A stolid masklike appearance of face, emotional disturbances such as uncontrollable laughter and spastic gait with tendency to fall in walking and findings in more advanced cases. Persons with a history of asthma, allergies, chronic or recurrent respiratory disease should not be exposed to any process in which this product is used.

Indication of any immediate medical attention and special treatment needed

Notes to Physician Treat symptomatically. May cause sensitization by inhalation and skin contact. May cause sensitization of susceptible persons.

5. Fire-fighting measures

Suitable extinguishing media Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Extinguishing media which must not be used for safety reasons

Specific hazards arising from the chemical Non-combustible, substance itself does not burn but may decompose upon heating to produce corrosive and/or toxic fumes Thermal decomposition can lead to release of irritating and toxic gases and vapors May cause sensitization by inhalation and skin contact Carbon oxides

Protective equipment and precautions for firefighters Use personal protective equipment as required In the event of fire, wear self-contained breathing apparatus

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

Personal precautions Avoid contact with skin and eyes. Ensure adequate ventilation. Use personal protective equipment as required. Avoid dust accumulation in enclosed space.

OTHER INFORMATION See Section 12 for additional Ecological Information.

Environmental precautions Avoid release to the environment.

Methods and material for containment and cleaning up Pick up and transfer to properly labeled containers. Avoid generation of dust. Do not dry sweep dust. Wet dust with water before sweeping or use a vacuum to collect dust.

7. Handling and Storage

Precautions for safe handling Do not eat, drink or smoke when using this product. Use personal protective equipment as required. Avoid contact with eyes, skin and clothing. Wash contaminated clothing before reuse. Do not breathe dust/fume/gas/mist/vapors/spray.

Conditions for safe storage, including any incompatibilities

Storage Keep out of the reach of children. Keep container tightly closed in a dry and well-ventilated place. Keep containers tightly closed in a cool, well-ventilated place.

Incompatible products

Specific use(s) Welding. .

8. Exposure Controls/Personal Protection

Control parameters

Exposure Guidelines		Exposure Guidelines			
Chemical name	USA - ACGIH TLV	USA - OSHA PEL	USA - NIOSH IDLH	Argentina	Brazil
Cobalt	0.02 mg/m ³ TWA	0.1 mg/m ³ TWA (dust and fume)	20 mg/m ³ IDLH (dust and fume)	TWA: 0.02 mg/m ³	
Chromium	0.5 mg/m ³ TWA	1 mg/m ³ TWA	250 mg/m ³ IDLH	TWA: 0.5 mg/m ³	
Molybdenum	10 mg/m ³ TWA (inhalable fraction); 3 mg/m ³ TWA (respirable fraction)	Not Listed	5000 mg/m ³ IDLH	TWA: 10 mg/m ³ TWA: 3 mg/m ³	
Nickel	1.5 mg/m ³ TWA (inhalable fraction)	1 mg/m ³ TWA	10 mg/m ³ IDLH	TWA: 1.5 mg/m ³	
Silicon Metal	-	15 mg/m ³ TWA (total dust); 5 mg/m ³ TWA (respirable fraction)	Not Listed	TWA: 10 mg/m ³	
Manganese	0.02 mg/m ³ TWA (respirable fraction); 0.1 mg/m ³ TWA (inhalable fraction)	-	500 mg/m ³ IDLH	TWA: 0.2 mg/m ³	5 mg/m ³ TWA LT (dust); 1 mg/m ³ TWA LT (fume)
Tungsten	10 mg/m ³ STEL 5 mg/m ³ TWA	-	-	TWA: 5 mg/m ³ STEL: 10 mg/m ³	
Chemical name	Canada - Alberta	Canada - British Columbia	Canada - Ontario	Canada - Quebec	Canada - Manitoba
Cobalt	0.02 mg/m ³ TWA	0.02 mg/m ³ TWA	0.02 mg/m ³ TWA	0.02 mg/m ³ TWAEV	0.02 mg/m ³ TWA 0.02 mg/m ³ TWA (as Co)
Chromium	0.5 mg/m ³ TWA	0.5 mg/m ³ TWA	0.5 mg/m ³ TWA	0.5 mg/m ³ TWAEV	0.5 mg/m ³ TWA
Molybdenum	10 mg/m ³ TWA (total); 3 mg/m ³ TWA (respirable)	3 mg/m ³ TWA (respirable); 10 mg/m ³ TWA (inhalable)	10 mg/m ³ TWA (metal, inhalable); 3 mg/m ³ TWA (metal, respirable)		10 mg/m ³ TWA (inhalable fraction); 3 mg/m ³ TWA (respirable fraction)
Nickel	1.5 mg/m ³ TWA	0.05 mg/m ³ TWA	1 mg/m ³ TWA (inhalable)	1 mg/m ³ TWAEV	1.5 mg/m ³ TWA (inhalable fraction)
Silicon Metal		10 mg/m ³ TWA (total dust); 3 mg/m ³ TWA (respirable fraction)	10 mg/m ³ TWA (total dust)	10 mg/m ³ TWAEV (containing no Asbestos and <1% Crystalline silica, total dust)	
Manganese	0.2 mg/m ³ TWA	0.2 mg/m ³ TWA	0.2 mg/m ³ TWA	5 mg/m ³ TWAEV (dust); 1 mg/m ³ TWAEV (fume) 3 mg/m ³ STEV (fume)	0.02 mg/m ³ TWA (respirable fraction); 0.1 mg/m ³ TWA (inhalable fraction) 0.02 mg/m ³ TWA (as Mn, listed under respirable fraction); 0.1 mg/m ³ TWA (as Mn)
Tungsten	5 mg/m ³ TWA 10 mg/m ³ STEL	5 mg/m ³ TWA 10 mg/m ³ STEL	5 mg/m ³ TWA 10 mg/m ³ STEL		5 mg/m ³ TWA 5 mg/m ³ TWA (as W) 10 mg/m ³ STEL
Chemical name	Chile	Mexico OEL (TWA)	Peru	Uruguay	Venezuela
Cobalt	TWA: 0.016 mg/m ³	0.1 mg/m ³ TWA LMPE-PPT (dust and fume, as Co)	0.02 mg/m ³ TWA	0.02 mg/m ³ TWA	TWA: 0.02 mg/m ³
Chromium	TWA: 0.4 mg/m ³	0.5 mg/m ³ TWA LMPE-PPT		0.5 mg/m ³ TWA	TWA: 0.5 mg/m ³
Molybdenum		-		10 mg/m ³ TWA (inhalable fraction); 3 mg/m ³ TWA (respirable fraction)	TWA: 10 mg/m ³ TWA: 3 mg/m ³
Nickel	TWA: 0.8 mg/m ³	1 mg/m ³ TWA LMPE-PPT	1.5 mg/m ³ TWA	1.5 mg/m ³ TWA (inhalable fraction)	TWA: 1.5 mg/m ³
Silicon Metal		10 mg/m ³ TWA LMPE-PPT (inhalable fraction)	10 mg/m ³ TWA (inhalable fraction); 4 mg/m ³ TWA (respirable fraction); 5 mg/m ³ TWA (welding fumes)		TWA: 10 mg/m ³

Manganese	TWA: 0.8 mg/m ³ TWA: 4 mg/m ³	0.2 mg/m ³ TWA LMPE-PPT; 1 mg/m ³ TWA LMPE-PPT (fume, as Mn)	0.2 ppm TWA	0.02 mg/m ³ TWA (respirable fraction); 0.1 mg/m ³ TWA (inhalable fraction)	TWA: 0.2 mg/m ³
Carbon		2 mg/m ³ TWA LMPE-PPT (dust)			
Tungsten		-	5 mg/m ³ TWA	10 mg/m ³ STEL 5 mg/m ³ TWA	STEL: 10 mg/m ³ TWA: 5 mg/m ³

Other Exposure Guidelines Hexavalent Chrome may be formed during welding.

Appropriate engineering controls

Engineering controls Showers
Eyewash stations
Ventilation systems.

Individual protection measures, such as personal protective equipment

Eye Protection Use suitable eye protection to guard against the effects of welding. Wear safety glasses with side shields (or goggles). Eye-irrigation bottle with pure water.

Skin Protection Long sleeved clothing. Wear fire/ flame resistant/retardant clothing. Apron. Wear suitable protective clothing. Wear suitable gloves.

Hand Protection Protective gloves. The product and work surface will be hot during and after welding. Ensure adequate protection is in place to stop individuals from burning themselves.

Respiratory protection Use only with adequate ventilation. If exposure limits are exceeded or irritation is experienced, NIOSH/MSHA approved respiratory protection should be worn. Positive-pressure supplied air respirators may be required for high airborne contaminant concentrations. Respiratory protection must be provided in accordance with current local regulations.

Hygiene Measures Handle in accordance with good industrial hygiene and safety practice. Do not eat, drink or smoke when using this product. Regular cleaning of equipment, work area and clothing is recommended.

Biological standards

Chemical name	USA ACGIH -BEI
Cobalt - 7440-48-4	15 µg/L Medium: urine Time: end of shift at end of workweek Parameter: Cobalt (background); 1 µg/L Medium: blood Time: end of shift at end of workweek Parameter: Cobalt (background, semi-quantitative)

9. Physical and Chemical Properties

Information on basic physical and chemical properties

Physical State	solid	Appearance	solid metallic
Odor	odorless	pH	
Melting point/freezing point	1285-1395 °C / 2340-2540 °F	Boiling temperature / boiling range	No information available
Flash Point	No information available	Evaporation Rate	
Flammability (solid, gas)		Flammability Limits in Air	
Upper flammability limits		Lower Flammability Limit	
Vapor Pressure		Vapor Density	
Specific gravity		Water solubility	Insoluble in water
Solubility in other solvents		Partition coefficient	
Autoignition temperature		Decomposition Temperature	
Kinematic viscosity		Dynamic viscosity	

OTHER INFORMATION

VOC Content (%) Not Applicable
Density 8.44 g/cm³

10. Stability and Reactivity

Reactivity Stable under normal conditions

No data available

Chemical stability Stable under normal conditions.

Stable under normal conditions.

Possibility of Hazardous Reactions None under normal processing.

Conditions to avoid Keep away from sources of heat (e.g. hot surfaces), sparks and open flames.

incompatible materials Acids. Strong oxidizing agents.

Hazardous decomposition products Thermal decomposition can lead to release of toxic/corrosive gases and vapors.

11. Toxicological Information

Information on likely routes of exposure

Product Information

- Inhalation** May cause allergy or asthma symptoms or breathing difficulties if inhaled.
- Eye Contact** May cause eye irritation with susceptible persons.
- Skin contact** Repeated or prolonged skin contact may cause allergic reactions with susceptible persons. Prolonged contact may cause redness and irritation. Prolonged skin contact may defat the skin and produce dermatitis. May cause sensitization by skin contact.
- Ingestion** Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea. Ingestion may cause irritation to mucous membranes.

Chemical name	Oral LD50	dermal LD50	Inhalation LC50
Cobalt - 7440-48-4	550 mg/kg bw	>2000 mg/kg bw	0.05 mg/L
Chromium - 7440-47-3	LD50 >5000 mg/kg bw	Data waiving - Study Scientifically Unjustified	LC50 >5.41 mg/L air (analytical)
Molybdenum - 7439-98-7	LD50 >2000 mg/kg bw	Not Classified	LC50 >3.92 mg/L air
Nickel - 7440-02-0	>9000 mg/kg bw	Data waiving - Other Justification	NOAEC >=10.2 mg/L air
Iron - 7439-89-6	= 984 mg/kg (Rat)		Inhalation LC50 (4 hrs)
Silicon Metal - 7440-21-3	LD50 >3160 mg/kg bw	LD50 >5000 mg/kg bw	Acutely Non Toxic
Manganese - 7439-96-5	LD50 >2000 mg/kg bw	Data waiving - Study Scientifically Unjustified	LC50 >5.14 mg/L air (analytical)
Carbon - 7440-44-0	> 10000 mg/kg (Rat)		Inhalation LC50 (4 hrs)
Tungsten - 7440-33-7	LD50 >2000 mg/kg bw	LD50 >2000 mg/kg bw	LC50 >5.4 mg/L air

Information on toxicological effects

Chemical name	US ACGIH - Critical effects
Cobalt - 7440-48-4	asthma; myocardial effects; pulmonary function
Chromium - 7440-47-3	skin and upper respiratory tract irritation
Nickel - 7440-02-0	dermatitis; pneumoconiosis

Manganese - 7439-96-5	CNS impairment
Tungsten - 7440-33-7	lower respiratory tract irritation

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Irritation Repeated exposure may cause skin dryness or cracking.

Sensitization May cause sensitization of susceptible persons.

MUTAGENIC EFFECTS None known.

Carcinogenicity This product contains one or more substances which are classified by IARC as carcinogenic to humans (Group I), probably carcinogenic to humans (Group 2A) or possibly carcinogenic to humans (Group 2B).

Chemical name	ACGIH	IARC	NTP	OSHA
Cobalt - 7440-48-4	A3 - Confirmed Animal Carcinogen with Unknown Relevance to Humans	Group 2B - Possible Human Carcinogen	Not Listed	Not Listed
Chromium - 7440-47-3	A4 - Not Classifiable as a Human Carcinogen	Group 3 - Not Classified as a Human Carcinogen	Not Listed	Not Listed
Nickel - 7440-02-0	A5 - Not Suspected as a Human Carcinogen	Nickel Compounds: Group 1 - Known Human Carcinogen - Nickel, Metallic & Alloy: Group 2B - Possible Human Carcinogen	Reasonably anticipated to be a Human Carcinogen	Not Listed
Chemical name	Chile	Argentina	Venezuela	Peru
Cobalt - 7440-48-4	A3 - Animal Carcinogen	A3 - Confirmed animal carcinogen with unknown relevance to humans	A3 - Animal Carcinogen	
Chromium - 7440-47-3	A4 - Not Classifiable as a Human Carcinogen	A4 - Not classifiable as a human carcinogen	A4 - Not Classified as a Carcinogen in Humans	
Nickel - 7440-02-0	A1 - Confirmed Human Carcinogen	A5 - Not Suspected as a human carcinogen	A5 - Not an Alleged Carcinogen in Humans	A1 - Confirmed Human Carcinogen

Reproductive toxicity STOT - single exposure Contains a known or suspected reproductive toxin. No information available.

STOT - repeated exposure No information available.

Chronic toxicity Prolonged exposure may cause chronic effects. CNS and psychiatric effects, Parkinson-like symptoms. Languor, sleepiness and weakness in legs. A stolid masklike appearance of face, emotional disturbances such as uncontrollable laughter and spastic gait with tendency to fall in walking and findings in more advanced cases. Repeated contact may cause allergic reactions in very susceptible persons. Avoid repeated exposure. Repeated or prolonged skin contact may cause skin irritation and/or dermatitis and sensitization of susceptible persons. Repeated or prolonged exposure may cause central nervous system damage. Contains a known or suspected reproductive toxin. This product contains one or more substances which are classified by IARC as carcinogenic to humans (Group I), probably carcinogenic to humans (Group 2A) or possibly carcinogenic to humans (Group 2B).

Target organ effects blood, central nervous system (CNS), Central Vascular System (CVS), Eyes, kidney, liver, Lungs, Nasal Cavities, respiratory system, Skin.

Neurological effects Repeated or prolonged exposure may cause central nervous system damage. Prolonged or excessive exposure to manganese in dust or fume may cause irreversible central nervous system damage (Manganism). Symptoms resemble Parkinson's disease and include tremors, impaired speech, mask like face and impaired movement.

Aspiration hazard No information available.

Numerical measures of toxicity - Product Information

Unknown Aquatic Toxicity 37.65% of the mixture consists of ingredient(s) of unknown toxicity
The following values are calculated based on chapter 3.1 of the GHS document
ATEmix (oral) 508 mg/kg
ATEmix (dermal) 5 mg/kg
ATEmix (inhalation-gas) 10 mg/l

12. Ecological Information

This product contains a chemical which is listed as a marine pollutant according to DOT.

12.1. Ecotoxicity 96% of the mixture consists of components(s) of unknown hazards to the aquatic environment

Chemical name	Algae toxicity	Acute Fish toxicity	Toxicity to Microorganisms	Daphnia magna
Cobalt 7440-48-4	EC50 - 270ug/L	NOEC - 100 mg/L - Cobalt Powder	Not available	LOEC - 5.6 mg/L, LC50 > 100 mg/L
Chromium 7440-47-3	Data Waiving - Study Scientifically Unjustified	Data Waiving - Study Scientifically Unjustified	Not available	Data Waiving - Study Scientifically Unjustified
Molybdenum 7439-98-7	EC10 - 150 mg/L, NOEL - 169.9 ,h/L	LC50 - 609 mg/L	Not available	EC50 - 2847.5 mg/L
Nickel 7440-02-0	EC10 - 316.5 ug/L	LC50 - 15.3 mg/L	Not available	LC50 >200ug/L (@6-6.5 pH), 13ug/L (@8-8.5pH)
Iron 7439-89-6	NOEC - 1.4 mg/L	Data Waiving - Study Scientifically Unjustified	Not available	Data Waiving - Study Scientifically Unjustified
Silicon Metal 7440-21-3	Data Waiving - Study Scientifically Unjustified	Data Waiving - Other Justification	Not available	Data Waiving - Study Scientifically Unjustified
Manganese 7439-96-5	EC50 - 4.5 mg/L	NOEC - 3.6 mg/L	Not available	EC 50 > 1.6 mg/L
Tungsten 7440-33-7	Read Across - EC50 >17.7 mg/L	Read Across - NOEC > 9.8 mg/L	Not available	EC50 50 mg/L

12.2 Persistence and degradability Product/Substance is inorganic. not applicable.

Bioaccumulation/Accumulation No information available.

13. Disposal Considerations

Waste treatment methods It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste identification and disposal methods in compliance with applicable regulations. It must undergo special treatment, e.g. at suitable disposal site, to comply with local regulations.

Waste from residues/unused products Reuse or recycle Recover or recycle if possible Dispose of in accordance with local regulations

Contaminated packaging Empty containers should be taken to an approved waste handling site for recycling or disposal.

California Waste Status This product contains one or more substances that are listed with the State of California as a hazardous waste.

Chemical name	California Hazardous Waste Status
Cobalt - 7440-48-4	Toxic Ignitable

Chromium - 7440-47-3	Toxic Corrosive Ignitable
Molybdenum - 7439-98-7	Ignitable
Nickel - 7440-02-0	Toxic Ignitable
Manganese - 7439-96-5	Ignitable

14. Transport Information

DOT	Not regulated
Marine pollutant	This product contains a chemical which is listed as a marine pollutant according to DOT.
TDG	Not regulated
MEX	Not regulated
ICAO / IATA-DGR	Not regulated
IMO / IMDG	Not regulated

15. Regulatory Information

Chemical name	Bolivia - hazardous substances regulated under Bolivia's Environmental Regulations for the Industrial Manufacturing Sector
Cobalt - 7440-48-4	Present
Nickel - 7440-02-0	Present

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory
DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List

U.S. Federal Regulations

SARA 313 Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product does not contain any chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372

Chemical name	CAS-No	weight-%	SARA 313 - Threshold Values %
Cobalt - 7440-48-4	7440-48-4	> 50	Present
Chromium - 7440-47-3	7440-47-3	25 - 50	Present

SARA 311/312 Hazard Categories

Acute health hazard	yes
Chronic Health Hazard	yes
Fire Hazard	no
Sudden release of pressure hazard	no
Reactive Hazard	no

Clean Water Act

This product does not contain any substances regulated as pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42)

Chemical name	CWA - Reportable Quantities	CWA - Toxic Pollutants	CWA - Priority Pollutants	CWA - Hazardous Substances
Chromium - 7440-47-3	Not Applicable	Present	Present	Not Applicable
Nickel - 7440-02-0	Not Applicable	Present	Present	Not Applicable

CERCLA

This material, as supplied, does not contain any substances regulated as hazardous substances under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302) or the Superfund Amendments and Reauthorization Act (SARA) (40 CFR 355). There may be specific reporting requirements at the local, regional, or state level pertaining to releases of this material

Chemical name	Hazardous Substances RQs	Extremely Hazardous Substances RQs	RQ
Chromium - 7440-47-3	5000 lb final RQ (no reporting of releases of this hazardous substance is required if the diameter of the pieces of the solid metal released is >100 µm); 2270 kg final RQ (no reporting of releases of this hazardous substance is required if the diameter of the pieces of the solid metal released is >100 µm)		5000 lb final RQ (no reporting of releases of this hazardous substance is required if the diameter of the pieces of the solid metal released is >100 µm); 2270 kg final RQ (no reporting of releases of this hazardous substance is required if the diameter of the pieces of the solid metal released is >100 µm)
Nickel - 7440-02-0	100 lb final RQ (no reporting of releases of this hazardous substance is required if the diameter of the pieces of the solid metal released is >100 µm); 45.4 kg final RQ (no reporting of releases of this hazardous substance is required if the diameter of the pieces of the solid metal released is >100 µm)		100 lb final RQ (no reporting of releases of this hazardous substance is required if the diameter of the pieces of the solid metal released is >100 µm); 45.4 kg final RQ (no reporting of releases of this hazardous substance is required if the diameter of the pieces of the solid metal released is >100 µm)

U.S. State Regulations

California Proposition 65

This product does not contain any Proposition 65 chemicals

U.S. State Right-to-Know Regulations

Chemical name	New Jersey	Massachusetts	Pennsylvania
Cobalt - 7440-48-4	sn 0520	Present	Environmental hazard (fume) Present
Chromium - 7440-47-3	sn 0432	Carcinogen; Extraordinarily hazardous	Environmental hazard; Special hazardous substance Present
Molybdenum - 7439-98-7	sn 1309	Present	Present
Nickel - 7440-02-0	sn 1341 (dust and fume)	Carcinogen; Extraordinarily hazardous	Environmental hazard; Special hazardous substance Present
Silicon Metal - 7440-21-3	sn 3125 (powder)	Present (dust, exempt when encapsulated or if particulates are not present and cannot be substantially generated through use of the product)	Present
Manganese - 7439-96-5	sn 1155 (dust and fume)	Present	Environmental hazard Present
Tungsten - 7440-33-7	sn 1959	Present	Present

U.S. EPA Label information

CANADA

Chemical name	WHMIS Classifications of Components
Cobalt - 7440-48-4	D2A, D2B
Chromium - 7440-47-3	Uncontrolled product according to WHMIS classification criteria
Molybdenum - 7439-98-7	Uncontrolled product according to WHMIS classification criteria
Nickel - 7440-02-0	D2A, D2B; B6, D2A (Raney)
Iron - 7439-89-6	Uncontrolled product according to WHMIS classification criteria
Silicon Metal - 7440-21-3	B4
Manganese - 7439-96-5	D2A (including powder)
Carbon - 7440-44-0	Uncontrolled product according to WHMIS classification criteria
Tungsten - 7440-33-7	Uncontrolled product according to WHMIS classification criteria

Chemical name	Bolivia - hazardous substances regulated under Bolivia's Environmental Regulations for the Industrial Manufacturing Sector
Cobalt - 7440-48-4	Present
Nickel - 7440-02-0	Present

16. Other Information

<u>NFPA</u>	Health hazard 2	Flammability 0	Instability 0	Physical and Chemical Hazards -
<u>HMIS</u>	Health hazard 2	Flammability 0	Physical hazards 0	Personal precautions -

Issuing Date 28-Nov-2013

Revision Date 11-Dec-2013

Revision Note No information available

Disclaimer

Kennametal urges each customer or recipient of this SDS to study it carefully and consult appropriate expertise, as necessary or appropriate, to become aware of and understand the data contained in this SDS and any hazards associated with the product. The information herein is provided in good faith and believed to be accurate as of the effective date shown above. However, no warranty, express or implied, is given. Regulatory requirements are subject to change and may differ between various locations. It is the buyer's/user's responsibility to ensure that his activities comply with all federal, state, provincial or local laws. The information presented here pertains only to the product as shipped. Since conditions for use of the product are not under the control of the manufacturer, it is the buyer's/user's duty to determine the conditions necessary for the safe use of this product. Due to the proliferation of sources for information such as manufacturer-specific SDSs, we are not and cannot be responsible for SDS's obtained from any source other than ourselves. If you have obtained an SDS from another source or if you are not sure that the SDS you have is current, please contact us for the most current version.

End of Safety Data Sheet