Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations Date of issue: 03/24/2015 Revision date: 11/10/2015 Supersedes: 03/24/2015

Version: 2.0

## SECTION 1: Identification of the substance/mixture and of the company/undertaking

#### 1.1. Identification

Product form Product name : Article

: Eureka Stainless Steel MIG Wires and TIG Rods: 240, 308, 309, 310, 330, 350, 505, 410Ni Mo, 420, 17-4 PH, 2209

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

Use of the substance/mixture : Welding industry.

#### 1.3. Details of the supplier of the safety data sheet

Eureka Welding Alloys 2000 E. Avis Dr. Madison Heights, MI 48045 - USA T 800-962-8560 rkamen@eurekaweldingalloys.com

#### 1.4. Emergency telephone number

: 1-800-962-8560

### SECTION 2: Hazard(s) identification

#### 2.1. Classification of the substance or mixture

**GHS-US** classification

Emergency number

Not classified

#### 2.2. Label elements

**GHS-US** labeling

No labeling applicable

#### 2.3. Other hazards

Other hazards not contributing to the classification

: Exposure to metal dusts and oxides may cause metal fume fever. Metal fume fever is a temporary flu-like condition characterized by chills, fever, muscle aches and pains, nausea and vomiting. Typically the symptoms appear within a few hours after exposure and subside within 2-3 days with no permanent effects. Inhalation of fumes or vapors may cause respiratory irritation.

### 2.4. Unknown acute toxicity (GHS US)

Not applicable

SECTION 3: Composition/Information on ingredients						
3.1. Substance						
Not applicable						
3.2. Mixture						
Name		Product identifier	%	GHS-US classification		
				and the second sec		

Iron	(CAS No) 7439-89-6	75 - 98	Not classified
Nickel	(CAS No) 7440-02-0	<= 35	Skin Sens. 1, H317 Carc. 2, H351 STOT RE 1, H372
Chromium	(CAS No) 7440-47-3	<= 32	Not classified
Silicon	(CAS No) 7440-21-3	<= 5	Not classified
Molybdenum	(CAS No) 7439-98-7	<= 5	Not classified
Carbon	(CAS No) 7440-44-0	<= 2	Not classified
Manganese	(CAS No) 7439-96-5	<= 2	Not classified
Titanium	(CAS No) 7440-32-6	<= 1	Not classified

Full text of H-phrases: see section 16

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

## **SECTION 4: First aid measures**

4.1. Description of first aid measures		
First-aid measures after inhalation :	If inhaled and if breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing.	
First-aid measures after skin contact :	Gently wash with plenty of soap and water. Wash contaminated clothing before reuse. In the event of contact with molten product: Cool skin rapidly with cold water after contact with molten product.	
First-aid measures after eye contact :	Hot material: Immediately flush eyes with plenty of water for at least 15 minutes. Seek medical assistance for mechanical removal of this material from the eye. Cold material: Flush eyes with plenty of water. Seek medical attention if irritation persists. Use of flush fluid, other than water, is not recommended.	
First-aid measures after ingestion :	Not expected to present a significant ingestion hazard under anticipated conditions of normal use.	
4.2. Most important symptoms and effects	, both acute and delayed	
Symptoms/injuries after inhalation :	Dust from this product may cause irritation to the respiratory tract. Inhalation of fumes may cause metal fume fever.	
Symptoms/injuries after skin contact :	Heated product causes burns.	
Symptoms/injuries after eye contact :	Excessive dust production may cause minor eye irritation. Heated product causes burns.	
Chronic symptoms :	Excessive or prolonged inhalation of fumes may cause metal fume fever.	

4.3. Indication of any immediate medical attention and special treatment needed

All treatments should be based on observed signs and symptoms of distress in the patient.

SECTI	SECTION 5: Firefighting measures				
5.1.	Extinguishing media				
Suitable	extinguishing media	: Carbon dioxide. Dry chemical. Foam. Sand. Water fog. Use extinguishing media appropriate for surrounding fire.			

#### 5.2. Special hazards arising from the substance or mixture

No additional information available

#### 5.3. Advice for firefighters

Protection during firefighting

: Do not enter fire area without proper protective equipment, including respiratory protection. Wear fire/flame resistant/retardant clothing. Wear a self-contained breathing apparatus.

## SECTION 6: Accidental release measures

#### 6.1. Personal precautions, protective equipment and emergency procedures

General measures

: Avoid creating or spreading dust.

#### 6.1.1. For non-emergency personnel

No additional information available

### 6.1.2. For emergency responders

No additional information available

#### 6.2. Environmental precautions

Avoid release to the environment. Prevent dispersion.

#### 6.3. Methods and material for containment and cleaning up

Methods for cleaning up : Sweep or shovel spills into appropriate container for disposal. Minimize generation of dust.

#### 6.4. Reference to other sections

Section 7: safe handling. Section 8: personal protective equipment. Section 13: disposal information.

SECTION 7: Handling and storage				
7.1. Precautions for safe handling				
Precautions for safe handling	: Avoid breathing dust, fume, gas. Ensure good ventilation of the work station. Handle in accordance with good industrial hygiene and safety procedures.			
Hygiene measures	: Always wash your hands immediately after handling this product, and once again before leaving the workplace. Contaminated work clothing should not be allowed out of the workplace.			

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

### 7.2. Conditions for safe storage, including any incompatibilities

Storage conditions

: Store in a dry place. Store in correctly labelled containers.

### **SECTION 8: Exposure controls/personal protection**

## 8.1. Control parameters

Carbon (7440-44-0)				
OSHA OSHA PEL (TWA) (mg/m³)			15 mg/m³ (total dust) 5 mg/m³ (respirable dust)	
Chromium (7440-47-3	)			
ACGIH	ACGIH T\	VA (mg/m³)	0.5 mg/m <sup>3</sup>	
OSHA	OSHA PE	L (TWA) (mg/m³)	1 mg/m <sup>3</sup>	
OSHA	Remark (	OSHA)	(Chromium metal and insol. salts (as Cr)	
Nickel (7440-02-0)	÷			
ACGIH	ACGIH T	VA (mg/m³)	0.2 mg/m³ (inhalable) 0.1 mg/m³ (soluble) 1.5 mg/m³ (inhalable fraction)	
Silicon (7440-21-3)				
ACGIH	ACGIH T	VA (mg/m³)	10 mg/m <sup>3</sup>	
OSHA	OSHA PE	L (TWA) (mg/m³)	15 mg/m³ (total dust) 5 mg/m³ (respirable dust)	
Manganese (7439-96-	5)			
ACGIH	ACGIH T	VA (mg/m³)	0.02 mg/m <sup>3</sup>	
ACGIH	Remark (/	ACGIH)	CNS impair; A4	
OSHA	OSHA PE	L (Ceiling) (mg/m³)	5 mg/m³	
Molybdenum (7439-98	3-7)		· · · · ·	
ACGIH		VA (mg/m³)	10 mg/m³ (unsoluble, inhalable) 3 mg/m³ (unsoluble, respirable) 0.5 mg/m³ (soluble, inhalable)	
Iron (7439-89-6)				
None				
Titanium (7440-32-6)				
None				
.2. Exposure cor				
.2. Exposure cor ppropriate engineering		: Use engineering controls t ventilation of the work stat	to eliminate or reduce exposures below exposure limits. Ensure goo	
Materials for protective clothing			: Flame retardant protective clothing.	
Hand protection		1	: Wear thermal protective gloves when working around hot surfaces.	
Eye protection		: Wear goggles with suitable	e filter lenses when use is cutting/welding.	
Respiratory protection			: In case of inadequate ventilation wear respiratory protection. Use air-purifying respirator equipped with particulate filtering cartridges.	
Environmental exposure controls			<ul> <li>Avoid release to the environment. Emissions from ventilation or work process equipment should be checked to ensure they comply with requirements of environmental protection legislation.</li> </ul>	

## **SECTION 9: Physical and chemical properties**

9.1.	Information on basic physical and chemical properties		
Physical	state	:	Solid
Appeara	nce	:	Metallic solid.
Color		:	Silver Blue

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Odor	: odorless
Odor threshold	: No data available
рН	: Not applicable
Melting point	: 1260 °C
Freezing point	: No data available
Boiling point	: No data available
Flash point	: No data available
Relative evaporation rate (butyl acetate=1)	: No data available
Flammability (solid, gas)	: No data available
Explosive limits	: No data available
Explosive properties	: No data available
Oxidizing properties	: No data available
Vapor pressure	: No data available
Relative density	: No data available
Relative vapor density at 20 °C	: No data available
Specific gravity / density	: 8 g/cm <sup>3</sup>
Solubility	: No data available
Log Pow	: No data available
Auto-ignition temperature	: No data available
Decomposition temperature	: No data available
Viscosity	: No data available
Viscosity, kinematic	: No data available
Viscosity, dynamic	: No data available

#### 9.2. Other information

No additional information available

## **SECTION 10: Stability and reactivity**

#### 10.1. Reactivity

No additional information available

#### 10.2. Chemical stability

Stable at ambient temperature and under normal conditions of use.

#### 10.3. Possibility of hazardous reactions

Hazardous polymerization will not occur.

#### 10.4. Conditions to avoid

Do not store with incompatible materials.

#### 10.5. Incompatible materials

Acids. Bases. Oxidizing agent.

#### 10.6. Hazardous decomposition products

metallic oxides.

#### **SECTION 11: Toxicological information**

#### 11.1. Information on toxicological effects

Likely routes of exposure	: Dermal; During use, welding fumes are released with potential for inhalation exposure.		
Acute toxicity	: Not classified		
Chromium (7440-47-3)			
LD50 oral rat	> 5000 mg/kg OECD Guideline 420		
LC50 inhalation rat (mg/l)	> 5.1 mg/l/4h OECD Guideline 403		
Nickel (7440-02-0)			
LD50 oral rat	> 9000 mg/kg OECD Guideline 401		

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Nickel (7440-02-0)		
LC50 inhalation rat (mg/l)	> 10.2 mg/l/4h No effects observed	
Silicon (7440-21-3)		
LD50 oral rat	> 5000 mg/kg	
LD50 dermal rabbit	> 5000 mg/kg	
LC50 inhalation rat (mg/l)	> 2000 mg/l/4h	
Titanium (7440-32-6)		
LD50 oral rat	> 5000 mg/kg	
Iron (7439-89-6) LD50 oral rat	> 5000 mg/kg	
LC50 inhalation rat (mg/l)	> 5 mg/l/4h	
	> 5 mg//4h	
Manganese (7439-96-5)		
LD50 oral rat	> 2000 mg/kg	
LC50 inhalation rat (mg/l)	> 5.14 mg/kg	
Molybdenum (7439-98-7)		
LD50 oral rat	4233 mg/kg	
LD50 dermal rat	> 2000 mg/kg	
LC50 inhalation rat (mg/l)	5.1 mg/l/4h	
ATE US (oral)	4233.000 mg/kg	
ATE US (dust, mist)	5.100 mg/l/4h	
Skin corrosion/irritation	: Not classified	
Serious eye damage/irritation	Not classified	
Respiratory or skin sensitization	: Not classified	
Germ cell mutagenicity	: Not classified	
Carcinogenicity	: Not classified	
Chromium (7440-47-3)		
IARC group	3 - Not classifiable	
National Toxicology Program (NTP) Status	Not listed in carcinogenicity class	
Nickel (7440-02-0)		
NOAEL (chronic,oral,animal/male,2 years)	0.4 mg/kg bodyweight OECD 451 (Carcinogenicity Studies). Adrenal gland pheochromocytomas (benign and malignant) were significantly increased in exposed male.	
NOAEL (chronic,oral,animal/female,2 years)	0.4 mg/kg bodyweight OECD 451 (Carcinogenicity Studies). The incidence of combined (adenoma and carcinoma) cortical tumors among 0.4 mg Ni/m3 females, although statistically higher compared to the concurrent controls, falls within the historical control range; therefore, in the present study, this tumor is of uncertain relationship to Nickel metal exposure.	
IARC group	2B - Possibly carcinogenic to humans	
National Toxicology Program (NTP) Status	3 - Reasonably anticipated to be Human Carcinogen	
Reproductive toxicity	: Not classified	
Specific target organ toxicity (single exposure)	: Not classified	
Specific target organ toxicity (repeated exposure)	: Not classified	
Nickel (7440-02-0)		
LOAEL (inhalation,rat,dust/mist/fume,90 days)	0.1 mg/l/6h/day OECD Guideline 451	
NOAEL (oral.rat.90 days)	4 mg/kg bodyweight/day OECD Guideline 412. increased incidence of granulomatous	
	inflammation and mucoid exudate.	
NOAEL (inhalation,rat,dust/mist/fume,90 days)	> 10.2 mg/l/6h/day	
Aspiration hazard	: Not classified	

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Potential Adverse human health effects and symptoms		Irritation to eyes, skin and respiratory tract. Exposure to metal dusts and oxides may cause metal fume fever. Metal fume fever is a temporary flu-like condition characterized by chills, fever, muscle aches and pains, nausea and vomiting. Typically the symptoms appear within a few hours after exposure and subside within 2-3 days with no permanent effects.
		Prolonged overexposure may cause ulceration of the skin and perforation of the nasal septum, dermatitis and pneumonia.
		Carcinogenic to humans on inhalation: Nickel, Chromium VI compounds.
Symptoms/injuries after inhalation	:	Dust from this product may cause irritation to the respiratory tract. Inhalation of fumes may cause metal fume fever.
Symptoms/injuries after skin contact	:	Heated product causes burns.
Symptoms/injuries after eye contact	:	Excessive dust production may cause minor eye irritation. Heated product causes burns.
Chronic symptoms	:	Excessive or prolonged inhalation of fumes may cause metal fume fever.

SECTION	12:	Ecological	information
---------	-----	------------	-------------

12.1. Toxicity

Nickel (7440-02-0)	
LC50 fish 1	15.3 mg/l Oncorhynchus mykiss (as Nickel chloride)
LOEC (chronic)	0.12 mg/l as Nickel (II) chloride hexahydrate
NOEC (chronic)	0.057 mg/l as Nickel (II) chloride hexahydrate
Titanium (7440-32-6)	
LC50 fish 1	> 100 mg/l
EC50 Daphnia 1	20000 mg/l
Iron (7439-89-6)	
LC50 fish 1	> 10000 mg/l
Manganese (7439-96-5)	
LC50 fish 1	> 3.6 mg/l
EC50 Daphnia 1	> 1.6 mg/l
NOEC (acute)	3.6 mg/l
NOEC (chronic)	1.7 mg/l
Molybdenum (7439-98-7)	
LC50 fish 1	609 mg/l
EC50 Daphnia 1	> 1000 mg/l
NOEC chronic fish	> 19.5 mg/l

### 12.2. Persistence and degradability

Nickel (7440-02-0)	
Persistence and degradability	Not established.

#### 12.3. Bioaccumulative potential

Nickel (7440-02-0)	
Bioconcentration factor (BCF REACH)	> 600
Bioaccumulative potential	Expected to bioaccumulate. Not established.
Silicon (7440-21-3)	
Bioaccumulative potential	Not expected to bioaccumulate.

#### 12.4. Mobility in soil

Eureka Stainless Steel MIG Wires and TIG Rods: 240, 308, 309, 310, 330, 350, 505, 410Ni Mo, 420, 17-4 PH, 2209		
Mobility in soil	Not mobile.	
12.5 Other advarse offects		

#### 12.5. Other adverse effects

44/40/0045	ENL/Exalists LIC)		0/4.0
Other information	: Avoid release to the environment.		
Effect on the global warming	: No known ecological damage caused by	this product.	

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

### SECTION 13: Disposal considerations

#### 13.1. Waste treatment methods

Regional legislation (waste)

: Disposal must be done according to official regulations.

Waste disposal recommendations

. Disposal must be done according to official regulations

: Collect as much as possible in a clean container for (preferable) reuse or disposal. Dispose in a safe manner in accordance with local/national regulations.

### **SECTION 14: Transport information**

#### Department of Transportation (DOT)

In accordance with DOT

Not considered a dangerous good for transport regulations

#### TDG

No additional information available

### Transport by sea

No additional information available

#### Air transport

No additional information available

## SECTION 15: Regulatory information

### 15.1. US Federal regulations

Carbon (7440-44-0)
Listed on the United States TSCA (Toxic Substances Control Act) inventory
Chromium (7440-47-3)
Subject to reporting requirements of United States SARA Section 313 Listed on the United States TSCA (Toxic Substances Control Act) inventory
Nickel (7440-02-0)
Listed on the United States TSCA (Toxic Substances Control Act) inventory Subject to reporting requirements of United States SARA Section 313
Silicon (7440-21-3)
Listed on the United States TSCA (Toxic Substances Control Act) inventory
Titanium (7440-32-6)
Listed on the United States TSCA (Toxic Substances Control Act) inventory
Iron (7439-89-6)
Listed on the United States TSCA (Toxic Substances Control Act) inventory
Manganese (7439-96-5)
Listed on the United States TSCA (Toxic Substances Control Act) inventory Subject to reporting requirements of United States SARA Section 313
Molybdenum (7439-98-7)
Listed on the United States TSCA (Toxic Substances Control Act) inventory

#### 15.2. International regulations

## CANADA

Carbon (7440-44-0)
Listed on the Canadian DSL (Domestic Substances List)
Chromium (7440-47-3)
Listed on the Canadian DSL (Domestic Substances List)
Nickel (7440-02-0)
Listed on the Canadian DSL (Domestic Substances List)
Silicon (7440-21-3)
Listed on the Canadian DSL (Domestic Substances List)

## Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Titanium (7440-32-6)
Listed on the Canadian DSL (Domestic Substances List)
Iron (7439-89-6)
Listed on the Canadian DSL (Domestic Substances List)
Manganese (7439-96-5)
Listed on the Canadian DSL (Domestic Substances List)
Molybdenum (7439-98-7)
Listed on the Canadian DSL (Domestic Substances List)
EU-Regulations
Eureka Stainless Steel MIG Wires and TIG Rods: 240, 308, 309, 310, 330, 350, 505, 410Ni Mo, 420, 17-4 PH, 2209
All components are listed on the EEC inventory European Inventory of Existing Commercial Chemical Substances (EINECS).

#### National regulations

Carbon (7440-44-0)	
Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)	
Listed on the Japanese ENCS (Existing & New Chemical Substances) inventory	
Listed on KECI (Korean Existing Chemicals Inventory)	
Listed on Taiwan National Chemical Inventory	
Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)	
Listed on the AICS (Australian Inventory of Chemical Substances)	
Listed on NZIoC (New Zealand Inventory of Chemicals)	
Chromium (7440-47-3)	
Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)	
Listed on NZIoC (New Zealand Inventory of Chemicals)	
Listed on KECI (Korean Existing Chemicals Inventory)	
Listed on Taiwan National Chemical Inventory	
Listed on the AICS (Australian Inventory of Chemical Substances)	
Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)	
Nickel (7440-02-0)	
Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)	
Listed on NZIoC (New Zealand Inventory of Chemicals)	
Listed on KECI (Korean Existing Chemicals Inventory)	
Listed on Taiwan National Chemical Inventory	
Listed on the AICS (Australian Inventory of Chemical Substances)	
Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)	
,,, _,	
Silicon (7440-21-3)	
Silicon (7440-21-3) Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China) Listed on NZIoC (New Zealand Inventory of Chemicals)	
Silicon (7440-21-3) Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China) Listed on NZIoC (New Zealand Inventory of Chemicals) Listed on KECI (Korean Existing Chemicals Inventory)	
Silicon (7440-21-3) Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China) Listed on NZIoC (New Zealand Inventory of Chemicals) Listed on KECI (Korean Existing Chemicals Inventory) Listed on Taiwan National Chemical Inventory	
Silicon (7440-21-3) Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China) Listed on NZIoC (New Zealand Inventory of Chemicals) Listed on KECI (Korean Existing Chemicals Inventory) Listed on Taiwan National Chemical Inventory Listed on the AICS (Australian Inventory of Chemical Substances)	
Silicon (7440-21-3) Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China) Listed on NZIoC (New Zealand Inventory of Chemicals) Listed on KECI (Korean Existing Chemicals Inventory) Listed on Taiwan National Chemical Inventory	
Silicon (7440-21-3) Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China) Listed on NZIoC (New Zealand Inventory of Chemicals) Listed on KECI (Korean Existing Chemicals Inventory) Listed on Taiwan National Chemical Inventory Listed on the AICS (Australian Inventory of Chemical Substances)	
Silicon (7440-21-3) Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China) Listed on NZIoC (New Zealand Inventory of Chemicals) Listed on KECI (Korean Existing Chemicals Inventory) Listed on Taiwan National Chemical Inventory Listed on the AICS (Australian Inventory of Chemical Substances) Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)	
Silicon (7440-21-3) Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China) Listed on NZIoC (New Zealand Inventory of Chemicals) Listed on KECI (Korean Existing Chemicals Inventory) Listed on Taiwan National Chemical Inventory Listed on the AICS (Australian Inventory of Chemical Substances) Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances) Titanium (7440-32-6) Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China) Listed on NZIoC (New Zealand Inventory of Chemical Substances Produced or Imported in China) Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China) Listed on NZIoC (New Zealand Inventory of Chemicals)	
Silicon (7440-21-3) Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China) Listed on NZIoC (New Zealand Inventory of Chemicals) Listed on KECI (Korean Existing Chemicals Inventory) Listed on Taiwan National Chemical Inventory Listed on the AICS (Australian Inventory of Chemical Substances) Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances) Titanium (7440-32-6) Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China) Listed on NZIoC (New Zealand Inventory of Chemicals) Listed on KECI (Korean Existing Chemicals Inventory)	
Silicon (7440-21-3) Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China) Listed on NZIoC (New Zealand Inventory of Chemicals) Listed on KECI (Korean Existing Chemicals Inventory) Listed on Taiwan National Chemical Inventory of Chemical Substances) Listed on the AICS (Australian Inventory of Chemical Substances) Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances) Titanium (7440-32-6) Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China) Listed on NZIoC (New Zealand Inventory of Chemicals) Listed on NZIoC (New Zealand Inventory of Chemicals) Listed on NZIoC (New Zealand Inventory of Chemicals) Listed on Taiwan National Chemicals Inventory) Listed on Taiwan National Chemicals Inventory	
Silicon (7440-21-3) Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China) Listed on NZIoC (New Zealand Inventory of Chemicals) Listed on NECI (Korean Existing Chemicals Inventory) Listed on Taiwan National Chemical Inventory Listed on the AICS (Australian Inventory of Chemical Substances) Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances) Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China) Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China) Listed on NZIoC (New Zealand Inventory of Chemicals) Listed on KECI (Korean Existing Chemicals Inventory) Listed on KECI (Korean Existing Chemicals Inventory) Listed on Taiwan National Chemical Inventory Listed on Taiwan National Chemicals Inventory Listed on Taiwan National Chemical Inventory Listed on Taiwan National Chemicals Inventory Listed on the AICS (Australian Inventory of Chemical Substances)	
Silicon (7440-21-3) Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China) Listed on NZIoC (New Zealand Inventory of Chemicals) Listed on KECI (Korean Existing Chemicals Inventory) Listed on Taiwan National Chemical Inventory of Chemical Substances) Listed on the AICS (Australian Inventory of Chemical Substances) Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances) Titanium (7440-32-6) Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China) Listed on NZIoC (New Zealand Inventory of Chemicals) Listed on NZIoC (New Zealand Inventory of Chemicals) Listed on NZIoC (New Zealand Inventory of Chemicals) Listed on Taiwan National Chemicals Inventory) Listed on Taiwan National Chemicals Inventory	
Silicon (7440-21-3) Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China) Listed on NZIoC (New Zealand Inventory of Chemicals) Listed on KECI (Korean Existing Chemicals Inventory) Listed on Taiwan National Chemical Inventory Listed on the AICS (Australian Inventory of Chemical Substances) Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances) Titanium (7440-32-6) Listed on NZIoC (New Zealand Inventory of Chemicals) Listed on NZIOC (New Zealand Inventory of Chemicals) Listed on KECI (Korean Existing Chemicals Inventory) Listed on Taiwan National Chemical Inventory Listed on Taiwan National Chemical Inventory of Chemical Substances) Listed on PICCS (Philippines Inventory of Chemicals Inventory) Listed on Taiwan National Chemical Inventory Listed on Taiwan National Chemical Inventory of Chemical Substances) Listed on PICCS (Philippines Inventory of Chemical Substan	
Silicon (7440-21-3) Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China) Listed on NZIoC (New Zealand Inventory of Chemicals) Listed on KECI (Korean Existing Chemicals Inventory) Listed on Taiwan National Chemical Inventory Listed on the AICS (Australian Inventory of Chemical Substances) Listed on PICCS (Philippines Inventory of Chemical Substances) Titanium (7440-32-6) Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China) Listed on NZIoC (New Zealand Inventory of Chemicals) Listed on NZIoC (New Zealand Inventory of Chemicals) Listed on Taiwan National Chemical Inventory Listed on Taiwan National Chemical Inventory Listed on Taiwan National Chemical Inventory of Chemical Substances) Listed on Taiwan National Chemical Inventory of Chemical Substances) Listed on Taiwan National Chemical Inventory of Chemical Substances) Listed on Taiwan National Chemical Substances Produced or Imported in China) Listed on Taiwan National Chemical Inventory of Chemical Substances) Listed on Taiwan National Chemical Inventory of Chemical Substances) Listed on IECSC (Inventory of Existing Chemical Substances) Listed on PICCS (Philippines Inventory of Chemical Substances) Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)	
Silicon (7440-21-3) Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China) Listed on NZIoC (New Zealand Inventory of Chemicals) Listed on KECI (Korean Existing Chemicals Inventory) Listed on Taiwan National Chemical Inventory Listed on the AICS (Australian Inventory of Chemical Substances) Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances) Titanium (7440-32-6) Listed on NZIoC (New Zealand Inventory of Chemicals) Listed on NZIoC (New Zealand Inventory of Chemicals) Listed on KECI (Korean Existing Chemical Substances Produced or Imported in China) Listed on KECI (Korean Existing Chemicals Inventory) Listed on Taiwan National Chemical Inventory Listed on Taiwan National Chemical Inventory Listed on the AICS (Australian Inventory of Chemical Substances) Listed on PICCS (Philippines Inventory of Chemical Substances) Listed on Taiwan National Chemical Inventory Listed on Taiwan National Chemical Inventory of Chemical Substances) Listed on TeCSS (Inventory of Chemical Substances) Listed on IECSS (Inventory of Chemical Substances) Listed on IECSS (Inventory of Chemical Substances) Listed on IECSS (Inventory of Existing Chemical Substances Produced or Imported in China) Listed on IECSS (Inventory of Existing Chemical Substances Produced or Imported in China) Listed on NZIOC (New Zealand Inventory of Chemicals)	
Silicon (7440-21-3) Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China) Listed on NZIoC (New Zealand Inventory of Chemicals) Listed on NZIoC (Kew Zealand Inventory of Chemicals) Listed on Taiwan National Chemical Inventory Listed on Taiwan National Chemical Inventory of Chemical Substances) Listed on PICCS (Philippines Inventory of Chemical Substances) Listed on PICCS (Philippines Inventory of Chemical Substances Produced or Imported in China) Listed on NZIoC (New Zealand Inventory of Chemical Substances) Titanium (7440-32-6) Listed on NZIoC (New Zealand Inventory of Chemicals) Listed on NZIoC (New Zealand Inventory of Chemicals) Listed on Taiwan National Chemical Inventory Listed on Taiwan National Chemicals Inventory Listed on Taiwan National Chemicals Inventory Listed on Taiwan National Chemical Inventory Listed on Taiwan National Chemicals Inventory Listed on PICCS (Philippines Inventory of Chemical Substances) Listed on Taiwan National Chemical Inventory Listed on Taiwan National Chemical Inventory Listed on Taiwan National Chemical Inventory Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances) Listed on PICCS (Inventory of Existing Chemicals and Chemical Substances) Listed on PICCS (Inventory of Existing Chemicals and Chemical Substances) Listed on NZIOC (New Zealand Inventory of Chemicals and Chemical Substances) Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China) Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China) Listed on NZIOC (New Zealand Inventory of Chemicals Substances Produced or Imported in China) Listed on NZIOC (New Zealand Inventory of Chemicals) Listed on KECI (Korean Existing Chemicals Inventory)	
Silicon (7440-21-3) Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China) Listed on NZIoC (New Zealand Inventory of Chemicals) Listed on NZIoC (New Zealand Inventory of Chemicals) Listed on Taiwan National Chemical Inventory Listed on Taiwan National Chemical Inventory of Chemical Substances) Listed on PICCS (Philippines Inventory of Chemical Substances) Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances) Titanium (7440-32-6) Listed on IECSC (Inventory of Existing Chemicals Substances Produced or Imported in China) Listed on KECI (Korean Existing Chemicals Inventory) Listed on Taiwan National Chemical Inventory Listed on Taiwan National Chemical Inventory Listed on Taiwan National Chemical Inventory Listed on Taiwan National Chemical Inventory of Chemicals Substances) Listed on Taiwan National Chemical Inventory of Chemical Substances) Listed on PICCS (Philippines Inventory of Chemicals Substances) Listed on Taiwan National Chemical Inventory Listed on IECSC (Inventory of Existing Chemical Substances) Listed on IECSC (Inventory of Existing Chemical Substances) Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China) Listed on RECS (Inventory of Existing Chemical Substances Produced or Imported in China) Listed on RECS (Inventory of Existing Chemical Substances Produced or Imported in China) Listed on RECS (Inventory of Existing Chemical Substances Produced or Imported in China) Listed on RECI (Korean Existing Chemicals Inventory) Listed on RECI (Korean Existing Chemicals Inventory) Listed on Taiwan National Chemical Inventory) Listed on Taiwan National Chemical Inventory	
Silicon (7440-21-3) Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China) Listed on NZIoC (New Zealand Inventory of Chemicals) Listed on NZIoC (Kew Zealand Inventory of Chemicals) Listed on Taiwan National Chemical Inventory Listed on Taiwan National Chemical Inventory of Chemical Substances) Listed on PICCS (Philippines Inventory of Chemical Substances) Listed on PICCS (Philippines Inventory of Chemical Substances Produced or Imported in China) Listed on NZIoC (New Zealand Inventory of Chemical Substances) Titanium (7440-32-6) Listed on NZIoC (New Zealand Inventory of Chemicals) Listed on NZIoC (New Zealand Inventory of Chemicals) Listed on Taiwan National Chemical Inventory Listed on Taiwan National Chemicals Inventory Listed on Taiwan National Chemicals Inventory Listed on Taiwan National Chemical Inventory Listed on Taiwan National Chemicals Inventory Listed on PICCS (Philippines Inventory of Chemical Substances) Listed on Taiwan National Chemical Inventory Listed on Taiwan National Chemical Inventory Listed on Taiwan National Chemical Inventory Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances) Listed on PICCS (Inventory of Existing Chemicals and Chemical Substances) Listed on PICCS (Inventory of Existing Chemicals and Chemical Substances) Listed on NZIOC (New Zealand Inventory of Chemicals and Chemical Substances) Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China) Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China) Listed on NZIOC (New Zealand Inventory of Chemicals Substances Produced or Imported in China) Listed on NZIOC (New Zealand Inventory of Chemicals) Listed on KECI (Korean Existing Chemicals Inventory)	

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

## Manganese (7439-96-5)

Manganese (7439-96-5)
Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)
Listed on NZIoC (New Zealand Inventory of Chemicals)
Listed on KECI (Korean Existing Chemicals Inventory)
Listed on Taiwan National Chemical Inventory
Listed on the AICS (Australian Inventory of Chemical Substances)
Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)
Molybdenum (7439-98-7)
Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)
Listed on NZIoC (New Zealand Inventory of Chemicals)
Listed on KECI (Korean Existing Chemicals Inventory)
Listed on KECI (Korean Existing Chemicals Inventory)

#### 15.3. US State regulations

### Nickel (7440-02-0)

U.S California - Proposition 65 - Carcinogens List	U.S California - Proposition 65 - Developmental Toxicity	U.S California - Proposition 65 - Reproductive Toxicity - Female	U.S California - Proposition 65 - Reproductive Toxicity - Male	Non-significant risk level (NSRL)
Yes	No	No	No	
Chromium (7440-47-3)				
U.S Minnesota - Hazardous U.S New Jersey - Right to I U.S Pennsylvania - List of I	Know Hazardous Substance L	ist		
Nickel (7440-02-0)				
U.S Minnesota - Hazardous Substance List U.S New Jersey - Right to Know Hazardous Substance List U.S New York - Right to Know List of Hazardous Chemicals U.S Pennsylvania - List of Hazardous Substances				
Silicon (7440-21-3)				
U.S New Jersey - Right to Know Hazardous Substance List U.S Minnesota - Hazardous Substance List				
Titanium (7440-32-6)				
	Know Hazardous Substance L now List of Hazardous Chemic			
Manganese (7439-96-5)				
U.S New Jersey - Right to Know Hazardous Substance List U.S New York - Right to Know List of Hazardous Chemicals U.S Minnesota - Hazardous Substance List				
Molybdenum (7439-98-7)				
		list		

## **SECTION 16: Other information**

Indication of changes Revision date : GHS classification information. Revised sections: 1 - 16. : 11/10/2015

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Data sources	: ACGIH (American Conference of Government Industrial Hygienists).
	European Chemicals Agency (ECHA) Registered Substances list.
	European Standards: Personal Protective Equipment; accessed at: http://ec.europa.eu/enterprise/policies/european-standards/harmonised-standards/personal- protective-equipment/index_en.htm.
	Internal Company test data.
	US National Library of Medicine National Institutes of Health Haz-Map. Accessed at <a href="http://hazmap.nlm.nih.gov">http://hazmap.nlm.nih.gov</a>
Abbreviations and acronyms	: ACGIH (American Conference of Government Industrial Hygienists).
	ATE: Acute Toxicity Estimate.
	CAS: CAS (Chemical Abstracts Service) number.
	EC50: Environmental Concentration associated with a response by 50% of the test population.
	GHS: Globally Harmonized System (of Classification and Labeling of Chemicals).
	LD50: Lethal Dose for 50% of the test population.
	LOAEL: Lowest Observed Adverse Effect Level.
	NOEC: No Observable Effect Concentration.
	PBT: Persistent, Bioaccumulative, Toxic.
	SDS: Safety Data Sheet.
	TSCA: Toxic Substances Control Act.
	TWA: Time Weighted Average.
	vPvB: Very Persistent and Very Bioaccumulative.

#### Full text of H-phrases:

	Carc. 2	Carcinogenicity Category 2
	Skin Sens. 1	Skin sensitization Category 1
	STOT RE 1	Specific target organ toxicity (repeated exposure) Category 1
	H317	May cause an allergic skin reaction
	H351	Suspected of causing cancer
	H372	Causes damage to organs through prolonged or repeated exposure

SDS US (GHS HazCom 2012)

SDS prepared by:

The Redstone Group, LLC 6077 Frantz Rd. Suite 206 Dublin, OH USA 43017 T 614-923-7472 www.redstonegrp.com.

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product