1. Chemical Product and Company Identification

Material name: Carbon and Alloy Tool Steels, High Speed and Stainless Steels, and; MIG weld, TIG weld, and Laser Weld
Recommended Use: Bar, Sheet, Plate – Solid Product
: Welding Consumables
Distributor:
voestalpine High Performance Metals Corporation, 2505 Millennium Drive, Elgin, IL 60124
1-800-630-3000

In Case of Emergency: (630) 883–3000 Monday – Friday 9:00 am – 5:00 pm CST

2. Hazards Identification

Solid metallic products, sold by voestalpine High Performance Metals Corporation are generally classified as "articles" [1910:1200(c)] and do not constitute a hazardous material in solid form under the definition of the OSHA Hazard Communication Standard (29 CFR 1910:1200).

Under normal use and handling of the solid form of this material there are few health hazards. Welding, sawing, cutting, brazing, grinding, milling, machining, and abrasive blasting, etc. of these materials will produce dust, fume or particulate containing the component elements of these materials. Classification of the dust following 29CFR 1910.1200 is provided below.

PRODUCT HAZARD CATEGORY:

Carcinogenicity (Category 2)
Eye Damage/Irritation (Category 1)
Skin Sensitization (Category 1)
Specific Target Organ Toxicity-Repeated Exposure (Category 1)

LABEL CONTENT:

Signal Word: Danger

Hazard Statement(s):

Causes serious eye damage
May cause an allergic skin reaction.
Suspected of causing cancer.
Causes damage to respiratory tract through prolonged or repeated exposure

Prevention:

Avoid breathing dust/fumes.
Contaminated work clothing must not be allowed out of the workplace.
Obtain special instructions before use.
Do not handle until all safety precautions have been read and understood.
Wear protective gloves/protective clothing/eye protection/face protection.
Wash thoroughly after handling.
Do not eat, drink, or smoke when using this product.

Response:

If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Immediately call a poison center/doctor/chemical manufacture, importer or distributor to specify the appropriate source of emergency medical advice.
If on skin: Wash with plenty of water.
If skin irritation or rash occurs: Get medical advice attention.

Wash contaminated clothing before reuse.
If exposed or concerned: Get medical advice/attention
Get medical advice if you feel unwell.

Storage:

Store away from strong acids, strong bases, strong oxidizers. Alkalis. Metal oxides. Water and humidity. Corrosive substances in contact with metals may produce flammable hydrogen gas

Disposal:

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

OTHER HAZARDS:

Hazards not otherwise classified (HNOC):

Combustible Dust

3. Composition / Information on Ingredients

Substance/Mixture: Mixture

Component	Cas Number	% Weight
Iron (Fe)	1309-37-1	0.01 to 99
*Aluminum (Al)+	7429-90-5	0.01 to 2.5
Carbon (C)	7440-44-0	0.01 to 3.6
*Chromium (Cr)	7440-47-3	0.01 to 25
*Cobalt (Co)	7440-48-4	0.01 to 40
*Copper (Cu)	7440-50-8	0.01 to 4
*Manganese (Mn)	7439-96-5	0.01 to 19.3
Molybdenum (Mo)	7439-98-7	0.01 to 20
*Nickel (Ni)	7440-02-0	0.01 to 99
Silicon (Si)	7440-21-3	0.01 to 3.0
Titanium (Ti)	7440-32-6 13463-67-7 (Titanium Dioxide - Total dust)	0.01 to 3.10
Tungsten (W)	7440-33-7	0.01 to 18
Vanadium (V)	7440-62-2	0.01 to 10

The exact composition/components have been withheld due to trade secret.

4. First Aid Measures

DESCRIPTIOIN OF FIRST AID MEASURES:

Due to the composition and type of the substances present in the product, no particular warnings are necessary

General Advice: Seek medical attention/advice if you feel unwell.

Eye Contact: In case of overexposure to dusts or fumes, immediately flush eyes with plenty of water for at least 15 minutes occasionally lifting the eye lids. Get medical attention if irritation persists.

Skin Contact: In case of overexposure to dusts or particulates, wash with soap and plenty of water. Get medical attention if irritation develops or persists. If thermal burn occurs, flush area with cold water and get immediate medical attention. Thermal burns should be treated as medical emergencies.

Inhalation: In case of overexposure to dusts or fumes, remove to fresh air. Get immediate medical attention if symptoms described in this SDS develop. If unconscious, place them in a suitable position and seek medical assistance.

Ingestion: Not considered an ingestion hazard. However, if excessive amounts of dust or particulates are swallowed, treat symptomatically and supportively. If accidentally ingested, seek immediate medical attention. Do NOT induce vomiting unless told to do so by the poison control center or doctor. Do not give anything by mouth to an unconscious person.

MOST IMPORTANT HEALTH EFFECTS, BOTH ACUTE AND DELAYED

Inhalation of metal fume or metal oxides may produce an acute febrile state, with cough, chills, weakness, and general malaise, nausea, vomiting, muscle cramps, and remarkable leukocytosis. Treatment is symptomatic, and condition is self-limited in 24-48 hours. Chronic exposure to dusts may result in pneumoconiosis of mixed type.

INDICATION OF IMMEDIATE MEDICAL ATTENTION AND SPECIAL TREATMENT

In case of doubt or when symptoms of feeling unwell persist, get medical attention. Never administer anything orally to persons who are unconscious.

5. Fire-Fighting Measures

Suitable Extinguishing Media: For molten metal, use dry powder or sand. For steel dust use or dry sand, water, Foam, argon or nitrogen.
Special Fire Fighting Procedures: Do not use water on molten metal. Do not use Carbon Dioxide (CO 2). Firefighters should not enter confined spaces without wearing NIOSH/MSHA approved positive pressure breathing apparatus (SCBA) with full face mask and full protective equipment.
Unusual Fire or Explosion Hazards: Steel products do not present fire or explosion hazards under normal conditions. Any non-oxidized fine metal particles/ dust generated by grinding, sawing, abrasive blasting, or individual customer processes may produce materials that the customer should test for combustibility and other hazards in accordance with applicable regulations. High concentrations of combustible metallic fines in the air may present an explosion hazard.

6. Accidental Release Measures

Emergency response is unlikely unless in the form of combustible dust.

Personal precautions, protective equipment, and emergency procedures: For spills involving finely divided particles, clean-up personnel should be protected against contact with eyes and skin. If material is in a dry state, avoid inhalation of dust.
Environmental precautions: Some grades of steel may contain reportable quantities of alloying elements. Prevent materials from entering drains, sewers, or waterways.
Methods and materials for containment and cleaning up: Fine turnings and small chips should be swept or vacuumed and placed into appropriate disposable containers. Keep fine dust or powder away from sources of ignition. Scrap should be reclaimed for recycling

7. Handling and Storage

Handling Precautions: Use care during processing to minimize dust generation. Where excessive dust may result, use approved respiratory protection equipment. Heating of product may release toxic or irritating fumes; ensure proper ventilation is employed, proper precautions are enforced, and applicable regulations are followed. Handle in accordance with good industrial hygiene and safety procedures.
Storage Requirements: Store away from strong acids, strong bases, strong oxidizers. Alkalis. Metal oxides. Water and humidity. Corrosive substances in contact with metals may produce flammable hydrogen gas.

8. Exposure Controls / Personal Protection

Occupational Exposure Limits: No permissible exposure limits (PEL) or threshold limit values (TLV) exist for steel. Various grades of steel will contain different combinations of these elements. Trace elements may also be present in minute amounts.

Consult a Professional Industrial Hygienist and /or Qualified Safety professional to determine whether work processes are within the permissible exposure limits.

Component	Cas Number	Exposure Limits		
		OSHA PEL (mg/m^3) (TWA – 8hrs)	ACGIH TLV (mg/m^3 - TWA 8 hrs) & (if noted NIOSH REL mg/m^3 -TWA 10 hrs)	
Iron (Fe)	1309-37-1	5 TWA (As Iron Oxide fume)	5 TWA (As Iron Oxide dust and fume)	
*Aluminum (Al)+	7429-90-5	15 TWA (dust) 5 TWA (respirable fraction)	10 TWA (dust) 5 TWA (fume)	
Carbon (C)	7440-44-0	Not Established	Not Established	
*Chromium (Cr)	7440-47-3	1 TWA	0.5 TWA	
*Cobalt (Co)	7440-48-4	0.01 TWA (dust and fume)	0.02 TWA	
*Copper (Cu)	7440-50-8	0.1 TWA (fume) 1 TWA (dust & mist)	0.2 TWA (fume)	1 TWA (dust & mist)(NIOSH) 0.1 TWA (fume) (NIOSH)
*Manganese (Mn)	7439-96-5	5 Ceiling (fume)	0.02 TWA (respirable fraction) 0.1 TWA (inhalable fraction)	1 TWA (fume) (NIOSH)
Molybdenum (Mo)	7439-98-7	10 TWA (Insoluble – dust) 3 TWA (Insoluble – respirable) 0.5 TWA (Soluble – respirable)	10 TWA (Insoluble – dust) 3 TWA (Insoluble – respirable) 0.5 TWA (Soluble – respirable)	
*Nickel (Ni)	7440-02-0	1 TWA	1.5 TWA (inhalable fraction)	0.015 TWA (NIOSH)
Silicon (Si)	7440-21-3	10 TWA (dust) 5 TWA (respirable fraction)	10 TWA (dust) (NIOSH) 5 TWA (respirable fraction) (NIOSH)	
Titanium (Ti)	7440-32-6 13463-67-7 (Titanium Dioxide - Total dust)	Not Established 15 TWA (titanium dioxide)	Not Established 10 TWA (titanium dioxide)	NIOSH 2.4 TWA (fine) 0.3 TWA (ultra fine)
Tungsten (W)	7440-33-7	5 TWA (insoluble compounds) 1 TWA (soluble compounds)	5 TWA (insoluble compounds) 10 STEL	
Vanadium (V)	7440-62-2	0.5 TWA (ceiling, respirable dust) 0.1 TWA (ceiling, fume)	0.05 TWA (dust and fume) as V2O5	

NOTE: No permissible exposure limits (PEL) or threshold limit values (TLV) exist for steel. The above listing is a summary of elements used in the product. Various grades of steel will contain different combinations of these elements and/or trace materials. Consult appropriate data sheets or test reports for the specific ordered analysis or contact Böhler-Uddeholm.

EXPOSURE CONTROLS:

Engineering Measures: Use controls as appropriate to minimize exposure to metal fumes and dusts during handling operations. Provide local exhaust when possible, and general ventilation as necessary, to keep airborne concentrations below exposure limits and as low as possible.

Hygiene Measures: Do not breathe vapors/dust. When using, do not eat, drink or smoke. Provide regular cleaning of equipment, work area and clothing. Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product. Keep away from food, drink and animal feeding stuffs.

PERSONAL PROTECTION:

Respiratory Protection: If exposure limits are exceeded or irritation is experienced, NIOSH/MSHA approved respiratory protection should be worn. Seek professional advice prior to respirator selection and use. Select respirator based on its suitability to provide adequate worker protection for given working conditions, level of airborne contamination, and presence of sufficient oxygen.

Protective Clothing/Equipment: For operations, which result in elevating the temperature of the product to or above its melting point or result in the generation of airborne particulates, use protective clothing, gloves and safety glasses to prevent skin and eye contact. Contact lenses should not be worn where industrial exposures to this material are likely. Wear safety glasses, goggles, gloves, and/ or head and body protection as required for welding, burning, sawing, brazing, grinding or machining operations. Welder's gloves and protective face shield, arm protectors, aprons, hats, and shoulder protection, as appropriate. Train the welder not to touch live electrical parts and to insulate oneself from work and ground. Where the surface treatments are applied to the product, wear gloves when handling. Do not continue to use gloves or work clothing that has become saturated or soaked through with oil coating. Wash skin that has been exposed to oil with soap and water or waterless hand cleaner.

9. Physical and Chemical Properties

Physical State:	Solid	Appearance:	Metallic
Odor:	Odorless	Odor Threshold:	Not available
pH:	Not available	Evaporation Rate:	Not available
Melting Point:	~ (2372 ~ 2800) °F	Freezing Point:	Not available
Boiling Point:	Not available	Flash Point:	Not applicable
Auto-ignition Temp:	Not available	Specific Gravity:	7.5 ~ 8.5
Relative Density:	Not available	Vapor Pressure:	Not available
Solubility:	Insoluble in water	Viscosity:	Not available
Lower Flammable Limit:	Not available	Upper Flammable Limit:	Not available
Flammability (solid, gas):	Not available		

Relative Vapor Density at 20 °C:	Not available
Partition Coefficient: N-octanol/water:	Not available
Decomposition Temperature:	Not available

10. Stability and Reactivity

Reactivity: Hazardous reactions will not occur under normal conditions.
Chemical Stability: Stable under recommended handling and storage conditions (see section 7).
Possibility of Hazardous Reactions: Hazardous polymerization will not occur.
Conditions to Avoid: Avoid creating or spreading dust. Sparks, heat, open flame and other sources of ignition.
Incompatible Materials: Strong acids, strong bases, strong oxidizers. Alkalis. Metal oxides. Moisture. Corrosive substances in contact with metals may produce flammable hydrogen gas. When molten: water.
Hazardous Decomposition Products: Oxides of iron and carbon. Organic acid vapors. Chromium (VI) compounds. Sulfur compounds.

11. Toxicological Information

Information on likely routes of exposure: Dermal, eye contact, inhalation, ingestion.
POTENTIAL ACUTE HEALTH EFFECTS:

Eye Contact: Dusts or particulates may cause mechanical irritation including pain, tearing, and redness. Scratching of the cornea can occur if eye is rubbed. Fumes may be irritating. Contact with the heated material may cause thermal burns.

Skin Contact: Dusts or particulates may cause mechanical irritation due to abrasion. Coated steel may cause skin irritation in sensitive individuals (see Section 16 for additional information.) Some components in this product are capable of causing an allergic reaction, possibly resulting in burning, itching and skin eruptions. Contact with heated material may cause thermal burns.

Inhalation: Dusts may cause irritation of the nose, throat, and lungs. Excessive inhalation of metallic fumes and dusts may result in metal fume fever, an influenza-like illness. It is characterized by a sweet or metallic taste in the mouth, accompanied by dryness and irritation of the throat, cough, shortness of breath, pulmonary edema, general malaise, weakness, fatigue, muscle and joint pains, blurred vision, fever and chills. Typical symptoms last from 12 to 48 hours.

Ingestion: Not expected to be acutely toxic via ingestion based on the physical and chemical properties of the product. Swallowing of excessive amounts of the dust may cause irritation, nausea, and diarrhea.

POTENTIAL CHRONIC HEALTH EFFECTS:

Chronic or Special Toxic Effects: Repeated exposure to fine dusts may inflame the nasal mucosa and cause changes to the lung. In addition, a red-brown pigmentation of the eye and/or skin may occur. Welding fumes have been associated with adverse health effects. Contains components that may cause cancer or reproductive effects. The following components are listed by NTP, OSHA, or IARC as carcinogens: Nickel, chromium (hexavalent), cobalt, lead, cadmium, antimony (trioxide), arsenic, and beryllium. See Section 11, for additional, specific information on effects noted above.

Target Organs: Overexposure to specific components of this product that are generated in dusts or fumes may cause adverse effects to the following organs or systems: eyes, skin, liver, kidney, central nervous system, cardiovascular system, respiratory system.
Medical Conditions Aggravated by Exposure: Diseases of the skin such as eczema may be aggravated by exposure. Also, disorders of the respiratory system including asthma, bronchitis, and emphysema. Long-term inhalation exposure to agents that cause pneumoconiosis (e.g. dust) may act synergistically with inhalation of oxide fumes or dusts of this product.
When this product is welded, fumes are generated. Welding fumes may be different in composition from the original welding product, with the chief component being ordinary oxides of the metal being welded. Chronic health effects (including cancer) have been associated with the fumes and dusts of individual component metals (see above), and **welding fumes** as a general category have been listed as a **carcinogen (Group 2B) by IARC.** There is also limited evidence that welding fumes may cause adverse reproductive and fetal effects. Evidence is stronger where welding materials contain known reproductive toxins, e.g., lead which may be present in the coating material of this product.

INFORMATION ON TOXOCOLOGICAL EFFECTS:
*This mixture has not been subjected to toxicological testing but has been blended from materials with established toxicological bibliographies. There is no applicable toxicity data available for this mixture***.**

Acute Toxicity:

Chemical	CAS #	Oral	Inhalation
Iron (Fe)	1309-37-1	Oral LD50 Rat >10000 mg/kg	
Carbon (C)	7440-44-0	Oral LD50 Rat >10000 mg/kg	
Cobalt (Co)	7440-48-4	Oral LD50 Rat 6171 mg/kg	Inhalation LC50 Rat >10 mg/L 1 h
Copper (Cu)	7440-50-8	Category 4	
Manganese (Mn)	7439-96-5	Oral LD50 Rat 9 g/kg	
Nickel (Ni)	7440-02-0	Oral LD50 Rat >9000 mg/kg (powder suspended in mineral oil)	Inhalation LC50 Rat >10.2 mg/L 1 h
Silicon (Si)	7440-21-3	Oral LD50 Rat 3160 mg/kg	
Titanium (Ti)	13463-67-7 (Titanium Dioxide - Total dust)	Oral LD50 Rat >10000 mg/kg	
Vanadium (V)	7440-62-2	Oral LD50 Rat >2000 mg/kg	

Irritation/Corrosion:

Chemical	CAS #	Eye	Skin
Tungsten (W)	7440-33-7	Causes serious eye irritation	-

Sensitization:

Chemical	CAS #	Respiratory	Skin
Nickel (Ni)	7440-02-0	-	Category 1

Germ Cell Mutagenicity:
No data available/not classifiable.

Reproductive Toxicity:
No data available/not classifiable.

Specific Organ Toxicity:

Chemical	CAS #	Single Exposure	Repeat Exposure
Manganese (Mn)	7439-96-5	Category 1	-
Nickel (Ni)	7440-02-0	Category 1	-

Aspiration Hazard:
No data available/not classifiable.

Carcinogenicity:

Chemical	CAS #	IARC	ACGIH	NTP	OSHA
Iron (Fe)	1309-37-1	Group 3 - Not Classifiable	A4 - Not Classifiable as a Human Carcinogen		
*Aluminum (Al)+	7429-90-5		A4 - Not Classifiable as a Human Carcinogen		
*Chromium (Cr)	7440-47-3	Group 3 - Not Classifiable			
*Cobalt (Co)	7440-	Group 2B-Possibly	A3 - Confirmed Animal	Reasonably	Present-

	48-4	Carcinogenic to Humans	Carcinogen with Unknown Relevance to Humans	Anticipated To Be A Human Carcinogen	Carcinogen
*Manganese (Mn)	7439-96-5		A4 - Not Classifiable as a Human Carcinogen		
*Nickel (Ni)	7440-02-0	Group 2B-Possibly Carcinogenic to Humans	A5 - Not Suspected as a Human Carcinogen	Reasonably Anticipated To Be A Human Carcinogen	Present-Carcinogen
Titanium (Ti)	13463-67-7	Group 2B-Possibly Carcinogenic to Humans	A4 - Not Classifiable as a Human Carcinogen	No evidence in rat or mice	Present-Carcinogen

12. Ecological information

Ecotoxicity:

Chemical	CAS #	Aquatic Toxicity Data
*Cobalt (Co)	7440-48-4	LC50 96 h Brachydanio rerio >100 mg/L [static] (IUCLID)
*Copper (Cu)	7440-50-8	EC50 72 h Pseudokirchneriella subcapitata 0.0426 - 0.0535 mg/L [static] (EPA); EC50 96 h Pseudokirchneriella subcapitata 0.031 - 0.054 mg/L [static] (EPA) LC50 96 h Pimephales promelas 0.0068 - 0.0156 mg/L (EPA); LC50 96 h Pimephales promelas <0.3 mg/L [static] (EPA); LC50 96 h Pimephales promelas 0.2 mg/L [flow-through] (EPA); LC50 96 h Oncorhynchus mykiss 0.052 mg/L [flow-through] (EPA); LC50 96 h Lepomis macrochirus 1.25 mg/L [static] (EPA); LC50 96 h Cyprinus carpio 0.3 mg/L [semi-static] (EPA); LC50 96 h Cyprinus carpio 0.8 mg/L [static] (EPA); LC50 96 h Poecilia reticulata 0.112 mg/L [flow-through] (EPA) EC50 48 h Daphnia magna 0.03 mg/L [Static] (EPA)
*Nickel (Ni)	7440-02-0	EC50 72 h Pseudokirchneriella subcapitata 0.18 mg/L (IUCLID); EC50 96 h Pseudokirchneriella subcapitata 0.174 - 0.311 mg/L [static] (EPA) LC50 96 h Brachydanio rerio >100 mg/L (IUCLID); LC50 96 h Cyprinus carpio 1.3 mg/L [semi-static] (EPA); LC50 96 h Cyprinus carpio 10.4 mg/L [static] (EPA) EC50 48 h Daphnia magna >100 mg/L (IUCLID); EC50 48 h Daphnia magna 1 mg/L [Static] (EPA)

Persistence and degradability:
No data available.
Bioaccumulation Potential:
No data available.
Mobility in Soil:
No data available
Other adverse effects:
No data available.

13. Disposal Considerations

Steel scrap should be recycled whenever possible. Product dusts and fumes from processing operations should also be recycled, or classified by a competent environmental professional and disposed of in accordance with applicable federal, state or local regulations.

14. Transport Information

There are no special requirements for the shipping of this product

DOT Proper Shipping Name: Not regulated
DOT Hazard Classification: Not regulated
UN/NA Number: Not applicable
DOT Packing Group: Not applicable
Labeling Requirements: Not applicable
Placards: Not applicable
DOT Hazardous Substance: Not applicable
DOT Marine Pollutant: Not applicable

15. Regulatory Information

FEDERAL REGULATIONS:

OSHA Regulations: This product is not hazardous under the criteria of the OSHA Hazard Communication Standard 29 CFR 1910.1200. However, dusts and fumes from this product may be combustible or hazardous and require protection to comply with applicable Federal, state and local laws and regulations.

EPA Regulations: RCRA (40CFR261): Steel scrap is not regulated as a solid waste or a hazardous waste under this act. If product dusts and/or fumes from processing operations are not recycled, they are considered a solid waste and may be classified as a hazardous waste depending on the toxicity characteristics of the dust as defined within 40CFR261.24.

Chemical	CAS #	CERCLA/SARA - emission reporting	CERCLA/SARA- RQ
*Aluminum (Al)+	7429-90-5	1.0 % de minimis concentration (dust or fume only)	
*Chromium (Cr)	7440-47-3	1.0 % de minimis concentration	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)
*Cobalt (Co)	7440-48-4	0.1 % de minimis concentration	
*Copper (Cu)	7440-50-8	1.0 % de minimis concentration	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 (Mn)	7439-96-5	1.0 % de minimis concentration	
*Nickel (Ni)	7440-02-0	0.1 % de minimis concentration	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)
Vanadium (V)	7440-62-2	1.0 % de minimis concentration (except when contained in an alloy)	

STATE REGULATIONS:

Right to Know:

Chemical	CAS #	Massachusetts	New Jersey	Pennsylvania
Iron (Fe)	1309-37-1	yes	yes	yes
*Aluminum (Al)+	7429-90-5	yes	yes	yes
*Chromium (Cr)	7440-47-3	yes	yes	yes
*Cobalt (Co)	7440-48-4	yes	yes	yes
*Copper (Cu)	7440-50-8	yes	yes	yes
*Manganese (Mn)	7439-96-5	yes	yes	yes
Molybdenum (Mo)	7439-98-7	yes	yes	yes
*Nickel (Ni)	7440-02-0	yes	yes	yes
Silicon (Si)	7440-21-3	yes - dust	yes	yes
Titanium (Ti)	7440-32-6		yes	
Titanium (Ti)	13463-67-7	yes	yes	yes
Tungsten (W)	7440-33-7	yes	yes	yes
Vanadium (V)	7440-62-2	yes	yes	yes

Ingredient Disclosure:

Chemical	CAS #	U.S. - New York - Household Cleansing Product Information Disclosure Program - Appendix B - Chemicals of Concern	U.S. - California -Cleaning Products Right to Know Act - Substances in Designated Lists
*Aluminum (Al)+	7429-90-5	yes	yes

*Chromium (Cr)	7440-47-3	yes	yes
*Cobalt (Co)	7440-48-4	yes	yes
*Copper (Cu)	7440-50-8	yes	yes
*Manganese (Mn)	7439-96-5	yes	yes
*Nickel (Ni)	7440-02-0	yes	yes
Titanium (Ti)	13463-67-7	yes	yes
Vanadium (V)	7440-62-2	yes	yes

California Proposition 65:

⚠ WARNING: This product can expose you to chemicals including [see list below], which is [are] known to the State of California to cause cancer, and [see list below], which is [are] known to the State of California to cause birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.

Proposition 65-Listed Chemicals Potentially Present in Trace Amounts:

Chemical	CAS #	Boiling Point (deg C)	Cancer	Reproductive
Naphthalene	91-20-3	218	Yes	
Ethyl Acrylate	140-88-5	99.4	Yes	
Toluene	108-88-3	110.6		Yes
Benzene	71-43-2	80.1	Yes	Yes
Aniline	62-53-3	184.1	Yes	
1-Naphthylamine	134-32-7	301	Yes	
2-Naphthylamine	91-59-8	306	Yes	
Formaldehyde	50-00-0	-19.1	Yes	
2,2'-iminodiethanol	111-42-2	269	Yes	
Propylene Oxide	75-56-9	34.23	Yes	
1,4 dioxane	123-91-1	101	Yes	
Ethylene oxide	75-21-8	10.7	Yes	
Diethanolamine	111-42-2	280	Yes	
Ethylbenzene	100-41-4	136	Yes	
Methanol	67-56-1	64.7		Yes
Lead	7439-92-1	Solid	Yes	Yes
Carbon black (airborne, unbound particles of respirable size)	1333-86-4	Solid	Yes	
Titanium dioxide (airborne, unbound particles of respirable size)	13463-67-3	Solid	Yes	

Proposition 65-Listed Metals

Chemical	CAS #	Note	Cancer	Reproductive
Chromium (hexavalent compounds)	18540-29-9 and others	Avoid high temps	Yes	Yes
Nickel compounds	7440-02-0 and others	Avoid grinding/cutting	Yes	
Cobalt metal powder and Cobalt (II) oxide	7440-48-4, 1307-96-6 and others		Yes	
Arsenic (inorganic arsenic compounds)	7440-38-2 and others		Yes	
Arsenic (inorganic oxides)	7440-38-2 and others			Yes

16. Other information

SDS History:

Supersedes: Feb 22 2017
Revision: Mar 19 2019

Key-Legend:

ACGIH American Conference of Governmental Industrial Hygienists
CAS Chemical Abstract Service
DOT Department of Transportation
EPA Environmental Protection Act

IARC	International Agency for Research on Cancer
MSHA	Mine Safety and Health Administration
NIOSH	National Institute for Occupational Safety and Health
NTP	National Toxicology Program
OSHA	Occupational Safety and Health Administration
PEL	Permissible Exposure Limit
REL	Recommended Exposure Limit
SARA	Superfund Amendments and Reauthorization Act
SCBA	Self-Contained Breathing Apparatus
SDS	Safety Data Sheet
TLV	Threshold Limit Value
TSCA	Toxic Substance Control Act
TWA	Time Weighted Average
UN/NA	United Nations/North American
mg	milligram

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