

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

1.1 Product identifier

Product Name • **Steel Welding Stud Stainless**
Synonyms • Steel

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

Relevant identified use(s) • Stud for use in stud welder

1.3 Details of the supplier of the safety data sheet

Manufacturer • Nelson Stud Weld & Doncasters Company
7900 West Ridge Road
PO Box 4019 Elyria, OH 44036
United States
www.Doncasters.com

Telephone (General) • 440-329-0400

1.4 Emergency telephone number

Manufacturer • 440-329-0400
Manufacturer • 800-262-8200 - CHEMTREC

Section 2: Hazards Identification

EU/EEC

According to: Regulation (EC) No 1272/2008 (CLP)/REACH 1907/2006 [amended by 453/2010]

2.1 Classification of the substance or mixture

CLP • Acute Toxicity Oral 4 - H302
Reproductive Toxicity 2 - H361
Specific Target Organ Toxicity Repeated Exposure 2 - H373
Hazardous to the aquatic environment Chronic 4 - H413

2.2 Label Elements

CLP

WARNING



- Hazard statements**
- H302 - Harmful if swallowed
 - H361 - Suspected of damaging fertility or the unborn child.
 - H373 - May cause damage to organs through prolonged or repeated exposure.
 - H413 - May cause long lasting harmful effects to aquatic life

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 or fume.
 - P264 - Wash thoroughly after handling.
 - P270 - Do not eat, drink or smoke when using this product.
 - P273 - Avoid release to the environment.
 - P281 - Use personal protective equipment as required.

- Response**
- P301+P312 - IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician if you feel unwell.
 - P330 - Rinse mouth.
 - P308+P313 - IF exposed or concerned: Get medical advice/attention.
 - P314 - Get medical advice/attention if you feel unwell.

- Storage/Disposal**
- P405 - Store locked up.
 - P501 - Dispose of content and/or container in accordance with local, regional, national, and/or international regulations.

- Supplemental information**
- 2-12.5 percent of this product consists of an ingredient of unknown toxicity.

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.

UN GHS Revision 3

According to: **UN Globally Harmonized System of Classification and Labelling of Chemicals (GHS): Third Revised Edition**

2.1 Classification of the substance or mixture

- UN GHS**
- Acute Toxicity Oral 4
 - Reproductive Toxicity 2
 - Specific Target Organ Toxicity Repeated Exposure 1
 - Hazardous to the aquatic environment Chronic 4

2.2 Label elements

UN GHS

DANGER



- Hazard statements**
- Harmful if swallowed
 - Suspected of damaging fertility or the unborn child.
 - Causes damage to organs through prolonged or repeated exposure.
 - May cause long lasting harmful effects to aquatic life

Precautionary statements

- Prevention**
- Obtain special instructions before use.
 - Do not handle until all safety precautions have been read and understood.

Do not breathe dust or fume.
Wash thoroughly after handling.
Do not eat, drink or smoke when using this product.
Avoid release to the environment.
Use personal protective equipment as required.

Response • IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician if you feel unwell.
Rinse mouth.
IF exposed or concerned: Get medical advice/attention.
Get medical advice/attention if you feel unwell.

Storage/Disposal • Store locked up.
Dispose of content and/or container in accordance with local, regional, national, and/or international regulations.

Supplemental information • 2-12.5 percent of this product consists of an ingredient of unknown toxicity.

2.3 Other hazards

UN GHS

• 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 the Globally Harmonized System for Classification and Labeling (GHS) this product is considered hazardous

United States (US)

According to: OSHA 29 CFR 1910.1200 HCS

2.1 Classification of the substance or mixture

OSHA HCS 2012 • Acute Toxicity Oral 4
Reproductive Toxicity 2
Specific Target Organ Toxicity Repeated Exposure 1
Hazards Not Otherwise Classified - Health Hazards - Metal fume fever

2.2 Label elements

OSHA HCS 2012

DANGER



Hazard statements • Harmful if swallowed
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 or fume.
Wash thoroughly after handling.
Do not eat, drink or smoke when using this product.
Wear protective gloves/protective clothing/eye protection/face protection.

Response • IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician if you feel unwell.
Rinse mouth.
IF exposed or concerned: Get medical advice/attention.
Get medical advice/attention if you feel unwell.

Storage/Disposal • Store locked up.

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

Supplemental information • 2-12.5 percent of this product consists of an ingredient of unknown toxicity.

2.3 Other hazards

OSHA HCS 2012 • 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. 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
Iron	CAS:7439-89-6 EC Number:231-096-4	48% TO 86%		EU CLP: Acute Tox. 4, H302; Aquatic Chronic 4, H413 UN GHS Revision 3: Acute Tox. 4 (Orl); Aquatic Chronic 4 OSHA HCS 2012: Acute Tox. 4 (Orl)	NDA
Nickel	CAS:7440-02-0 EC Number:231-111-4	0% TO 22%	NDA	EU CLP: Annex VI, Table 3.1: Skin Sens. 1, H317; Carc. 2, H351 (Inhl); STOT RE 1, H372 (Lungs, Orl, Derm, Inhl); Aquatic Chronic 3, H412 UN GHS Revision 3: Flam. Sol. 1; Resp. Sens. 1B; Skin Sens. 1A; Carc. 2 (Inhl); STOT RE 2 (Lungs, Oral, Inhl); Aquatic Acute 3; Aquatic Chronic 3 OSHA HCS 2012: Flam. Sol. 1; Comb. Dust; Resp. Sens. 1B; Skin Sens. 1A; Carc. 2 (Inhl); STOT RE 2 (Lungs, Orl, Inhl)	NDA
Molybdenum	CAS:7439-98-7 EC Number:231-107-2	>= 3%	NDA	EU CLP: Flam. Sol. 1, H228; Repr. 2, H361 (Orl); Aquatic Chronic 4, H413 UN GHS Revision 3: Flam. Sol. 1; Repr. 2 (Orl); Aquatic Chronic 4 OSHA HCS 2012: Flam. Sol. 1; Comb. Dust; Repr. 2 (Orl)	NDA
Manganese	CAS:7439-96-5 EC Number:231-105-1	2%	Ingestion/Oral-Rat LD50 • 9 g/kg	EU CLP: Flam. Sol. 2, H228; Eye Irrit. 2, H319; Repr. 2, H361 (Orl); STOT RE 1, H372 (CNS, Lungs, Inhl) UN GHS Revision 3: Flam. Sol. 2; Skin Irrit. 3; Eye Irrit. 2; Repr. 2 (Orl); STOT RE 1 (CNS, Lungs, Inhl) OSHA HCS 2012: Flam. Sol. 2; Comb. Dust; Eye Irrit. 2; Repr. 2 (Orl); STOT RE 1 (CNS, Lungs, Inhl); Hazard Not Otherwise Classified - Health Hazard - Metal fume fever	NDA
Silicon	CAS:7440-21-3 EC Number:231-130-8	1.5%	Ingestion/Oral-Rat LD50 • 3160 mg/kg	EU CLP: Flam. Sol. 2, H228 UN GHS Revision 3: Flam. Sol. 2; Acute Tox. 5 (Orl) OSHA HCS 2012: Flam. Sol. 2	NDA
Chromium	CAS:7440-47-3 EC Number:231-157-5	0.3%	NDA	EU CLP: STOT SE 3: Resp. Irrit., H335 UN GHS Revision 3: STOT SE 3: Resp. Irrit. OSHA HCS 2012: STOT SE 3: Resp. Irrit.	NDA

Section 4 - First Aid Measures

4.1 Description of first aid measures

- Inhalation** • Move victim to fresh air. Administer oxygen if breathing is difficult. Give artificial respiration if victim is not breathing. Get medical attention.
- Skin** • Wash skin with soap and water. Remove clothing and wash thoroughly before use. If irritation develops and persists, get medical attention.
- Eye** • In case of contact with substance, immediately flush eyes with running water for at least 20 minutes. Get medical attention.
- Ingestion** • Not expected to be an important route of entry into the body. If entire welding studs or large fragments are ingested, seek medical attention.

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** • LARGE FIRE: Water spray, fog or regular foam.
SMALL FIRES: Dry chemical, CO₂, water spray or regular foam.
- Unsuitable Extinguishing Media** • No data available

5.2 Special hazards arising from the substance or mixture

- Unusual Fire and Explosion Hazards** • This product is non-combustible and does not present a fire hazard.
- 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** • Ventilate enclosed areas. Do not walk through spilled material. Wear appropriate personal protective equipment, avoid direct contact. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.
- Emergency Procedures** • Eliminate all ignition sources. As an immediate precautionary measure, isolate spill or leak area for at least 25 meters (75 feet) in all directions. If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions. Keep unauthorized personnel away.

6.2 Environmental precautions

- Avoid run off to waterways and sewers.

6.3 Methods and material for containment and cleaning up

- Containment/Clean-up Measures** • Avoid generating dust.
SMALL DRY SPILLS: With clean shovel place material into clean, dry container and cover

loosely; move containers from spill area.
 LARGE SPILLS: Cover powder spill with plastic sheet or tarp to minimize spreading.

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. Wear appropriate personal protective equipment, avoid direct contact. Do not breathe dust or fumes. Avoid contact with skin, eyes, and 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 • Keep container closed. Store in a cool, dry, well-ventilated place.

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	Europe	NIOSH	OSHA	United Kingdom
Nickel (7440-02-0)	STELs	Not established	Not established	Not established	Not established	1.5 mg/m ³ STEL (calculated)
	TWAs	1.5 mg/m ³ TWA (inhalable fraction)	Not established	0.015 mg/m ³ TWA	1 mg/m ³ TWA	0.5 mg/m ³ TWA
Chromium (7440-47-3)	TWAs	0.5 mg/m ³ TWA	2 mg/m ³ TWA	0.5 mg/m ³ TWA	1 mg/m ³ TWA	0.5 mg/m ³ TWA
	STELs	Not established	Not established	Not established	Not established	1.5 mg/m ³ STEL (calculated)
Silicon (7440-21-3)	STELs	Not established	Not established	Not established	Not established	30 ppm STEL (calculated, inhalable dust); 12 mg/m ³ STEL (calculated, respirable dust)
	TWAs	Not established	Not established	10 mg/m ³ TWA (total dust); 5 mg/m ³ TWA (respirable dust)	15 mg/m ³ TWA (total dust); 5 mg/m ³ TWA (respirable fraction)	10 mg/m ³ TWA (inhalable dust); 4 mg/m ³ TWA (respirable dust)
Manganese	STELs	Not established	Not established	3 mg/m ³ STEL	Not established	1.5 mg/m ³ STEL (calculated)
	TWAs	0.02 mg/m ³ TWA (respirable fraction); 0.1 mg/m ³ TWA (inhalable fraction)	Not established	1 mg/m ³ TWA (fume)	Not established	0.5 mg/m ³ TWA (as Mn)
	Ceilings	Not established	Not established	Not established	5 mg/m ³ Ceiling (fume)	Not established
Molybdenum (7439-98-7)	TWAs	10 mg/m ³ TWA (inhalable fraction); 3 mg/m ³ TWA (respirable fraction)	Not established	Not established	Not established	Not established

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.

Skin/Body

- Wear appropriate gloves.

Environmental

Exposure Controls

- Follow best practice for site management and disposal of waste. Controls should be engineered to prevent release to the environment, including procedures to prevent spills, atmospheric release and release to waterways.

Key to abbreviations

ACGIH = American Conference of Governmental Industrial Hygiene

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

TWA = Time-Weighted Averages are based on 8h/day, 40h/week exposures

Section 9 - Physical and Chemical Properties

9.1 Information on Physical and Chemical Properties

Material Description			
Physical Form	Solid	Appearance/Description	Gray metallic solid shapes, various sizes.
Color	Gray metallic.	Odor	Data lacking
Odor Threshold	Data lacking		
General Properties			
Boiling Point	Data lacking	Melting Point/Freezing Point	1510 °F(821.1111 °C)
Decomposition Temperature	2750 °F(1510 °C)	pH	Data lacking
Specific Gravity/Relative Density	= 7.5 Water=1	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	Data lacking
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

- No dangerous reaction known under conditions of normal use.

10.2 Chemical stability

- Stable under normal temperatures and pressures.

10.3 Possibility of hazardous reactions

- Hazardous polymerization not indicated.

10.4 Conditions to avoid

- Avoid generating dust.

10.5 Incompatible materials

- Acids and strong oxidizing agents.

10.6 Hazardous decomposition products

- None known.

Section 11 - Toxicological Information

11.1 Information on toxicological effects

Components		
Iron (48% TO 86%)	7439-89-6	Acute Toxicity: Ingestion/Oral-Rat LD50 • 750 mg/kg; Blood:Changes in serum composition (e.g., TP, bilirubin cholesterol); Biochemical:Enzyme inhibition, induction, or change in blood or tissue levels:Transaminases; Ingestion/Oral-Child TDLo • 77 mg/kg; Behavioral:Irritability; Gastrointestinal:Nausea or vomiting; Blood:Normocytic anemia; Multi-dose Toxicity: Ingestion/Oral-Rat TDLo • 105 mg/kg 5 Week(s)-Continuous; Liver:Tumors; Tumorigenic:Active as anti-cancer agent; Tumorigenic:Protects against induction of experimental tumors
Nickel (0% TO 22%)	7440-02-0	Acute Toxicity: Ingestion/Oral-Rat TDLo • 200 mg/kg; Nutritional and Gross Metabolic:Gross Metabolite Changes:Weight loss or decreased weight gain; Behavioral:Somnolence (general depressed activity); Multi-dose Toxicity: Ingestion/Oral-Mouse TDLo • 500 mg/kg 5 Day(s)-Intermittent; Lungs, Thorax, or Respiration:Fibrosis, focal (pneumoconiosis); Related to Chronic Data:Death in the Other Multiple Dose data type field; Inhalation-Rabbit TClO • 1 mg/m ³ 6 Hour(s) 13 Week(s)-Intermittent; Lungs, Thorax, or Respiration:Other changes; Lungs, Thorax, or Respiration:Changes in lung weight; Blood:Hemorrhage; Inhalation-Rat TClO • 0.4 mg/m ³ 40 Week(s)-Intermittent; Vascular:Thrombosis distant from injection site; Lungs, Thorax, or Respiration:Other changes; Related to Chronic Data:Death in the Other Multiple Dose data type field; Reproductive: Ingestion/Oral-Rat TDLo • 158 mg/kg (multigenerations); Reproductive Effects:Effects on Embryo or Fetus:Fetotoxicity (except death, e.g., stunted fetus); Reproductive Effects:Effects on Embryo or Fetus:Fetal death; Tumorigen / Carcinogen: Inhalation-Guinea Pig TClO • 15 mg/m ³ 91 Week(s)-Intermittent; Tumorigenic:Equivocal tumorigenic agent by RTECS criteria; Lungs, Thorax, or Respiration:Tumors; Lungs, Thorax, or Respiration:Bronchiogenic carcinoma
Molybdenum (>= 3%)	7439-98-7	Mutagen: Cytogenetic analysis • Inhalation-Rat • 19500 µg/m ³ ; Reproductive: Ingestion/Oral-Mouse TDLo • 448 mg/kg (multigenerations); Reproductive Effects:Effects on Embryo or Fetus:Fetotoxicity (except death, e.g., stunted fetus); Reproductive Effects:Effects on Embryo or Fetus:Fetal death; Ingestion/Oral-Rat TDLo • 5800 µg/kg (30W pre/1-20D preg); Reproductive Effects:Specific Developmental Abnormalities:Musculoskeletal system; Ingestion/Oral-Rat TDLo • 6050 µg/kg (35W pre); Reproductive Effects:Effects on Fertility:Pre-implantation mortality; Reproductive Effects:Effects on Fertility:Post-implantation mortality; Reproductive Effects:Specific Developmental Abnormalities:Musculoskeletal system
Manganese (2%)	7439-96-5	Acute Toxicity: Ingestion/Oral-Rat LD50 • 9 g/kg; Inhalation-Man TClO • 2300 µg/m ³ ; Brain and Coverings:Other degenerative changes; Behavioral:Changes in motor activity (specific assay); Behavioral:Muscle weakness; Irritation: Eye-Rabbit • 500 mg 24 Hour(s) • Mild irritation; Skin-Rabbit • 500 mg 24 Hour(s) • Mild irritation; Multi-dose Toxicity: Inhalation-Human TClO • 0.5 mg/m ³ 39 Week(s)-Intermittent; Brain and Coverings:Other degenerative changes; Peripheral Nerve and Sensation:Sensory change involving peripheral nerve; Behavioral:Irritability; Inhalation-Mouse TClO • 0.7 mg/m ³ 24 Hour(s) 22 Week(s)-Continuous; Lungs, Thorax, or Respiration:Fibrosis (interstitial); Immunological Including Allergic:Decrease in cellular immune response; Inhalation-Rat TClO • 0.3 mg/m ³ 5 Hour(s) 26 Week(s)-Intermittent; Lungs, Thorax, or Respiration:Fibrosis (interstitial); Immunological Including Allergic:Decrease in cellular immune response; Reproductive: Ingestion/Oral-Mouse TDLo • 322.5 mg/kg (43D male); Reproductive Effects:Paternal Effects:Spermatogenesis; Ingestion/Oral-Rat TDLo • 50 mg/kg (20D post); Reproductive Effects:Specific Developmental Abnormalities:Central nervous system; Reproductive Effects:Effects on Newborn:Biochemical and metabolic; Reproductive Effects:Effects on Newborn:Behavioral
Silicon (1.5%)	7440-21-3	Acute Toxicity: Ingestion/Oral-Rat LD50 • 3160 mg/kg; Irritation: Eye-Rabbit • 3 mg • Mild irritation

GHS Properties	Classification
Acute toxicity	EU/CLP •Acute Toxicity - Oral 4 - ATEmix (Orl) = 763 mg/kg UN GHS 3 •Acute Toxicity - Oral 4 - ATEmix (Orl) = 760 mg/kg OSHA HCS 2012 •Acute Toxicity - Oral 4 - ATEmix (Orl) = 760 mg/kg
Skin corrosion/Irritation	EU/CLP •Data lacking UN GHS 3 •Data lacking OSHA HCS 2012 •Data lacking
Serious eye damage/Irritation	EU/CLP •Data lacking UN GHS 3 •Data lacking OSHA HCS 2012 •Data lacking
Skin sensitization	EU/CLP •Data lacking UN GHS 3 •Data lacking OSHA HCS 2012 •Data lacking
Respiratory sensitization	EU/CLP •Data lacking UN GHS 3 •Data lacking OSHA HCS 2012 •Data lacking
Aspiration Hazard	EU/CLP •Data lacking UN GHS 3 •Data lacking OSHA HCS 2012 •Data lacking
Carcinogenicity	EU/CLP •Data lacking UN GHS 3 •Data lacking OSHA HCS 2012 •Data lacking
Germ Cell Mutagenicity	EU/CLP •Data lacking UN GHS 3 •Data lacking OSHA HCS 2012 •Data lacking
Toxicity for Reproduction	EU/CLP •Toxic to Reproduction 2 UN GHS 3 •Toxic to Reproduction 2 OSHA HCS 2012 •Toxic to Reproduction 2
STOT-SE	EU/CLP •Data lacking UN GHS 3 •Data lacking OSHA HCS 2012 •Data lacking
STOT-RE	EU/CLP •Specific Target Organ Toxicity Repeated Exposure 2 UN GHS 3 •Specific Target Organ Toxicity Repeated Exposure 1 OSHA HCS 2012 •Specific Target Organ Toxicity Repeated Exposure 1

Potential Health Effects

Inhalation

Acute (Immediate)

- Exposure to dust may cause 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.

Skin

Acute (Immediate)

- Exposure to dust may cause mechanical irritation.

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) Ingestion

- No data available

Acute (Immediate)

- Harmful if swallowed. Excessive concentrations of nuisance dust in the workplace may cause mechanical irritation to mucous membranes.

Chronic (Delayed)

- No data available

Other

Chronic (Delayed)

- Chronic exposure to Manganese dust and fumes can cause Manganism (Parkinson like disease).

Carcinogenic Effects

- This material contains a component that may cause cancer, however based on regulatory criteria this material is not classified as a carcinogen.

Carcinogenic Effects			
	CAS	IARC	NTP
Nickel	7440-02-0	Group 2B-Possible Carcinogen	Reasonably Anticipated to be Human Carcinogen

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

Components		
Iron (48% TO 86%)	7439-89-6	Aquatic Toxicity-Fish: 96 Hour(s) LC50 <i>Mudskipper(Periophthalmus waltoni)</i> 0.00648 mg/L 7 Day(s) NOEC <i>Brown Trout (Salmo trutta)</i> 0.305 mg/L Aquatic Toxicity-Crustacea: 7 Day(s) NOEC <i>Aquatic Sowbug, Isopod (Idotea balthica)</i> 0.5 mg/L
Nickel (0% TO 22%)	7440-02-0	Aquatic Toxicity-Fish: 96 Hour(s) LC50 <i>Oncorhynchus mykiss (Rainbow Trout)</i> 0.06 mg/L Comments: The Reproductive Toxicology of Aquatic Contaminants 28 Day(s) NOEC <i>Cyprinus carpio (Common Carp)</i> 0.0035 µg/L Comments: Bioaccumulation of Micropollutants and Biomarker Responses in Caged Carp (<i>Cyprinus carpio</i>) Aquatic Toxicity-Crustacea: 7 Day(s) NOEC <i>Americamysis bahia (Opossum Shrimp)</i> 0.213 mg/L Comments: Results of Provision E5F Spiked Metals Toxicity Testing 2 to 9 April 1991 Aquatic Toxicity-Algae and Other Aquatic Plant(s): 96 Hour(s) EC50 <i>Pseudokirchneriella subcapitata (Green Algae)</i> 0.233 mg/L Comments: Comparison of the Relative Toxicity Relationships Based on Batch and Continuous Algal Toxicity Tests.
Molybdenum (>= 3%)	7439-98-7	Aquatic Toxicity-Fish: 96 Hour(s) LC50 <i>Rainbow Trout (Oncorhynchus mykiss)</i> 800 mg/L Comments: Water Pollution Studies Aquatic Toxicity-Crustacea: 48 Hour(s) LC50 Water Flea >200 mg/L Comments: Chronic Screening Toxicity Test with <i>Daphnia magna</i> 28 Day(s) NOEC Water Flea 0.67 mg/L Comments: Chronic Screening Toxicity Test with <i>Daphnia magna</i>

- May cause long lasting harmful effects to aquatic life.

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
TDG	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

Inventory						
Component	CAS	Canada DSL	Canada NDSL	EU EINECS	EU ELNICS	TSCA
Chromium	7440-47-3	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
Silicon	7440-21-3	Yes	No	Yes	No	Yes

Canada

Labor

Canada - WHMIS - Classifications of Substances

•Chromium

7440-47-3

Uncontrolled product according to WHMIS classification criteria

•Manganese

7439-96-5

D2A (including powder)

•Molybdenum	7439-98-7	Uncontrolled product according to WHMIS classification criteria
•Nickel	7440-02-0	D2A, D2B; B6, D2A (Raney)
•Silicon	7440-21-3	B4
•Iron	7439-89-6	Uncontrolled product according to WHMIS classification criteria

Canada - WHMIS - Ingredient Disclosure List

•Chromium	7440-47-3	0.1 %
•Manganese	7439-96-5	1 %
•Molybdenum	7439-98-7	1 %
•Nickel	7440-02-0	0.1 %
•Silicon	7440-21-3	Not Listed
•Iron	7439-89-6	Not Listed

Environment

Canada - CEPA - Priority Substances List

•Chromium	7440-47-3	Not Listed
•Manganese	7439-96-5	Not Listed
•Molybdenum	7439-98-7	Not Listed
•Nickel	7440-02-0	Not Listed
•Silicon	7440-21-3	Not Listed
•Iron	7439-89-6	Not Listed

United States

Labor

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

•Chromium	7440-47-3	Not Listed
•Manganese	7439-96-5	Not Listed
•Molybdenum	7439-98-7	Not Listed
•Nickel	7440-02-0	Not Listed
•Silicon	7440-21-3	Not Listed
•Iron	7439-89-6	Not Listed

U.S. - OSHA - Specifically Regulated Chemicals

•Chromium	7440-47-3	Not Listed
•Manganese	7439-96-5	Not Listed
•Molybdenum	7439-98-7	Not Listed
•Nickel	7440-02-0	Not Listed
•Silicon	7440-21-3	Not Listed
•Iron	7439-89-6	Not Listed

Environment

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

•Chromium	7440-47-3	Not Listed
•Manganese	7439-96-5	Not Listed
•Molybdenum	7439-98-7	Not Listed
•Nickel	7440-02-0	Not Listed
•Silicon	7440-21-3	Not Listed
•Iron	7439-89-6	Not Listed

U.S. - CERCLA/SARA - Hazardous Substances and their Reportable Quantities

•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)
•Manganese	7439-96-5	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 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)
•Silicon	7440-21-3	Not Listed
•Iron	7439-89-6	Not Listed
U.S. - CERCLA/SARA - Radionuclides and Their Reportable Quantities		
•Chromium	7440-47-3	Not Listed
•Manganese	7439-96-5	Not Listed
•Molybdenum	7439-98-7	Not Listed
•Nickel	7440-02-0	Not Listed
•Silicon	7440-21-3	Not Listed
•Iron	7439-89-6	Not Listed
U.S. - CERCLA/SARA - Section 302 Extremely Hazardous Substances EPCRA RQs		
•Chromium	7440-47-3	Not Listed
•Manganese	7439-96-5	Not Listed
•Molybdenum	7439-98-7	Not Listed
•Nickel	7440-02-0	Not Listed
•Silicon	7440-21-3	Not Listed
•Iron	7439-89-6	Not Listed
U.S. - CERCLA/SARA - Section 302 Extremely Hazardous Substances TPQs		
•Chromium	7440-47-3	Not Listed
•Manganese	7439-96-5	Not Listed
•Molybdenum	7439-98-7	Not Listed
•Nickel	7440-02-0	Not Listed
•Silicon	7440-21-3	Not Listed
•Iron	7439-89-6	Not Listed
U.S. - CERCLA/SARA - Section 313 - Emission Reporting		
•Chromium	7440-47-3	1.0 % de minimis concentration
•Manganese	7439-96-5	1.0 % de minimis concentration
•Molybdenum	7439-98-7	Not Listed
•Nickel	7440-02-0	0.1 % de minimis concentration
•Silicon	7440-21-3	Not Listed
•Iron	7439-89-6	Not Listed
U.S. - CERCLA/SARA - Section 313 - PBT Chemical Listing		
•Chromium	7440-47-3	Not Listed
•Manganese	7439-96-5	Not Listed
•Molybdenum	7439-98-7	Not Listed
•Nickel	7440-02-0	Not Listed
•Silicon	7440-21-3	Not Listed
•Iron	7439-89-6	Not Listed

United States - California

Environment

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

•Chromium	7440-47-3	Not Listed
•Manganese	7439-96-5	Not Listed
•Molybdenum	7439-98-7	Not Listed
•Nickel	7440-02-0	carcinogen, 10/1/1989 (metallic)
•Silicon	7440-21-3	Not Listed
•Iron	7439-89-6	Not Listed

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

•Chromium	7440-47-3	Not Listed
•Manganese	7439-96-5	Not Listed

•Molybdenum	7439-98-7	Not Listed
•Nickel	7440-02-0	Not Listed
•Silicon	7440-21-3	Not Listed
•Iron	7439-89-6	Not Listed
U.S. - California - Proposition 65 - Maximum Allowable Dose Levels (MADL)		
•Chromium	7440-47-3	Not Listed
•Manganese	7439-96-5	Not Listed
•Molybdenum	7439-98-7	Not Listed
•Nickel	7440-02-0	Not Listed
•Silicon	7440-21-3	Not Listed
•Iron	7439-89-6	Not Listed
U.S. - California - Proposition 65 - No Significant Risk Levels (NSRL)		
•Chromium	7440-47-3	Not Listed
•Manganese	7439-96-5	Not Listed
•Molybdenum	7439-98-7	Not Listed
•Nickel	7440-02-0	Not Listed
•Silicon	7440-21-3	Not Listed
•Iron	7439-89-6	Not Listed
U.S. - California - Proposition 65 - Reproductive Toxicity - Female		
•Chromium	7440-47-3	Not Listed
•Manganese	7439-96-5	Not Listed
•Molybdenum	7439-98-7	Not Listed
•Nickel	7440-02-0	Not Listed
•Silicon	7440-21-3	Not Listed
•Iron	7439-89-6	Not Listed
U.S. - California - Proposition 65 - Reproductive Toxicity - Male		
•Chromium	7440-47-3	Not Listed
•Manganese	7439-96-5	Not Listed
•Molybdenum	7439-98-7	Not Listed
•Nickel	7440-02-0	Not Listed
•Silicon	7440-21-3	Not Listed
•Iron	7439-89-6	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

Relevant Phrases (code & full text)

- H228 - Flammable solid
- H317 - May cause an allergic skin reaction
- H319 - Causes serious eye irritation
- H335 - May cause respiratory irritation
- H351 - Suspected of causing cancer.
- H372 - Causes damage to organs through prolonged or repeated exposure.
- H412 - Harmful to aquatic life with long lasting effects

Revision Date

- 28/April/2016

Preparation Date

- 28/April/2016

Disclaimer/Statement of Liability

- The information herein is given in good faith but no warranty, expressed or implied, is made.

Key to abbreviations

NDA = No Data Available