Safety Data Sheet

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

1.1 Product identifier

Product Name • **Nickel Alloy Castings**

Chemical Category • Nickel Compounds

1.2 Current & Past Alloy in this Category:

(Alloys are listed by product code. Please contact your Cannon Sales Representative if you have questions regarding your particular material.)

116	CW2M	IN 738LC	PW A 1440
117	GMR 235	IN 792	PW A 1480
2316	GTD 111	IN 939	PW A 1483
Airesist 319	GTD 111M	Lewmet 25	PW A 1484
Alloy 80	GTD 222	Lewmet 33	PW A 1487
Alloy 90	GTD 4444	Lewmet 44	Rene 104
AM 1	HAST B	Lewmet 66	Rene 108
AM 3	HAST C	MAR M 002	Rene 125
B 1900	HAST C22	MAR M 004	Rene 142
B 1914	HAST D	MAR M 200+Hf	Rene 220
B 1900	HAST G	MAR M 246	Rene 220 CH22
C 1023	HAST S	MAR M 247	Rene 41
C 263	HAST X	MAR M 421	Rene 77
CM 186 LC®	IN 100	Ni 230	Rene 80
CM 247 LC®	IN 600	Ni R	Rene 88 (W-2)
CM 681®	IN 601	Ni C	Rene 88 DT
CM 939 Weldable®	IN 610	Ni CU (Monel)	Rene 95
CM186LC®	IN 611	Ni X	Rene N4
CMSX-2®	IN 6203	Nimocast 80	Rene N5
CMSX-3®	IN 625	PE 10	Rene N6
CMSX-4®	IN 690	PW A 1400	Rene 142
CMSX-4® Plus	IN 713	PW A 1422	RR 2000
CMSX-6®	IN 713C	PW A 1426	Rene N 500
CMSX-10®	IN 713LC	PW A 1430	SC18
CMSX-11®	IN 718	PW A 1431	TMS 82
CMSX-486®	IN 738	PW A 1432	U 500
CNK7P	IN 738C	PW A 1436	Udimet 500
CW 12MW		PW A 1437	Waspaloy

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

Relevant identified use(s) • Investment Casting

1.4 Details of the supplier of the safety data sheet

Manufacturer • Cannon-Muskegon Corporation

2875 Lincoln St.
Muskegon, MI 49441-3313
United States
Tel: (+1) 231 759 2820
Fax: (+1) 231 759 4975

1.4 Emergency telephone number

CHEMTREC • (800) 424-9300

Section 2: Hazards Identification

EU/EEC

According to: Regulation (EC) No 1272/2008 (CLP)/REACH 1907/2006 [amended by 453/2010]
According to: EU Directive 67/548/EEC (DSD) or 1999/45/EC (DPD)

REACH Registration Reference #:

Aluminium	01-2119529243-45-0259
Chromium	01-2119485652-31-0076
Cobalt	01-2119517392-44-0035
Copper	01-2119480154-42-0157
Hafnium	01-2119967822-27-0002
Iron	01-2119462838-24-0343
Manganese	01-2119449803-34-0166
Molybdenum	01-2119472304-43-0064
Nickel	01-2119438727-29-0102
Niobium	01-2119489003-42-0033
Rhenium	01-2120006550-73-0002
Silicon	01-2119480401-47-0219
Tantalum	01-2119974241-40-0007
Titanium	01-2119484878-14-0080
Tungsten	01-2119488910-30-0041

2.1 Classification of the substance or mixture

CLP

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

Skin Irritation 2 - H315
Skin Sensitization 1 - H317
Eye Irritation 2 - H319
Specific Target Organ Toxicity Single Exposure 3: Respiratory Tract Irritation - H335
Carcinogenicity 2 - H351
Reproductive Toxicity 2 - H361
Specific Target Organ Toxicity Repeated Exposure 1 - H372

DSD/DPD

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

Toxic (T)
Irritant (Xi)
Carcinogenic Substances - Category 3
Substances Toxic To Reproduction - Category 3
R36/37/38, R40, R42/43, R48/23, R63

2.2 Label Elements

CLP

DANGER

Hazard statements

- H319 - Causes serious eye irritation

H315 - Causes skin irritation

H317 - May cause an allergic skin reaction
H335 - May cause respiratory irritation
H351 - Suspected of causing cancer.
H361 - Suspected of damaging fertility or the unborn child.
H372 - Causes damage to organs through prolonged or repeated exposure.

Precautionary statements

Prevention

- P201 - Obtain special instructions before use.
  P202 - Do not handle until all safety precautions have been read and understood.
  P260 - Do not breathe dust.
  P264 - Wash thoroughly after handling.
  P270 - Do not eat, drink or smoke when using this product.
  P271 - Use only outdoors or in a well-ventilated area.
  P281 - Use personal protective equipment as required.

Response

- P304+P340 - IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
  P312 - Call a POISON CENTER or doctor/physician if you feel unwell.
  P302+P352 - IF ON SKIN: Wash with plenty of soap and water.
  P362 - Take off contaminated clothing and wash before reuse.
  P321 - Specific treatment, see supplemental first aid information.
  P333+P313 - If skin irritation or rash occurs: Get medical advice/attention.
  P305+P351+P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
  P337+P313 - If eye irritation persists: Get medical advice/attention.
  P308+P313 - IF exposed or concerned: Get medical advice/attention.

Storage/Disposal

- P403+P233 - Store in a well-ventilated place. Keep container tightly closed.
  P405 - Store locked up.
  P501 - Dispose of content and/or container in accordance with local, regional, national, and/or international regulations.

DSD/DPD

Risk phrases

- R36/37/38 - Irritating to eyes, respiratory system and skin.
  R40 - Limited evidence of a carcinogenic effect.
  R42/43 - May cause sensitization by inhalation and skin contact.
  R48/23 - Toxic: danger of serious damage to health by prolonged exposure through inhalation.
  R63 - Possible risk of harm to the unborn child.

Safety phrases

- S26 - In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
  S36 - Wear suitable protective clothing.
  S37 - Wear suitable gloves.
  S45 - In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).
  S53 - Avoid exposure - obtain special instructions before use.

2.3 Other Hazards

CLP

- 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.
  According to Regulation (EC) No. 1272/2008 (CLP) this material is considered hazardous.

DSD/DPD

- 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.
  According to European Directive 1999/45/EC this material is considered dangerous.

United States (US)
According to: OSHA 29 CFR 1910.1200 HCS

2.1 Classification of the substance or mixture

OSHA HCS 2012

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

Skin Irritation 2
Skin Sensitization 1
Eye Irritation 2
Respiratory Sensitization 1
Specific Target Organ Toxicity Single Exposure 3: Respiratory Tract Irritation
Carcinogenicity 2
Reproductive Toxicity 2
Specific Target Organ Toxicity Repeated Exposure 2
Hazards Not Otherwise Classified - Health Hazards - Metal Fume Fever

2.2 Label elements

OSHA HCS 2012

DANGER

Hazard statements

- Causes skin irritation
- May cause an allergic skin reaction
- Causes serious eye irritation
- May cause allergy or asthma symptoms or breathing difficulties if inhaled
- May cause respiratory irritation
- Suspected of causing cancer.
- Suspected of damaging fertility or the unborn child.
- May cause damage to organs through prolonged or repeated exposure.

Precautionary statements

Prevention

- Obtain special instructions before use.
- Do not handle until all safety precautions have been read and understood.
- Do not breathe dust.
- Wash thoroughly after handling.
- Use only outdoors or in a well-ventilated area.
- Wear protective gloves, clothing, and eye/face protection.
- In case of inadequate ventilation wear respiratory protection.

Response

- IF INHALED: If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing.
- If experiencing respiratory symptoms: Call a POISON CENTER or doctor/physician.
- If on skin: Wash with plenty of water.
- Take off contaminated clothing and wash before reuse.
- Specific treatment, see supplemental first aid information.
- If skin irritation or rash occurs: Get medical advice/attention.
- 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.
- IF exposed or concerned: Get medical advice/attention.

Storage/Disposal

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

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

2.3 Other hazards

OSHA HCS 2012

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

Section 3 - Composition/Information on Ingredients

3.1 Substances

- Material does not meet the criteria of a substance.

3.2 Mixtures

Composition					
Chemical Name	**Identifiers**	**%**	**LD50/LC50**	**Classifications According to Regulation/Directive**	**Comments**
Nickel	**CAS:**7440-02-0 **EC Number:**231-111-4	0% TO 93.6%	NDA	**EU DSD/DPD:** Annex VI, Table 3.2: Carc. Cat. 3; R40 T; R48/23, R43 **EU CLP:** Annex VI, Table 3.1: Carc. 2, H351; STOT RE 1, H372: Skin Sens. 1, H317 **OSHA HCS 2012:** Carc. 2; Skin Sens. 1A; Resp. Sens. 1A; STOT RE 2 (Lungs)	NDA
Chromium	**CAS:**7440-47-3 **EINECS:**231-157-5	4% TO 23%	NDA	**EU DSD/DPD:** Xi; R37 **EU CLP:** STOT SE 3: Resp. Irrit., H335 **OSHA HCS 2012:** STOT SE 3: Resp. Irrit.	NDA
Iron	**CAS:**7439-89-6 **EC Number:**215-168-2	0% TO 18%	Ingestion/Oral-Rat LD50 • 750 mg/kg	**EU DSD/DPD:** Xn; R22; R53 **EU CLP:** Acute Tox. 4, H302; Aquatic Chronic 4, H413 **OSHA HCS 2012:** Acute Tox. 4 (orl)	NDA
Cobalt	**CAS:**7440-48-4 **EC Number:**231-158-0 **EU Index:**027-001-00-9	2% TO 15%	Ingestion/Oral-Rat LD50 • 6171 mg/kg	**EU DSD/DPD:** Annex VI, Table 3.2: R42/43; R53 **EU CLP:** Annex VI, Table 3.1: Resp. Sens. 1, H334; Skin Sens. 1, H317; Aquatic Chronic 4, H413 **OSHA HCS 2012:** Resp. Sens. 1; Skin Sens. 1; Carc. 2	NDA
Tungsten	**CAS:**7440-33-7 **EC Number:**231-143-9	0% TO 12%	NDA	**EU DSD/DPD:** Xi; R36/38 **EU CLP:** Skin Irrit. 2, H319; Eye Irrit. 2, H315 **OSHA HCS 2012:** Skin Irrit. 2; Eye Irrit. 2	NDA
Tantalum	**CAS:**7440-25-7 **EC Number:**231-135-5	0% TO 12%	NDA	**EU DSD/DPD:** Not Classified **EU CLP:** Not Classified **OSHA HCS 2012:** Not Classified	NDA
Molybdenum	**CAS:**7439-98-7 **EC Number:**231-107-2	0% TO 10%	NDA	**EU DSD/DPD:** Xi; R36/37/38 **EU CLP:** Skin Irrit. 2, H319; Eye Irrit. 2, H315; STOT SE 3: Resp. Irrit., H335 **OSHA HCS 2012:** Skin Irrit. 2; Eye Irrit. 2; STOT SE 3: Resp. Irrit.	NDA
Titanium	**CAS:**7440-32-6 **EINECS:**231-142-3	0% TO 6%	NDA	**EU DSD/DPD:** Repr. Cat. 3; R63 **EU CLP:** Repr. 2, H361 **OSHA HCS 2012:** Repr. 2	NDA
Rhenium	**CAS:**7440-15-5 **EINECS:**231-124-5	0% TO 6%	NDA	**EU DSD/DPD:** Not Classified **EU CLP:** Not Classified **OSHA HCS 2012:** Not Classified	NDA
Niobium	**CAS:**7440-03-1 **EC Number:**231-113-5	0% TO 5%	NDA	**EU DSD/DPD:** Not Classified **EU CLP:** Not Classified **OSHA HCS 2012:** Not Classified	NDA
Hafnium	**CAS:**7440-58-6 **EINECS:**231-166-4	0% TO 2.5%	NDA	**EU DSD/DPD:** Not Classified **EU CLP:** Not Classified **OSHA HCS 2012:** Not Classified	NDA
Vanadium	**CAS:**7440-62-2 **EC Number:**231-171-1	0% TO 1%	NDA	**EU DSD/DPD:** Xi; R38 **EU CLP:** Skin Irrit. 2, H319 **OSHA HCS 2012:** Skin Irrit. 2	NDA
Manganese	**CAS:**7439-96-5 **EC Number:**231-105-1	< 0.4%	Ingestion/Oral-Rat LD50 • 9 g/kg	**EU DSD/DPD:** T; R48/20 **EU CLP:** STOT RE 1 (CNS), H372 **OSHA HCS 2012:** Eye Irrit. 2B; STOT RE 1 (CNS)	NDA

Copper	**CAS:**7440-50-8 **EC Number:**231-159-6	< 0.1%	NDA	**EU CLP:** Community workplace exposure limit **OSHA HCS 2012:** Exposure limits	NDA

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

Section 4 - First Aid Measures

4.1 Description of first aid measures

Inhalation
- Move victim to fresh air. Give artificial respiration if victim is not breathing. Administer oxygen if breathing is difficult. If signs/symptoms continue, get medical attention.

Skin
- In case of contact with substance, immediately flush skin with running water for at least 20 minutes. If skin irritation occurs: Get medical advice/attention.

Eye
- In case of contact with substance, immediately flush eyes with running water for at least 20 minutes. If eye irritation persists: Get medical advice/attention.

Ingestion
- Rinse mouth. Do not give anything by mouth to an unconscious person. Get medical attention if symptoms occur.

4.2 Most important symptoms and effects, both acute and delayed

- Refer to Section 11 - Toxicological Information.

4.3 Indication of any immediate medical attention and special treatment needed

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

Section 5 - Firefighting Measures

5.1 Extinguishing media

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

Unsuitable Extinguishing Media
- Do not use water.

5.2 Special hazards arising from the substance or mixture

Unusual Fire and Explosion Hazards
- Solid, massive form of material is not combustible.
  Fire and explosion hazards are moderate when material is in the form of dust and exposed to heat or flames, or by chemical reaction.

Hazardous Combustion Products
- No data available

5.3 Advice for firefighters

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

Section 6 - Accidental Release Measures

6.1 Personal precautions, protective equipment and emergency procedures

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

Emergency Procedures
- Use normal clean up procedures.

6.2 Environmental precautions

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

6.3 Methods and material for containment and cleaning up

Containment/Clean-up Measures

- Carefully shovel or sweep up spilled material and place in suitable container. Residues should be evaluated for metal leachability and consignable waste standards. Do not use compressed air for cleanup.

6.4 Reference to other sections

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

Section 7 - Handling and Storage

7.1 Precautions for safe handling

Handling

- Use only with adequate ventilation. Minimize dust generation and accumulation. Routine housekeeping should be instituted to ensure that dusts do not accumulate on surfaces. Wear appropriate personal protective equipment, avoid direct contact. Do not breathe dust or fumes. Avoid contact with skin, eyes or clothing. Wash thoroughly with soap and water after handling and before eating, drinking, or using tobacco.

7.2 Conditions for safe storage, including any incompatibilities

Storage

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

7.3 Specific end use(s)

- Refer to Section 1.2 - Relevant identified uses.

Section 8 - Exposure Controls/Personal Protection

8.1 Control parameters

Exposure Limits/Guidelines						
	Result	**ACGIH**	**Canada Ontario**	**Canada Quebec**	**China**	**Europe**
Tantalum (7440-25-7)	STELs	Not established	Not established	Not established	12.5 mg/m3 STEL	Not established
	TWAs	Not established	Not established	5 mg/m3 TWAEV (dust)	5 mg/m3 TWA	Not established
Molybdenum (7439-98-7)	STELs	Not established	Not established	Not established	15 mg/m3 STEL	Not established
	TWAs	10 mg/m3 TWA (inhalable fraction); 3 mg/m3 TWA (reparable fraction)	10 mg/m3 TWA (metal, inhalable); 3 mg/m3 TWA (metal, reparable)	Not established	6 mg/m3 TWA	Not established
Nickel (7440-02-0)	STELs	Not established	Not established	Not established	2.5 mg/m3 STEL	Not established
	TWAs	1.5 mg/m3 TWA (inhalable fraction)	1 mg/m3 TWA (inhalable)	1 mg/m3 TWAEV	1 mg/m3 TWA	Not established
Tungsten (7440-33-7)	STELs	10 mg/m3 STEL	10 mg/m3 STEL	Not established	10 mg/m3 STEL	Not established
	TWAs	5 mg/m3 TWA	5 mg/m3 TWA	Not established	5 mg/m3 TWA	Not established
Hafnium (7440-58-6)	TWAs	0.5 mg/m3 TWA	0.5 mg/m3 TWA	0.5 mg/m3 TWAEV	Not established	Not established
Iron (7439-89-6)	TWAs	5 mg/m3 TWA (reparable fraction)	5 mg/m3 TWA (reparable)	5 mg/m3 TWAEV (dust and fume, as Fe); 10 mg/m3 TWAEV (containing no Asbestos and <1% Crystalline silica, regulated	Not established	Not established

				under Rouge, total dust)		
Copper (7440-50-8)	STELs	Not established	Not established	Not established	2.5 mg/m3 STEL (dust); 0.6 mg/m3 STEL (fume)	Not established
	TWAs	0.2 mg/m3 TWA (fume)	0.2 mg/m3 TWA (fume); 1 mg/m3 TWA (dust and mist)	0.2 mg/m3 TWAEV (fume); 1 mg/m3 TWAEV (dust and mist)	1 mg/m3 TWA (dust); 0.2 mg/m3 TWA (fume)	Not established
Manganese (7439-96-5)	STELs	Not established	Not established	3 mg/m3 STEV (fume)	0.45 mg/m3 STEL	Not established
	TWAs	0.02 mg/m3 TWA (reparable fraction); 0.1 mg/m3 TWA (inhalable fraction)	0.2 mg/m3 TWA	5 mg/m3 TWAEV (dust); 1 mg/m3 TWAEV (fume)	0.15 mg/m3 TWA	Not established
Cobalt (7440-48-4)	STELs	Not established	Not established	Not established	0.1 mg/m3 STEL	Not established
	TWAs	0.02 mg/m3 TWA	0.02 mg/m3 TWA	0.02 mg/m3 TWAEV	0.05 mg/m3 TWA	Not established
Chromium (7440-47-3)	TWAs	0.5 mg/m3 TWA	0.5 mg/m3 TWA	0.5 mg/m3 TWAEV	0.05 mg/m3 TWA	2 mg/m3 TWA
	STELs	Not established	Not established	Not established	0.15 mg/m3 STEL	Not established

Exposure Limits/Guidelines (Con't.)

	Result	Germany DFG	Germany TRGS	NIOSH	OSHA
Tantalum (7440-25-7)	TWAs	Not established	Not established	5 mg/m3 TWA (dust)	5 mg/m3 TWA
	STELs	Not established	Not established	10 mg/m3 STEL (dust)	Not established
	MAKs	4 mg/m3 TWA MAK (inhalable fraction); 1.5 mg/m3 TWA MAK (reparable fraction)	Not established	Not established	Not established
Nickel (7440-02-0)	TWAs	Not established	Not established	0.015 mg/m3 TWA	1 mg/m3 TWA
Tungsten (7440-33-7)	STELs	Not established	Not established	10 mg/m3 STEL	Not established
	TWAs	Not established	Not established	5 mg/m3 TWA	Not established
Hafnium (7440-58-6)	TWAs	Not established	Not established	0.5 mg/m3 TWA	0.5 mg/m3 TWA
Iron (7439-89-6)	TWAs	Not established	Not established	5 mg/m3 TWA (dust and fume, as Fe)	10 mg/m3 TWA (fume); 15 mg/m3 TWA (total dust, listed under Rouge); 5 mg/m3 TWA (reparable fraction, listed under Rouge)
Vanadium (7440-62-2)	Ceilings	Not established	Not established	0.05 mg/m3 Ceiling (except Vanadium metal and Vanadium carbide, dust and fume, as V, 15 min) *as Vanadium compounds*	0.5 mg/m3 Ceiling (reparable dust, as V2O5); 0.1 mg/m3 Ceiling (fume, as V2O5)
	STELs	Not established	Not established	3 mg/m3 STEL (listed under Ferrovanadium dust)	Not established
	TWAs	Not established	Not established	1 mg/m3 TWA (listed under Ferrovanadium dust)	Not established
Copper (7440-50-8)	TWAs	Not established	Not established	1 mg/m3 TWA (dust and mist); 0.1 mg/m3 TWA (fume)	0.1 mg/m3 TWA (fume); 1 mg/m3 TWA (dust and mist)

	Ceilings	0.2 mg/m3 Peak (inhalable fraction)	Not established	Not established	Not established
	MAKs	0.1 mg/m3 TWA MAK (inhalable fraction)	Not established	Not established	Not established
Manganese (7439-96-5)	Ceilings	1.6 mg/m3 Peak (Ceiling factor 1 for Permanganates, inhalable fraction); 0.16 mg/m3 Peak (Ceiling factor 1 for Permanganates, reparable fraction)	Not established	Not established	5 mg/m3 Ceiling (fume)
	STELs	Not established	Not established	3 mg/m3 STEL	Not established
	TWAs	Not established	0.5 mg/m3 TWA AGW (The risk of damage to the embryo or fetus can be excluded when AGW and BGW values are observed, inhalable fraction)	1 mg/m3 TWA (fume)	Not established
	MAKs	0.2 mg/m3 TWA MAK (inhalable fraction); 0.02 mg/m3 TWA MAK (reparable fraction)	Not established	Not established	Not established
Cobalt (7440-48-4)	TWAs	Not established	Not established	0.05 mg/m3 TWA (dust and fume)	0.1 mg/m3 TWA (dust and fume)
Chromium as Chromium (VI) compounds	TWAs	Not established	2 mg/m3 TWA AGW (inhalable fraction, exposure factor 1)	0.5 mg/m3 TWA	1 mg/m3 TWA

Exposure Control Notations

Canada Quebec

•Cobalt (7440-48-4): **Carcinogens:** (C3 carcinogen - effect detected in animals)

ACGIH

•Nickel (7440-02-0): **Carcinogens:** (A5 - Not Suspected as a Human Carcinogen)

•Cobalt (7440-48-4): **Carcinogens:** (A3 - Confirmed Animal Carcinogen with Unknown Relevance to Humans)

•Manganese (7439-96-5): **Carcinogens:** (A4 - Not Classifiable as a Human Carcinogen)

•Iron (7439-89-6): **Carcinogens:** (A4 - Not Classifiable as a Human Carcinogen)

•Chromium (7440-47-3): **Carcinogens:** (A4 - Not Classifiable as a Human Carcinogen)

Germany TRGS

•Cobalt (7440-48-4): **Carcinogens:** (Category 3 (bioavailable, as inhalable dust/aerosol, except hard metals, cobalt containing spinels and organic cobalt desiccants)) | **Developmental Toxins:** (Based on current data, this substance cannot be classified in categories 1-3 (bioavailable, as inhalable dust/aerosol, except hard metals, cobalt containing spinels and organic cobalt desiccants)) | **Reproductive Toxins:** (Based on current data, this substance cannot be classified in categories 1-3 (bioavailable, as inhalable dust/aerosol, except hard metals, cobalt containing spinels and organic cobalt desiccants)) | **Germ Cell Mutagens:** (Based on current data, this substance cannot be classified in categories 1-3 (bioavailable, as inhalable dust/aerosol, except hard metals, cobalt containing spinels and organic cobalt desiccants))

Germany DFG

•Nickel Alloy Castings as Nickel Compounds: **Carcinogens:** (Category 1 (causes cancer in man)) | **Sensitizers:** (respiratory and skin sensitizer (inhalable fraction, respiratory sensitization confirmed for water soluble Nickel compounds only))

•Nickel (7440-02-0): **Carcinogens:** (Category 1 (causes cancer in man)) | **Sensitizers:** (respiratory and skin sensitizer (inhalable fraction, respiratory sensitization confirmed for water soluble Nickel compounds only))

•Nickel as Nickel Compounds: **Carcinogens:** (Category 1 (causes cancer in man)) | **Sensitizers:** (respiratory and skin sensitizer (inhalable fraction, respiratory sensitization confirmed for water soluble Nickel compounds only))

•Cobalt (7440-48-4): **Carcinogens:** (Category 2 (considered to be carcinogenic for man)) | **Sensitizers:** (respiratory and skin sensitizer) | **Skin:** (skin notation)

•Copper (7440-50-8): **Pregnancy:** (no risk to embryo/fetus if exposure limits adhered to)

•Manganese (7439-96-5): **Pregnancy:** (no risk to embryo/fetus if exposure limits adhered to (inhalable fraction, reparable fraction))

•Iron (7439-89-6): **Carcinogens:** (Category 3B (could be carcinogenic for man, with the exception of non-bioavailable ferrous oxides))

•Tantalum (7440-25-7): **Pregnancy:** (no risk to embryo/fetus if exposure limits adhered to (inhalable fraction); no risk to embryo/fetus if exposure limits adhered to (reparable fraction))

•Vanadium (7440-62-2): **Carcinogens:** (Category 2 (considered to be carcinogenic for man))

•Chromium as Chromium (VI) compounds: **Carcinogens:** (Category 1 (causes cancer in man, inhalable fraction)) | **Sensitizers:** (skin sensitizer (inhalable

fraction, except Lead chromate and Barium chromate)) | **Skin:** (skin notation (inhalable fraction, except Lead chromate and Barium chromate and Strontium chromate and Zinc chromate))

Exposure Limits Supplemental

ACGIH

- Nickel (7440-02-0): **TLV Basis - Critical Effects:** (dermatitis; pneumoconiosis)
- Cobalt (7440-48-4): **BEIs:** (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)) | **TLV Basis - Critical Effects:** (asthma; myocardial effects; pulmonary function)
- Copper (7440-50-8): **TLV Basis - Critical Effects:** (metal fume fever (fume))
- Copper as Copper Compounds: **TLV Basis - Critical Effects:** (gastrointestinal (dust and mist); irritation (dust and mist))
- Manganese (7439-96-5): **TLV Basis - Critical Effects:** (CNS impairment)
- Iron (7439-89-6): **TLV Basis - Critical Effects:** (pneumoconiosis)
- Tungsten (7440-33-7): **TLV Basis - Critical Effects:** (lower respiratory tract irritation)
- Hafnium (7440-58-6): **TLV Basis - Critical Effects:** (eye and upper respiratory tract irritation; liver damage)
- Chromium (7440-47-3): **TLV Basis - Critical Effects:** (skin and upper respiratory tract irritation)

8.2 Exposure controls

Engineering Measures/Controls

- Good general ventilation should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. Ensure that dust handling systems (such as exhaust ducts, dust collectors, vessels and processing equipment) are designed in a manner to prevent the escape of dust into the work area (i.e., there is not leakage from the equipment).

Personal Protective Equipment

Respiratory

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

Eye/Face

- Wear safety goggles.

Hands

- Wear appropriate gloves.

Skin/Body

- Wear long sleeves and/or protective coveralls.

Environmental Exposure Controls

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

Key to abbreviations

ACGIH = American Conference of Governmental Industrial Hygiene
BEI = Biological Exposure Indices
MAK = Maximale Arbeitsplatz Konzentration is the maximum permissible concentration
NIOSH = National Institute of Occupational Safety and Health
OSHA = Occupational Safety and Health Administration
STEL = Short Term Exposure Limits are based on 15-minute exposures
STEV = Short Term Exposure Value
TLV = Threshold Limit Value determined by the American Conference of Governmental Industrial Hygienists (ACGIH)
TWA = Time-Weighted Averages are based on 8h/day, 40h/week exposures
TWAEV = Time-Weighted Average Exposure Value

Section 9 - Physical and Chemical Properties

9.1 Information on Physical and Chemical Properties

Material Description			
Physical Form	Solid	Appearance/Description	Soild alloy and metallic castings.
Color	Metallic	Odor	Data lacking
Odor Threshold	Data lacking		
General Properties			
Boiling Point	2800 C(5072 F)	Melting Point	1452 C(2645.6 F)
Decomposition Temperature	Data lacking	pH	Data lacking
Specific Gravity/Relative Density	7.7 to 9.2	Water Solubility	Insoluble
Viscosity	Data lacking	Explosive Properties	Data lacking

Oxidizing Properties:	Data lacking		
Volatility			
Vapor Pressure	Data lacking	Vapor Density	Data lacking
Evaporation Rate	Data lacking		
Flammability			
Flash Point	Data lacking	UEL	Data lacking
LEL	Data lacking	Autoignition	930 C(1706 F)
Flammability (solid, gas)	Data lacking		
Environmental			
Octanol/Water Partition coefficient	Data lacking		

9.2 Other Information

- No additional physical and chemical parameters noted.

Section 10: Stability and Reactivity

10.1 Reactivity

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

10.2 Chemical stability

- Stable under normal temperatures and pressures.

10.3 Possibility of hazardous reactions

- Hazardous polymerization will not occur.

10.4 Conditions to avoid

- Avoid generating dust.

10.5 Incompatible materials

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

10.6 Hazardous decomposition products

- No data available

Section 11 - Toxicological Information

11.1 Information on toxicological effects

Components		
Cobalt (2% TO 15%)	7440-48-4	**Acute Toxicity:** Ingestion/Oral-Rat LD50 • 6171 mg/kg; *Behavioral*:**Somnolence (general depressed activity)**; *Behavioral*:**Ataxia**; *Gastrointestinal*:**Hypermotility, diarrhea**; **Multi-dose Toxicity:** Inhalation-Rat TCLo • 2 mg/m³ 4 Day(s)-Intermittent; *Lungs, Thorax, or Respiration*:**Fibrosing alveolitis**
Manganese (< 0.4%)	7439-96-5	**Acute Toxicity:** Ingestion/Oral-Rat LD50 • 9 g/kg; **Irritation:** Eye-Rabbit • 500 mg 24 Hour(s) • Mild irritation; Skin-Rabbit • 500 mg 24 Hour(s) • Mild irritation; **Reproductive:** Ingestion/Oral-Rat TDLo • 90 mg/kg (18D post); *Reproductive Effects:Effects on Newborn*:**Growth statistics (e.g., reduced weight gain)**; *Reproductive Effects:Effects on Newborn*:**Biochemical and metabolic**; *Reproductive Effects:Effects on Newborn*:**Other postnatal measures or effects**
Molybdenum (0% TO 10%)	7439-98-7	**Reproductive:** Ingestion/Oral-Rat TDLo • 5800 µg/kg (30W pre/1-20D preg); *Reproductive Effects:Specific Developmental Abnormalities*:**Musculoskeletal system**
Iron (0% TO 18%)	7439-89-6	**Acute Toxicity:** Inhalation-Rat TCLo • 50 mg/m³ 60 Hour(s); *Behavioral*:**Excitement**; *Behavioral*:**Fluid intake**; *Gastrointestinal*:**Hypermotility, diarrhea**; Inhalation-Rat TCLo • 0.8 mg/kg; *Lungs, Thorax, or Respiration*:**Emphysema**; *Biochemical:Enzyme inhibition, induction, or change in blood or tissue levels*:**Multiple enzyme effects**; *Biochemical:Metabolism (intermediary)*:**Effect on inflammation or mediation of inflammation**; **Multi-dose Toxicity:** Inhalation-Rat TCLo • 500 µg/m³ 24 Hour(s) 61 Day(s)-Continuous; *Brain and Coverings*:**Other degenerative changes**; *Blood*:**Changes in serum composition (e.g., TP, bilirubin cholesterol)**; *Biochemical:Enzyme inhibition, induction, or change in blood or tissue levels*:**True cholinesterase**
Titanium (0% TO 6%)	7440-32-6	**Reproductive:** Ingestion/Oral-Rat TDLo • 158 mg/kg (multigeneration); *Reproductive Effects:Effects on Embryo or Fetus*:**Fetotoxicity (except death, e.g., stunted fetus)**; *Reproductive Effects:Effects on Embryo or Fetus*:**Fetal death**

GHS Properties	Classification
Acute toxicity	**EU/CLP**•Data lacking **OSHA HCS 2012**•Data lacking
Aspiration Hazard	**EU/CLP**•Data lacking **OSHA HCS 2012**•Data lacking
Carcinogenicity	**EU/CLP**•Carcinogenicity 2 **OSHA HCS 2012**•Carcinogenicity 2
Germ Cell Mutagenicity	**EU/CLP**•Data lacking **OSHA HCS 2012**•Data lacking
Skin corrosion/Irritation	**EU/CLP**•Skin Irritation 2 **OSHA HCS 2012**•Skin Irritation 2
Skin sensitization	**EU/CLP**•Skin Sensitizer 1 **OSHA HCS 2012**•Skin Sensitizer 1
STOT-RE	**EU/CLP**•Specific Target Organ Toxicity Repeated Exposure 1 **OSHA HCS 2012**•Specific Target Organ Toxicity Repeated Exposure 2
STOT-SE	**EU/CLP**•Specific Target Organ Toxicity Single Exposure 3: Respiratory Tract Irritation **OSHA HCS 2012**•Specific Target Organ Toxicity Single Exposure 3: Respiratory Tract Irritation
Toxicity for Reproduction	**EU/CLP**•Toxic to Reproduction 2 **OSHA HCS 2012**•Toxic to Reproduction 2
Respiratory sensitization	**EU/CLP**•Data lacking **OSHA HCS 2012**•Respiratory Sensitizer 1
Serious eye damage/Irritation	**EU/CLP**•Eye Irritation 2 **OSHA HCS 2012**•Eye Irritation 2

Potential Health Effects

Inhalation

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

Chronic (Delayed)
- Longterm inhalation exposure to metallic nickel caused mucosal damage and inflammatory reaction, sometimes accompanied by slight fibrosis, was observed in rabbits after high level exposure to nickel graphite dust. May cause allergy or asthma symptoms or breathing difficulties if inhaled.

Skin

Acute (Immediate)
- Causes skin irritation. Exposure to dust may cause mechanical irritation. May cause skin sensitization. Symptoms include redness, and skin rash.

Chronic (Delayed)
- No data available.

Eye

Acute (Immediate)
- Causes serious eye irritation. Excessive concentrations of nuisance dust in the workplace may reduce visibility and may cause unpleasant deposits in eyes.

Chronic (Delayed)
- No data available.

Ingestion

Acute (Immediate)
- Excessive concentrations of nuisance dust in the workplace may cause mechanical irritation to mucous membranes.

Chronic (Delayed)
- No data available.

Carcinogenic Effects • Repeated and prolonged exposure may cause cancer.

Carcinogenic Effects			
	CAS	IARC	NTP
Nickel	7440-02-0	Group 2B-Possible Carcinogen	Reasonably Anticipated to be Human Carcinogen
Cobalt	7440-48-4	Group 2B-Possible Carcinogen	Not Listed

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

11.2 Other information

- 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.

Key to abbreviations
LD = Lethal Dose
TC = Toxic Concentration
TD = Toxic Dose

Section 12 - Ecological Information

12.1 Toxicity

- Metal castings do not present any ecological danger to the environment. The by-products formed through processing metal castings may cause adverse effects in the environment if released directly to the environment. Heavy metals may be present and can enter into biological pathways.

12.2 Persistence and degradability

- Material Data Lacking.

12.3 Bioaccumulative potential

- Material Data Lacking.

12.4 Mobility in Soil

- Material Data Lacking.

12.5 Results of PBT and vPvB assessment

- No PBT and vPvB assessment has been conducted.

12.6 Other adverse effects

- No studies have been found.

Section 13 - Disposal Considerations

13.1 Waste treatment methods

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

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

Section 14 - Transport Information

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

IATA/ICAO	NDA	Not Regulated	NDA	NDA	NDA

14.6 Special precautions for user
- None specified.

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

Section 15 - Regulatory Information

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

SARA Hazard Classifications
- Acute, Chronic

State Right To Know				
Component	**CAS**	**MA**	**NJ**	**PA**
Nickel Alloy Castings as Nickel compounds	NDA	No	Yes	Yes
Chromium	7440-47-3	Yes	Yes	Yes
Cobalt	7440-48-4	Yes	Yes	Yes
Copper	7440-50-8	Yes	Yes	Yes
Hafnium	7440-58-6	Yes	Yes	Yes
Iron	7439-89-6	Yes	Yes	Yes
Manganese	7439-96-5	Yes	Yes	Yes
Molybdenum	7439-98-7	Yes	Yes	Yes
Nickel	7440-02-0	Yes	Yes	Yes
Niobium	7440-03-1	No	No	No
Rhenium	7440-15-5	No	No	No
Tantalum	7440-25-7	Yes	Yes	Yes
Titanium	7440-32-6	No	Yes	No
Tungsten	7440-33-7	Yes	Yes	Yes
Vanadium	7440-62-2	Yes	Yes	Yes

Inventory						
Component	**CAS**	**Canada DSL**	**Canada NDSL**	**China**	**EU EINECS**	**EU ELNICS**
Nickel Alloy Castings as Nickel compounds	NDA	No	No	No	No	No
Chromium	7440-47-3	Yes	No	Yes	Yes	No
Cobalt	7440-48-4	Yes	No	Yes	Yes	No
Copper	7440-50-8	Yes	No	Yes	Yes	No
Hafnium	7440-58-6	Yes	No	No	Yes	No
Iron	7439-89-6	Yes	No	Yes	Yes	No
Manganese	7439-96-5	Yes	No	Yes	Yes	No
Molybdenum	7439-98-7	Yes	No	Yes	Yes	No
Nickel	7440-02-0	Yes	No	Yes	Yes	No
Niobium	7440-03-1	Yes	No	Yes	Yes	No
Rhenium	7440-15-5	Yes	No	Yes	Yes	No
Tantalum	7440-25-7	Yes	No	Yes	Yes	No
Titanium	7440-32-6	Yes	No	Yes	Yes	No
Tungsten	7440-33-7	Yes	No	Yes	Yes	No
Vanadium	7440-62-2	Yes	No	Yes	Yes	No

Inventory (Con't.)				
Component	**CAS**	**Japan ENCS**	**Korea KECL**	**TSCA**
Nickel Alloy Castings as Nickel compounds	NDA	No	No	No

Chromium	7440-47-3	No	Yes	Yes
Cobalt	7440-48-4	No	Yes	Yes
Copper	7440-50-8	No	Yes	Yes
Hafnium	7440-58-6	No	Yes	Yes
Iron	7439-89-6	Yes	Yes	Yes
Manganese	7439-96-5	No	Yes	Yes
Molybdenum	7439-98-7	No	Yes	Yes
Nickel	7440-02-0	No	Yes	Yes
Niobium	7440-03-1	No	No	Yes
Rhenium	7440-15-5	No	Yes	Yes
Tantalum	7440-25-7	No	Yes	Yes
Titanium	7440-32-6	No	Yes	Yes
Tungsten	7440-33-7	No	Yes	Yes
Vanadium	7440-62-2	No	Yes	Yes

Australia

Labor

Australia - Work Health and Safety Regulations - Hazardous Substances Requiring Health Monitoring

•Nickel Alloy Castings as Nickel compounds		Not Listed
•Chromium	7440-47-3	Not Listed
•Hafnium	7440-58-6	Not Listed
•Rhenium	7440-15-5	Not Listed
•Copper	7440-50-8	Not Listed
•Iron	7439-89-6	Not Listed
•Manganese	7439-96-5	Not Listed
•Tantalum	7440-25-7	Not Listed
•Cobalt	7440-48-4	Not Listed
•Molybdenum	7439-98-7	Not Listed
•Nickel	7440-02-0	Not Listed
•Tungsten	7440-33-7	Not Listed
•Vanadium	7440-62-2	Not Listed
•Titanium	7440-32-6	Not Listed
•Niobium	7440-03-1	Not Listed

Australia - High Volume Industrial Chemicals List

•Nickel Alloy Castings as Nickel compounds		Not Listed
•Chromium	7440-47-3	
•Hafnium	7440-58-6	Not Listed
•Rhenium	7440-15-5	Not Listed
•Copper	7440-50-8	
•Iron	7439-89-6	
•Manganese	7439-96-5	
•Tantalum	7440-25-7	Not Listed
•Cobalt	7440-48-4	Not Listed
•Molybdenum	7439-98-7	Not Listed
•Nickel	7440-02-0	
•Tungsten	7440-33-7	Not Listed
•Vanadium	7440-62-2	Not Listed
•Titanium	7440-32-6	Not Listed
•Niobium	7440-03-1	Not Listed

Australia - List of Designated Hazardous Substances - Classification

•Nickel Alloy Castings as Nickel compounds		Not Listed
•Chromium	7440-47-3	Self classification required
•Hafnium	7440-58-6	Self classification required
•Rhenium	7440-15-5	Not Listed
•Copper	7440-50-8	Self classification required (dust, fume and mist)
•Iron	7439-89-6	Self classification required (fume)
•Manganese	7439-96-5	Self classification required (dust)

•Tantalum	7440-25-7	Self classification required (metal and oxide dusts)
•Cobalt	7440-48-4	R42/43, R53 (including dust and fume)
•Molybdenum	7439-98-7	Self classification required
•Nickel	7440-02-0	T Carc.Cat.3 R40, R48/23, R43; T Carc.Cat.3 R40, R48/23, R43, R52, R53 (powder, particle diameter <1 mm)
•Tungsten	7440-33-7	Self classification required
•Vanadium	7440-62-2	Not Listed
•Titanium	7440-32-6	Not Listed
•Niobium	7440-03-1	Not Listed

Environment

Australia - National Pollutant Inventory (NPI) Substance List

•Nickel Alloy Castings as Nickel compounds		10 tonne/yr Threshold category 1 (Nickel and compounds); 2000 tonne/yr Threshold category 2b (Nickel and compounds); 60000 MWH Threshold category 2b (Nickel and compounds); 20 MW Threshold category 2b (Nickel and compounds)
•Chromium	7440-47-3	Not Listed
•Hafnium	7440-58-6	Not Listed
•Rhenium	7440-15-5	Not Listed
•Copper	7440-50-8	10 tonne/yr Threshold category 1 (Copper and compounds); 2000 tonne/yr Threshold category 2b (Copper and compounds); 60000 MWH Threshold category 2b (Copper and compounds); 20 MW Threshold category 2b (Copper and compounds)
•Iron	7439-89-6	Not Listed
•Manganese	7439-96-5	10 tonne/yr Threshold category 1 (Manganese and compounds)
•Tantalum	7440-25-7	Not Listed
•Cobalt	7440-48-4	10 tonne/yr Threshold category 1 (Cobalt and compounds)
•Molybdenum	7439-98-7	Not Listed
•Nickel	7440-02-0	10 tonne/yr Threshold category 1 (Nickel and compounds); 2000 tonne/yr Threshold category 2b (Nickel and compounds); 60000 MWH Threshold category 2b (Nickel and compounds); 20 MW Threshold category 2b (Nickel and compounds)
•Tungsten	7440-33-7	Not Listed
•Vanadium	7440-62-2	Not Listed
•Titanium	7440-32-6	Not Listed
•Niobium	7440-03-1	Not Listed

Australia - Ozone Protection Act - Scheduled Substances

•Nickel Alloy Castings as Nickel compounds		Not Listed
•Chromium	7440-47-3	Not Listed
•Hafnium	7440-58-6	Not Listed
•Rhenium	7440-15-5	Not Listed

•Copper	7440-50-8	Not Listed
•Iron	7439-89-6	Not Listed
•Manganese	7439-96-5	Not Listed
•Tantalum	7440-25-7	Not Listed
•Cobalt	7440-48-4	Not Listed
•Molybdenum	7439-98-7	Not Listed
•Nickel	7440-02-0	Not Listed
•Tungsten	7440-33-7	Not Listed
•Vanadium	7440-62-2	Not Listed
•Titanium	7440-32-6	Not Listed
•Niobium	7440-03-1	Not Listed
Australia - Priority Existing Chemical Program		
•Nickel Alloy Castings as Nickel compounds		Not Listed
•Chromium	7440-47-3	Not Listed
•Hafnium	7440-58-6	Not Listed
•Rhenium	7440-15-5	Not Listed
•Copper	7440-50-8	Not Listed
•Iron	7439-89-6	Not Listed
•Manganese	7439-96-5	Not Listed
•Tantalum	7440-25-7	Not Listed
•Cobalt	7440-48-4	Not Listed
•Molybdenum	7439-98-7	Not Listed
•Nickel	7440-02-0	Standby chemical
•Tungsten	7440-33-7	Not Listed
•Vanadium	7440-62-2	Not Listed
•Titanium	7440-32-6	Not Listed
•Niobium	7440-03-1	Not Listed

Canada

Labor

Canada - WHMIS - Classifications of Substances		
•Nickel Alloy Castings as Nickel compounds		Not Listed
•Chromium	7440-47-3	Uncontrolled product according to WHMIS classification criteria
•Hafnium	7440-58-6	Uncontrolled product according to WHMIS classification criteria
•Rhenium	7440-15-5	Not Listed
•Copper	7440-50-8	Uncontrolled product according to WHMIS classification criteria
•Iron	7439-89-6	Uncontrolled product according to WHMIS classification criteria
•Manganese	7439-96-5	D2A (including powder)
•Tantalum	7440-25-7	Uncontrolled product according to WHMIS classification criteria
•Cobalt	7440-48-4	D2A, D2B
•Molybdenum	7439-98-7	Uncontrolled product according to WHMIS classification criteria
•Nickel	7440-02-0	D2A, D2B; B6, D2A (Raney)
•Tungsten	7440-33-7	Uncontrolled product according to WHMIS classification criteria
•Vanadium	7440-62-2	Not Listed
•Titanium	7440-32-6	Not Listed
•Niobium	7440-03-1	Not Listed
Canada - WHMIS - Ingredient Disclosure List		
•Nickel Alloy Castings as Nickel compounds		Not Listed
•Chromium	7440-47-3	0.1 %
•Hafnium	7440-58-6	1 %
•Rhenium	7440-15-5	Not Listed

•Copper	7440-50-8	1 %
•Iron	7439-89-6	1 %
•Manganese	7439-96-5	1 %
•Tantalum	7440-25-7	1 %
•Cobalt	7440-48-4	0.1 %
•Molybdenum	7439-98-7	1 %
•Nickel	7440-02-0	0.1 %
•Tungsten	7440-33-7	1 %
•Vanadium	7440-62-2	1 %
•Titanium	7440-32-6	Not Listed
•Niobium	7440-03-1	Not Listed

Environment

Canada - CEPA - Priority Substances List

•Nickel Alloy Castings as Nickel compounds		Not Listed
•Chromium	7440-47-3	Not Listed
•Hafnium	7440-58-6	Not Listed
•Rhenium	7440-15-5	Not Listed
•Copper	7440-50-8	Not Listed
•Iron	7439-89-6	Not Listed
•Manganese	7439-96-5	Not Listed
•Tantalum	7440-25-7	Not Listed
•Cobalt	7440-48-4	Not Listed
•Molybdenum	7439-98-7	Not Listed
•Nickel	7440-02-0	Not Listed
•Tungsten	7440-33-7	Not Listed
•Vanadium	7440-62-2	Not Listed
•Titanium	7440-32-6	Not Listed
•Niobium	7440-03-1	Not Listed

Europe

Other

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

•Nickel Alloy Castings as Nickel compounds		Not Listed
•Chromium	7440-47-3	Not Listed
•Hafnium	7440-58-6	Not Listed
•Rhenium	7440-15-5	Not Listed
•Copper	7440-50-8	Not Listed
•Iron	7439-89-6	Not Listed
•Manganese	7439-96-5	Not Listed
•Tantalum	7440-25-7	Not Listed
•Cobalt	7440-48-4	R42/43 R53
•Molybdenum	7439-98-7	Not Listed
•Nickel	7440-02-0	Carc.Cat.3; R40 R43 T; R48/23
•Tungsten	7440-33-7	Not Listed
•Vanadium	7440-62-2	Not Listed
•Titanium	7440-32-6	Not Listed
•Niobium	7440-03-1	Not Listed

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

•Nickel Alloy Castings as Nickel compounds		Not Listed
•Chromium	7440-47-3	Not Listed
•Hafnium	7440-58-6	Not Listed
•Rhenium	7440-15-5	Not Listed
•Copper	7440-50-8	Not Listed
•Iron	7439-89-6	Not Listed
•Manganese	7439-96-5	Not Listed
•Tantalum	7440-25-7	Not Listed
•Cobalt	7440-48-4	Not Listed
•Molybdenum	7439-98-7	Not Listed
•Nickel	7440-02-0	Not Listed
•Tungsten	7440-33-7	Not Listed
•Vanadium	7440-62-2	Not Listed
•Titanium	7440-32-6	Not Listed

•Niobium	7440-03-1	Not Listed

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

•Nickel Alloy Castings as Nickel compounds		Not Listed
•Chromium	7440-47-3	Not Listed
•Hafnium	7440-58-6	Not Listed
•Rhenium	7440-15-5	Not Listed
•Copper	7440-50-8	Not Listed
•Iron	7439-89-6	Not Listed
•Manganese	7439-96-5	Not Listed
•Tantalum	7440-25-7	Not Listed
•Cobalt	7440-48-4	Xn R:42/43-53 S:(2)-22-24-37-61
•Molybdenum	7439-98-7	Not Listed
•Nickel	7440-02-0	T R:40-43-48/23 S:(2)-36/37/39-45
•Tungsten	7440-33-7	Not Listed
•Vanadium	7440-62-2	Not Listed
•Titanium	7440-32-6	Not Listed
•Niobium	7440-03-1	Not Listed

EU - CLP (1272/2008) - Annex VI - Table 3.2 - Notes - Substances and Preparations

•Nickel Alloy Castings as Nickel compounds		Not Listed
•Chromium	7440-47-3	Not Listed
•Hafnium	7440-58-6	Not Listed
•Rhenium	7440-15-5	Not Listed
•Copper	7440-50-8	Not Listed
•Iron	7439-89-6	Not Listed
•Manganese	7439-96-5	Not Listed
•Tantalum	7440-25-7	Not Listed
•Cobalt	7440-48-4	Not Listed
•Molybdenum	7439-98-7	Not Listed
•Nickel	7440-02-0	S, 7
•Tungsten	7440-33-7	Not Listed
•Vanadium	7440-62-2	Not Listed
•Titanium	7440-32-6	Not Listed
•Niobium	7440-03-1	Not Listed

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

•Nickel Alloy Castings as Nickel compounds		Not Listed
•Chromium	7440-47-3	Not Listed
•Hafnium	7440-58-6	Not Listed
•Rhenium	7440-15-5	Not Listed
•Copper	7440-50-8	Not Listed
•Iron	7439-89-6	Not Listed
•Manganese	7439-96-5	Not Listed
•Tantalum	7440-25-7	Not Listed
•Cobalt	7440-48-4	S:(2)-22-24-37-61
•Molybdenum	7439-98-7	Not Listed
•Nickel	7440-02-0	S:(2)-36/37/39-45
•Tungsten	7440-33-7	Not Listed
•Vanadium	7440-62-2	Not Listed
•Titanium	7440-32-6	Not Listed
•Niobium	7440-03-1	Not Listed

United States

Labor

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

•Nickel Alloy Castings as Nickel compounds		Not Listed
•Chromium	7440-47-3	Not Listed
•Hafnium	7440-58-6	Not Listed
•Rhenium	7440-15-5	Not Listed
•Copper	7440-50-8	Not Listed
•Iron	7439-89-6	Not Listed
•Manganese	7439-96-5	Not Listed
•Tantalum	7440-25-7	Not Listed

•Cobalt	7440-48-4	Not Listed
•Molybdenum	7439-98-7	Not Listed
•Nickel	7440-02-0	Not Listed
•Tungsten	7440-33-7	Not Listed
•Vanadium	7440-62-2	Not Listed
•Titanium	7440-32-6	Not Listed
•Niobium	7440-03-1	Not Listed
U.S. - OSHA - Specifically Regulated Chemicals		
•Nickel Alloy Castings as Nickel compounds		Not Listed
•Chromium	7440-47-3	Not Listed
•Hafnium	7440-58-6	Not Listed
•Rhenium	7440-15-5	Not Listed
•Copper	7440-50-8	Not Listed
•Iron	7439-89-6	Not Listed
•Manganese	7439-96-5	Not Listed
•Tantalum	7440-25-7	Not Listed
•Cobalt	7440-48-4	Not Listed
•Molybdenum	7439-98-7	Not Listed
•Nickel	7440-02-0	Not Listed
•Tungsten	7440-33-7	Not Listed
•Vanadium	7440-62-2	Not Listed
•Titanium	7440-32-6	Not Listed
•Niobium	7440-03-1	Not Listed

Environment

U.S. - CAA (Clean Air Act) - 1990 Hazardous Air Pollutants		
•Nickel Alloy Castings as Nickel compounds		(including any unique chemical substance that contains Nickel as part of its infrastructure)
•Chromium	7440-47-3	Not Listed
•Hafnium	7440-58-6	Not Listed
•Rhenium	7440-15-5	Not Listed
•Copper	7440-50-8	Not Listed
•Iron	7439-89-6	Not Listed
•Manganese	7439-96-5	Not Listed
•Tantalum	7440-25-7	Not Listed
•Cobalt	7440-48-4	Not Listed
•Molybdenum	7439-98-7	Not Listed
•Nickel	7440-02-0	Not Listed
•Tungsten	7440-33-7	Not Listed
•Vanadium	7440-62-2	Not Listed
•Titanium	7440-32-6	Not Listed
•Niobium	7440-03-1	Not Listed
U.S. - CERCLA/SARA - Hazardous Substances and their Reportable Quantities		
•Nickel Alloy Castings as Nickel compounds		Not Listed
•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)
•Hafnium	7440-58-6	Not Listed
•Rhenium	7440-15-5	Not Listed
•Copper	7440-50-8	5000 lb final RQ (no reporting of releases of this hazardous substance is required if the diameter of the pieces of the solid metal released is >100 µm); 2270

		kg final RQ (no reporting of releases of this hazardous substance is required if the diameter of the pieces of the solid metal released is >100 µm)
•Iron	7439-89-6	Not Listed
•Manganese	7439-96-5	Not Listed
•Tantalum	7440-25-7	Not Listed
•Cobalt	7440-48-4	Not Listed
•Molybdenum	7439-98-7	Not Listed
•Nickel	7440-02-0	100 lb final RQ (no reporting of releases of this hazardous substance is required if the diameter of the pieces of the solid metal released is >100 µm); 45.4 kg final RQ (no reporting of releases of this hazardous substance is required if the diameter of the pieces of the solid metal released is >100 µm)
•Tungsten	7440-33-7	Not Listed
•Vanadium	7440-62-2	Not Listed
•Titanium	7440-32-6	Not Listed
•Niobium	7440-03-1	Not Listed
U.S. - CERCLA/SARA - Radionuclides and Their Reportable Quantities		
•Nickel Alloy Castings as Nickel compounds		Not Listed
•Chromium	7440-47-3	Not Listed
•Hafnium	7440-58-6	Not Listed
•Rhenium	7440-15-5	Not Listed
•Copper	7440-50-8	Not Listed
•Iron	7439-89-6	Not Listed
•Manganese	7439-96-5	Not Listed
•Tantalum	7440-25-7	Not Listed
•Cobalt	7440-48-4	Not Listed
•Molybdenum	7439-98-7	Not Listed
•Nickel	7440-02-0	Not Listed
•Tungsten	7440-33-7	Not Listed
•Vanadium	7440-62-2	Not Listed
•Titanium	7440-32-6	Not Listed
•Niobium	7440-03-1	Not Listed
U.S. - CERCLA/SARA - Section 302 Extremely Hazardous Substances EPCRA RQs		
•Nickel Alloy Castings as Nickel compounds		Not Listed
•Chromium	7440-47-3	Not Listed
•Hafnium	7440-58-6	Not Listed
•Rhenium	7440-15-5	Not Listed
•Copper	7440-50-8	Not Listed
•Iron	7439-89-6	Not Listed
•Manganese	7439-96-5	Not Listed
•Tantalum	7440-25-7	Not Listed
•Cobalt	7440-48-4	Not Listed
•Molybdenum	7439-98-7	Not Listed
•Nickel	7440-02-0	Not Listed
•Tungsten	7440-33-7	Not Listed
•Vanadium	7440-62-2	Not Listed
•Titanium	7440-32-6	Not Listed
•Niobium	7440-03-1	Not Listed
U.S. - CERCLA/SARA - Section 302 Extremely Hazardous Substances TPQs		
•Nickel Alloy Castings as Nickel compounds		Not Listed
•Chromium	7440-47-3	Not Listed
•Hafnium	7440-58-6	Not Listed
•Rhenium	7440-15-5	Not Listed
•Copper	7440-50-8	Not Listed
•Iron	7439-89-6	Not Listed

•Manganese	7439-96-5	Not Listed
•Tantalum	7440-25-7	Not Listed
•Cobalt	7440-48-4	Not Listed
•Molybdenum	7439-98-7	Not Listed
•Nickel	7440-02-0	Not Listed
•Tungsten	7440-33-7	Not Listed
•Vanadium	7440-62-2	Not Listed
•Titanium	7440-32-6	Not Listed
•Niobium	7440-03-1	Not Listed
U.S. - CERCLA/SARA - Section 313 - Emission Reporting		
•Nickel Alloy Castings as Nickel compounds		0.1 % de minimis concentration (Chemical Category N495)
•Chromium	7440-47-3	1.0 % de minimis concentration
•Hafnium	7440-58-6	Not Listed
•Rhenium	7440-15-5	Not Listed
•Copper	7440-50-8	1.0 % de minimis concentration
•Iron	7439-89-6	Not Listed
•Manganese	7439-96-5	1.0 % de minimis concentration
•Tantalum	7440-25-7	Not Listed
•Cobalt	7440-48-4	0.1 % de minimis concentration
•Molybdenum	7439-98-7	Not Listed
•Nickel	7440-02-0	0.1 % de minimis concentration
•Tungsten	7440-33-7	Not Listed
•Vanadium	7440-62-2	1.0 % de minimis concentration (except when contained in an alloy)
•Titanium	7440-32-6	Not Listed
•Niobium	7440-03-1	Not Listed
U.S. - CERCLA/SARA - Section 313 - PBT Chemical Listing		
•Nickel Alloy Castings as Nickel compounds		Not Listed
•Chromium	7440-47-3	Not Listed
•Hafnium	7440-58-6	Not Listed
•Rhenium	7440-15-5	Not Listed
•Copper	7440-50-8	Not Listed
•Iron	7439-89-6	Not Listed
•Manganese	7439-96-5	Not Listed
•Tantalum	7440-25-7	Not Listed
•Cobalt	7440-48-4	Not Listed
•Molybdenum	7439-98-7	Not Listed
•Nickel	7440-02-0	Not Listed
•Tungsten	7440-33-7	Not Listed
•Vanadium	7440-62-2	Not Listed
•Titanium	7440-32-6	Not Listed
•Niobium	7440-03-1	Not Listed
U.S. - RCRA (Resource Conservation & Recovery Act) - Basis for Listing - Appendix VII		
•Nickel Alloy Castings as Nickel compounds		Not Listed
•Chromium	7440-47-3	Included in waste streams: F032, F034, F035, F037, F038, F039
•Hafnium	7440-58-6	Not Listed
•Rhenium	7440-15-5	Not Listed
•Copper	7440-50-8	Not Listed
•Iron	7439-89-6	Not Listed
•Manganese	7439-96-5	Not Listed
•Tantalum	7440-25-7	Not Listed
•Cobalt	7440-48-4	Not Listed
•Molybdenum	7439-98-7	Not Listed
•Nickel	7440-02-0	Included in waste streams: F006, F039

•Tungsten	7440-33-7	Not Listed
•Vanadium	7440-62-2	Included in waste stream: F039
•Titanium	7440-32-6	Not Listed
•Niobium	7440-03-1	Not Listed
U.S. - RCRA (Resource Conservation & Recovery Act) - Constituents for Detection Monitoring		
•Nickel Alloy Castings as Nickel compounds		Not Listed
•Chromium	7440-47-3	(total)
•Hafnium	7440-58-6	Not Listed
•Rhenium	7440-15-5	Not Listed
•Copper	7440-50-8	(total)
•Iron	7439-89-6	Not Listed
•Manganese	7439-96-5	Not Listed
•Tantalum	7440-25-7	Not Listed
•Cobalt	7440-48-4	(total)
•Molybdenum	7439-98-7	Not Listed
•Nickel	7440-02-0	(total)
•Tungsten	7440-33-7	Not Listed
•Vanadium	7440-62-2	(total)
•Titanium	7440-32-6	Not Listed
•Niobium	7440-03-1	Not Listed
U.S. - RCRA (Resource Conservation & Recovery Act) - D Series Wastes - Max Conc of Contaminants for the Tox Characteristic		
•Nickel Alloy Castings as Nickel compounds		Not Listed
•Chromium	7440-47-3	5.0 mg/L regulatory level
•Hafnium	7440-58-6	Not Listed
•Rhenium	7440-15-5	Not Listed
•Copper	7440-50-8	Not Listed
•Iron	7439-89-6	Not Listed
•Manganese	7439-96-5	Not Listed
•Tantalum	7440-25-7	Not Listed
•Cobalt	7440-48-4	Not Listed
•Molybdenum	7439-98-7	Not Listed
•Nickel	7440-02-0	Not Listed
•Tungsten	7440-33-7	Not Listed
•Vanadium	7440-62-2	Not Listed
•Titanium	7440-32-6	Not Listed
•Niobium	7440-03-1	Not Listed
U.S. - RCRA (Resource Conservation & Recovery Act) - Hazardous Constituents - Appendix VIII to 40 CFR 261		
•Nickel Alloy Castings as Nickel compounds		hazardous constituent - no waste number
•Chromium	7440-47-3	hazardous constituent - no waste number
•Hafnium	7440-58-6	Not Listed
•Rhenium	7440-15-5	Not Listed
•Copper	7440-50-8	Not Listed
•Iron	7439-89-6	Not Listed
•Manganese	7439-96-5	Not Listed
•Tantalum	7440-25-7	Not Listed
•Cobalt	7440-48-4	Not Listed
•Molybdenum	7439-98-7	Not Listed
•Nickel	7440-02-0	hazardous constituent - no waste number
•Tungsten	7440-33-7	Not Listed
•Vanadium	7440-62-2	Not Listed
•Titanium	7440-32-6	Not Listed
•Niobium	7440-03-1	Not Listed
U.S. - RCRA (Resource Conservation & Recovery Act) - List for Hazardous Constituents		
•Nickel Alloy Castings as Nickel compounds		Not Listed
•Chromium	7440-47-3	(total)
•Hafnium	7440-58-6	Not Listed
•Rhenium	7440-15-5	Not Listed
•Copper	7440-50-8	(total)
•Iron	7439-89-6	Not Listed
•Manganese	7439-96-5	Not Listed

•Tantalum	7440-25-7	Not Listed
•Cobalt	7440-48-4	(total)
•Molybdenum	7439-98-7	Not Listed
•Nickel	7440-02-0	(total)
•Tungsten	7440-33-7	Not Listed
•Vanadium	7440-62-2	(total)
•Titanium	7440-32-6	Not Listed
•Niobium	7440-03-1	Not Listed
U.S. - RCRA (Resource Conservation & Recovery Act) - Phase 4 LDR Rule - Universal Treatment Standards		
•Nickel Alloy Castings as Nickel compounds		Not Listed
•Chromium	7440-47-3	2.77 mg/L (total, wastewater); 0.60 mg/L TCLP (total, nonwastewater)
•Hafnium	7440-58-6	Not Listed
•Rhenium	7440-15-5	Not Listed
•Copper	7440-50-8	Not Listed
•Iron	7439-89-6	Not Listed
•Manganese	7439-96-5	Not Listed
•Tantalum	7440-25-7	Not Listed
•Cobalt	7440-48-4	Not Listed
•Molybdenum	7439-98-7	Not Listed
•Nickel	7440-02-0	3.98 mg/L (wastewater); 11.0 mg/L TCLP (nonwastewater)
•Tungsten	7440-33-7	Not Listed
•Vanadium	7440-62-2	4.3 mg/L (wastewater); 1.6 mg/L TCLP (nonwastewater)
•Titanium	7440-32-6	Not Listed
•Niobium	7440-03-1	Not Listed
U.S. - RCRA (Resource Conservation & Recovery Act) - TSD Facilities Ground Water Monitoring		
•Nickel Alloy Castings as Nickel compounds		Not Listed
•Chromium	7440-47-3	(total)
•Hafnium	7440-58-6	Not Listed
•Rhenium	7440-15-5	Not Listed
•Copper	7440-50-8	(total)
•Iron	7439-89-6	Not Listed
•Manganese	7439-96-5	Not Listed
•Tantalum	7440-25-7	Not Listed
•Cobalt	7440-48-4	(total)
•Molybdenum	7439-98-7	Not Listed
•Nickel	7440-02-0	(total)
•Tungsten	7440-33-7	Not Listed
•Vanadium	7440-62-2	(total)
•Titanium	7440-32-6	Not Listed
•Niobium	7440-03-1	Not Listed

United States - California

Environment

U.S. - California - Proposition 65 - Carcinogens List		
•Nickel Alloy Castings as Nickel compounds		carcinogen, initial date 5/7/04
•Chromium	7440-47-3	Not Listed
•Hafnium	7440-58-6	Not Listed
•Rhenium	7440-15-5	Not Listed
•Copper	7440-50-8	Not Listed
•Iron	7439-89-6	Not Listed
•Manganese	7439-96-5	Not Listed
•Tantalum	7440-25-7	Not Listed
•Cobalt	7440-48-4	carcinogen, initial date 7/1/92 (powder)
•Molybdenum	7439-98-7	Not Listed
•Nickel	7440-02-0	carcinogen, initial date 10/1/89 (metallic)
•Tungsten	7440-33-7	Not Listed

•Vanadium	7440-62-2	Not Listed
•Titanium	7440-32-6	Not Listed
•Niobium	7440-03-1	Not Listed
U.S. - California - Proposition 65 - Developmental Toxicity		
•Nickel Alloy Castings as Nickel compounds		Not Listed
•Chromium	7440-47-3	Not Listed
•Hafnium	7440-58-6	Not Listed
•Rhenium	7440-15-5	Not Listed
•Copper	7440-50-8	Not Listed
•Iron	7439-89-6	Not Listed
•Manganese	7439-96-5	Not Listed
•Tantalum	7440-25-7	Not Listed
•Cobalt	7440-48-4	Not Listed
•Molybdenum	7439-98-7	Not Listed
•Nickel	7440-02-0	Not Listed
•Tungsten	7440-33-7	Not Listed
•Vanadium	7440-62-2	Not Listed
•Titanium	7440-32-6	Not Listed
•Niobium	7440-03-1	Not Listed
U.S. - California - Proposition 65 - Maximum Allowable Dose Levels (MADL)		
•Nickel Alloy Castings as Nickel compounds		Not Listed
•Chromium	7440-47-3	Not Listed
•Hafnium	7440-58-6	Not Listed
•Rhenium	7440-15-5	Not Listed
•Copper	7440-50-8	Not Listed
•Iron	7439-89-6	Not Listed
•Manganese	7439-96-5	Not Listed
•Tantalum	7440-25-7	Not Listed
•Cobalt	7440-48-4	Not Listed
•Molybdenum	7439-98-7	Not Listed
•Nickel	7440-02-0	Not Listed
•Tungsten	7440-33-7	Not Listed
•Vanadium	7440-62-2	Not Listed
•Titanium	7440-32-6	Not Listed
•Niobium	7440-03-1	Not Listed
U.S. - California - Proposition 65 - No Significant Risk Levels (NSRL)		
•Nickel Alloy Castings as Nickel compounds		Not Listed
•Chromium	7440-47-3	Not Listed
•Hafnium	7440-58-6	Not Listed
•Rhenium	7440-15-5	Not Listed
•Copper	7440-50-8	Not Listed
•Iron	7439-89-6	Not Listed
•Manganese	7439-96-5	Not Listed
•Tantalum	7440-25-7	Not Listed
•Cobalt	7440-48-4	Not Listed
•Molybdenum	7439-98-7	Not Listed
•Nickel	7440-02-0	Not Listed
•Tungsten	7440-33-7	Not Listed
•Vanadium	7440-62-2	Not Listed
•Titanium	7440-32-6	Not Listed
•Niobium	7440-03-1	Not Listed
U.S. - California - Proposition 65 - Reproductive Toxicity - Female		
•Nickel Alloy Castings as Nickel compounds		Not Listed
•Chromium	7440-47-3	Not Listed
•Hafnium	7440-58-6	Not Listed
•Rhenium	7440-15-5	Not Listed
•Copper	7440-50-8	Not Listed
•Iron	7439-89-6	Not Listed
•Manganese	7439-96-5	Not Listed
•Tantalum	7440-25-7	Not Listed
•Cobalt	7440-48-4	Not Listed
•Molybdenum	7439-98-7	Not Listed
•Nickel	7440-02-0	Not Listed

•Tungsten	7440-33-7	Not Listed
•Vanadium	7440-62-2	Not Listed
•Titanium	7440-32-6	Not Listed
•Niobium	7440-03-1	Not Listed

U.S. - California - Proposition 65 - Reproductive Toxicity - Male

•Nickel Alloy Castings as Nickel compounds		Not Listed
•Chromium	7440-47-3	Not Listed
•Hafnium	7440-58-6	Not Listed
•Rhenium	7440-15-5	Not Listed
•Copper	7440-50-8	Not Listed
•Iron	7439-89-6	Not Listed
•Manganese	7439-96-5	Not Listed
•Tantalum	7440-25-7	Not Listed
•Cobalt	7440-48-4	Not Listed
•Molybdenum	7439-98-7	Not Listed
•Nickel	7440-02-0	Not Listed
•Tungsten	7440-33-7	Not Listed
•Vanadium	7440-62-2	Not Listed
•Titanium	7440-32-6	Not Listed
•Niobium	7440-03-1	Not Listed

United States - Pennsylvania

Labor

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

•Nickel Alloy Castings as Nickel compounds		
•Chromium	7440-47-3	
•Hafnium	7440-58-6	Not Listed
•Rhenium	7440-15-5	Not Listed
•Copper	7440-50-8	(dust and fume)
•Iron	7439-89-6	Not Listed
•Manganese	7439-96-5	
•Tantalum	7440-25-7	Not Listed
•Cobalt	7440-48-4	
•Molybdenum	7439-98-7	Not Listed
•Nickel	7440-02-0	
•Tungsten	7440-33-7	Not Listed
•Vanadium	7440-62-2	(dust or fume)
•Titanium	7440-32-6	Not Listed
•Niobium	7440-03-1	Not Listed

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

•Nickel Alloy Castings as Nickel compounds		Not Listed
•Chromium	7440-47-3	
•Hafnium	7440-58-6	Not Listed
•Rhenium	7440-15-5	Not Listed
•Copper	7440-50-8	Not Listed
•Iron	7439-89-6	Not Listed
•Manganese	7439-96-5	Not Listed
•Tantalum	7440-25-7	Not Listed
•Cobalt	7440-48-4	Not Listed
•Molybdenum	7439-98-7	Not Listed
•Nickel	7440-02-0	
•Tungsten	7440-33-7	Not Listed
•Vanadium	7440-62-2	Not Listed
•Titanium	7440-32-6	Not Listed
•Niobium	7440-03-1	Not Listed

15.2 Chemical Safety Assessment

- No Chemical Safety Assessment has been carried out.

15.3 Other Information

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

Section 16 - Other Information

Last Revision Date	• 28/August/2015
Preparation Date	• 09/March/2015
Disclaimer/Statement of Liability	• Although reasonable care has been taken to provide current and accurate information herein, Cannon-Muskegon Corporation extends no warranties, expressed or implied, makes no representations regarding the accuracy or completeness of the information and assumes no liability for any loss, damage, or injury of any kind which may result from or arise out of the use of or reliance on the information by any person. Responsibility for the compliance with federal, state, and local law and regulations concerning the use of this product rests solely upon the purchaser.

Key to abbreviations

NDA = No Data Available