



All M.A. Ford Cutting Tools

Safety Data Sheet

According To Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules And Regulations And According To The Hazardous Products Regulation (February 11, 2015).

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SECTION 1: IDENTIFICATION

1.1. Product Identifier

Product Form: Article

Product Name: All M.A. Ford Cutting Tools

Article Exemption: This product meets the definition of an article under 29 CFR 1910.1200(c), which states: *Article means a manufactured item other than a fluid or particle: (i) which is formed to a specific shape or design during manufacture; (ii) which has end use function(s) dependent in whole or in part upon its shape or design during end use; and (iii) which under normal conditions of use does not release more than very small quantities, e.g., minute or trace amounts of a hazardous chemical (as determined under paragraph (d) of this section), and does not pose a physical hazard or health risk to employees.*

This product meets the definition of an article under the Hazardous Products Regulation, which states: *Manufactured article – an article that: is formed to a specific shape or design during manufacture, the intended use of which is dependent in whole or in part on the shape or design, and will not release or otherwise cause an individual to be exposed to a hazardous product when being installed, if the intended use of the article requires it to be installed, or under normal conditions of use.*

1.2. Intended Use of the Product

Industrial drilling and milling

1.3. Name, Address, and Telephone of the Responsible Party

Company

M.A. Ford Manufacturing Co. Inc.

7737 Northwest Blvd

Davenport, IA 52806

563.391.6220

www.maford.com

1.4. Emergency Telephone Number

Emergency Number : 800.553.8024

SECTION 2: HAZARDS IDENTIFICATION

2.1. Classification of the Substance or Mixture

GHS-US/CA Classification

Not classified

2.2. Label Elements

GHS-US/CA Labeling

No labeling applicable according to 29 CFR 1910.1200 and the Hazardous Products Regulations (HPR) SOR/2015-17.

2.3. Other Hazards

In this product's final form, it does not pose any hazard to health. However, when subject to, brazing, grinding, welding, etc., the following applies: Dust of the product, if generated, is very toxic to aquatic life with long lasting effects. When machined or physically altered, material may produce dusts or ribbons that may be irritating or toxic. Inhalation of dusts and fumes can cause metal fume fever. Symptoms can include a metallic or sweet taste in the mouth, sweating, shivering, headache, throat irritation, fever, chills, thirstiness, muscle aches, nausea, vomiting, weakness, fatigue, and shortness of breath. Metallic dusts may ignite or explode. May cause allergic skin or respiratory reactions in some individuals. Ingestion may cause metallic taste, abdominal pain, vomiting and diarrhea. May also cause hemolytic anemia, liver and kidney damage, and discoloration of the hair and skin. Wilson's Disease, a genetic condition, may cause abnormally high absorption, retention and storage of copper by the body. This disease is progressive and fatal if untreated. Damages genetic material in mammalian test systems. Cobalt: Chronic exposure to cobalt-containing hard metal (dust or fume) can result in a serious lung disease called "hard metal lung disease", which is a type of pneumoconiosis (lung fibrosis). May damage the male reproductive system (including a decrease in sperm count) and affect male fertility in animals. Manganese: Chronic exposure can cause inflammation of the lung tissue, scarring the lungs (pulmonary fibrosis). Chronic exposure to excessive levels can lead to a variety of psychiatric and motor disturbances, termed manganism. Nickel: May cause a form of dermatitis known as nickel itch and intestinal irritation, which may cause disorders, convulsions and asphyxia. When respirable, is a suspected human carcinogen, and is known to cause damage to the lungs through inhalation. Silver: Prolonged and excessive exposure through multiple routes of exposure may cause argyria, a condition that causes bluish-gray discoloration of the skin, eyes, and mucous membranes. Tantalum: Repeated exposure to tantalum alloys may cause fibrosis, chronic rhinitis and "hard metal pneumoconiosis". Titanium dioxide: Repeated or prolonged exposure to titanium dioxide dust via inhalation is suspected of causing

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cancer of the respiratory tract. Vanadium: May cause gastrointestinal discomfort, renal damage, nervous system depression and irritation of the respiratory passages. May also cause cardiac palpitations and asthma. Zinc: Prolonged exposure to high concentrations of fumes may cause "zinc shakes", an involuntary twitching of the muscles.

2.4. Unknown Acute Toxicity (GHS-US/CA)

No additional information available

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1. Substance

Not applicable

3.2. Mixture

Name	Synonyms	Product Identifier	% *	GHS Ingredient Classification
Iron	Iron, elemental / Direct reduced Iron / Iron, reduced	(CAS-No.) 7439-89-6	≤ 99	Comb. Dust
Tungsten carbide	Tungsten carbide (WC) / Tungsten(IV) carbide	(CAS-No.) 12070-12-1	≤ 94	Comb. Dust
Tantalum carbide (TaC)	-	(CAS-No.) 12070-06-3	≤ 50	Not classified
Fatty acids, tall-oil, maleated, esters with diethylene glycol, ammonium salts	Fatty acids, tall oil, maleated, esters with diethylene glycol, ammonium salt	(CAS-No.) 158706-62-8	≤ 35	Skin Irrit. 2, H315 Eye Irrit. 2, H319
Titanium carbide (TiC)	-	(CAS-No.) 12070-08-5	≤ 30	Comb. Dust
Nickel	Nickel, elemental / Nickel, metallic / Nickel, metal / C.I. 77775	(CAS-No.) 7440-02-0	≤ 30	Skin Sens. 1, H317 Carc. 2, H351 STOT RE 1, H372 Aquatic Acute 1, H400 Aquatic Chronic 3, H412 Comb. Dust
Niobium carbide (NbC)	-	(CAS-No.) 12069-94-2	≤ 20	Flam. Sol. 1, H228
Chromium	Chromium, elemental / Chromium, metal / Chromium, metallic / Chrome, metal / Chrome	(CAS-No.) 7440-47-3	≤ 14	Comb. Dust
Cobalt	Cobalt, metal / Cobalt, elemental / C.I. 77320 / Cobalt, metallic	(CAS-No.) 7440-48-4	≤ 12	Flam. Sol. 2, H228 Acute Tox. 4 (Oral), H302 Acute Tox. 1 (Inhalation), H330 Eye Irrit. 2A, H319 Resp. Sens. 1B, H334 Skin Sens. 1, H317 Muta. 2, H341 Carc. 1B, H350 Repr. 2, H361 Aquatic Chronic 4, H413 Comb. Dust
Tungsten	Tungsten, elemental / Tungsten, metal / Tungsten trioxide	(CAS-No.) 7440-33-7	≤ 6.35	Flam. Sol. 1, H228 Self-heat. 2, H252 Comb. Dust
Chromium carbide (Cr3C2)	Trichromium dicarbide	(CAS-No.) 12012-35-0	≤ 5.1	Not classified
Molybdenum	Molybdenum, elemental / Molybdenum, metal / Molybdenum, metallic	(CAS-No.) 7439-98-7	≤ 5.1	Comb. Dust
Vanadium carbide (VC)	-	(CAS-No.) 12070-10-9	≤ 5	Not classified
Titanium nitride	Titanium nitride (TiN) / BALINIT A	(CAS-No.) 25583-20-4	≤ 5	Not classified
Polyethylene glycol	Poly(oxy-1,2-ethanediyl), .alpha.-hydro-.omega.-hydroxy- / Polyethylene glycol ether / PEG / Macrogols / Ethylene oxide polymer / 1,2-Ethanediol, homopolymer / .alpha.-Hydro-.omega.-hydroxypoly(oxyethylene) / .alpha.-Hydro-	(CAS-No.) 25322-68-3	≤ 5	Comb. Dust

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	.omega.-hydroxypoly(oxy-1,2-ethanediyl) / Ethoxylated 1,2-ethanediol / Polyethylene oxide / Ethylene glycol homopolymer			
Zirconium carbide (ZrC)	-	(CAS-No.) 12070-14-3	≤ 5	Flam. Sol. 1, H228 Acute Tox. 4 (Oral), H302 Acute Tox. 4 (Dermal), H312 Acute Tox. 4 (Inhalation), H332
Chromium ion (3+)	Chromium, trivalent / Chromium(III) / Chromium, ion (Cr3+) / Chromic cation / Chromium(III), insoluble salts	(CAS-No.) 16065-83-1	≤ 4.5	Not classified
Carbon	Carbon, activated / Carbon Black / Graphite	(CAS-No.) 7440-44-0	≤ 2	Comb. Dust
Manganese	Manganese, elemental / Manganese, metal	(CAS-No.) 7439-96-5	≤ 2	Flam. Sol. 2, H228 STOT RE 1, H372 Aquatic Acute 2, H401 Aquatic Chronic 2, H411 Comb. Dust
1H-Benzotriazole	1,2,3-Benzotriazole / Benzotriazole / NSC-3058 / 1H-1,2,3-Benzotriazole / Benzeneazimide / 1,2,3-1H-Benzotriazole	(CAS-No.) 95-14-7	< 2	Acute Tox. 4 (Oral), H302 Acute Tox. 4 (Inhalation), H332 Eye Irrit. 2A, H319 Aquatic Acute 3, H402 Aquatic Chronic 2, H411 Comb. Dust
Vanadium	Vanadium, elemental / Vanadium metal / Ammonium trioxovanadate / vanadium	(CAS-No.) 7440-62-2	≤ 1.95	Comb. Dust
Vanadium oxide (V2O5)	Vanadium pentoxide / Divanadium pentoxide / Divanadium pentaoxide / Vanadium pentaoxide / Vanadium(V) oxide / C.I. 77938	(CAS-No.) 1314-62-1	< 1	Acute Tox. 3 (Oral), H301 Acute Tox. 4 (Inhalation), H332 Eye Dam. 1, H318 Muta. 2, H341 Carc. 2, H351 Repr. 2, H361 STOT SE 3, H335 STOT RE 1, H372 Aquatic Acute 2, H401 Aquatic Chronic 1, H410
Zinc	C.I. Pigment Black 16 / C.I. Pigment Metal 6 / Zinc, metallic / Zinc powder - zinc dust (stabilised) / Zinc powder - zinc dust (pyrophoric)	(CAS-No.) 7440-66-6	< 1	Pyr. Sol. 1, H250 Water-react. 1, H260 Aquatic Acute 1, H400 Aquatic Chronic 1, H410 Comb. Dust
Copper	C.I. 77400 / C.I. Pigment Metal 2 / Copper, elemental / Copper, metal / Copper, metallic	(CAS-No.) 7440-50-8	< 1	Aquatic Acute 1, H400 Aquatic Chronic 3, H412 Comb. Dust
Silicon nitride (Si3N4)	Silicon nitride / Trisilicon tetranitride	(CAS-No.) 12033-89-5	< 1	Not classified
Titanium boride (TiB2)	Titanium diboride	(CAS-No.) 12045-63-5	< 1	STOT RE 2, H373
Aluminum nitride (AlN)	Aluminium nitride	(CAS-No.) 24304-00-5	< 1	STOT RE 2, H373 Aquatic Chronic 1, H410
Aluminum magnesium boride	Aluminium magnesium boride / AlMgB14 / BAM	(CAS-No.) Not applicable	< 1	Acute Tox. 4 (Oral), H302
Silver	C.I. 77820 / Silver, elemental / Silver, metal / Silver, metallic	(CAS-No.) 7440-22-4	< 1	Aquatic Acute 1, H400 Aquatic Chronic 1, H410 Comb. Dust
Boron	B	(CAS-No.) 7440-42-8	< 0.9	Comb. Dust
Molybdenum carbide (Mo2C)	Dimolybdenum carbide	(CAS-No.) 12069-89-5	≤ 0.5	Not classified
Titanium dioxide (TiO2)	C.I. 77891 / C.I. Pigment White 6 /	(CAS-No.) 13463-67-7	< 0.5	Not classified

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	Titanium(IV) oxide / C.I. Pigment White 7 / Titanium oxide			
Silicon	Silicon powder / Silicon powder, amorphous / Ammonium hexafluorosilicate	(CAS-No.) 7440-21-3	≤ 0.35	Comb. Dust
Sulfur	Sulphur / Sulfur, molten / Brimstone / Sulfur, elemental	(CAS-No.) 7704-34-9	< 0.35	Skin Irrit. 2, H315 Aquatic Acute 3, H402 Aquatic Chronic 3, H412 Comb. Dust
Phosphorus elemental	Phosphorous / Phosphorus / Phosphorus, amorphous / Phosphorus (red, yellow, white)	(CAS-No.) 7723-14-0	< 0.25	Pyr. Sol. 1, H250 Acute Tox. 1 (Oral), H300 Acute Tox. 2 (Dermal), H310 Acute Tox. 4 (Inhalation), H332 Skin Corr. 1A, H314 Eye Dam. 1, H318 Aquatic Acute 1, H400 Aquatic Chronic 3, H412
Tin	Tin, elemental / Tin, metal / Organometallic tin	(CAS-No.) 7440-31-5	< 0.25	Comb. Dust
Tantalum	Tantalum, elemental / Tantalum, metal	(CAS-No.) 7440-25-7	< 0.25	Flam. Sol. 1, H228 Comb. Dust
Aluminum	Aluminium / Aluminum, metal / Aluminum, elemental / C.I. 77000 Aluminum, powder (stabilized) / Pigment Metal 1 / Aluminium, powder (pyrophoric)	(CAS-No.) 7429-90-5	≤ 0.2	Flam. Sol. 1, H228 Water-react. 2, H261 Comb. Dust

Full text of H-statements: see section 16

*Percentages are listed in weight by weight percentage (w/w%) for liquid and solid ingredients. Gas ingredients are listed in volume by volume percentage (v/v%).

Within the meaning of the OSHA Hazard Communication Standard [29 CFR 1910.1200] and the Canadian Hazardous Products Regulations (HPR): this product is considered a manufactured article and is not considered a hazard when used in a manner which is consistent with the labeled directions

SECTION 4: FIRST AID MEASURES

4.1. Description of First-aid Measures

General: The health effects listed below are not likely to occur unless dust or fumes are generated by processing.

Inhalation: Using proper respiratory protection, move the exposed person to fresh air at once. Encourage exposed person to cough, spit out, and blow nose to remove dust. Immediately call a poison center, physician, or emergency medical service. Immediately call a poison center or doctor/physician.

Skin Contact: Remove contaminated clothing. Brush off loose particles from skin. Wash affected area with soap and water for at least 15 minutes. Obtain medical attention if irritation/rash develops or persists. If exposed or concerned: Get medical advice/attention.

Eye Contact: Immediately rinse with water for at least 15 minutes. Obtain medical attention.

Ingestion: Rinse mouth. Immediately call a POISON CENTER or doctor.

4.2. Most Important Symptoms and Effects Both Acute and Delayed

General: Welding, cutting, or processing this material may release dust or fumes that are hazardous.

Inhalation: Not expected to present a significant inhalation hazard under anticipated conditions of normal use. Exposure may produce cough, mucous secretions, shortness of breath, chest tightness or other symptoms indicative of an allergic/sensitization reaction. Inhalation of dusts and fumes can cause metal fume fever. Symptoms can include a metallic or sweet taste in the mouth, sweating, shivering, headache, throat irritation, fever, chills, thirstiness, muscle aches, nausea, vomiting, weakness, fatigue, and shortness of breath.

Skin Contact: None expected under normal conditions of use. Skin contact with large amounts of dust may cause mechanical irritation. Redness, pain, swelling, itching, burning, dryness, and dermatitis. May cause an allergic skin reaction.

Eye Contact: None expected under normal conditions of use. Dusts caused from milling and physical alteration will likely cause eye irritation. Fumes from thermal decomposition or molten material will likely be irritating to the eyes.

Ingestion: Ingestion is likely to be harmful or have adverse effects.

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Chronic Symptoms: In massive form, no chronic hazard exists. If physically altered to present slivers, ribbons, dusts or fumes from molten material: Cobalt: Chronic exposure to cobalt-containing hard metal (dust or fume) can result in a serious lung disease called "hard metal lung disease", which is a type of pneumoconiosis (lung fibrosis). Cobalt may damage the male reproductive system (including a decrease in sperm count) and affect male fertility in animals. Manganese: Chronic exposure can cause inflammation of the lung tissue, scarring the lungs (pulmonary fibrosis). Chronic exposure to excessive manganese levels can lead to a variety of psychiatric and motor disturbances, termed manganism. Nickel: May cause a form of dermatitis known as nickel itch and intestinal irritation, which may cause disorders, convulsions and asphyxia. Nickel metal powder, when respirable, is a suspected human carcinogen, and is known to cause damage to the lungs through inhalation. Product may cause an allergic reaction in persons previously sensitised to nickel and/or its salts. Silver: Chronic skin contact or ingestion of silver dust, salts or fume can result in a condition known as Argyria, a condition with bluish pigmentation of the skin and eyes. Tantalum: Repeated exposure to tantalum alloys may cause fibrosis, chronic rhinitis and "hard metal pneumoconiosis". Titanium dioxide: Repeated or prolonged exposure to titanium dioxide dust via inhalation is suspected of causing cancer of the respiratory tract. Vanadium: May cause gastrointestinal discomfort, renal damage, nervous system depression and irritation of the respiratory passages. May also cause cardiac palpitations and asthma. Zinc: Prolonged exposure to high concentrations of zinc fumes may cause "zinc shakes", an involuntary twitching of the muscles. Otherwise, zinc is non-toxic.

4.3. Indication of Any Immediate Medical Attention and Special Treatment Needed

If exposed or concerned, get medical advice and attention.

SECTION 5: FIRE-FIGHTING MEASURES

5.1. Extinguishing Media

Suitable Extinguishing Media: Dust, fines, or molten metal: Use Class D extinguishing agents. As shipped: Use extinguishing media appropriate for surrounding fire.

Unsuitable Extinguishing Media: Do not use water when molten material is involved, may react violently or explosively on contact with water. Do not use halogenated extinguishing agents on small chips or fines.

5.2. Special Hazards Arising From the Substance or Mixture

Fire Hazard: Not flammable. The following applies to the product if it is cut, sanded or altered in such a way that excessive and/or significant particulates and/or dusts may be generated: Metallic dusts may ignite or explode.

Explosion Hazard: Product itself is not explosive but if dust is generated, dust clouds suspended in air can be explosive.

Reactivity: Product is stable. Contact with concentrated acid or alkali can result in evolution of hydrogen gas.

5.3. Advice for Firefighters

Precautionary Measures Fire: Exercise caution when fighting any fire.

Firefighting Instructions: Use water spray or fog for cooling exposed containers.

Protection During Firefighting: Do not enter fire area without proper protective equipment, including respiratory protection.

Hazardous Combustion Products: Burning material releases heavy metal oxide fumes.

5.4. Reference to Other Sections

Refer to Section 9 for flammability properties.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1. Personal Precautions, Protective Equipment and Emergency Procedures

General Measures: Avoid generating dust. Do not breathe dust or fumes. For particulates and dust: Avoid dispersal of dust in the air (i.e. clearing dust surfaces with compressed air). Do not get in eyes, on skin, or on clothing. Keep away from heat, hot surfaces, sparks, open flames, and other ignition sources. No smoking. Remove ignition sources.

6.1.1. For Non-Emergency Personnel

Protective Equipment: Use appropriate personal protective equipment (PPE).

Emergency Procedures: Do not touch or walk through spilled material. Evacuate unnecessary personnel.

6.1.2. For Emergency Personnel

Protective Equipment: Equip cleanup crew with proper protection.

Emergency Procedures: Upon arrival at the scene, a first responder is expected to recognize the presence of dangerous goods, protect oneself and the public, secure the area, and call for the assistance of trained personnel as soon as conditions permit. Eliminate ignition sources.

6.2. Environmental Precautions

Avoid release to the environment. Collect spillage.

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6.3. Methods and Materials for Containment and Cleaning Up

For Containment: Ventilate area. As an immediate precautionary measure, isolate spill or leak area in all directions. Avoid generation of dust during clean-up of spills. Contain and collect as any solid. Where possible allow molten material to solidify naturally.

Methods for Cleaning Up: Clean up spills immediately and dispose of waste safely. Avoid generation of dust during clean-up of spills. Use only non-sparking tools. Use explosion proof vacuum during cleanup, with appropriate filter. Do not mix with other materials. Vacuum clean-up is preferred. If sweeping is required use a dust suppressant.

6.4. Reference to Other Sections

See Section 8, Exposure Controls and Personal Protection. See Section 13, Disposal Considerations.

SECTION 7: HANDLING AND STORAGE

7.1. Precautions for Safe Handling

Additional Hazards When Processed: Avoid dust production. Accumulation and dispersion of dust with an ignition source can cause a combustible dust explosion. Keep dust levels to a minimum and follow applicable regulations.

Precautions for Safe Handling: Do not handle until all safety precautions have been read and understood. Do not breathe dust. Avoid creating or spreading dust.

Hygiene Measures: Handle in accordance with good industrial hygiene and safety procedures. Wash hands and other exposed areas with mild soap and water before eating, drinking, or smoking and again when leaving work.

7.2. Conditions for Safe Storage, Including Any Incompatibilities

Technical Measures: Avoid creating or spreading dust.

Storage Conditions: Store in a dry, cool and well-ventilated place.

Incompatible Materials: Strong acids. Strong bases. Strong oxidizers.

7.3. Specific End Use(s)

Industrial drilling and milling

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. Control Parameters

For substances listed in section 3 that are not listed here, there are no established exposure limits from the manufacturer, supplier, importer, or the appropriate advisory agency including: ACGIH (TLV), AIHA (WEEL), NIOSH (REL), OSHA (PEL), or Canadian provincial governments.

Cobalt (7440-48-4)		
USA ACGIH	ACGIH OEL TWA	0.02 mg/m ³ (inhalable particulate matter)
USA ACGIH	ACGIH chemical category	Confirmed Animal Carcinogen with Unknown Relevance to Humans, dermal sensitizer
USA ACGIH	BEI BLV	15 µg/l Parameter: Cobalt - Medium: urine - Sampling time: end of shift at end of workweek (nonspecific)
USA OSHA	OSHA PEL TWA	0.1 mg/m ³ (dust and fume)
USA NIOSH	NIOSH REL TWA	0.05 mg/m ³ (dust and fume)
USA IDLH	IDLH	20 mg/m ³ (dust and fume)
Alberta	OEL TWA	0.02 mg/m ³
British Columbia	OEL TWA	0.02 mg/m ³ (total)
Manitoba	OEL TWA	0.02 mg/m ³ (inhalable particulate matter)
New Brunswick	OEL TWA	0.02 mg/m ³
Newfoundland & Labrador	OEL TWA	0.02 mg/m ³ (inhalable particulate matter)
Nova Scotia	OEL TWA	0.02 mg/m ³ (inhalable particulate matter)
Nunavut	OEL STEL	0.06 mg/m ³
Nunavut	OEL TWA	0.02 mg/m ³
Northwest Territories	OEL STEL	0.06 mg/m ³
Northwest Territories	OEL TWA	0.02 mg/m ³
Ontario	OEL TWA	0.02 mg/m ³
Prince Edward Island	OEL TWA	0.02 mg/m ³ (inhalable particulate matter)
Québec	VEMP OEL TWA	0.02 mg/m ³
Saskatchewan	OEL STEL	0.06 mg/m ³
Saskatchewan	OEL TWA	0.02 mg/m ³

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Yukon	OEL STEL	0.15 mg/m ³ (dust and fume)
Yukon	OEL TWA	0.05 mg/m ³ (dust and fume)
Nickel (7440-02-0)		
USA ACGIH	ACGIH OEL TWA	1.5 mg/m ³ (inhalable particulate matter)
USA ACGIH	ACGIH chemical category	Not Suspected as a Human Carcinogen
USA ACGIH	BEI BLV	5 µg/l Parameter: Nickel - Medium: urine - Sampling time: post-shift at end of workweek (background)
USA OSHA	OSHA PEL TWA	1 mg/m ³
USA NIOSH	NIOSH REL TWA	0.015 mg/m ³
USA IDLH	IDLH	10 mg/m ³
Alberta	OEL TWA	1.5 mg/m ³
British Columbia	OEL TWA	0.05 mg/m ³
Manitoba	OEL TWA	1.5 mg/m ³ (inhalable particulate matter)
New Brunswick	OEL TWA	1 mg/m ³
Newfoundland & Labrador	OEL TWA	1.5 mg/m ³ (inhalable particulate matter)
Nova Scotia	OEL TWA	1.5 mg/m ³ (inhalable particulate matter)
Nunavut	OEL STEL	3 mg/m ³ (inhalable fraction)
Nunavut	OEL TWA	1.5 mg/m ³ (inhalable fraction)
Northwest Territories	OEL STEL	3 mg/m ³ (inhalable fraction)
Northwest Territories	OEL TWA	1.5 mg/m ³ (inhalable fraction)
Ontario	OEL TWA	1 mg/m ³ (inhalable fraction)
Prince Edward Island	OEL TWA	1.5 mg/m ³ (inhalable particulate matter)
Québec	VEMP OEL TWA	1.5 mg/m ³ (inhalable dust)
Saskatchewan	OEL STEL	3 mg/m ³ (inhalable fraction)
Saskatchewan	OEL TWA	1.5 mg/m ³ (inhalable fraction)
Yukon	OEL STEL	3 mg/m ³
Yukon	OEL TWA	1 mg/m ³
Vanadium carbide (VC) (12070-10-9)		
USA NIOSH	NIOSH REL TWA	1 mg/m ³ (Ferrovanadium dust)
USA NIOSH	NIOSH REL STEL	3 mg/m ³ (Ferrovanadium dust)
Chromium (7440-47-3)		
USA ACGIH	ACGIH OEL TWA	0.5 mg/m ³ (inhalable particulate matter)
USA ACGIH	BEI BLV	0.7 µg/l Parameter: Total chromium - Medium: urine - Sampling time: end of shift at end of workweek (population based)
USA OSHA	OSHA PEL TWA	1 mg/m ³
USA NIOSH	NIOSH REL TWA	0.5 mg/m ³
USA IDLH	IDLH	250 mg/m ³
Alberta	OEL TWA	0.5 mg/m ³
British Columbia	OEL TWA	0.5 mg/m ³ (total)
Manitoba	OEL TWA	0.5 mg/m ³ (inhalable particulate matter)
New Brunswick	OEL TWA	0.5 mg/m ³
Newfoundland & Labrador	OEL TWA	0.5 mg/m ³ (inhalable particulate matter)
Nova Scotia	OEL TWA	0.5 mg/m ³ (inhalable particulate matter)
Nunavut	OEL STEL	1.5 mg/m ³ (metal)
Nunavut	OEL TWA	0.5 mg/m ³ (metal)
Northwest Territories	OEL STEL	1.5 mg/m ³ (metal)
Northwest Territories	OEL TWA	0.5 mg/m ³ (metal)
Ontario	OEL TWA	0.5 mg/m ³
Prince Edward Island	OEL TWA	0.5 mg/m ³ (inhalable particulate matter)
Québec	VEMP OEL TWA	0.5 mg/m ³
Saskatchewan	OEL STEL	1.5 mg/m ³

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Saskatchewan	OEL TWA	0.5 mg/m ³
Yukon	OEL STEL	3 mg/m ³
Yukon	OEL TWA	0.1 mg/m ³
Aluminum (7429-90-5)		
USA ACGIH	ACGIH OEL TWA	1 mg/m ³ (respirable particulate matter)
USA ACGIH	ACGIH chemical category	Not Classifiable as a Human Carcinogen
USA OSHA	OSHA PEL TWA	15 mg/m ³ (total dust) 5 mg/m ³ (respirable fraction)
USA NIOSH	NIOSH REL TWA	10 mg/m ³ (total dust) 5 mg/m ³ (respirable dust)
Alberta	OEL TWA	10 mg/m ³ (dust)
British Columbia	OEL TWA	1 mg/m ³ (respirable)
Manitoba	OEL TWA	1 mg/m ³ (respirable particulate matter)
New Brunswick	OEL TWA	10 mg/m ³ (metal dust)
Newfoundland & Labrador	OEL TWA	1 mg/m ³ (respirable particulate matter)
Nova Scotia	OEL TWA	1 mg/m ³ (respirable particulate matter)
Nunavut	OEL STEL	20 mg/m ³ (metal-dust)
Nunavut	OEL TWA	10 mg/m ³ (metal-dust)
Northwest Territories	OEL STEL	20 mg/m ³ (metal-dust)
Northwest Territories	OEL TWA	10 mg/m ³ (metal-dust)
Ontario	OEL TWA	1 mg/m ³ (respirable particulate matter)
Prince Edward Island	OEL TWA	1 mg/m ³ (respirable particulate matter)
Québec	VEMP OEL TWA	10 mg/m ³
Saskatchewan	OEL STEL	20 mg/m ³ (dust)
Saskatchewan	OEL TWA	10 mg/m ³ (dust)
Copper (7440-50-8)		
USA ACGIH	ACGIH OEL TWA	0.2 mg/m ³ (fume)
USA OSHA	OSHA PEL TWA	0.1 mg/m ³ (fume) 1 mg/m ³ (dust and mist)
USA NIOSH	NIOSH REL TWA	1 mg/m ³ (dust and mist) 0.1 mg/m ³ (fume)
USA IDLH	IDLH	100 mg/m ³ (dust, fume and mist)
Alberta	OEL TWA	0.2 mg/m ³ (fume) 1 mg/m ³ (dust and mist)
British Columbia	OEL TWA	1 mg/m ³ (dust and mist) 0.2 mg/m ³ (fume)
Manitoba	OEL TWA	0.2 mg/m ³ (fume)
New Brunswick	OEL TWA	0.2 mg/m ³ (fume) 1 mg/m ³ (dust and mist)
Newfoundland & Labrador	OEL TWA	0.2 mg/m ³ (fume)
Nova Scotia	OEL TWA	0.2 mg/m ³ (fume)
Nunavut	OEL STEL	3 mg/m ³ (dust and mist) 0.6 mg/m ³ (fume)
Nunavut	OEL TWA	0.2 mg/m ³ (fume) 1 mg/m ³ (dust and mist)
Northwest Territories	OEL STEL	3 mg/m ³ (dust and mist) 0.6 mg/m ³ (fume)
Northwest Territories	OEL TWA	0.2 mg/m ³ (fume) 1 mg/m ³ (dust and mist)
Ontario	OEL TWA	0.2 mg/m ³ (fume) 1 mg/m ³ (dust and mist)
Prince Edward Island	OEL TWA	0.2 mg/m ³ (fume)

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Québec	VEMP OEL TWA	0.2 mg/m ³ (fume) 1 mg/m ³ (dust and mist)
Saskatchewan	OEL STEL	0.6 mg/m ³ (fume) 3 mg/m ³ (dust and mist)
Saskatchewan	OEL TWA	0.2 mg/m ³ (fume) 1 mg/m ³ (dust and mist)
Yukon	OEL STEL	0.2 mg/m ³ (fume) 2 mg/m ³ (dust and mist)
Yukon	OEL TWA	0.2 mg/m ³ (fume) 1 mg/m ³ (dust and mist)
Manganese (7439-96-5)		
USA ACGIH	ACGIH OEL TWA	0.02 mg/m ³ (respirable particulate matter) 0.1 mg/m ³ (inhalable particulate matter)
USA ACGIH	ACGIH chemical category	Not Classifiable as a Human Carcinogen
USA OSHA	OSHA PEL Ceiling	5 mg/m ³ (fume)
USA NIOSH	NIOSH REL TWA	1 mg/m ³ (fume)
USA NIOSH	NIOSH REL STEL	3 mg/m ³
USA IDLH	IDLH	500 mg/m ³
Alberta	OEL TWA	0.2 mg/m ³
British Columbia	OEL TWA	0.2 mg/m ³ (total) 0.02 mg/m ³ (respirable)
Manitoba	OEL TWA	0.02 mg/m ³ (respirable particulate matter) 0.1 mg/m ³ (inhalable particulate matter)
New Brunswick	OEL TWA	0.2 mg/m ³
Newfoundland & Labrador	OEL TWA	0.02 mg/m ³ (respirable particulate matter) 0.1 mg/m ³ (inhalable particulate matter)
Nova Scotia	OEL TWA	0.02 mg/m ³ (respirable particulate matter) 0.1 mg/m ³ (inhalable particulate matter)
Nunavut	OEL STEL	0.6 mg/m ³
Nunavut	OEL TWA	0.2 mg/m ³
Northwest Territories	OEL STEL	0.6 mg/m ³
Northwest Territories	OEL TWA	0.2 mg/m ³
Ontario	OEL TWA	0.2 mg/m ³
Prince Edward Island	OEL TWA	0.02 mg/m ³ (respirable particulate matter) 0.1 mg/m ³ (inhalable particulate matter)
Québec	VEMP OEL TWA	0.2 mg/m ³ (total dust and fume)
Saskatchewan	OEL STEL	0.6 mg/m ³
Saskatchewan	OEL TWA	0.2 mg/m ³
Yukon	OEL C	5 mg/m ³
Molybdenum (7439-98-7)		
USA ACGIH	ACGIH OEL TWA	10 mg/m ³ (inhalable particulate matter) 3 mg/m ³ (respirable particulate matter)
USA OSHA	OSHA PEL TWA	5 mg/m ³ (Molybdenum (as Mo), Soluble Compounds) 15 mg/m ³ (Molybdenum (as Mo), Insoluble Compounds (Total dust))
USA NIOSH	NIOSH REL TWA	5 mg/m ³ (Molybdenum (as Mo), Soluble Compounds)
USA IDLH	IDLH	5000 mg/m ³
Alberta	OEL TWA	10 mg/m ³ (total) 3 mg/m ³ (respirable)
British Columbia	OEL TWA	3 mg/m ³ (respirable) 10 mg/m ³ (inhalable)
Manitoba	OEL TWA	10 mg/m ³ (inhalable particulate matter) 3 mg/m ³ (respirable particulate matter)

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Newfoundland & Labrador	OEL TWA	10 mg/m ³ (inhalable particulate matter) 3 mg/m ³ (respirable particulate matter)
Nova Scotia	OEL TWA	10 mg/m ³ (inhalable particulate matter) 3 mg/m ³ (respirable particulate matter)
Nunavut	OEL STEL	20 mg/m ³ (metal-inhalable fraction) 6 mg/m ³ (metal-respirable fraction)
Nunavut	OEL TWA	10 mg/m ³ (metal-inhalable fraction) 3 mg/m ³ (metal-respirable fraction)
Northwest Territories	OEL STEL	20 mg/m ³ (metal-inhalable fraction) 6 mg/m ³ (metal-respirable fraction)
Northwest Territories	OEL TWA	10 mg/m ³ (metal-inhalable fraction) 3 mg/m ³ (metal-respirable fraction)
Ontario	OEL TWA	10 mg/m ³ (metal-inhalable particulate matter) 3 mg/m ³ (metal-respirable particulate matter)
Prince Edward Island	OEL TWA	10 mg/m ³ (inhalable particulate matter) 3 mg/m ³ (respirable particulate matter)
Québec	VEMP OEL TWA	10 mg/m ³ (inhalable dust) 3 mg/m ³ (respirable dust)
Saskatchewan	OEL STEL	20 mg/m ³ (inhalable fraction) 6 mg/m ³ (respirable fraction)
Saskatchewan	OEL TWA	10 mg/m ³ (inhalable fraction) 3 mg/m ³ (respirable fraction)
Silicon (7440-21-3)		
USA OSHA	OSHA PEL TWA	15 mg/m ³ (total dust) 5 mg/m ³ (respirable fraction)
USA NIOSH	NIOSH REL TWA	10 mg/m ³ (total dust) 5 mg/m ³ (respirable dust)
British Columbia	OEL TWA	10 mg/m ³ (total dust) 3 mg/m ³ (respirable fraction)
New Brunswick	OEL TWA	10 mg/m ³
Nunavut	OEL STEL	20 mg/m ³
Nunavut	OEL TWA	10 mg/m ³
Northwest Territories	OEL STEL	20 mg/m ³
Northwest Territories	OEL TWA	10 mg/m ³
Québec	VEMP OEL TWA	10 mg/m ³ (containing no Asbestos and <1% Crystalline silica-total dust)
Saskatchewan	OEL STEL	20 mg/m ³
Saskatchewan	OEL TWA	10 mg/m ³
Yukon	OEL STEL	20 mg/m ³
Yukon	OEL TWA	30 mppcf 10 mg/m ³
Tungsten (7440-33-7)		
USA ACGIH	ACGIH OEL TWA	3 mg/m ³ (respirable particulate matter)
USA NIOSH	NIOSH REL TWA	5 mg/m ³
USA NIOSH	NIOSH REL STEL	10 mg/m ³
Alberta	OEL STEL	10 mg/m ³
Alberta	OEL TWA	5 mg/m ³
British Columbia	OEL STEL	10 mg/m ³
British Columbia	OEL TWA	5 mg/m ³
Manitoba	OEL TWA	3 mg/m ³ (respirable particulate matter)
Newfoundland & Labrador	OEL TWA	3 mg/m ³ (respirable particulate matter)
Nova Scotia	OEL TWA	3 mg/m ³ (respirable particulate matter)
Nunavut	OEL STEL	10 mg/m ³

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Nunavut	OEL TWA	5 mg/m ³
Northwest Territories	OEL STEL	10 mg/m ³
Northwest Territories	OEL TWA	5 mg/m ³
Ontario	OEL TWA	3 mg/m ³ (in the absence of Cobalt-respirable particulate matter)
Prince Edward Island	OEL TWA	3 mg/m ³ (respirable particulate matter)
Saskatchewan	OEL STEL	10 mg/m ³
Saskatchewan	OEL TWA	5 mg/m ³
Yukon	OEL STEL	10 mg/m ³
Yukon	OEL TWA	5 mg/m ³
Vanadium (7440-62-2)		
USA OSHA	OSHA PEL Ceiling	0.5 mg/m ³ (respirable dust) 0.1 mg/m ³ (fume)
USA NIOSH	NIOSH REL TWA	1 mg/m ³ (Ferrovanadium dust)
USA NIOSH	NIOSH REL STEL	3 mg/m ³ (Ferrovanadium dust)
Phosphorus elemental (7723-14-0)		
Alberta	OEL TWA	0.1 mg/m ³ (yellow)
New Brunswick	OEL TWA	0.1 mg/m ³ (yellow)
New Brunswick	OEL TWA [ppm]	0.02 ppm (yellow)
Sulfur (7704-34-9)		
Alberta	OEL TWA	10 mg/m ³
Silver (7440-22-4)		
USA ACGIH	ACGIH OEL TWA	0.1 mg/m ³ (dust and fume)
USA OSHA	OSHA PEL TWA	0.01 mg/m ³
USA NIOSH	NIOSH REL TWA	0.01 mg/m ³ (dust) 0.9 µg/m ³ (nanoparticles <100 nm)
USA IDLH	IDLH	10 mg/m ³ (dust)
Alberta	OEL TWA	0.1 mg/m ³
British Columbia	OEL STEL	0.03 mg/m ³
British Columbia	OEL TWA	0.01 mg/m ³
Manitoba	OEL TWA	0.1 mg/m ³ (dust and fume)
New Brunswick	OEL TWA	0.1 mg/m ³
Newfoundland & Labrador	OEL TWA	0.1 mg/m ³ (dust and fume)
Nova Scotia	OEL TWA	0.1 mg/m ³ (dust and fume)
Nunavut	OEL STEL	0.3 mg/m ³ (metal)
Nunavut	OEL TWA	0.1 mg/m ³ (metal)
Northwest Territories	OEL STEL	0.3 mg/m ³ (metal)
Northwest Territories	OEL TWA	0.1 mg/m ³ (metal)
Ontario	OEL TWA	0.1 mg/m ³ (dust and fume)
Prince Edward Island	OEL TWA	0.1 mg/m ³ (dust and fume)
Québec	VEMP OEL TWA	0.1 mg/m ³
Saskatchewan	OEL STEL	0.3 mg/m ³
Saskatchewan	OEL TWA	0.1 mg/m ³
Yukon	OEL STEL	0.03 mg/m ³
Yukon	OEL TWA	0.01 mg/m ³
Polyethylene glycol (25322-68-3)		
USA AIHA	WEEL TWA	10 mg/m ³ (molecular weight>200-aerosol)
Vanadium oxide (V2O5) (1314-62-1)		
USA ACGIH	ACGIH OEL TWA	0.05 mg/m ³ (inhalable particulate matter)
USA ACGIH	ACGIH chemical category	Confirmed Animal Carcinogen with Unknown Relevance to Humans
USA OSHA	OSHA PEL Ceiling	0.5 mg/m ³ (Respirable dust (as V2O5)) 0.1 mg/m ³ (Fume (as V2O5))

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USA NIOSH	NIOSH REL Ceiling	0.05 mg/m ³ (dust and fume)
USA IDLH	IDLH	35 mg/m ³ (dust and fume)
Alberta	OEL TWA	0.05 mg/m ³ (fume or respirable particulate)
British Columbia	OEL TWA	0.05 mg/m ³ (inhalable)
Manitoba	OEL TWA	0.05 mg/m ³ (inhalable particulate matter)
New Brunswick	OEL TWA	0.05 mg/m ³ (respirable dust or fume)
Newfoundland & Labrador	OEL TWA	0.05 mg/m ³ (inhalable particulate matter)
Nova Scotia	OEL TWA	0.05 mg/m ³ (inhalable particulate matter)
Nunavut	OEL STEL	0.15 mg/m ³ (dust and fume; respirable fraction)
Nunavut	OEL TWA	0.05 mg/m ³ (dust and fume; respirable fraction)
Northwest Territories	OEL STEL	0.15 mg/m ³ (dust and fume; respirable fraction)
Northwest Territories	OEL TWA	0.05 mg/m ³ (dust and fume; respirable fraction)
Ontario	OEL TWA	0.05 mg/m ³ (inhalable particulate matter)
Prince Edward Island	OEL TWA	0.05 mg/m ³ (inhalable particulate matter)
Québec	VEMP OEL TWA	0.05 mg/m ³ (inhalable dust)
Saskatchewan	OEL STEL	0.15 mg/m ³ (dust and fume, respirable fraction)
Saskatchewan	OEL TWA	0.05 mg/m ³ (dust and fume, respirable fraction)
Yukon	OEL C	0.05 mg/m ³ (fume)
Yukon	OEL STEL	1.5 mg/m ³ (dust)
Yukon	OEL TWA	0.5 mg/m ³ (dust)
Tin (7440-31-5)		
USA ACGIH	ACGIH OEL TWA	2 mg/m ³ (inhalable particulate matter)
USA NIOSH	NIOSH REL TWA	2 mg/m ³
USA IDLH	IDLH	100 mg/m ³
Alberta	OEL TWA	2 mg/m ³
British Columbia	OEL TWA	2 mg/m ³
Manitoba	OEL TWA	2 mg/m ³ (inhalable particulate matter)
New Brunswick	OEL TWA	2 mg/m ³
Newfoundland & Labrador	OEL TWA	2 mg/m ³ (inhalable particulate matter)
Nova Scotia	OEL TWA	2 mg/m ³ (inhalable particulate matter)
Nunavut	OEL STEL	4 mg/m ³ (metal)
Nunavut	OEL TWA	2 mg/m ³ (metal)
Northwest Territories	OEL STEL	4 mg/m ³ (metal)
Northwest Territories	OEL TWA	2 mg/m ³ (metal)
Ontario	OEL TWA	2 mg/m ³
Prince Edward Island	OEL TWA	2 mg/m ³ (inhalable particulate matter)
Québec	VEMP OEL TWA	2 mg/m ³
Saskatchewan	OEL STEL	4 mg/m ³
Saskatchewan	OEL TWA	2 mg/m ³
Tantalum (7440-25-7)		
USA OSHA	OSHA PEL TWA	5 mg/m ³
USA NIOSH	NIOSH REL TWA	5 mg/m ³ (dust)
USA NIOSH	NIOSH REL STEL	10 mg/m ³ (dust)
USA IDLH	IDLH	2500 mg/m ³ (dust)
Alberta	OEL TWA	5 mg/m ³ (dust)
British Columbia	OEL TWA	5 mg/m ³
New Brunswick	OEL TWA	5 mg/m ³ (dust)
Nunavut	OEL STEL	10 mg/m ³ (metal)
Nunavut	OEL TWA	5 mg/m ³ (metal)
Northwest Territories	OEL STEL	10 mg/m ³ (metal)
Northwest Territories	OEL TWA	5 mg/m ³ (metal)

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Québec	VEMP OEL TWA	5 mg/m ³ (dust)
Saskatchewan	OEL STEL	10 mg/m ³
Saskatchewan	OEL TWA	5 mg/m ³
Yukon	OEL STEL	10 mg/m ³
Yukon	OEL TWA	5 mg/m ³
Chromium ion (3+) (16065-83-1)		
Saskatchewan	OEL STEL	1.5 mg/m ³
Saskatchewan	OEL TWA	0.5 mg/m ³
Titanium dioxide (13463-67-7)		
USA ACGIH	ACGIH OEL TWA	10 mg/m ³
USA ACGIH	ACGIH chemical category	Not Classifiable as a Human Carcinogen
USA OSHA	OSHA PEL TWA	15 mg/m ³ (total dust)
USA NIOSH	NIOSH REL TWA	2.4 mg/m ³ (CIB 63-fine) 0.3 mg/m ³ (CIB 63-ultrafine, including engineered nanoscale)
USA IDLH	IDLH	5000 mg/m ³
Alberta	OEL TWA	10 mg/m ³
British Columbia	OEL TWA	10 mg/m ³ (total dust) 3 mg/m ³ (respirable fraction)
Manitoba	OEL TWA	10 mg/m ³
New Brunswick	OEL TWA	10 mg/m ³
Newfoundland & Labrador	OEL TWA	10 mg/m ³
Nova Scotia	OEL TWA	10 mg/m ³
Nunavut	OEL STEL	20 mg/m ³
Nunavut	OEL TWA	10 mg/m ³
Northwest Territories	OEL STEL	20 mg/m ³
Northwest Territories	OEL TWA	10 mg/m ³
Ontario	OEL TWA	10 mg/m ³
Prince Edward Island	OEL TWA	10 mg/m ³
Québec	VEMP OEL TWA	10 mg/m ³ (containing no Asbestos and <1% Crystalline silica-total dust)
Saskatchewan	OEL STEL	20 mg/m ³
Saskatchewan	OEL TWA	10 mg/m ³
Yukon	OEL STEL	20 mg/m ³
Yukon	OEL TWA	30 mppcf 10 mg/m ³

8.2. Exposure Controls

Appropriate Engineering Controls: When cutting, grinding, crushing, or drilling, provide general or local ventilation systems, as needed, to maintain airborne dust concentrations below the regulatory limits. Local vacuum collection is preferred since it prevents release of contaminants into the work area by controlling it at the source. Other technologies that may aid in controlling airborne respirable dust include wet suppression, ventilation, process enclosure, and enclosed employee work stations.

Personal Protective Equipment: The following applies to the product if it is cut, sanded or altered in such a way that excessive and/or significant particulates and/or dusts may be generated: Protective goggles. Dust/aerosol mask. Gloves. Dustproof clothing.



Materials for Protective Clothing: Flame retardant antistatic protective clothing.

Hand Protection: Impermeable protective gloves. If material is hot, wear thermally resistant protective gloves.

Eye and Face Protection: In case of dust production: protective goggles.

Skin and Body Protection: Wear suitable protective clothing.

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Respiratory Protection: When effective engineering controls are not feasible, appropriate respiratory protection shall be used. Personal Protective Equipment must be selected by trained personnel, taking into account the type of hazardous materials it should protect from, the nature of the work, the expected exposure, and the facial characteristics of the wearers; proper fit is of paramount importance. Ensure the respiratory protection program meets the requirements of OSHA 29 CFR 1910.134.

Other Information: When using, do not eat, drink or smoke.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1. Information on Basic Physical and Chemical Properties

Physical State	: Solid
Appearance	: Formed article
Odor	: No data available
Odor Threshold	: No data available
pH	: No data available
Evaporation Rate	: No data available
Melting Point	: No data available
Freezing Point	: No data available
Boiling Point	: No data available
Flash Point	: No data available
Auto-ignition Temperature	: No data available
Decomposition Temperature	: No data available
Flammability (solid, gas)	: No data available
Lower Flammable Limit	: No data available
Upper Flammable Limit	: No data available
Vapor Pressure	: No data available
Relative Vapor Density at 20°C	: No data available
Relative Density	: No data available
Specific Gravity	: No data available
Solubility	: Insoluble in water
Partition Coefficient: N-Octanol/Water	: No data available
Viscosity	: No data available

SECTION 10: STABILITY AND REACTIVITY

10.1. Reactivity:

Product is stable. Contact with concentrated acid or alkali can result in evolution of hydrogen gas.

10.2. Chemical Stability:

Stable under normal conditions.

10.3. Possibility of Hazardous Reactions:

Hazardous polymerization will not occur.

10.4. Conditions to Avoid:

Use good housekeeping practices during storage, transfer, handling, to avoid excessive dust accumulation.

10.5. Incompatible Materials:

Strong acids. Strong bases. Strong oxidizers.

10.6. Hazardous Decomposition Products:

None expected under normal conditions of use. Thermal decomposition may produce: Metal oxides.

SECTION 11: TOXICOLOGICAL INFORMATION

11.1. Information on Toxicological Effects - Product

Acute Toxicity (Oral): As delivered: Not classified. Particulates: Harmful if swallowed.

Acute Toxicity (Dermal): Not classified

Acute Toxicity (Inhalation): As delivered: Not classified. Particulates or fumes: Toxic if inhaled.

LD50 and LC50 Data: No additional information available

Skin Corrosion/Irritation: As delivered: Not classified. Particulates or fumes: Causes skin irritation.

Eye Damage/Irritation: As delivered: Not classified. Particulates or fumes: Causes serious eye irritation.

Respiratory or Skin Sensitization: As delivered: Not classified. Particulates or fumes: May cause an allergy or asthma symptoms or breathing difficulties if inhaled. May cause an allergic skin reaction.

Germ Cell Mutagenicity: As delivered: Not classified. Particulates or fumes: Suspected of causing genetic defects.

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Carcinogenicity: As delivered: Not classified. Particulates or fumes: May cause cancer.

Specific Target Organ Toxicity (Repeated Exposure): As delivered: Not classified. Particulates or fumes: Causes damage to organs through prolonged or repeated exposure.

Reproductive Toxicity: As delivered: Not classified. Particulates or fumes: Suspected of damaging fertility or the unborn child.

Specific Target Organ Toxicity (Single Exposure): Not classified

Aspiration Hazard: Not classified

Symptoms/Injuries After Inhalation: Not expected to present a significant inhalation hazard under anticipated conditions of normal use. Exposure may produce cough, mucous secretions, shortness of breath, chest tightness or other symptoms indicative of an allergic/sensitization reaction. Inhalation of dusts and fumes can cause metal fume fever. Symptoms can include a metallic or sweet taste in the mouth, sweating, shivering, headache, throat irritation, fever, chills, thirstiness, muscle aches, nausea, vomiting, weakness, fatigue, and shortness of breath.

Symptoms/Injuries After Skin Contact: None expected under normal conditions of use. Skin contact with large amounts of dust may cause mechanical irritation. Redness, pain, swelling, itching, burning, dryness, and dermatitis. May cause an allergic skin reaction.

Symptoms/Injuries After Eye Contact: None expected under normal conditions of use. Dusts caused from milling and physical alteration will likely cause eye irritation. Fumes from thermal decomposition or molten material will likely be irritating to the eyes.

Symptoms/Injuries After Ingestion: Ingestion is likely to be harmful or have adverse effects.

Chronic Symptoms: In massive form, no chronic hazard exists. If physically altered to present slivers, ribbons, dusts or fumes from molten material: Cobalt: Chronic exposure to cobalt-containing hard metal (dust or fume) can result in a serious lung disease called "hard metal lung disease", which is a type of pneumoconiosis (lung fibrosis). Cobalt may damage the male reproductive system (including a decrease in sperm count) and affect male fertility in animals. Manganese: Chronic exposure can cause inflammation of the lung tissue, scarring the lungs (pulmonary fibrosis). Chronic exposure to excessive manganese levels can lead to a variety of psychiatric and motor disturbances, termed manganism. Nickel: May cause a form of dermatitis known as nickel itch and intestinal irritation, which may cause disorders, convulsions and asphyxia. Nickel metal powder, when respirable, is a suspected human carcinogen, and is known to cause damage to the lungs through inhalation. Product may cause an allergic reaction in persons previously sensitised to nickel and/or its salts. Silver: Chronic skin contact or ingestion of silver dust, salts or fume can result in a condition known as Argyria, a condition with bluish pigmentation of the skin and eyes. Tantalum: Repeated exposure to tantalum alloys may cause fibrosis, chronic rhinitis and "hard metal pneumoconiosis". Titanium dioxide: Repeated or prolonged exposure to titanium dioxide dust via inhalation is suspected of causing cancer of the respiratory tract. Vanadium: May cause gastrointestinal discomfort, renal damage, nervous system depression and irritation of the respiratory passages. May also cause cardiac palpitations and asthma. Zinc: Prolonged exposure to high concentrations of zinc fumes may cause "zinc shakes", an involuntary twitching of the muscles. Otherwise, zinc is non-toxic.

11.2. Information on Toxicological Effects - Ingredient(s)

LD50 and LC50 Data:

Tungsten carbide (12070-12-1)	
LD50 Dermal Rat	> 2000 mg/kg
LC50 Inhalation Rat	> 5.3 mg/l/4h
Cobalt (7440-48-4)	
LD50 Oral Rat	550 mg/kg (Species: Sprague Dawley)
LC50 Inhalation Rat	< 0.05 mg/l/4h
Nickel (7440-02-0)	
LD50 Oral Rat	> 9000 mg/kg
LC50 Inhalation Rat	> 10.2 mg/l (Exposure time: 1 h)
Vanadium carbide (VC) (12070-10-9)	
LC50 Inhalation Rat	> 5.05 mg/l/4h
Chromium (7440-47-3)	
LD50 Oral Rat	> 5000 mg/kg
LC50 Inhalation Rat	> 5.41 mg/l/4h
Carbon (7440-44-0)	
LD50 Oral Rat	> 10000 mg/kg
Copper (7440-50-8)	
LC50 Inhalation Rat	> 5.11 mg/l/4h
Iron (7439-89-6)	

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LD50 Oral Rat	98.6 g/kg
Manganese (7439-96-5)	
LD50 Oral Rat	> 2000 mg/kg
LC50 Inhalation Rat	> 5.14 mg/l/4h
Molybdenum (7439-98-7)	
LD50 Oral Rat	> 2000 mg/kg
LD50 Dermal Rat	> 2000 mg/kg
LC50 Inhalation Rat	> 3.92 mg/l/4h
Silicon (7440-21-3)	
LD50 Oral Rat	3160 mg/kg
Tungsten (7440-33-7)	
LD50 Dermal Rat	> 2000 mg/kg
Vanadium (7440-62-2)	
LD50 Oral Rat	> 2000 mg/kg
Phosphorus elemental (7723-14-0)	
LD50 Oral Rat	> 15000 mg/kg
LC50 Inhalation Rat	4.3 mg/l (Exposure time: 1 h)
Sulfur (7704-34-9)	
LD50 Oral Rat	> 3000 mg/kg
LD50 Dermal Rabbit	> 2000 mg/kg
LC50 Inhalation Rat	> 9.23 mg/l/4h
Silver (7440-22-4)	
LD50 Oral Rat	> 5000 mg/kg
LD50 Dermal Rat	> 2000 mg/kg
LC50 Inhalation Rat	> 5.16 mg/l/4h
Titanium boride (TiB2) (12045-63-5)	
LD50 Dermal Rat	> 2000 mg/kg
LC50 Inhalation Rat	> 5.05 mg/l/4h
Polyethylene glycol (25322-68-3)	
LD50 Oral Rat	47000 mg/kg
LD50 Dermal Rabbit	> 20 g/kg
Vanadium oxide (V2O5) (1314-62-1)	
LD50 Oral Rat	221 mg/kg (Species: Sprague-Dawley)
LD50 Dermal Rat	> 2500 mg/kg body weight
LC50 Inhalation Rat	2.21 mg/l/4h
Tin (7440-31-5)	
LD50 Dermal Rat	> 2000 mg/kg
Tantalum (7440-25-7)	
LD50 Oral Rat	> 2000 mg/kg
LD50 Dermal Rat	> 2000 mg/kg
LC50 Inhalation Rat	> 5.18 mg/l/4h
1H-Benzotriazole (95-14-7)	
LD50 Oral Rat	560 mg/kg
LD50 Dermal Rabbit	> 10000 mg/kg
LC50 Inhalation Rat	1910 mg/m ³ (Exposure time: 3 h)
LC50 Inhalation Rat	1.43 mg/l/4h
Boron (7440-42-8)	
LD50 Oral Rat	> 2000 mg/kg
LC50 Inhalation Rat	> 5.08 mg/l/4h
Titanium dioxide (13463-67-7)	

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LD50 Oral Rat	> 10000 mg/kg
LC50 Inhalation Rat	5.09 mg/l/4h
Silicon nitride (Si3N4) (12033-89-5)	
LC50 Inhalation Rat	> 5.07 mg/l/4h
Cobalt (7440-48-4)	
IARC Group	2B
National Toxicology Program (NTP) Status	Reasonably anticipated to be Human Carcinogen, Evidence of Carcinogenicity.
OSHA Hazard Communication Carcinogen List	In OSHA Hazard Communication Carcinogen list.
Nickel (7440-02-0)	
IARC Group	2B
National Toxicology Program (NTP) Status	Reasonably anticipated to be Human Carcinogen.
OSHA Hazard Communication Carcinogen List	In OSHA Hazard Communication Carcinogen list.
Vanadium oxide (V2O5) (1314-62-1)	
IARC Group	2B
National Toxicology Program (NTP) Status	Evidence of Carcinogenicity.
OSHA Hazard Communication Carcinogen List	In OSHA Hazard Communication Carcinogen list.
Titanium dioxide (13463-67-7)	
IARC Group	2B
OSHA Hazard Communication Carcinogen List	In OSHA Hazard Communication Carcinogen list.

SECTION 12: ECOLOGICAL INFORMATION

12.1. Toxicity

Ecology - General: For particulates and dust: Very toxic to aquatic life with long lasting effects.

Cobalt (7440-48-4)	
LC50 Fish	> 100 mg/l (Exposure time: 96 h - Species: Brachydanio rerio [static])
Nickel (7440-02-0)	
LC50 Fish 1	100 mg/l (Exposure time: 96 h - Species: Brachydanio rerio)
EC50 Crustacea 1	121.6 µg/l (Exposure time: 48h - Species: Ceriodaphnia dubia [static])
LC50 Fish 2	15.3 mg/l
EC50 Crustacea 2	1 mg/l (Exposure time: 48 h - Species: Daphnia magna [Static])
EC50 Other Aquatic Organisms 2	0.174 – 0.311 mg/l (Exposure time: 96 h - Species: Pseudokirchneriella subcapitata [static])
Copper (7440-50-8)	
LC50 Fish 1	0.0068 – 0.0156 mg/l (Exposure time: 96 h - Species: Pimephales promelas)
EC50 Crustacea	0.03 mg/l (Exposure time: 48 h - Species: Daphnia magna [Static])
EC50 Other Aquatic Organisms 1	0.0426 – 0.0535 mg/l (Exposure time: 72 h - Species: Pseudokirchneriella subcapitata [static])
LC50 Fish 2	< 0.3 mg/l (Exposure time: 96 h - Species: Pimephales promelas [static])
EC50 Other Aquatic Organisms 2	0.031 – 0.054 mg/l (Exposure time: 96 h - Species: Pseudokirchneriella subcapitata [static])
Manganese (7439-96-5)	
LC50 Fish	> 3.6 mg/l (Exposure time: 96 h - Species: Oncorhynchus mykiss [semi-static])
NOEC Chronic Fish	3.6 mg/l (Exposure time: 96h; Species: Oncorhynchus mykiss)
Molybdenum (7439-98-7)	
LC50 Fish	800 – 1320 mg/l
Phosphorus elemental (7723-14-0)	
LC50 Fish 1	33.2 mg/l Red Phosphorous (Exposure time: 96 h - Species Danio rerio [static])
EC50 Crustacea 1	0.03 mg/l (Exposure time: 48 h - Species: Daphnia magna)
LC50 Fish 2	0.001 – 0.004 mg/l (Exposure time: 96 h - Species: Lepomis macrochirus [static])
EC50 Crustacea 2	0.025 – 0.037 mg/l (Exposure time: 48 h - Species: Daphnia magna [Static])
Sulfur (7704-34-9)	
LC50 Fish 1	866 mg/l (Exposure time: 96 h - Species: Brachydanio rerio [static])
EC50 Crustacea	736 mg/l (Exposure time: 48 h - Species: Daphnia magna)

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LC50 Fish 2	14 mg/l (Exposure time: 96 h - Species: Lepomis macrochirus [static])
Silver (7440-22-4)	
LC50 Fish 1	0.00155 – 0.00293 mg/l (Exposure time: 96 h - Species: Pimephales promelas [static])
EC50 Crustacea	0.00024 mg/l (Exposure time: 48 h - Species: Daphnia magna [Static])
LC50 Fish 2	0.0062 mg/l (Exposure time: 96 h - Species: Oncorhynchus mykiss [flow-through])
Zinc (7440-66-6)	
LC50 Fish 1	2.16 – 3.05 mg/l (Exposure time: 96 h - Species: Pimephales promelas [flow-through])
EC50 Crustacea	0.139 – 0.908 mg/l (Exposure time: 48 h - Species: Daphnia magna [Static])
LC50 Fish 2	0.211 – 0.269 mg/l (Exposure time: 96 h - Species: Pimephales promelas [semi-static])
ErC50 Algae	0.15 mg/l
Vanadium oxide (V2O5) (1314-62-1)	
LC50 Fish	4.46 mg/l
NOEC Chronic Fish	0.073 mg/l
1H-Benzotriazole (95-14-7)	
LC50 Fish	39 mg/l (Exposure time: 96 h - Species: Oncorhynchus mykiss)
EC50 Crustacea	141.6 mg/l (Exposure time: 48 h - Species: water flea)
Silicon nitride (Si3N4) (12033-89-5)	
LC50 Fish 1	> 100 mg/l (Exposure time: 96 h - Species: Danio rerio [static])

12.2. Persistence and Degradability

All M.A. Ford Cutting Tools	
Persistence and Degradability	Inorganic product which cannot be eliminated from water by biological purification processes.
Copper (7440-50-8)	
Persistence and Degradability	Not readily biodegradable.

12.3. Bioaccumulative Potential

Cobalt (7440-48-4)	
BCF Fish	No bioaccumulation.
Phosphorus elemental (7723-14-0)	
BCF Fish	< 200

12.4. Mobility in Soil

No additional information available

12.5. Other Adverse Effects

Other Information: Avoid unintended release to the environment.

SECTION 13: DISPOSAL CONSIDERATIONS

13.1. Waste treatment methods

Waste Disposal Recommendations: Dispose of waste material in accordance with all local, regional, national, provincial, territorial and international regulations. Material should be recycled if possible.

Ecology - Waste Materials: Avoid unintended release to the environment.

SECTION 14: TRANSPORT INFORMATION

The shipping description(s) stated herein were prepared in accordance with certain assumptions at the time the SDS was authored, and can vary based on a number of variables that may or may not have been known at the time the SDS was issued.

14.1. In Accordance with DOT

Not regulated for transport

14.2. In Accordance with IMDG

Not regulated for transport

14.3. In Accordance with IATA

Not regulated for transport

14.4. In Accordance with TDG

Not regulated for transport

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SECTION 15: REGULATORY INFORMATION

15.1. US Federal Regulations

Tungsten carbide (12070-12-1)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory - Status: Active	
Tantalum carbide (TaC) (12070-06-3)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory - Status: Active	
Titanium carbide (TiC) (12070-08-5)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory - Status: Active	
Niobium carbide (NbC) (12069-94-2)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory - Status: Active	
Chromium carbide (Cr3C2) (12012-35-0)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory - Status: Active	
Cobalt (7440-48-4)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory - Status: Active Subject to reporting requirements of United States SARA Section 313	
SARA Section 313 - Emission Reporting	0.1 %
Nickel (7440-02-0)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory - Status: Active Subject to reporting requirements of United States SARA Section 313	
CERCLA RQ	100 lb (only applicable if particles are < 100 µm)
SARA Section 313 - Emission Reporting	0.1 %
Vanadium carbide (VC) (12070-10-9)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory - Status: Active	
Molybdenum carbide (Mo2C) (12069-89-5)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory - Status: Active	
Chromium (7440-47-3)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory - Status: Active Subject to reporting requirements of United States SARA Section 313	
CERCLA RQ	5000 lb no reporting of releases of this hazardous substance is required if the diameter of the pieces of the solid metal released is >100 µm
SARA Section 313 - Emission Reporting	1 %
Titanium nitride (25583-20-4)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory - Status: Active	
Aluminum (7429-90-5)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory - Status: Active Subject to reporting requirements of United States SARA Section 313	
SARA Section 313 - Emission Reporting	1 % (dust or fume only)
Carbon (7440-44-0)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory - Status: Active	
Copper (7440-50-8)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory - Status: Active Subject to reporting requirements of United States SARA Section 313	
CERCLA RQ	5000 lb no reporting of releases of this hazardous substance is required if the diameter of the pieces of the solid metal released is >100 µm
SARA Section 313 - Emission Reporting	1 %
Iron (7439-89-6)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory - Status: Active	
Manganese (7439-96-5)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory - Status: Active Subject to reporting requirements of United States SARA Section 313	

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SARA Section 313 - Emission Reporting	1 %
Molybdenum (7439-98-7)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory - Status: Active	
Silicon (7440-21-3)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory - Status: Active	
Tungsten (7440-33-7)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory - Status: Active	
Vanadium (7440-62-2)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory - Status: Active Subject to reporting requirements of United States SARA Section 313	
SARA Section 313 - Emission Reporting	1 % (except when contained in an alloy)
Phosphorus elemental (7723-14-0)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory Listed on the United States SARA Section 302 Subject to reporting requirements of United States SARA Section 313	
CERCLA RQ	1 lb
SARA Section 302 Threshold Planning Quantity (TPQ)	100 lb (this material is a reactive solid, the TPQ does not default to 10000 pounds for non-powder, non-molten, non-solution form)
SARA Section 313 - Emission Reporting	1 % (yellow or white)
Sulfur (7704-34-9)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory - Status: Active	
Silver (7440-22-4)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory - Status: Active Subject to reporting requirements of United States SARA Section 313	
CERCLA RQ	1000 lb < 100 um CERCLA/SARA RQ CHANGE TITLE
SARA Section 313 - Emission Reporting	1 %
Zinc (7440-66-6)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory - Status: Active Subject to reporting requirements of United States SARA Section 313	
CERCLA RQ	454 kg no reporting of releases of this hazardous substance is required if the diameter of the pieces of the solid metal released is >100 µm
SARA Section 313 - Emission Reporting	1 % (dust or fume only)
Titanium boride (TiB2) (12045-63-5)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory - Status: Active	
Aluminum nitride (AlN) (24304-00-5)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory - Status: Active	
Polyethylene glycol (25322-68-3)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory - Status: Active	
EPA TSCA Regulatory Flag	XU - XU - indicates a substance exempt from reporting under the Chemical Data Reporting Rule, (40 CFR 711).
Zirconium carbide (ZrC) (12070-14-3)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory - Status: Active	
Vanadium oxide (V2O5) (1314-62-1)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory - Status: Active Listed on the United States SARA Section 302	
CERCLA RQ	1000 lb
SARA Section 302 Threshold Planning Quantity (TPQ)	100 – 10000 lb
Tin (7440-31-5)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory - Status: Active	
Tantalum (7440-25-7)	

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Listed on the United States TSCA (Toxic Substances Control Act) inventory - Status: Active

Fatty acids, tall-oil, maleated, esters with diethylene glycol, ammonium salts (158706-62-8)

Listed on the United States TSCA (Toxic Substances Control Act) inventory - Status: Active

EPA TSCA Regulatory Flag PMN - PMN - indicates a commenced PMN substance.

1H-Benzotriazole (95-14-7)

Listed on the United States TSCA (Toxic Substances Control Act) inventory - Status: Active

EPA TSCA Regulatory Flag TP - TP - indicates a substance that is the subject of a proposed Section 4 test rule under TSCA.

Boron (7440-42-8)


Listed on the United States TSCA (Toxic Substances Control Act) inventory - Status: Active

Silicon nitride (Si3N4) (12033-89-5)

Listed on the United States TSCA (Toxic Substances Control Act) inventory - Status: Active

15.2. US State Regulations

California Proposition 65

 **WARNING:** This product can expose you to Cobalt, which is known to the State of California to cause cancer. For more information go to www.P65Warnings.ca.gov.

Chemical Name (CAS No.)	Carcinogenicity	Developmental Toxicity	Female Reproductive Toxicity	Male Reproductive Toxicity
Cobalt (7440-48-4)	X			
Nickel (7440-02-0)	X			
Vanadium oxide (V2O5) (1314-62-1)	X			
Titanium dioxide (13463-67-7)	X			

Tungsten carbide (12070-12-1)

U.S. - New Jersey - Right to Know Hazardous Substance List

Cobalt (7440-48-4)

U.S. - New Jersey - Right to Know Hazardous Substance List

U.S. - Pennsylvania - RTK (Right to Know) List

U.S. - Massachusetts - Right To Know List

U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List

Nickel (7440-02-0)

U.S. - New Jersey - Right to Know Hazardous Substance List

U.S. - Pennsylvania - RTK (Right to Know) List

U.S. - Massachusetts - Right To Know List

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

U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List

Chromium (7440-47-3)

U.S. - New Jersey - Right to Know Hazardous Substance List

U.S. - Pennsylvania - RTK (Right to Know) List

U.S. - Massachusetts - Right To Know List

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

U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List

Aluminum (7429-90-5)

U.S. - New Jersey - Right to Know Hazardous Substance List

U.S. - Pennsylvania - RTK (Right to Know) List

U.S. - Massachusetts - Right To Know List

U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List

Copper (7440-50-8)

U.S. - New Jersey - Right to Know Hazardous Substance List

U.S. - Pennsylvania - RTK (Right to Know) List

U.S. - Massachusetts - Right To Know List

U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List

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Manganese (7439-96-5)
U.S. - New Jersey - Right to Know Hazardous Substance List U.S. - Pennsylvania - RTK (Right to Know) List U.S. - Massachusetts - Right To Know List U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List
Molybdenum (7439-98-7)
U.S. - New Jersey - Right to Know Hazardous Substance List U.S. - Pennsylvania - RTK (Right to Know) List U.S. - Massachusetts - Right To Know List
Silicon (7440-21-3)
U.S. - New Jersey - Right to Know Hazardous Substance List U.S. - Pennsylvania - RTK (Right to Know) List U.S. - Massachusetts - Right To Know List
Tungsten (7440-33-7)
U.S. - New Jersey - Right to Know Hazardous Substance List U.S. - Pennsylvania - RTK (Right to Know) List U.S. - Massachusetts - Right To Know List
Vanadium (7440-62-2)
U.S. - New Jersey - Right to Know Hazardous Substance List U.S. - Pennsylvania - RTK (Right to Know) List U.S. - Massachusetts - Right To Know List U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List
Phosphorus elemental (7723-14-0)
U.S. - New Jersey - Right to Know Hazardous Substance List U.S. - Pennsylvania - RTK (Right to Know) List U.S. - Massachusetts - Right To Know List U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List
Sulfur (7704-34-9)
U.S. - New Jersey - Right to Know Hazardous Substance List U.S. - Pennsylvania - RTK (Right to Know) List U.S. - Massachusetts - Right To Know List
Silver (7440-22-4)
U.S. - New Jersey - Right to Know Hazardous Substance List U.S. - Pennsylvania - RTK (Right to Know) List U.S. - Massachusetts - Right To Know List U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List
Zinc (7440-66-6)
U.S. - New Jersey - Right to Know Hazardous Substance List U.S. - Pennsylvania - RTK (Right to Know) List U.S. - Massachusetts - Right To Know List U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List
Vanadium oxide (V2O5) (1314-62-1)
U.S. - New Jersey - Right to Know Hazardous Substance List U.S. - Pennsylvania - RTK (Right to Know) List U.S. - Massachusetts - Right To Know List U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List
Tin (7440-31-5)
U.S. - New Jersey - Right to Know Hazardous Substance List U.S. - Pennsylvania - RTK (Right to Know) List U.S. - Massachusetts - Right To Know List
Tantalum (7440-25-7)

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U.S. - New Jersey - Right to Know Hazardous Substance List
U.S. - Pennsylvania - RTK (Right to Know) List
U.S. - Massachusetts - Right To Know List

1H-Benzotriazole (95-14-7)

U.S. - Massachusetts - Right To Know List

Boron (7440-42-8)

U.S. - New Jersey - Right to Know Hazardous Substance List

Chromium ion (3+) (16065-83-1)

U.S. - Pennsylvania - RTK (Right to Know) List
U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List

Titanium dioxide (13463-67-7)

U.S. - New Jersey - Right to Know Hazardous Substance List
U.S. - Pennsylvania - RTK (Right to Know) List
U.S. - Massachusetts - Right To Know List

15.3. Canadian Regulations

Tungsten carbide (12070-12-1)

Listed on the Canadian DSL (Domestic Substances List)

Tantalum carbide (TaC) (12070-06-3)

Listed on the Canadian DSL (Domestic Substances List)

Titanium carbide (TiC) (12070-08-5)

Listed on the Canadian DSL (Domestic Substances List)

Niobium carbide (NbC) (12069-94-2)

Listed on the Canadian DSL (Domestic Substances List)

Chromium carbide (Cr3C2) (12012-35-0)

Listed on the Canadian DSL (Domestic Substances List)

Cobalt (7440-48-4)

Listed on the Canadian DSL (Domestic Substances List)

Nickel (7440-02-0)

Listed on the Canadian DSL (Domestic Substances List)

Vanadium carbide (VC) (12070-10-9)

Listed on the Canadian NDSL (Non-Domestic Substances List)

Molybdenum carbide (Mo2C) (12069-89-5)

Listed on the Canadian NDSL (Non-Domestic Substances List)

Chromium (7440-47-3)

Listed on the Canadian DSL (Domestic Substances List)

Titanium nitride (25583-20-4)

Listed on the Canadian DSL (Domestic Substances List)

Aluminum (7429-90-5)

Listed on the Canadian DSL (Domestic Substances List)

Carbon (7440-44-0)

Listed on the Canadian DSL (Domestic Substances List)

Copper (7440-50-8)

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)

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Silicon (7440-21-3)
Listed on the Canadian DSL (Domestic Substances List)
Tungsten (7440-33-7)
Listed on the Canadian DSL (Domestic Substances List)
Vanadium (7440-62-2)
Listed on the Canadian DSL (Domestic Substances List)
Phosphorus elemental (7723-14-0)
Listed on the Canadian DSL (Domestic Substances List)
Sulfur (7704-34-9)
Listed on the Canadian DSL (Domestic Substances List)
Silver (7440-22-4)
Listed on the Canadian DSL (Domestic Substances List)
Zinc (7440-66-6)
Listed on the Canadian DSL (Domestic Substances List)
Titanium boride (TiB₂) (12045-63-5)
Listed on the Canadian DSL (Domestic Substances List)
Aluminum nitride (AlN) (24304-00-5)
Listed on the Canadian DSL (Domestic Substances List)
Polyethylene glycol (25322-68-3)
Listed on the Canadian DSL (Domestic Substances List)
Zirconium carbide (ZrC) (12070-14-3)
Listed on the Canadian NDSL (Non-Domestic Substances List)
Vanadium oxide (V₂O₅) (1314-62-1)
Listed on the Canadian DSL (Domestic Substances List)
Tin (7440-31-5)
Listed on the Canadian DSL (Domestic Substances List)
Tantalum (7440-25-7)
Listed on the Canadian DSL (Domestic Substances List)
Fatty acids, tall-oil, maleated, esters with diethylene glycol, ammonium salts (158706-62-8)
Listed on the Canadian DSL (Domestic Substances List)
1H-Benzotriazole (95-14-7)
Listed on the Canadian DSL (Domestic Substances List)
Boron (7440-42-8)
Listed on the Canadian DSL (Domestic Substances List)
Titanium dioxide (13463-67-7)
Listed on the Canadian DSL (Domestic Substances List)
Silicon nitride (Si₃N₄) (12033-89-5)
Listed on the Canadian DSL (Domestic Substances List)

SECTION 16: OTHER INFORMATION, INCLUDING DATE OF PREPARATION OR LAST REVISION

Date of Preparation or Latest Revision : 03/31/2022

Other Information : This document has been prepared in accordance with the SDS requirements of the OSHA Hazard Communication Standard 29 CFR 1910.1200 and Canada's Hazardous Products Regulations (HPR) SOR/2015-17.

GHS Full Text Phrases:

Acute Tox. 1 (Inhalation)	Acute toxicity (inhalation) Category 1
Acute Tox. 1 (Oral)	Acute toxicity (oral) Category 1
Acute Tox. 2 (Dermal)	Acute toxicity (dermal) Category 2
Acute Tox. 3 (Oral)	Acute toxicity (oral) Category 3

All M.A. Ford Cutting Tools

Safety Data Sheet

According To Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules And Regulations And According To The Hazardous Products Regulation (February 11, 2015).

Acute Tox. 4 (Dermal)	Acute toxicity (dermal) Category 4
Acute Tox. 4 (Inhalation)	Acute toxicity (inhalation) Category 4
Acute Tox. 4 (Oral)	Acute toxicity (oral) Category 4
Aquatic Acute 1	Hazardous to the aquatic environment - Acute Hazard Category 1
Aquatic Acute 2	Hazardous to the aquatic environment - Acute Hazard Category 2
Aquatic Acute 3	Hazardous to the aquatic environment - Acute Hazard Category 3
Aquatic Chronic 1	Hazardous to the aquatic environment - Chronic Hazard Category 1
Aquatic Chronic 2	Hazardous to the aquatic environment - Chronic Hazard Category 2
Aquatic Chronic 3	Hazardous to the aquatic environment - Chronic Hazard Category 3
Aquatic Chronic 4	Hazardous to the aquatic environment - Chronic Hazard Category 4
Carc. 1B	Carcinogenicity Category 1B
Carc. 2	Carcinogenicity Category 2
Comb. Dust	Combustible Dust
Eye Dam. 1	Serious eye damage/eye irritation Category 1
Eye Irrit. 2	Serious eye damage/eye irritation Category 2
Eye Irrit. 2A	Serious eye damage/eye irritation Category 2A
Flam. Sol. 1	Flammable solids Category 1
Flam. Sol. 2	Flammable solids Category 2
Muta. 2	Germ cell mutagenicity Category 2
Pyr. Sol. 1	Pyrophoric solids Category 1
Repr. 2	Reproductive toxicity Category 2
Resp. Sens. 1B	Respiratory sensitization, Category 1B
Self-heat. 2	Self-heating substances and mixtures Category 2
Skin Corr. 1A	Skin corrosion/irritation Category 1A
Skin Irrit. 2	Skin corrosion/irritation Category 2
Skin Sens. 1	Skin sensitization, Category 1
STOT RE 1	Specific target organ toxicity (repeated exposure) Category 1
STOT RE 2	Specific target organ toxicity (repeated exposure) Category 2
STOT SE 3	Specific target organ toxicity (single exposure) Category 3, Respiratory tract irritation
Water-react. 1	Substances and mixtures which in contact with water emit flammable gases Category 1
Water-react. 2	Substances and mixtures which in contact with water emit flammable gases Category 2
H228	Flammable solid
H250	Catches fire spontaneously if exposed to air
H252	Self-heating in large quantities; may catch fire
H260	In contact with water releases flammable gases which may ignite spontaneously
H261	In contact with water releases flammable gas
H300	Fatal if swallowed
H301	Toxic if swallowed
H302	Harmful if swallowed
H310	Fatal in contact with skin
H312	Harmful in contact with skin
H314	Causes severe skin burns and eye damage
H315	Causes skin irritation
H317	May cause an allergic skin reaction
H318	Causes serious eye damage
H319	Causes serious eye irritation
H330	Fatal if inhaled
H332	Harmful if inhaled

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H334	May cause an allergy or asthma symptoms or breathing difficulties if inhaled
H335	May cause respiratory irritation
H341	Suspected of causing genetic defects
H350	May cause cancer
H351	Suspected of causing cancer
H361	Suspected of damaging fertility or the unborn child
H372	Causes damage to organs through prolonged or repeated exposure
H373	May cause damage to organs through prolonged or repeated exposure
H400	Very toxic to aquatic life
H401	Toxic to aquatic life
H402	Harmful to aquatic life
H410	Very toxic to aquatic life with long lasting effects
H411	Toxic to aquatic life with long lasting effects
H412	Harmful to aquatic life with long lasting effects
H413	May cause long lasting harmful effects to aquatic life

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.

NA GHS SDS 2015 (Can, US)