

## **SAFETY DATA SHEETS**

**This SDS packet was issued with item:**

070960492

**The safety data sheets (SDS) in this packet apply to the individual products listed below. Please refer to invoice for specific item number(s).**

070413906 070413914 070413922 070413930 070413948 070413955 070413963 070414094 070415265 070415273  
070415281 070415299 070415307 070415315 070415323 070415331 070415349 070415356 070415364 070415372  
070415380 070415398 070415406 070415414 070415422 070415430 070415448 070415455 070415463 070415471  
070415489 070415497 070415505 070415513 070415521 070415539 070415547 070415554 070415562 070956003  
070956011 070956052 070956060 070957308 070957316 070957324 070957332 070957340 070960401 070960419  
070960427 070960435 070960443 070960450 070960468 070960476 070960484

**The safety data sheets (SDS) in this packet apply to one or more components included in the items listed below. Items listed below may require one or more SDS. Please refer to invoice for specific item number(s).**

070954933 070954941 070954958 070954966 070954982 070954990 070955005 070955062 070955096 070955104  
070955138 070955146 070955161 070955179

**SECTION I – PRODUCT AND COMPANY IDENTIFICATION**

Company Name  
**American Orthodontics**  
**1714 Cambridge Ave**  
**Sheboygan Wisconsin 53081**

Emergency telephone number  
**(920) 457-5051**  
 Telephone for information  
**(920) 457-5051**

**Product Identification:**

Product Name  
 Common Name  
 Associated Catalog Numbers

Stainless Steel Products  
 Stainless Steel Alloys  
 Arch Hooks and Stops, Arch Lock, Bands, Bondable Tongue Directors, Brackets, Diastema Closers, Expansion Screws, Facebows, Gentle Jumpers, Instruments, Jasper Jumpers, Jet Family Products, Jones Jigs, Kobayashi Hooks, Korn Mandibular Advancers, Lingual Attachments, Lingual Retainers, Ligature Wire, Lip Bumpers, Mesh Pads, Palatal Bars, Springs, Surgical Ball Hooks, Tubes, Stainless Steel Wires, Stainless Steel Products

**SECTION II – HAZARDOUS COMPONENTS**

Ingredients Considered Hazardous	Common Name	Wt %	CAS Number	OSHA PEL	ACGIH TLV
	Aluminum, Al	0-5	7429-90-5	15.0	15.0
	Cobalt, Co	0-5	7440-48-7	0.1	0.1
	Copper, Cu	0-5	7440-50-8	1.0	1.0
	Chromium, Cr	13-23	7440-47-3	1.0	0.5
	Iron, Fe	50-80	7439-89-6	10.0	5.0
	Manganese, Mn	0-5	7439-96-5	5.0	5.0
	Molybdenum, Mo	0-5	7439-98-7	5.0	5.0
	Nickel, Ni	3-15	7440-02-0	1.0	1.0
	Silicon, Si	0-5	7440-21-3	15.0	10.0

**SECTION III – PHYSICAL CHARACTERISTICS**

Boiling Point  
 Specific Gravity  
 Solubility in Water  
 Vapor Pressure  
 Appearance  
 Odor

High °C  
 7.5 – 8.5  
 Insoluble  
 Nil at 100°C  
 Solid metal  
 Odorless

**SECTION IV – FIRE AND EXPLOSION HAZARD DATA**

Extinguishing Media  
 Unusual Fire & Explosion Hazards  
 Special Fire Fighting Procedures

N/A  
 N/A  
 N/A

**SECTION V – REACTIVITY DATA**

Reactivity  
 Incompatible Materials  
 Hazardous Decomposition Products  
 Hazardous Polymerization

Stable  
 None  
 None  
 Will Not Occur

**SECTION VI – HEALTH HAZARD DATA**

Acute Hazards  
 Chronic Hazards  
 Signs & Symptoms Of Overexposure

None known in form supplied  
 None known in form supplied  
 N/A

Routes of Entry: \_\_\_\_\_ Symptom: \_\_\_\_\_ Emergency / First Aid Procedures: \_\_\_\_\_

# MATERIAL SAFETY DATA SHEET

Table of Contents

Eye Contact	Unlikely in form supplied	N/A
Skin Contact	Unlikely in form supplied	N/A
Inhalation	Unlikely in form supplied	N/A
Ingestion	Unlikely in form supplied	N/A

## SECTION VII – SPECIAL PROTECTION INFORMATION

Ventilation	General
Respiratory Protection	Required when cutting, grinding, or welding
Protective Gloves	Required when cutting, grinding, or welding
Eye Protection	Required when cutting, grinding, or welding
Work / Hygienic Practices	Follow standard laboratory safety practices

## SECTION VIII – SAFE HANDLING MEASURES

Precautions In Case Of Spill	Clean up
Waste Disposal Method	Dispose of in accordance with local, state, and federal regulations
Handling & Storage Precautions	None

The information contained in the MSDS is believed to be valid and accurate. American Orthodontics, however, makes no warranty, either expressed or implied, as to the completeness of information in all possible conditions. **Reasonable safety precautions must always be observed.**

## 1. PRODUCT AND COMPANY IDENTIFICATION

### 1.1 Product Identifier

**Product Name:** Stainless Steel Brackets; Empower (Bracket body only; for Metal Clip, refer to Chromium Cobalt Alloy SDS); T3; Master Series; Mini Master Series; Low Profile (LP); Forever Gold™; iFit; Slim Tube; Wraparound; Inconel; Maximum Retention MR™ Bands; Contoured Bands; Bondable Retainer; Bite Blocks; Tongue Director; Diastema Closer; Sheaths; Eyelets; Eruption Appliance; Cleats; Lugs; Hooks; Stops; Weldable Tubes; Stainless Steel Wires; Stainless Steel Springs; Wrap Around Hawley; Stainless Steel Retainer Wire; Ball Retainer Clasps; Kobayashi Hooks; Ligature Wires; Springs; Powerscope™; Herbst Appliances; Miniscope™ Telescoping Herbst; Hanks Telescoping Herbst™; Rollo Bands; Mini Skirt™ Crowns; Jasper Jumper; Gentle Jumper; Jones Jig; Rapid Molar Intruder; Distal Jet; Spring Jet; Mesial Jet; Uprighter Jet; Palatal Arch; Quad Helix; Expansion Screws; Quick Fix; Alexander Lip Bumper; Lip Bumper; Korn Lip Bumper; Mandibular Advancer; M.A.P.; IOA; 300 Series Facebows; 400 Series Facebows; Luno

**Common Name:** Fixed & Functional, Stainless Steel Brackets, Buccal Tubes, Wires, Stops & Hooks, Wire Spring, Bands, Lingual Attachments, Extraoral, Instruments

**Material:** Stainless Steels (Austenitic, Ferritic, Precipitation Hardening, Martensitic)

**Restrictions on Use:** American Orthodontics' products are used for the treatment of malocclusions and craniofacial abnormalities as diagnosed by a trained dental professional or orthodontist. Federal law restricts this device to use by or on the order of a dentist or orthodontist.

**EC No.:** See Below

**REACH Registration No.:** Nickel (01-2119438727-29-XXXX)  
Aluminum (01-2119529243-XXXX)  
Niobium (01-2119489003-42-XXXX)  
Carbon (01-2119966900-32-XXXX)  
Tantalum (01-2119974241-40-XXXX)

**CAS No. / IUPAC:** See Below

### 1.2 Relevant Identified Uses/ Uses Advised Against

**Relevant identified uses:** Dental/Orthodontic use only

**Uses advised against:** Not for Consumer use. Please see "Restrictions on Use"

### 1.3 Details of the Supplier of the Safety Data Sheet

**Company Name:**  
American Orthodontics  
3524 Washington Avenue  
Sheboygan, WI 53081  
Phone: 920-457-5051  
Fax: 920-457-1485

**E-mail:** info@americanortho.com  
**National Contact:** Safety Department

### 1.4 Emergency Telephone Number

**Emergency Response Number:**  
920-457-5051  
Only available during office hours: 8:00AM – 5:00PM (Central Time)  
Language of Phone Service: English

## 2. HAZARDS IDENTIFICATION

### General Hazard Statement:

Solid metallic products are generally classified as “articles” and do not constitute a hazardous materials in solid form under the definitions of the OSHA Hazard Communication Standard (29 CFR 1910.1200). Any articles manufactured from these solid products would be generally classified as non-hazardous. However some hazardous elements contained in these products can be emitted under certain processing conditions such as but not limited to: burning, melting, cutting, sawing, brazing, grinding, machining, milling, and welding. Products in the solid state present no fire or explosion hazard. Small chips, fines, and dust may ignite readily, though. The following classification information is for the hazardous elements which may be released during processing.

### 2.1 Classification of the substance or mixture

Serious Eye Damage/Irritation - Category 2B  
 Respiratory Sensitizer - Category 1  
 Skin Sensitizer - Category 1  
 Germ Cell Mutagenicity - Category 2  
 Carcinogenicity - Category 1B  
 Toxic to reproduction - Category 1B  
 Specific target organ toxicity - Single exposure - Category 1 (kidneys, respiratory system)  
 Specific target organ toxicity - Repeated exposure - Category 1 (respiratory system, skin)  
 Hazardous to aquatic environment - Acute Hazard - Category 1  
 Hazardous to aquatic environment - Chronic Hazard - Category 1

### 2.2 Label Elements

*Labelling according to Regulation (EC) No 1272/2008 [CLP]*

### Hazard Pictogram(s)



### Signal Word(s): Danger

Hazard Statements:

Causes eye irritation  
 May cause allergy or asthma symptoms or breathing difficulties if inhaled  
 May cause an allergic skin reaction  
 Suspected of causing genetic defects  
 Suspected of causing cancer  
 Causes damage to organs (kidneys, respiratory system)  
 Causes damage to organs through prolonged or repeated exposure (respiratory system)  
 Very toxic to aquatic life  
 Very toxic to aquatic life with long lasting effects

**Supplemental Hazard information (EU):**

Do not breathe dust/fume/gas/mist/vapors/spray.  
 In case of inadequate ventilation wear respiratory protection  
 Contaminated work clothing should not be allowed out of the workplace.  
 Wash thoroughly after handling  
 Wear protective gloves  
 Obtain special instructions before use  
 Do not handle until all safety precautions have been read and understood  
 Use personal protective equipment as required  
 Do not eat, drink or smoke when using this product.  
 Avoid release to the environment

**Response**

IF exposed or concerned: Get medical advice/attention  
 IF INHALED: If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing.  
 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 experiencing respiratory symptoms: Call a POISON CENTER or doctor/physician.  
 IF ON SKIN: Wash with plenty of soap and water. If skin irritation or rash occurs: Get medical advice/attention. Wash contaminated clothing before reuse.  
 If exposed or concerned: Get medical advice/attention.  
 Collect spillage

**Storage**

Store locked up

**Disposal**

Dispose of contents/container in accordance with local/regional/national/international regulations.

**3. COMPOSITION / INFORMATION ON INGREDIENTS**

<u>Ingredient(s)</u>	<u>CAS No.</u>	<u>EC No.</u>	<u>Wt. % Content (or Range)</u>
Iron	7439-89-6	N/A	Balance
Nickel	7440-02-0	231-111-4	0-15
Chromium	7440-47-3	N/A	11.5-20
Silicon	7440-21-3	N/A	0-2
Manganese,	7439-96-5	N/A	0-2
Molybdenum	7439-98-7	N/A	0-6.5
Titanium	7440-32-6	N/A	0-0.7
Copper	7440-50-8	N/A	0-5
Aluminum	7429-90-5	231-072-3	0-4
Niobium	7440-03-1	231-113-5	0-0.6
Carbon	7440-44-0	231-153-3	0-1.2
Tantalum	7440-25-7	231-135-5	0-0.5

Other trace elements may also be present in minute amounts. These small quantities (less than 0.1%) are frequently referred to as "trace" or "residual" elements; generally they originate in the raw material used.

## 4. FIRST-AID MEASURES

### 4.1 Description of First-Aid Measures

**Inhalation:** Move to fresh air. If breathing is difficult, give oxygen. If not breathing, give artificial respiration. Consult a physician.

**Skin Contact:** Wash skin with soap and water. In the case of skin irritation or allergic reactions see a physician.

**Eye Contact:** Immediately flush with plenty of water. After initial flushing, remove any contact lenses and continue flushing for at least 15 minutes. Keep eye wide open while rinsing. Consult a physician.

**Ingestion/Swallowing:** Do NOT induce vomiting. Call a physician or Poison Control Center immediately. Drink plenty of water. Never give anything by mouth to an unconscious person.

## 5. FIRE AND EXPLOSION HAZARDS

### General Fire Hazards

See Section 9 for Flammability Properties.

This product does not present fire or explosion hazards as shipped. Small chips, fines, and dust from processing may be explosive or readily ignitable.

### Hazardous Combustion Products

Thermal decomposition can lead to release of irritating gases and vapors. In the event of fire and/or explosion do not breathe fumes. May cause sensitization by inhalation and skin contact.

### Extinguishing Media

Class D extinguishing agents on fines, dust or molten metal. Use coarse water spray on chips and fines.

### Unsuitable Extinguishing Media

DO NOT use halogenated extinguishing agents on small chips or fines. DO NOT use water for fires involving molten metal. These fire extinguishing agents will react with burning material.

### Fire Fighting Equipment/Instructions

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

## 6. ACCIDENTAL RELEASE MEASURES

### General

No notable environmental hazard is anticipated from the “release” of this material in bulk solid form on land. This material should be recovered from aquatic environments.

### Recovery and Neutralization

Avoid dust formation. Collect scrap for recycling.

### Materials and Methods for Clean-Up

If product is molten, contain the flow using dry sand or salt flux as a dam. All tools and containers which come in contact with molten metal must be preheated or specially coated and rust free. Allow the spill to cool before remelting as scrap.

**Emergency Measures**

Keep people away from and upwind of spill/leak.

**Personal Precautions and Protective Equipment**

Wear appropriate protective clothing and respiratory protection for the situation.

**Environmental Precautions**

Prevent further leakage or spillage if safe to do so. Prevent product from entering drains. Do not flush into surface water or sanitary sewer system.

**7. HANDLING AND STORAGE**
**Handling, storage and decontamination procedures:**

Avoid contact with skin, eyes, and clothing. Wear personal protective equipment when handling. Avoid dust creation. Keep material dry. Avoid contact with sharp edges, corners, hot metal. Good housekeeping must be practiced during storage, transfer, handling and use to avoid excessive dust accumulation.

**Incompatible Products:**

May react in contact with strong acids to release gaseous acid decomposition products, e.g. hydrogen, oxides of nitrogen. Use of strong oxidizers (high pH) on stainless steel may cause Cr(VI) compounds to form at ambient temperatures. Decomposition: Fumes generated during welding, brazing, or thermal cutting may contain: chromium compounds, including hexavalent chromium Cr(VI); nickel; manganese; iron; molybdenum; and silicon compounds.

**8. EXPOSURE CONTROLS / PERSONAL PROTECTION**
**8.1 Control Parameters**

**Exposure Guidelines:** Chemicals are not readily available as they are bound within the alloy. Occupational exposure limits apply to some components resulting from grinding, polishing, abrasive blasting, hot rolling, hot forging, thermal cutting, or welding which may produce stainless steel dust or fumes.

Component	OSHA PELs (Permissible Exposure Limits)	ACGIH TLVs (Threshold Limit Values)
Nickel	1mg/ m <sup>3</sup> TWA (vacated) 1mg/ m <sup>3</sup> TWA	1.5 mg/ m <sup>3</sup> TWA
Silicon	15 mg/ m <sup>3</sup> TWA (total dust) 5 mg/ m <sup>3</sup> TWA respirable fraction (vacated) 10 mg/ m <sup>3</sup> TWA total dust (vacated) 5 mg/ m <sup>3</sup> TWA respirable fraction	N/A
Manganese	1 mg/ m <sup>3</sup> TWA (vacated) 3 mg/ m <sup>3</sup> STEL funem (vacated) 5 mg/ m <sup>3</sup> Ceiling 5 mg/ m <sup>3</sup> Ceiling (fume)	0.2 mg/ m <sup>3</sup> TWA
Molybdenum	10 mg/ m <sup>3</sup> TWA (vacated)	10 mg/ m <sup>3</sup> TWA (inhaled fraction) 3 mg/ m <sup>3</sup> TWA (respirable fraction)
Copper	0.1 mg/ m <sup>3</sup> TWA (fume) 1 mg/ m <sup>3</sup> TWA dust & mist (vacated)	0.2 mg/ m <sup>3</sup> TWA



	0.1 mg/ m <sup>3</sup> TWA dust, fume, mist	
Aluminum	10 mg/ m <sup>3</sup> TWA (as metal dust) 5.0 mg/ m <sup>3</sup> (as welding fume)	10 mg/ m <sup>3</sup> TWA (as metal dust) 5.0 mg/ m <sup>3</sup> TWA (as welding fume)

## NIOSH IDLH:

Nickel: IDLH (10mg/m<sup>3</sup>); TWA (0.015 mg/m<sup>3</sup>)

Silicon: TWA (10mg/m<sup>3</sup> total dust); TWA (5 mg/m<sup>3</sup> respirable dust)

Manganese: IDLH (500mg/m<sup>3</sup>); TWA (1 mg/m<sup>3</sup> fume); STEL (3mg/m<sup>3</sup>)

Molybdenum: IDLH (5000mg/m<sup>3</sup>)

Copper: IDLH (100mg/m<sup>3</sup> dust, fume & mist); TWA (1 mg/m<sup>3</sup> dust & mist); TWA (0.1mg/m<sup>3</sup> fume)

Aluminum: IDLH (10mg/m<sup>3</sup> total dust); IDLH (5mg/m<sup>3</sup> as respirable dust)

## 8.2 Exposure Controls

### 8.2.1 Appropriate Engineering Controls

Ensure adequate ventilation, especially in confined area (i.e. showers, eyewash stations, etc.).

### 8.2.2 Personal Protective Equipment

#### 8.2.2.1 Eye & Face Protection

When processing the metal alloy wear: Tightly fitting safety goggles.

#### 8.2.2 Skin Protection

When processing the metal alloy: Wear protective gloves/clothing.

#### 8.2.2.3 Respiratory Protection

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

## 9. PHYSICAL AND CHEMICAL PROPERTIES

### 9.1 Basic Physical & Chemical Properties

Appearance:	Varies from dull to very light grey, to shiny metallic light grey or bright mirror finish
Odor:	Odorless
Odor Threshold:	No Information Available
pH:	No Data Available
Melting Point:	2498-2768°F (1370-1520°C)
Flash Point:	No Data Available
Evaporation Rate:	No Data Available
Flammability (solid, gas):	No Data Available
Upper/Lower Flammability or Explosive Limits:	No Data Available
Vapor Pressure:	No Data Available
Vapor Density:	No Data Available
Relative Density:	No Data Available

Solubility(ies):	Insoluble
Partition Coefficient: n-octanol/water):	No Data Available
Auto-Ignition Temperature:	No Data Available
Decomposition Temperature:	No Data Available
Viscosity:	No Data Available
Specific Gravity:	0.27-0.30 lbs./in <sup>3</sup> (7.7-8.1 kg/dm <sup>3</sup> )

**9.2 Other Information**

Thermal Expansion (ambient at 100°C)	10-16x10 <sup>6</sup> m/m°C
Thermal Conductivity (ambient temperature):	12-30 W/m°C

**10. STABILITY AND REACTIVITY**
**10.1 Reactivity**

No data available

**10.2 Chemical Stability**

Stable under recommended storage conditions

**10.3 Conditions of Instability**

N/A

**10.4 Possibility of Hazardous Reactions**

None under normal processing

**10.5 Conditions to Avoid**

Dust formation

**10.6 Incompatible Materials**

May react in contact with strong acids to release gaseous acid decomposition products, e.g. hydrogen, oxides of nitrogen. Use of strong oxidizers (high pH) on stainless steel may cause Cr(VI) compounds to form at ambient temperatures. Decomposition: Fumes generated during welding, brazing, or thermal cutting may contain: chromium compounds, including hexavalent chromium Cr(VI); nickel; manganese; iron; molybdenum; and silicon compounds.

**10.7 Hazardous Decomposition Products**

None known based on information supplied

**10.8 Hazardous Polymerization**

Will not occur.

**11. TOXICOLOGICAL INFORMATION**

In its solid form stainless steel does not present an inhalation, absorption, or ingestion hazard. Grinding, polishing, abrasive blasting, hot rolling, hot forging, thermal cutting, or welding may produce stainless steel dust or fumes containing complex or mixed oxides of its components. Metal dust particles may cause eye, skin and/or respiratory system irritation. The below information is for these instances.

**Toxicity Overview:**

This product contains the following components which in their pure form have the following characteristics:

Target Organs: Respiratory System. Skin.

Chronic Health Effects: Elevated temperature processing such as welding and plasma arc cutting may release hazardous fumes. Overexposure to metal fumes may cause pulmonary edema (fluid in the lungs) and methemoglobinemia. May also cause pulmonary fibrosis and lung cancer.

Chronic exposure to manganese may cause impairment to the central nervous system including sluggishness, sleepiness, muscle weakness, loss of facial muscle control, edema, emotional disturbances, spastic gait, and falling. Chronic exposure to aluminum flake has been reported to cause pneumoconiosis in workers. Repeat oral exposure to aluminum results in decrements in neurobehavioral function and development.

Serious Eye Damage/Irritation: Contact with eyes may cause irritation.

Respiratory/Skin Sensitization: Contact with dust can cause mechanical irritation or drying of the skin. Repeated or prolonged skin contact may cause allergic reactions with susceptible persons.

Reproductive Toxicity: No Information Available

STOT-Repeated Exposure: Causes damage to organs through prolonged or repeated exposure

Inhalation Hazard: May cause irritation of respiratory tract. Inhalation of fumes may cause metal fume fever, which is characterized by flu-like symptoms with metallic taste, fever, chills, cough, weakness, chest pain, muscle pain and increased white blood cell count. May cause allergy or asthma symptoms or breathing difficulties if inhaled.

Other Potential Health Effects: May cause sensitization by inhalation and skin contact

Ingestion: May cause irritation

Chemical Name	LD50 Oral	LD50 Dermal	LC50 Inhalation
Iron	= 984 mg/kg ( Rat )	-	-
Nickel	> 9000 mg/kg ( Rat )	-	-
Silicon	= 3160 mg/kg ( Rat )	-	-
Manganese	= 9 g/kg ( Rat )	-	-
Aluminum	Unknown	-	-

Carcinogenicity: Below indicates whether each agency has listed any ingredient as a carcinogen.

Chemical Name	ACGIH	IARC	NTP	OSHA
Nickel		Group 2B	Reasonably Anticipated	X
Chromium		Group 3		

**Numerical measures of toxicity • - Product**

The following values are calculated based on chapter 3.1 of the GHS document:

**LD50 Oral** 389 mg/kg; Acute toxicity estimate 7500

**12. ECOLOGICAL INFORMATION**

Chemicals are not readily available as they are bound within the alloy. Exposure effects listed are based on existing health data for the individual components which comprise the mixture.

Chemical Name	Toxicity to Algae	Toxicity to Fish	Toxicity to Microorganisms	Daphnia Magna (Water)
Iron	-	LC50 96 h: = 0.56 mg/L semi-static (Cyprinus carpio) LC50 96 h: = 13.6 mg/L	-	-
Nickel	EC50 96 h: 0.174 - 0.311 mg/L static (Pseudokirchneriella subcapitata) EC50 72 h: = 0.18 mg/L (Pseudokirchneriella subcapitata)	LC50 96 h: = 1.3 mg/L semi-static (Cyprinus carpio) LC50 96 h: = 10.4 mg/L static (Cyprinus carpio) LC50 96 h: > 100 mg/L	-	EC50 48 h: = 1 mg/L Static (Daphnia magna) EC50 48 h: > 100 mg/L (Daphnia magna)
Copper	EC50 96 h: 0.031 - 0.054 mg/L static (Pseudokirchneriella subcapitata) EC50 72 h: 0.0426 - 0.0535 mg/L static (Pseudokirchneriella subcapitata)	LC50 96 h: 0.0068 - 0.0156 mg/L (Pimephales promelas) LC50 96 h: < 0.3 mg/L static (Pimephales promelas) LC50 96 h: = 0.052 mg/L flow-through (Oncorhynchus mykiss) LC50 96 h: = 0.112 mg/L flow-through (Poecilia reticulata) LC50 96 h: = 0.2 mg/L flow-through (Pimephales promelas) LC50 96 h: = 0.3 mg/L	-	EC50 48 h: = 0.03 mg/L Static (Daphnia magna)
Aluminum	-	LC50 96 h = 0.16 mg/l Rainbow Trout		EC50 24 h: = 3.5 mg/l Static (Daphnia)

### 13. DISPOSAL CONSIDERATIONS

The generator of waste material has the responsibility for proper waste classification, transportation and disposal with accordance applicable federal, state/provincial and local regulations.

Chemical Name	RCRA	RCRA - Basis for	RCRA - D Series Wastes	RCRA - U Series Wastes
Nickel – 7440-02-0	(hazardous constituent -	Included in waste streams: F006,	N/A	N/A
Chromium – 7440-47-3	N/A	Included in waste streams: F032, F034, F035, F037, F038,	5.0 mg/L regulatory level	N/A
Aluminum – 7429-90-5	N/A	Included in waste streams: F006, F019, F039	N/A	N/A
Chemical Name		California Hazardous Waste		
Nickel		Toxic powder Ignitable		
Chromium		Toxic Corrosive Ignitable		
Manganese		Ignitable powder		
Molybdenum		Ignitable powder		
Titanium		Ignitable powder		
Copper		Toxic		

### 14. TRANSPORTATION INFORMATION

**DOT Not Regulated**

### 15. REGULATORY INFORMATION

#### International Inventories

**TSCA** - United States Toxic Substances Control Act Section 8(b) Inventory: Complies

**DSL/NDSL** - Canadian Domestic Substances List/Non-Domestic Substances List: Complies

**U.S. Federal Regulations**

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product contains a chemical or chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372:

Chemical Name	CAS-No	Weight %	SARA 313 - Threshold Values %
Nickel	7440-02-0	37	0.1
Chromium	7440-47-3	26	1.0
Manganese	7439-96-5	2	1.0

**SARA 311/312 Hazard Categories**

Acute Health Hazard	No
Chronic Health Hazard	No
Fire Hazard	No
Sudden Release of Pressure Hazard	No
Reactive Hazard	No

**Clean Water Act**

This product contains the following substances which are regulated pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42):

Chemical Name	CWA - Reportable Quantities	CWA - Toxic Pollutants	CWA - Priority Pollutants	CWA - Hazardous Substances
Nickel		X	X	
Copper		X	X	

**CERCLA**

This material, as supplied, contains one or more substances regulated as a hazardous substance under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302):

Chemical Name	Hazardous Substances RQs	Extremely Hazardous Substances RQs	RQ
Nickel	100 lb		RQ 100 lb final RQ RQ 45.4 kg
Chromium			RQ 5000 lb final RQ RQ 2270 kg
Copper	5000 lb		RQ 5000 lb final RQ RQ 2270 kg

**U.S. State Regulations**
**California Proposition 65**

This product contains the following Proposition 65 chemicals:

Chemical Name	CAS-No	California Prop. 65
Nickel	7440-02-0	Carcinogen

**U.S. State Right-to-Know Regulations**

Chemical Name	New Jersey	Massachusetts	Pennsylvania	Illinois	Rhode Island
Nickel	X	X	X	X	X
Chromium		X			X
Silicon	X	X	X		X
Manganese	X	X	X	X	X
Molybdenum	X	X	X		X
Titanium	X				

**U.S. EPA Label Information**

EPA Pesticide Registration Number: Not applicable

**16. ADDITIONAL INFORMATION**
**16.1 Indication of changes/revision to SDS:**

1. New format
2. Inclusion of EC Requirements
3. **Revision Date:** 04/17/2018

**16.2 Abbreviations and acronyms:**

None

**16.3 Key literature references and sources for data**

1. Guidance on the Compilation of Safety Data Sheets; European Chemical Agency (ECHA); Version 2.1, February 2014
2. Regulation (EC) No 1272/2008 of the European Parliament and the Council of 16 December 2008 on classification, labelling, and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006

**16.4 Classification and procedure used to derive classification for mixtures according to Regulation (EC) 1272/2008[CLP]:**

None

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