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SAFETY DATA SHEET

Product : **Robco Inconel Mesh**
Date Prepared : June 16th, 2017

Section 1 - Product and Company Identification

Product Name/Identifier : Robco Inconel Mesh
Other name / Synonym :
Company Information : Robco Inc.
Address : 7200 St.Patrick, LaSalle QC Canada H8N 2W7
Telephone : 514-367-2252
Email : info@robco.com
Website : www.robco.com

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)

Classification of the substance or mixture

CLP

As shipped, these complex alloys in massive form have no known toxicological properties other than causing allergic reactions in individuals sensitive to the metals contained in the alloys. Hazardous fume or dust emissions may be released during remelting, grinding, cutting or welding. The classifications below are related to exposure to the hazardous fume or dust emissions generated remelting, grinding, cutting or welding.

Skin Sensitization 1 -H317
Respiratory Sensitization 1 -H334
Specific Target Organ Toxicity Single Exposure 3: Respiratory Tract Irritation-H335 Carcinogenicity 1 B -H350
Reproductive Toxicity 2-H361d
Specific Target Organ Toxicity Repeated Exposure 1 -H372
Specific Target Organ Toxicity Repeated Exposure 2-H373

DSD/DPD

As shipped, these complex alloys in massive form have no known toxicological properties other than causing allergic reactions in individuals sensitive to the metals contained in the alloys. Hazardous fume or dust emissions may be released during remelting, grinding, cutting or welding. The classifications below are related to exposure to the hazardous fume or dust emissions generated remelting, grinding, cutting or welding.

Toxic (T)
Irritant (Xi)
Harmful (Xn)
Carcinogenic Substances -Category 2

Substances Toxic To Reproduction -Category 3
R22, R37, R42/43, R48/23, R49, R63

Label Elements
CLP

DANGER

Hazard statements.
H317-May cause an allergic skin reaction
H334 -May cause allergy or asthma symptoms or breathing difficulties if inhaled
H335 -May cause respiratory irritation
H350 -May cause cancer.
H361d-Suspected of damaging the unborn child.
H372 -Causes damage to organs through prolonged or repeated exposure.
H373 -May cause 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.
P285-In case of inadequate ventilation wear respiratory protection.

Response
P304+P341 -IF INHALED: If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing.
P342+P311 -If experiencing respiratory symptoms: Call a POISON CENTER or doctor/physician.
P302+P352-IF ON SKIN: Wash with plenty of soap and water.
P321 -Specific treatment, see supplemental first aid information.
P363 -Wash contaminated clothing before reuse.
P333+P313-If skin irritation or rash occurs: 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.
R22-Harmful if swallowed.
R37 -Irritating to respiratory system.
R42/43 -May cause sensitisation by inhalation and skin contact.
R48/23-Toxic: danger of serious damage to health by prolonged exposure through inhalation.
R49 -May cause cancer by inhalation.
R63 -Possible risk of harm to the unborn child.

Safety phrases
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

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
Classification of the substance or mixture

OSHA HCS 2012
As shipped, these complex alloys in massive form have no known toxicological properties other than causing allergic reactions in individuals sensitive to the metals contained in the alloys. Hazardous fume or dust emissions may be released during remelting, grinding, cutting or welding. The classifications below are related to exposure to the hazardous fume or dust emissions generated remelting, grinding, cutting or welding.

Skin Sensitization 1A
Eye Irritation 2
Respiratory Sensitization 1

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

Label elements
OSHA HCS 2012

DANGER

Hazard statements
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
May cause cancer.
Suspected of damaging fertility or the unborn child.
Causes 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.
Do not eat, drink or smoke when using this product. 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
Wash contaminated clothing 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.

Canada
According to: WHMIS

Classification of the substance or mixture

WHMIS
As shipped, these complex alloys in massive form have no known toxicological properties other than causing allergic reactions in individuals sensitive to the metals contained in the alloys. Hazardous fume or dust emissions may be released during remelting, grinding, cutting or welding. The classifications below are related to exposure to the hazardous fume or dust emissions generated remelting, grinding, cutting or welding.

Very Toxic-D1A
Toxic-018
Other Toxic Effects-D2A
Other Toxic Effects -028

Label elements

WHMIS
Other Toxic Effects-028

Other hazards

WHMIS
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. In Canada, the product mentioned above is considered hazardous under the Workplace Hazardous Materials Information System (WHMIS).

Section 3 - Composition/information on ingredients

Substances :
Material does not meet the criteria of a substance
Mixtures:

Chemical Name	Identifiers	%	LD50/LC50	Classifications according to regulation/Directive
Nickel	CAS: 7440-02-0 EC Number: 231-111-4	0% to 99%	NDA	EU DSD/DPD: Annex VI, Table 3.2: Care. Cat. 3; R40; R43; T; R48/23 EU CLP: Annex VI, Table 3.1: Care. 2, H351; STOT NDA RE 1, H372***; Skin Sens. 1, H317 OSHA HCS 2012: Care. 2; Skin Sens. 1A; Resp. Sens. 18; STOT RE 2 (Lungs)

	Iron	CAS: 7439-89-6 EC Number : 231-096-4	0% to 95%	Ingestion/Oral-Rat LD50 • 750 mg/kg	EU DSD/DPD: Xn; R22; R53 EU CLP: Acute Tox. 4, H302; Aquatic Chronic 4, NDA H413 OSHA HCS 2012: Acute Tox. 4 (orl)
	Cooper	CAS: 7440-50-8 EC Number: 231-159-6	0% to 67%	NDA	U DSD/DPD: Xi; R37; Repr. Cat. 3; R63 EU CLP: Repr. 2, H361; STOT SE 3: Resp. lrrit., NDA H335 OSHA HCS 2012: Repr. 2; STOT SE 3: Resp. lrrit.
	Cobalt	CAS: 7440-48-4 EC Number: 231-158-0 EU lndex: 027-001-00-9	0% to 54%	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 NDA OSHA HCS 2012: Resp Sens. 1; Skin Sens. 1; Care. 2
	Titanium	CAS: 7440-32-6 EINECS: 231-142-3	0% to 52%	NDA	EU DSD/DPD: Repr. Cat. 3; R63 EU CLP: Repr. 2, H361 NDA OSHA HCS 2012: Repr. 2
	Chromium	CAS: 7440-47-3 EC Number: 231-157-5	0% to 49%	NDA	U DSD/DPD: Care. Cat. 2; R49; R43; N; R50-53 EU CLP: Care. 1 B, H350; Skin Sens. 1, H317 NDA OSHA HCS 2012: Care. 1A; Skin Sens. 1
	Molybdenum	CAS: 7439-98-7 EC Number: 231-107-2	0% to 16%	NDA	EU DSD/DPD: Xn; R48/20; T; R25 EU CLP: STOT RE 2, H373; Acute Tox. 3, H301 NDA OSHA HCS 2012: STOT RE 2 (Lungs, lnhl); Acute Tox. 3 (orl)
	Tungsten	CAS: 7440-33-7 EC Number: 231-143-9	0% to 15%	NDA	EU DSD/DPD: F; R11; Repr. Cat. 3; R63 EU CLP: Flam. Sol. 1, H228; Self-heat. 2, H252; Repr. 2, H361d NDA OSHA HCS 2012: Flam. Sol. 1; Self-heat. 2; Repr. 2 (orl); Eye lrrit. 2
	Niobium	CAS: 7440-03-1 EC Number: 231-113-5	0% to 15%	NDA	EU DSD/DPD: Not Classified EU CLP: Not Classified NDA OSHA HCS 2012: Not Classified
	Aluminum	CAS: 7429-90-5 EC Number: 231-072-3	0% to 13%	NDA	EU DSD/DPD: F; R15-17 EU CLP: Water-react. 2, H261; Pyr. Sol. 1, H250 NDA OSHA HCS 2012: Water react. 2; Flam. Sol. 1; STOT RE 2 (Lungs, lnhl); Comb. Dust
	Manganese	CAS: 7439-96-5	0% to	Ingestion/Oral-	EU DSD/DPD: T; R48/23

	EC Number: 231-105-1	4.7%	Rat LD50 • 9 g/kg	EU CLP: STOT RE 1 (CNS), H372 NDA OSHA HCS 2012: Eye Irrit. 2; STOT RE 1 (CNS)
Silicon	CAS: 7440-21-3 EC Number: 231-130-8	0% to 4%	Ingestion/Oral-Rat LD50 • 3160 mg/kg	EU DSD/DPD: F; R11 EU CLP: Flam. Sol. 2, H228 NDA OSHA HCS 2012: Flam. Sol. 2
Calcium	CAS: 7440-70-2 EC Number: 231-179-5 EU Index: 020-001-00-X	0% to 4%	NDA	EU DSD/DPD: F; R15 EU CLP: Water-react. 2, H261 NDA OSHA HCS 2012: Pyr. Sol. 1
Tantalum	CAS: 7440-25-7 EC Number: 231-135-5	0% to 3%	NDA	EU DSD/DPD: Xn; R22 EU CLP: Acute Tox. 4, H302 NDA OSHA HCS 2012: Acute Tox. 4 (orl)
Yttrium trioxide	CAS: 1314-36-9 EINECS: 215-233-5	0% to 1%	NDA	EU DSD/DPD: Not Classified EU CLP: Not Classified OSHA HCS 2012: Not Classified
Nitrogen	CAS: 7727-37-9 EINECS: 231-783-9	0% to 0.35%	NDA	EU DSD/DPD: Not Classified EU CLP: Press. Gas -Camp., H280 OSHA HCS 2012: Press. Gas-Camp; Simp. Asphyx.

Section 4 - 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.

Emergency Procedures :
No emergency procedures are expected to be necessary if material is used under ordinary conditions as recommended.

Section 5 - Firefighting measures

Section 6 - Accidental release measures

Environmental Precautions :
No special precautions are necessary.

Methods and material for containment and cleaning up:
Vacuum or shovel any spilled material into a suitable container.
Alloy wastes are normally collected to recover metal values.

Reference to other sections :
Refer to Section 8 -Exposure Controls/Personal Protection and Section 13 -Disposal Considerations.

Section 7 - Handling and storage

Precautions for safe handling :
Under normal circumstances the materials do not produce any hazardous products and as such do not require any special precautions. The transient handling of the materials would not be expected to produce any sensitization but it is good practice to use gloves for handling. The normal precautions for handling heavy objects with possible sharp edges should also be observed. If dusts/fumes are created during processing wear appropriate personal protective equipment. Do not breathe dust or fumes. Wash thoroughly after handling.

Conditions for safe storage, including any incompatibilities :
Store in a dry place.

Specific end use(s) :
Refer to Section 1.2 -Relevant identified uses.

Section 8 - Exposure controls/personal protection

Control parameters :

Exposure Limits/Guidelines						
	Result	ACGIH	Canada Manitoba	Canada Ontario	Canada Quebec	China
Chromium (7440-47-3)	STELs	Not established	Not established	Not established	Not established	0. 15 mg/m3 STEL
	TWAs	0.5 mg/m3 TWA	Not established	0.5 mg/m3 TWA	0.5 mg/m3 TWAEV	0.05 mg/m3 TWA
	Designated Substances	Not established	Present	Not established	Not established	Not established
Yttrium trioxide	STELs	Not established	Not established	Not established	Not established	2.5 mg/m3 STEL (as Y) as Yttrium compounds
	TWAs	1 mg/m3 TWA (as Y) as Yttrium compounds	Not established	Not established	Not established	1 mg/m3 TWA (as Y) as Yttrium compounds
Copper (7440-50-8)	STELs	Not established	Not established	Not established	Not established	2.5 mg/m3 STEL (dust); 0.6 mg/m3 STEL (fume)

	TWAs	0.2 mg/m3 TWA	Not established	0.2 mg/m3 TWA (fume) / 1 mg/m3 TWA (dust and mist)	0.2 mg/m3 TWA (fume) / 1 mg/m3 TWA (dust and mist)	1 mg/m3 TWA (dust) / 0.2 mg/m3 TWA (fume)
Manganese (7439-96-5)	STELs	Not established	Not established	Not established	Not established	0.45 mg/m3 STEL
	TWAs	0.02 mg/m3 TWA (respirable fraction) ; 0.1 mg/m3 TWA (inhalable fraction)	Not established	0.2 mg/m3 TWA	0.2 mg/m3 TWAEV total (dust and fume)	0.15 mg/m3 TWA
Tantalum (7440-25-7)	STELs	Not established	Not established	Not established	Not established	12.5 mg/m3 STEL
	TWAs	Not established	Not established	Not established	5 mg/m3 TWAEV (dust)	5 mg/m3 TWA
Cobalt (7440-48-4)	STELs	Not established	Not established	Not established	Not established	0.1 mg/m3 STEL (7440-48-4)
	TWAs	0.02 mg/m3 TWA	Not established	0.02 mg/m3 TWA	0.02 mg/m3 TWAEV	0.05 mg/m3 TWA
Aluminum (7429-90-5)	STELs	Not established	Not established	Not established	Not established	6 mg/m3 STEL(total
	TWAs		Not established	1 mg/m3 TWA (respirable)	10 mg/m3 TWAEV	3 mg/m3 TWA(total dust)
Molybdenum (7439-98-7)	STELs	Not established	Not established	Not established	Not established	15 mg/m3 STEL Molybdenum
	TWAs	10 mg/m3 TWA (inhalable fraction); 3 mg/m3 TWA (respirable fraction)	Not established	10 mg/m3 TWA (metal, inhalable); 3 mg/m3 TWA (metal, resprable)	Not established	6 mg/m3 TWA 3 mg/m3 TWA
Nickel	STELs	Not established	Not established	Not established	Not established	2.5 mg/m3 STEL

	TWAs	1.5 mg/m3 TWA (inhalable fraction)	Not established	1 mg/m3 TWA	1 mg/m3 TWA	1 mg/m3 TWA
	Designated Substances	Not established	Present	Not established	Not established	Not established
Tungsten (7440-33-7)	STELs	10 mg/m3 STEL	Not established	10 mg/m3 STEL	Not established	10 mg/m3 STEL
	TWAs	5 mg/m3 TWA	Not established	5 mg/m3 TWA	Not established	5 mg/m3 TWA
Silicon (7440-21-3)	TWAs	Not established	Not established	10 mg/m3 TWA(total dust)	10 mg/m3 TWAEV (containing no Asbestos and <1% Crystalline silica, total dust)	Not established

Exposure Limits/Guidelines (Con't.)

	Result	Europe	Germany DFG	Germany TRGS	NIOSH	OSHA
Chromium (7440-47-3)	TWAs	2 mg/m3 TWA	Not established	2 mg/m3 TWA AGW (inhalable fraction, exposure factor 1)	0.5 mg/m3 TWA	1 mg/m3 TWA
Yttrium trioxide	TWAs	Not established	Not established	Not established	1 mg/m3 TWA (as Y) as Yttrium compounds	Not established
Copper (7440-50-8)	TWAs	Not established	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	Not established	0.02 mg/m3 Peak (respirable fraction)	Not established	Not established	Not established

	MAKs	Not established	0.01 mg/m3 TWA MAK(including inorganic copper compounds, respirable fraction)	Not established	Not established	Not established
Manganese (7439-96-5)	Ceilings	Not established	1.6 mg/m3 Peak (Ceiling factor 1 for Permanganates, inhalable fraction); 0.16 mg/m3 Peak (Ceiling factor 1 for Permanganates, respirable fraction)	Not established	Not established	5 mg/m3 Ceiling (fume)
	STELs	Not established	Not established	Not established	3 mg/m3 STEL	Not established
	TWAs	Not established	Not established	0.5 mg/m3 TWA AGW(The risk of damage to the embryo or fetus can be excluded when AGWand BGW values are observed, inhalable fraction)	1 mg/m3 TWA (fume	Not established
	MAKs	Not established	0.2 mg/m3 TWA MAK (inhalable fraction); 0.02 mg/m3 TWA MAK (respirable fraction)	Not established	Not established	Not established
Tantalum (7440-25-7)	TWAs	Not established	Not established	Not established	5 mg/m3 TWA (dust)	5 mg/m3 TWA
	STELs	Not established	Not established	Not established	1 0 mg/m3 STEL (dust)	Not established

	MAKs	Not established	4 mg/m3 TWA MAK (inhalable fraction); 1 .5 mg/m3 TWA MAK (respirable fraction	Not established	Not established	Not established
Cobalt (7440-48-4)	TWAs	Not established	Not established	Not established	0.05 mg/m3 TWA 0.1 mg/m3 TWA (dust and fume)	0.1 mg/m3 TWA (dust and fume)
Aluminum (7429-90-5)	TWAs	Not established	Not established	Not established	10 mg/m3 TWA (total dust); 5 mg/m3 TWA (respirable dust)	15 mg/m3 TWA (total dust); 5 mg/m3 TWA (respirable fraction)
	MAKs	Not established	4 mg/m3 TWA MAK (dust, inhalable fraction); 1.5 mg/m3 TWA MAK (dust, respirable fraction)	Not established	Not established	Not established
Nickel (7440-02-0)	TWAs	Not established	Not established	Not established	0.01 5 mg/m3 TWA	1 mg/m3 TWA
Tungsten (7440-33-7)	STELs	Not established	Not established	Not established	1 0 mg/m3 STEL	Not established
	TWAs	Not established	Not established	Not established	5 mg/m3 TWA	Not established
Silicon (7440-21-3)	TWAs	Not established	Not established	Not established	10 mg/m3 TWA (total dust); 5 mg/m3 TWA (respirable dust)	15 mg/m3 TWA (total dust); 5 mg/m3 TWA (respirable fraction)

Exposure Control Notations

Canada Ontario

•Nitrogen (7727-37-9): Simple Asphyxiants: (Simple asphyxiant)

Canada Quebec

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

•Nitrogen (7727-37-9): Simple Asphyxiants: (Simple asphyxiant)

ACGIH

•Aluminum (7429-90-5): Carcinogens: (A4 - Not Classifiable as a Human Carcinogen)

•Aluminum as Aluminum insoluble compounds: Carcinogens: (A4 - Not Classifiable as a Human Carcinogen)

•Chromium (7440-47-3): Carcinogens: (A4 - Not Classifiable 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)

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

•Nitrogen (7727-37-9): Simple Asphyxiants: (Simple asphyxiant (See Appendix F: Minimal Oxygen Content))

Germany TRGS

•Cobalt (7440-48-4): Carcinogens: (Category 2 (bioavailable, as inhalable dust/aerosol, except hard metals, cobalt containing spinels and organic cobalt desiccants)) 1 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)) 1 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)) 1 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

•Aluminum (7429-90-5): Pregnancy: (classification not yet possible (respirable, inhalable, dust))

•Cobalt (7440-48-4): Carcinogens: (Category 2 (considered to be carcinogenic for man)) 1 Sensitizers: (respiratory and skin sensitizer) 1 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, respirable fraction))

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

•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 (respirable fraction))

Exposure Limits Supplemental
ACGIH

•Aluminum (7429-90-5): TLV Basis- Critical Effects: (pneumoconiosis; lower respiratory tract irritation; neurotoxicity)

•Aluminum as Aluminum insoluble compounds: TLV Basis- Critical Effects: (pneumoconiosis; lower respiratory tract irritation; neurotoxicity)

•Chromium (7440-47-3): TLV Basis- Critical Effects: (skin and upper respiratory tract irritation)

•Cobalt (7440-48-4): BEis: (15 fJg/L Medium: urine Time: end of shift at end of workweek Parameter: Cobalt (background); 1 fJg/L Medium: blood Time: end of shift at end of workweek Parameter: Cobalt (background, semi-quantitative)) 1 TLV Basis-Critical Effects: (asthma; myocardial

effects; pulmonary function) 1 Notice of Intended Changes (BEis): (15 ug/L Medium: urine Time: end of shift at end of workweek Parameter: Cobalt (nonspecific))

•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)

•Nickel (7440-02-0): TLV Basis- Critical Effects: (dermatitis; pneumoconiosis)

•Tungsten (7440-33-7): TLV Basis-Critical Effects: (lower respiratory tract irritation)

•Yttrium trioxide as Yttrium compounds: TLV Basis- Critical Effects: (pulmonary fibrosis)

•Nitrogen (7727-37-9): TLV Basis- Critical Effects: (asphyxia)

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

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: safety glasses.
Skift/Body : Wear appropriate gloves. 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 conzentration 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
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

Information on Physical and Chemical Properties

Material Descriptif			
Physical Form	Solid	Appearance/Description	Silver colored solid shaped as plate, bar, wire, tube, rod, strip, sheet, or some intermediate form.
Color	Silver	Odor	Data lacking
Odor Threshold	Data lacking		
Gefteral Properties			
Boiling Point	Data lacking	Melting Point/Freezing Point	> 1260 C(> 2300 F)
Decomposition Temperature	Data lacking	pH	Data lacking
Specific Gravity/Relative Density	Data lacking	Bulk Density	8 to 9 g/cm3
Water Solubility	Negligible< 0.1 %	Viscosity	Data lacking
Explosive Properties	Data lacking	Oxidizing Properties:	Data lacking
Volatility			
Vapor Pressure	Data lacking	Vapor Density	Data lacking
Evaporation Rate	Data lacking	VOC (Wt.)	0%
VOC(Vol.)	0%	Volatiles(Wt.)	0%
Volatiles (Vol.)	0%		
Flammability			
Flash Point	Data lacking	UEL	Data lacking

LEL	Data lacking	Autoignition	Data lacking
Flammability(solid,	Data lacking		
Environmental Octanol/Water Partition coefficient	Data lacking		

Other Information
No additional physical and chemical parameters noted

Section 10 - Stability and reactivity

Reactivity : No dangerous reaction known under conditions of normal use
Chemical stability : Stable under normal temperatures and pressures
Possibility of hazardous reactions : Hazardous polymerization not indicated
Conditions to avoid : No data available
Incompatible materials : No data available
Nickel can react with carbon monoxide to form nickel carbonyl in reducing atmosphere
Hazardous decomposition products : Nickel can react with carbon monoxide to form nickel carbonyl in reducing atmosphere

Section 11 - Toxicological Information

Aluminum (0% TO 13%)	7429-90-5	**Reproductive:** Ingestion/Oral-Mouse TDLo • 1260 mg/kg (multigeneration); Reproductive Effects:Effects on Newbom: **Behavioral;** Reproductive Effects:Effects on Newborn: **Physical**; Reproductive Effects:Effects on Newbom: **Other postnatal measures or effects**
Cobalt (0% TO 54%)	7440-48-4	**Acute Toxicity:** Ingestion/Oral-Rat LD50 • 6171 mg/kg; Behaviora/:Somnolence (general depressed activity); Behavioral: **Ataxia;** Gastrointestinai: **Hypermotility, diarrhea; Multi-dose Toxicity**: Inhalation-Rat TCLo • 2 mgfm" 4 Day(s)-Intermittent; Lungs, Thorax, or Respiration:Fibrosing alveolitis
Copper (O% TO 67%)	7440-50-8	**Multi-dose Toxicity**: Ingestion/Oral-Rabbit TDLo • 3 g/kg 60 Day(s)-Continuous; Cardiac:Other changes; Liver:**Hepatitis** (hepatocellular necrosis), **zonal**; Related to Chronic Data: **Death in the Other Multiple Dose data type field**; **Reproductive:** Ingestion/Oral-Rat TDLo • 152 mg/kg (22W pre); Reproductive Effects:Effects on Embryo or Fetus:**Fetotoxicity** (except death, e.g., stunted fetus); Reproductive Effects: Specific Developmental Abnormalities:**Central nervous system**; Tumorigen I Carcinogen: Ingestion/Oral-Mouse TDLo • 10.08 mg/kg 12 Week(s)-Continuous; Tumorigenic:Carcinogenic **by RTECS criteria**; Lungs, Thorax, or Respiration:**Other changes**
Iron (0% TO 95%)	7439-89-6	**Acute Toxicity**: Ingestion/Oral-Rat LDSO • 750 mg/kg; blood:**Changes in serum composition** (e.g., TP, bilirubin

		cholesterol); Biochemicai:Enzyme inhibition, induction, or change in blood or tissue levels:**Transaminases**; Ingestion/Oral-Child TDLo • 77mg/kg; Behaviora/:Irritability; Gastrointestinal: Nausea or vomiting; Blood:Normocytic anemia; **Multi-dose Toxicity**: Inhalation-Rat TCLo • 150 mg/m" 4 Hour(s) 78 Week(s)-Intermittent; Lungs, Thorax, or Respiration: **Other changes**; Liver:**Other changes**; Nutritional and Gross Metabolic:Gross Metabolite Changes:**Weight loss or decreased weight gain**
Manganese (0% T0 4.7%)	7439-96-5	**Acute Toxicity:** Ingestion/Oral-Rat LDSO • 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 (180 post); Reproductive Effects: Effects on Newborn:Growth (0% **statistics (e.g., reduced weight gain)**; Reproductive Effects: Effects on Newbom: Biochemical and metabolic; Reproductive Effects:Effects on Newborn: **Other postnatal measures or effects**
Silicon (0% TO 4%)	7440-21-3	**Acute Toxicity**: Ingestion/Oral-Rat LDSO • 3160 mg/kg; **Irritation:** Eye-Rabbit • 3 mg • Mild irritation
Tantalum (0% T0 3%)	7440-25-7	**Acute Toxicity**: Ingestion/Oral-Mouse LD50 • 595 mg/kg
Titanium (0% TO 52%)	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**
Tungsten (0% TO 15%)	7440-33-7	**Irritation:** Eye-Rabbit • 500 mg 24 Hour(s) • Mild irritation; Skin-Rabbit • 500 mg 24 Hour(s) • Mild irritation; **Reproductive**: Ingestion/Oral-Rat TDLo • 1210 IJg/kg (35W pre); Reproductive Effects:Effects on Fertility: Post- **implantation mortality**; Reproductive Effects: Specific Developmental Abnormalities: **Musculoskeletal system**

GHS Properties	Classification
Respiratory sensitization	EUICLP • Respiratory Sensitizer 1 OSHA HCS 2012 • Respiratory Sensitizer 1
Serious eye daftage/Irritation	EU/CLP • Data lacking OSHA HCS 2012 • Eye Irritation 2
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 1 B OSHA HCS 2012 • Carcinogenicity 1A
Gerft Cell Mutagenicity	EU/CLP • Data lacking OSHA HCS 2012 • Data lacking
Skin corrosion/Irritation	EU/CLP • Data lacking OSHA HCS 2012 • Data lacking
Skin sensitization	EU/CLP • Skin Sensitizer 1 OSHA HCS 2012 • Skin Sensitizer 1A
STOT-RE	EU/CLP • Specific Target Organ Toxicity Repeated Exposure 1; Specific Target Organ Toxicity Repeated Exposure 2 OSHA HCS 2012. Specific Target Organ Toxicity Repeated Exposure 1
STOT-SE	EUICLP. 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

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) : Repeated and prolonged exposure to dust may cause lung effects including pneumoconiosis. May cause allergy or asthma symptoms or breathing difficulties if inhaled. Prolonged exposure to manganese fumes and dusts has resulted in a progressive deterioration of the Central Nervous System. Symptoms resemble late Parkinsons disease and include weakness in the legs, increased muscle tone, hand tremor, slurred speech, muscle cramps, spastic gate, fixed facial expression and mental deterioration

Skin

Acute (Immediate) : 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) : Exposure to dust may cause mechanical 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	ARC	NTP
Cobalt	7440-48-4	Group 28-Possible Carcinogen	Not listed
Nickel	7440-02-0	Group 28-Possible Carcinogen	Reasonably Anticipated to be Human Carcinogen

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

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
TO= Toxic Dose

Section 12 - Ecological information

Toxicity : These alloys are not soluble in water and react only very slowly with natural environments.

Persistence and degradability : Material data lacking

Bioaccumulative potential : Material data lacking.

Mobility in Soil : Material data lacking.

Results of PBT and vPvB assessment : No PBT and vPvB assessment has been conducted

Section 13 - Disposal considerations

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

Section 14 - Transport information

	UN number	UN proper shipping name	Transport hazard class(es)	Packing group	Environmental hazards
DOT	NDA	Not Regulated	NDA	NDA	NDA
TOG	NDA	Not Regulated	NDA	NDA	NDA
IMO/IMDG	NDA	Not Regulated	NDA	NDA	NDA
IATAIICAO	NDA	Not Regulated	NDA	NDA	NDA

Special precautions for user : None specified, Data lacking.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Section 15 - Regulatory information

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

SARA Hazard Classifications • Acute, Chronic

Component	CAS	MA	NJ	PA
Aluminum	7429-90-5	Yes	Yes	Yes
Calcium	7440-70-2	Yes	Yes	Yes
Chromium	7440-47-3	Yes	Yes	Yes
Cobalt	7440-48-4	Yes	Yes	Yes
Copper	7440-50-8	Yes	Yes	Yes
Iron	7439-89-6	No	No	No
Manganese	7439-96-5	Yes	Yes	Yes
Molybdenum	7439-98-7	Yes	Yes	Yes
Nickel	7440-02-0	Yes	Yes	Yes
Niobium	7440-03-01	No	No	No
Nitrogen	7727-37-9	Yes	Yes	Yes
Silicon	7440-21-3	Yes	Yes	Yes
Tantalum	7440-25-7	Yes	Yes	Yes
Titanium	7440-32-6	No	Yes	No
Tungsten	7440-33-7	Yes	Yes	Yes
Yttrium trioxide	1314-36-9	No	No	No

Inventory

Component	CAS	Canada DSL	Canada NDSL	EU EINECS	EU ELNICS	TSCA
Aluminum	7429-90-5	Yes	No	Yes	No	Yes
Calcium	7440-70-2	Yes	No	Yes	No	Yes
Chromium	7440-47-3	Yes	No	Yes	No	Yes
Cobalt	7440-48-4	Yes	No	Yes	No	Yes
Copper	7440-50-8	Yes	No	Yes	No	Yes
Iron	7439-89-6	Yes	No	Yes	No	Yes
Manganese	7439-96-5	Yes	No	Yes	No	Yes
Molybdenum	7439-98-7	Yes	No	Yes	No	Yes
Nickel	7440-02-0	Yes	No	Yes	No	Yes
Niobium	7440-03-01	Yes	No	Yes	No	Yes
Nitrogen	7727-37-9	Yes	No	Yes	No	Yes
Silicon	7440-21-3	Yes	No	Yes	No	Yes
Tantalum	7440-25-7	Yes	No	Yes	No	Yes
Titanium	7440-32-6	Yes	No	Yes	No	Yes
Tungsten	7440-33-7	Yes	No	Yes	No	Yes
Yttrium trioxide	1314-36-9	Yes	No	Yes	No	Yes

Canada
Labor

Canada - WHMIS - Classifications of Substances

Yttrium trioxide	1314-36-9	Not Listed
Calcium	7440-70-2	B6,E ;
Copper	7440-50-8	Uncontrolled product according to WHMIS classification criteria
Chromium	7440-47-3	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
Aluminum	7429-90-5	86(powder); Uncontrolled product according classification criteria
Molybdenum	7439-98-7	Uncontrolled product according classification criteria
Nickel	7440-02-0	D2A,D28;86,D2A(Raney)
Silicon	7440-21-3	84
Tungsten	7440-33-7	Uncontrolled product according classification criteria
Iron	7439-89-6	Uncontrolled product according classification criteria
Nitrogen	7727-37-9	A
Titanium	7440-32-6	Not Listed

Niobium	7440-03-16	Not Listed

Canada - WHMIS - Ingredient Disclosure List

Yttrium trioxide	1314-36-9	Not Listed
Calcium	7440-70-2	Not Listed
Copper	7440-50-8	1%
Chromium	7440-47-3	0.1%
Manganese	7439-96-5	1%
Tantalum	7440-25-7	1%
Cobalt	7440-48-4	0.1%
Aluminum	7429-90-5	1%
Molybdenum	7439-98-7	1%
Nickel	7440-02-0	0.1%
Silicon	7440-21-3	Not Listed
Tungsten	7440-33-7	1%
Iron	7439-89-6	Not Listed
Nitrogen	7727-37-9	Not Listed
Titanium	7440-32-6	Not Listed
Niobium	7440-03-16	Not Listed

Environment

Canada-CEPA- Priority Substances List

Yttrium trioxide	1314-36-9	Not Listed
Calcium	7440-70-2	Not Listed
Copper	7440-50-8	Not Listed
Chromium	7440-47-3	Not Listed
Manganese	7439-96-5	Not Listed
Tantalum	7440-25-7	Not Listed
Cobalt	7440-48-4	Not Listed
Aluminum	7429-90-5	Not Listed
Molybdenum	7439-98-7	Not Listed
Nickel	7440-02-0	Not Listed
Silicon	7440-21-3	Not Listed
Tungsten	7440-33-7	Not Listed
Iron	7439-89-6	Not Listed
Nitrogen	7727-37-9	Not Listed
Titanium	7440-32-6	Not Listed
Niobium	7440-03-16	Not Listed

Europe

Other

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

Yttrium trioxide	1314-36-9	Not Listed
Calcium	7440-70-2	F; R15
Copper	7440-50-8	Not Listed
Chromium	7440-47-3	Not Listed
Manganese	7439-96-5	Not Listed
Tantalum	7440-25-7	Not Listed

Cobalt	7440-48-4	R42/43 R53
Aluminum	7429-90-5	F; R11-15
Molybdenum	7439-98-7	Not Listed
Nickel	7440-02-0	Carc.Cat.3; R40 R43 T; R48/23
Silicon	7440-21-3	Not Listed
Tungsten	7440-33-7	Not Listed
Iron	7439-89-6	Not Listed
Nitrogen	7727-37-9	Not Listed
Titanium	7440-32-6	Not Listed
Niobium	7440-03-16	Not Listed

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

Yttrium trioxide	1314-36-9	Not Listed
Calcium	7440-70-2	Not Listed
Copper	7440-50-8	Not Listed
Chromium	7440-47-3	Not Listed
Manganese	7439-96-5	Not Listed
Tantalum	7440-25-7	Not Listed
Cobalt	7440-48-4	Not Listed
Aluminum	7429-90-5	Not Listed
Molybdenum	7439-98-7	Not Listed
Nickel	7440-02-0	Not Listed
Silicon	7440-21-3	Not Listed
Tungsten	7440-33-7	Not Listed
Iron	7439-89-6	Not Listed
Nitrogen	7727-37-9	Not Listed
Titanium	7440-32-6	Not Listed
Niobium	7440-03-16	Not Listed

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

Yttrium trioxide	1314-36-9	Not Listed
Calcium	7440-70-2	F R:15 S:(2)-8-24/25-43
Copper	7440-50-8	Not Listed
Chromium	7440-47-3	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
Aluminum	7429-90-5	F R:11-15 S:(2)-7/8-43
Molybdenum	7439-98-7	Not Listed
Nickel	7440-02-0	T R:40-43-48/23 S:(2)- 36/37/39-45
Silicon	7440-21-3	Not Listed
Tungsten	7440-33-7	Not Listed
Iron	7439-89-6	Not Listed
Nitrogen	7727-37-9	Not Listed
Titanium	7440-32-6	Not Listed
Niobium	7440-03-16	Not Listed

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

Yttrium trioxide	1314-36-9	Not Listed
Calcium	7440-70-2	Not Listed
Copper	7440-50-8	Not Listed
Chromium	7440-47-3	Not Listed
Manganese	7439-96-5	Not Listed
Tantalum	7440-25-7	Not Listed
Cobalt	7440-48-4	Not Listed
Aluminum	7429-90-5	T
Molybdenum	7439-98-7	Not Listed
Nickel	7440-02-0	s. 7
Silicon	7440-21-3	Not Listed
Tungsten	7440-33-7	Not Listed
Iron	7439-89-6	Not Listed
Nitrogen	7727-37-9	Not Listed
Titanium	7440-32-6	Not Listed
Niobium	7440-03-16	Not Listed

United States
Labor

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

Yttrium trioxide	1314-36-9	Not Listed
Calcium	7440-70-2	Not Listed
Copper	7440-50-8	Not Listed
Chromium	7440-47-3	Not Listed
Manganese	7439-96-5	Not Listed
Tantalum	7440-25-7	Not Listed
Cobalt	7440-48-4	Not Listed
Aluminum	7429-90-5	Not Listed
Molybdenum	7439-98-7	Not Listed
Nickel	7440-02-0	Not Listed
Silicon	7440-21-3	Not Listed
Tungsten	7440-33-7	Not Listed
Iron	7439-89-6	Not Listed
Nitrogen	7727-37-9	Not Listed
Titanium	7440-32-6	Not Listed
Niobium	7440-03-16	Not Listed

U.S.- OSHA -Specifically Regulated Chemicals

Yttrium trioxide	1314-36-9	Not Listed
Calcium	7440-70-2	Not Listed
Copper	7440-50-8	Not Listed
Chromium	7440-47-3	Not Listed
Manganese	7439-96-5	Not Listed
Tantalum	7440-25-7	Not Listed
Cobalt	7440-48-4	Not Listed
Aluminum	7429-90-5	Not Listed

Molybdenum	7439-98-7	Not Listed
Nickel	7440-02-0	Not Listed
Silicon	7440-21-3	Not Listed
Tungsten	7440-33-7	Not Listed
Iron	7439-89-6	Not Listed
Nitrogen	7727-37-9	Not Listed
Titanium	7440-32-6	Not Listed
Niobium	7440-03-16	Not Listed

Environment

U.S.- CAA (Clean Air Act)- 1990 Hazardous Air Pollutants

Yttrium trioxide	1314-36-9	Not Listed
Calcium	7440-70-2	Not Listed
Copper	7440-50-8	Not Listed
Chromium	7440-47-3	Not Listed
Manganese	7439-96-5	Not Listed
Tantalum	7440-25-7	Not Listed
Cobalt	7440-48-4	Not Listed
Aluminum	7429-90-5	Not Listed
Molybdenum	7439-98-7	Not Listed
Nickel	7440-02-0	Not Listed
Silicon	7440-21-3	Not Listed
Tungsten	7440-33-7	Not Listed
Iron	7439-89-6	Not Listed
Nitrogen	7727-37-9	Not Listed
Titanium	7440-32-6	Not Listed
Niobium	7440-03-16	Not Listed

U.S. - CERCLAISARA - Hazardous Substances and their Reportable Quantities

Yttrium trioxide	1314-36-9	Not Listed
Calcium	7440-70-2	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 m); 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 m)
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 m); 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)
Manganese	7439-96-5	Not Listed
Tantalum	7440-25-7	Not Listed
Cobalt	7440-48-4	Not Listed
Aluminum	7429-90-5	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 J.lm); 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 J.lm)
Silicon	7440-21-3	Not Listed
Tungsten	7440-33-7	Not Listed
Iron	7439-89-6	Not Listed
Nitrogen	7727-37-9	Not Listed
Titanium	7440-32-6	Not Listed
Niobium	7440-03-16	Not Listed

U.S.- CERCLA/SARA- Radionuclides and Their Reportable Quantities

Yttrium trioxide	1314-36-9	Not Listed
Calcium	7440-70-2	Not Listed
Copper	7440-50-8	Not Listed
Chromium	7440-47-3	Not Listed
Manganese	7439-96-5	Not Listed
Tantalum	7440-25-7	Not Listed
Cobalt	7440-48-4	Not Listed
Aluminum	7429-90-5	Not Listed
Molybdenum	7439-98-7	Not Listed
Nickel	7440-02-0	Not Listed
Silicon	7440-21-3	Not Listed
Tungsten	7440-33-7	Not Listed
Iron	7439-89-6	Not Listed
Nitrogen	7727-37-9	Not Listed
Titanium	7440-32-6	Not Listed
Niobium	7440-03-16	Not Listed

U.S.- CERCLA/SARA- Section 302 Extremely Hazardous Substances EPCRA RQs

Yttrium trioxide	1314-36-9	Not Listed
Calcium	7440-70-2	Not Listed
Copper	7440-50-8	Not Listed
Chromium	7440-47-3	Not Listed

Manganese	7439-96-5	Not Listed
Tantalum	7440-25-7	Not Listed
Cobalt	7440-48-4	Not Listed
Aluminum	7429-90-5	Not Listed
Molybdenum	7439-98-7	Not Listed
Nickel	7440-02-0	Not Listed
Silicon	7440-21-3	Not Listed
Tungsten	7440-33-7	Not Listed
Iron	7439-89-6	Not Listed
Nitrogen	7727-37-9	Not Listed
Titanium	7440-32-6	Not Listed
Niobium	7440-03-16	Not Listed

U.S.- CERCLAISARA - Section 302 Extremely Hazardous Substances TPQs

Yttrium trioxide	1314-36-9	Not Listed
Calcium	7440-70-2	Not Listed
Copper	7440-50-8	Not Listed
Chromium	7440-47-3	Not Listed
Manganese	7439-96-5	Not Listed
Tantalum	7440-25-7	Not Listed
Cobalt	7440-48-4	Not Listed
Aluminum	7429-90-5	Not Listed
Molybdenum	7439-98-7	Not Listed
Nickel	7440-02-0	Not Listed
Silicon	7440-21-3	Not Listed
Tungsten	7440-33-7	Not Listed
Iron	7439-89-6	Not Listed
Nitrogen	7727-37-9	Not Listed
Titanium	7440-32-6	Not Listed
Niobium	7440-03-16	Not Listed

U.S.- CERCLAISARA- Section 313- Emission Reporting

Yttrium trioxide	1314-36-9	Not Listed
Calcium	7440-70-2	Not Listed
Copper	7440-50-8	1.0 % de minimis concentration
Chromium	7440-47-3	1.0 % de minimis concentration
Manganese	7439-96-5	1.0 % de minimis concentration
Tantalum	7440-25-7	Not Listed
Cobalt	7440-48-4	0.1 % de minimis concentration
Aluminum	7429-90-5	1.0 % de minimis concentration (dust or fume only)
Molybdenum	7439-98-7	Not Listed
Nickel	7440-02-0	0.1 % de minimis concentration
Silicon	7440-21-3	Not Listed
Tungsten	7440-33-7	Not Listed
Iron	7439-89-6	Not Listed
Nitrogen	7727-37-9	Not Listed

Titanium	7440-32-6	Not Listed
Niobium	7440-03-16	Not Listed

U.S.- CERCLA/SARA- Section 313- PBT Chemical Listing

Yttrium trioxide	1314-36-9	Not Listed
Calcium	7440-70-2	Not Listed
Copper	7440-50-8	Not Listed
Chromium	7440-47-3	Not Listed
Manganese	7439-96-5	Not Listed
Tantalum	7440-25-7	Not Listed
Cobalt	7440-48-4	Not Listed
Aluminum	7429-90-5	Not Listed
Molybdenum	7439-98-7	Not Listed
Nickel	7440-02-0	Not Listed
Silicon	7440-21-3	Not Listed
Tungsten	7440-33-7	Not Listed
Iron	7439-89-6	Not Listed
Nitrogen	7727-37-9	Not Listed
Titanium	7440-32-6	Not Listed
Niobium	7440-03-16	Not Listed

U.S.- RCRA (Resoftrce Conservation & Recovery Act) -Basis for Listing- Appendix VII

Yttrium trioxide	1314-36-9	Not Listed
Calcium	7440-70-2	Not Listed
Copper	7440-50-8	Not Listed
Chromium	7440-47-3	Included ift waste streams:F032, F034, F035, F037, F038,F039
Manganese	7439-96-5	Not Listed
Tantalum	7440-25-7	Not Listed
Cobalt	7440-48-4	Not Listed
Aluminum	7429-90-5	Not Listed
Molybdenum	7439-98-7	Not Listed
Nickel	7440-02-0	Included in waste streams: F006,F039
Silicon	7440-21-3	Not Listed
Tungsten	7440-33-7	Not Listed
Iron	7439-89-6	Not Listed
Nitrogen	7727-37-9	Not Listed
Titanium	7440-32-6	Not Listed
Niobium	7440-03-16	Not Listed

U.S.- RCRA (Resoftrce Conservation & Recovery Act) -Constitftents for Detection Monitoring

Yttrium trioxide	1314-36-9	Not Listed
Calcium	7440-70-2	Not Listed
Copper	7440-50-8	(total)
Chromium	7440-47-3	(total)

Manganese	7439-96-5	Not Listed
Tantalum	7440-25-7	Not Listed
Cobalt	7440-48-4	Not Listed
Aluminum	7429-90-5	Not Listed
Molybdenum	7439-98-7	Not Listed
Nickel	7440-02-0	(total)
Silicon	7440-21-3	Not Listed
Tungsten	7440-33-7	Not Listed
Iron	7439-89-6	Not Listed
Nitrogen	7727-37-9	Not Listed
Titanium	7440-32-6	Not Listed
Niobium	7440-03-16	Not Listed

U.S. - RCRA (Resoftrce Conservation & Recovery Act) - 0 Series Wastes -Max Cone of Contaminants for the Tox caracteristics

Yttrium trioxide	1314-36-9	Not Listed
Calcium	7440-70-2	Not Listed
Copper	7440-50-8	Not Listed
Chromium	7440-47-3	5.0 mg/L regulatory level
Manganese	7439-96-5	Not Listed
Tantalum	7440-25-7	Not Listed
Cobalt	7440-48-4	Not Listed
Aluminum	7429-90-5	Not Listed
Molybdenum	7439-98-7	Not Listed
Nickel	7440-02-0	Not Listed
Silicon	7440-21-3	Not Listed
Tungsten	7440-33-7	Not Listed
Iron	7439-89-6	Not Listed
Nitrogen	7727-37-9	Not Listed
Titanium	7440-32-6	Not Listed
Niobium	7440-03-16	Not Listed

U.S. -RCRA (Resource Conservation & Recovery Act) - Hazardous Constituents -Appendix VIII to 40 CFR 261

Yttrium trioxide	1314-36-9	Not Listed
Calcium	7440-70-2	Not Listed
Copper	7440-50-8	Not Listed
Chromium	7440-47-3	hazardous constituent – no waste number
Manganese	7439-96-5	Not Listed
Tantalum	7440-25-7	Not Listed
Cobalt	7440-48-4	Not Listed
Aluminum	7429-90-5	Not Listed
Molybdenum	7439-98-7	Not Listed
Nickel	7440-02-0	hazardous constituent – no waste number
Silicon	7440-21-3	Not Listed
Tungsten	7440-33-7	Not Listed
Iron	7439-89-6	Not Listed
Nitrogen	7727-37-9	Not Listed

Titanium	7440-32-6	Not Listed
Niobium	7440-03-16	Not Listed

U.S. -RCRA (Resource Conservation & Recovery Act) -List for Hazardous Constituents

Yttrium trioxide	1314-36-9	Not Listed
Calcium	7440-70-2	Not Listed
Copper	7440-50-8	(total)
Chromium	7440-47-3	(total)
Manganese	7439-96-5	Not Listed
Tantalum	7440-25-7	Not Listed
Cobalt	7440-48-4	(total)
Aluminum	7429-90-5	Not Listed
Molybdenum	7439-98-7	Not Listed
Nickel	7440-02-0	(total)
Silicon	7440-21-3	Not Listed
Tungsten	7440-33-7	Not Listed
Iron	7439-89-6	Not Listed
Nitrogen	7727-37-9	Not Listed
Titanium	7440-32-6	Not Listed
Niobium	7440-03-16	Not Listed

U.S.- RCRA (Resource Conservation & Recovery Act) -Phase 4 LOR Rule-Universal Treatment Standards

Yttrium trioxide	1314-36-9	Not Listed
Calcium	7440-70-2	Not Listed
Copper	7440-50-8	Not Listed
Chromium	7440-47-3	2.77 mg/L (total, wastewater); 0.60 mg/L TCLP (total, nonwastewater);
Manganese	7439-96-5	Not Listed
Tantalum	7440-25-7	Not Listed
Cobalt	7440-48-4	Not Listed
Aluminum	7429-90-5	Not Listed
Molybdenum	7439-98-7	Not Listed
Nickel	7440-02-0	3.98 mg/L (total, wastewater); 11.0 mg/L TCLP (total, nonwastewater);
Silicon	7440-21-3	Not Listed
Tungsten	7440-33-7	Not Listed
Iron	7439-89-6	Not Listed
Nitrogen	7727-37-9	Not Listed
Titanium	7440-32-6	Not Listed
Niobium	7440-03-16	Not Listed

U.S.- RCRA (Resource Conservation & Recovery Act) - TSD Facilities Ground Water Monitoring

Yttrium trioxide	1314-36-9	Not Listed
Calcium	7440-70-2	Not Listed
Copper	7440-50-8	(total)
Chromium	7440-47-3	(total)
Manganese	7439-96-5	Not Listed
Tantalum	7440-25-7	Not Listed
Cobalt	7440-48-4	(total)
Aluminum	7429-90-5	Not Listed
Molybdenum	7439-98-7	Not Listed
Nickel	7440-02-0	(total)
Silicon	7440-21-3	Not Listed
Tungsten	7440-33-7	Not Listed
Iron	7439-89-6	Not Listed
Nitrogen	7727-37-9	Not Listed
Titanium	7440-32-6	Not Listed
Niobium	7440-03-16	Not Listed

United States - California
Environment

U.S.- California- Proposition 65- Carcinogens List

Yttrium trioxide	1314-36-9	Not Listed
Calcium	7440-70-2	Not Listed
Copper	7440-50-8	Not Listed
Chromium	7440-47-3	Not Listed
Manganese	7439-96-5	Not Listed
Tantalum	7440-25-7	Not Listed
Cobalt	7440-48-4	carcinogen, 7/1/1992 (pwder)
Aluminum	7429-90-5	Not Listed
Molybdenum	7439-98-7	Not Listed
Nickel	7440-02-0	carcinogen, 10/1/1989 (metallic)
Silicon	7440-21-3	Not Listed
Tungsten	7440-33-7	Not Listed
Iron	7439-89-6	Not Listed
Nitrogen	7727-37-9	Not Listed
Titanium	7440-32-6	Not Listed
Niobium	7440-03-16	Not Listed

U.S.- California - Proposition 65 - Developmental Toxicity

Yttrium trioxide	1314-36-9	Not Listed
Calcium	7440-70-2	Not Listed
Copper	7440-50-8	Not Listed
Chromium	7440-47-3	Not Listed
Manganese	7439-96-5	Not Listed
Tantalum	7440-25-7	Not Listed
Cobalt	7440-48-4	Not Listed

Aluminum	7429-90-5	Not Listed
Molybdenum	7439-98-7	Not Listed
Nickel	7440-02-0	Not Listed
Silicon	7440-21-3	Not Listed
Tungsten	7440-33-7	Not Listed
Iron	7439-89-6	Not Listed
Nitrogen	7727-37-9	Not Listed
Titanium	7440-32-6	Not Listed
Niobium	7440-03-16	Not Listed

U.S.- California- Proposition 65- Maximum Allowable Dose Levels (MADL)

Yttrium trioxide	1314-36-9	Not Listed
Calcium	7440-70-2	Not Listed
Copper	7440-50-8	Not Listed
Chromium	7440-47-3	Not Listed
Manganese	7439-96-5	Not Listed
Tantalum	7440-25-7	Not Listed
Cobalt	7440-48-4	Not Listed
Aluminum	7429-90-5	Not Listed
Molybdenum	7439-98-7	Not Listed
Nickel	7440-02-0	Not Listed
Silicon	7440-21-3	Not Listed
Tungsten	7440-33-7	Not Listed
Iron	7439-89-6	Not Listed
Nitrogen	7727-37-9	Not Listed
Titanium	7440-32-6	Not Listed
Niobium	7440-03-16	Not Listed

U.S.- California- Proposition 65 - No Significant Risk Levels (NSRL)

Yttrium trioxide	1314-36-9	Not Listed
Calcium	7440-70-2	Not Listed
Copper	7440-50-8	Not Listed
Chromium	7440-47-3	Not Listed
Manganese	7439-96-5	Not Listed
Tantalum	7440-25-7	Not Listed
Cobalt	7440-48-4	Not Listed
Aluminum	7429-90-5	Not Listed
Molybdenum	7439-98-7	Not Listed
Nickel	7440-02-0	Not Listed
Silicon	7440-21-3	Not Listed
Tungsten	7440-33-7	Not Listed
Iron	7439-89-6	Not Listed
Nitrogen	7727-37-9	Not Listed
Titanium	7440-32-6	Not Listed
Niobium	7440-03-16	Not Listed

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

Yttrium trioxide	1314-36-9	Not Listed

Calcium	7440-70-2	Not Listed
Copper	7440-50-8	Not Listed
Chromium	7440-47-3	Not Listed
Manganese	7439-96-5	Not Listed
Tantalum	7440-25-7	Not Listed
Cobalt	7440-48-4	Not Listed
Aluminum	7429-90-5	Not Listed
Molybdenum	7439-98-7	Not Listed
Nickel	7440-02-0	Not Listed
Silicon	7440-21-3	Not Listed
Tungsten	7440-33-7	Not Listed
Iron	7439-89-6	Not Listed
Nitrogen	7727-37-9	Not Listed
Titanium	7440-32-6	Not Listed
Niobium	7440-03-16	Not Listed

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

Yttrium trioxide	1314-36-9	Not Listed
Calcium	7440-70-2	Not Listed
Copper	7440-50-8	Not Listed
Chromium	7440-47-3	Not Listed
Manganese	7439-96-5	Not Listed
Tantalum	7440-25-7	Not Listed
Cobalt	7440-48-4	Not Listed
Aluminum	7429-90-5	Not Listed
Molybdenum	7439-98-7	Not Listed
Nickel	7440-02-0	Not Listed
Silicon	7440-21-3	Not Listed
Tungsten	7440-33-7	Not Listed
Iron	7439-89-6	Not Listed
Nitrogen	7727-37-9	Not Listed
Titanium	7440-32-6	Not Listed
Niobium	7440-03-16	Not Listed

United States - California Labor

Yttrium trioxide	1314-36-9	Not Listed
Calcium	7440-70-2	Not Listed
Copper	7440-50-8	(dust; fume; metal)
Chromium	7440-47-3	Not Listed
Manganese	7439-96-5	Not Listed
Tantalum	7440-25-7	Not Listed
Cobalt	7440-48-4	Not Listed
Aluminum	7429-90-5	Not Listed
Molybdenum	7439-98-7	Not Listed
Nickel	7440-02-0	Not Listed
Silicon	7440-21-3	Not Listed
Tungsten	7440-33-7	Not Listed

Iron	7439-89-6	Not Listed
Nitrogen	7727-37-9	Not Listed
Titanium	7440-32-6	Not Listed
Niobium	7440-03-16	Not Listed

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

Yttrium trioxide	1314-36-9	Not Listed
Calcium	7440-70-2	Not Listed
Copper	7440-50-8	Not Listed
Chromium	7440-47-3	Not Listed
Manganese	7439-96-5	Not Listed
Tantalum	7440-25-7	Not Listed
Cobalt	7440-48-4	Not Listed
Aluminum	7429-90-5	Not Listed
Molybdenum	7439-98-7	Not Listed
Nickel	7440-02-0	Not Listed
Silicon	7440-21-3	Not Listed
Tungsten	7440-33-7	Not Listed
Iron	7439-89-6	Not Listed
Nitrogen	7727-37-9	Not Listed
Titanium	7440-32-6	Not Listed
Niobium	7440-03-16	Not Listed

Chemical Safety Assessment : No Chemical Safety Assessment has been carried out.

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

Section 16 - Other information

Relevant Phrases (code & full text)
H228 - Flammable solid
H250 - Catches fire spontaneously if exposed to air
H252 - Self-heating in large quantities; may catch fire
H261 - In contact with water releases flammable gas
H280 - Contains gas under pressure; may explode if heated
H301 -Toxic if swallowed
H302 - Harmful if swallowed
H351 - Suspected of causing cancer.
H361 - Suspected of damaging fertility or the unborn child.
H413 - May cause long lasting harmful effects to aquatic life
R11 - Highly flammable.
R15 - Contact with water liberates extremely flammable gases.
R17 - Spontaneously flammable in air.
R25 -Toxic if swallowed.
R40 - Limited evidence of a carcinogenic effect.
R43 - May cause sensitisation by skin contact.
R48/20 - Harmful: danger of serious damage to health by prolonged exposure through inhalation.

R50 - Very toxic to aquatic organisms.
R53 - May cause long-term adverse effects in the aquatic environment.

Disclaimer :
The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as guidance for safe handling, use, storage, transportation and release and is not considered a warranty or quality specification. The responsibility for the compliance with existing law and regulations lies with the receiver of the product.