



CEMENTED TUNGSTEN CARBIDE CUTTING TOOLS; UNCOATED OR ALTIN COATED; SDS GROUP 13

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).

Date of Issue: 01/28/2020

Version: 1.0

SECTION 1: IDENTIFICATION

1.1. Product Identifier

Product Form: Mixture

Product Name: CEMENTED TUNGSTEN CARBIDE CUTTING TOOLS; UNCOATED OR ALTIN COATED; SDS GROUP 13

This product covers solid metal blanks for manufacturing cutting tools, this SDS and the hazards and information described below apply to this product if the materials contained within the cutting tool(s) become available during processing conditions, including dusts and particulates.

1.2. Intended Use of the Product

Cutting Tools for manufacturing industries. When used as intended, this product is physiologically inert. Do not modify or resharpen product; return tools to Harvey Tool Company for alteration.

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

Company

Harvey Tool Company, LLC

428 Newburyport Turnpike

Rowley, MA 01969

800-645-5609

Harveysales@harveyperformance.com

1.4. Emergency Telephone Number

Emergency Number : Within USA and Canada: 1-800-424-9300 or +1-703-527-3887 (collect calls accepted)

For Chemical Emergency, Spill, Leak, Fire, Exposure, or Accident, call CHEMTREC – Day or Night

SECTION 2: HAZARDS IDENTIFICATION

2.1. Classification of the Substance or Mixture

GHS-US/CA Classification

Acute Tox. 4 (Oral) H302

Resp. Sens. 1B H334

Skin Sens. 1 H317

Carc. 1 H350

Repr. 1 H360

Lact H362

STOT RE 1 H372

Aquatic Acute 1 H400

Aquatic Chronic 1 H410

Comb. Dust

Full text of hazard classes and H-statements : see section 16

2.2. Label Elements

GHS-US/CA Labeling

Hazard Pictograms (GHS-US/CA)



Signal Word (GHS-US/CA)

: Danger

Hazard Statements (GHS-US/CA)

: May form combustible dust concentrations in air.

H302 - Harmful if swallowed.

H317 - May cause an allergic skin reaction.

H334 - May cause an allergy or asthma symptoms or breathing difficulties if inhaled.

H350 - May cause cancer.

H360 - May damage fertility or the unborn child.

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H362 - May cause harm to breast-fed children.
H372 - Causes damage to organs through prolonged or repeated exposure.
H400 - Very toxic to aquatic life.
H410 - Very toxic to aquatic life with long lasting effects.

Precautionary Statements (GHS-US/CA) : P201 - Obtain special instructions before use.
P202 - Do not handle until all safety precautions have been read and understood.
P260 - Do not breathe vapors, mist, or spray.
P263 - Avoid contact during pregnancy/while nursing.
P264 - Wash hands, forearms, and other exposed areas thoroughly after handling.
P270 - Do not eat, drink or smoke when using this product.
P272 - Contaminated work clothing should not be allowed out of the workplace.
P273 - Avoid release to the environment.
P280 - Wear protective gloves, protective clothing, and eye protection.
P284 - [In case of inadequate ventilation] wear respiratory protection.
P301+P312 - IF SWALLOWED: Call a POISON CENTER or doctor if you feel unwell.
P302+P352 - IF ON SKIN: Wash with plenty of water.
P304+P340 - IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P308+P313 - If exposed or concerned: Get medical advice/attention.
P314 - Get medical advice/attention if you feel unwell.
P321 - Specific treatment (see section 4 on this SDS).
P330 - Rinse mouth.
P333+P313 - If skin irritation or rash occurs: Get medical advice/attention.
P342+P311 - If experiencing respiratory symptoms: Call a POISON CENTER or doctor.
P362+P364 - Take off contaminated clothing and wash it before reuse.
P391 - Collect spillage.
P405 - Store locked up.
P501 - Dispose of contents/container in accordance with local, regional, national, territorial, provincial, and international regulations.

Supplemental Information : Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Proper grounding procedures to avoid static electricity should be followed. Prevent dust accumulation (to minimize explosion hazard). Avoid generating dust.

2.3. Other Hazards

Exposure may aggravate pre-existing eye, skin, or respiratory conditions. Contains substances that are combustible dusts. If dried and allowed to accumulate, may form combustible dust concentrations in air that could ignite and cause an explosion. Take appropriate precautions. This product contains components that are environmentally hazardous and small chips, fine turnings, and dust from processing may be toxic to aquatic life.

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

No data 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 / Elemental iron / IRON POWDER | (CAS-No.) 7439-89-6 | 15.04 - 61.41 | Comb. Dust |
| Tungsten carbide | Tungsten carbide (WC) / Tungsten(IV) carbide | (CAS-No.) 12070-12-1 | 1.2 - 48.5 | Comb. Dust |
| Cobalt | Cobalt metal / Cobalt, elemental / C.I. 77320 / Cobalt metallic | (CAS-No.) 7440-48-4 | 4.51 - 22.76 | Acute Tox. 4 (Oral), H302 Resp. Sens. 1B, H334 |

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| | | | | |
|--------------------------|--|----------------------|----------------|--|
| | | | | Skin Sens. 1, H317 Carc. 1B, H350 Repr. 2, H361 Aquatic Chronic 4, H413 |
| Tungsten | Tungsten, elemental / Tungsten, metal / Tungsten metal / Tungsten trioxide | (CAS-No.) 7440-33-7 | 8.80 - 17.46 | Comb. Dust |
| Nickel | Nickel metal / Nickel, elemental / Nickel, metallic / Nickel, metal / C.I. 77775 | (CAS-No.) 7440-02-0 | 0.31 - 17.40 | Skin Sens. 1, H317 Carc. 2, H351 STOT RE 1, H372 Aquatic Acute 1, H400 Aquatic Chronic 3, H412 Comb. Dust |
| Chromium | Chromium metal / Chromium, elemental / Chromium, metal / Chromium, metallic / Chrome, metal / Chrome | (CAS-No.) 7440-47-3 | 0.0049 - 11.64 | Comb. Dust |
| Zinc oxide (ZnO) | Zinc oxide / C.I. 77947 / C.I. Pigment White 4 / Zinc White / CI 77947 / Pigment White 4 | (CAS-No.) 1314-13-2 | 4.89 - 9.7 | Aquatic Acute 1, H400 Aquatic Chronic 1, H410 |
| Titanium carbide (TiC) | Titanium carbide | (CAS-No.) 12070-08-5 | 0.3 - 7.5 | Comb. Dust |
| Tantalum carbide (TaC) | Tantalum carbide | (CAS-No.) 12070-06-3 | 0.3 - 7.5 | Not classified |
| Niobium carbide (NbC) | Niobium carbide | (CAS-No.) 12069-94-2 | 0.2 - 5 | Flam. Sol. 1, H228 |
| Silicon | Silicon powder / Silicon powder, amorphous / Ammonium hexafluorosilicate | (CAS-No.) 7440-21-3 | 0.073 - 2.13 | Flam. Sol. 2, H228 Comb. Dust |
| Manganese | Manganese, elemental / Manganese metal / Manganese elemental | (CAS-No.) 7439-96-5 | 0.024 - 1.94 | Aquatic Acute 2, H401 Comb. Dust |
| Aluminum | Aluminium powder (stabilized) / Aluminium powder / Aluminium (metal) / CI 77000 / C.I. 77000 / Aluminum, metal / Aluminum, elemental / Aluminum metal / Aluminium, metal / Aluminium metal / Aluminium / Aluminium metal, powder / Aluminium powders / Aluminium powder (stabilised) / Pigment Metal 1 / Aluminum powder | (CAS-No.) 7429-90-5 | 0.049 - 1.75 | Comb. Dust |
| Carbon | Carbon, activated / CARBON / Activated carbon / Carbon Black / Graphite | (CAS-No.) 7440-44-0 | 0.0049 - 1.55 | Comb. Dust |
| Chromium carbide (Cr3C2) | Trichromium dicarbide / Chromium carbide | (CAS-No.) 12012-35-0 | 0.06 - 1.5 | Not classified |
| Copper | Copper, metallic / Copper metal / CI 77400 / Granulated copper / Copper (metallic) / Copper, elemental / C.I. Pigment Metal 2 / C.I. 77400 / Pigment Metal 2 | (CAS-No.) 7440-50-8 | 0.17 - 1.38 | Comb. Dust |
| Molybdenum | Molybdenum metal / Molybdenum, elemental / Molybdenum, metal / Molybdenum, metallic | (CAS-No.) 7439-98-7 | 0.0049 - 1.07 | Comb. Dust |
| Vanadium | Vanadium, elemental / Vanadium metal / Ammonium trioxovanadate | (CAS-No.) 7440-62-2 | 0.0049 - 0.97 | Comb. Dust |
| Silver | C.I. 77820 / Silver, elemental / Silver, metal / CI 77820 / Silver metal / Silver, metallic / | (CAS-No.) 7440-22-4 | 0.1 - 0.70 | Aquatic Acute 1, H400 Aquatic Chronic 1, H410 Comb. Dust |

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| | | | | |
|-----------------------|--|----------------------|----------------|---|
| | Nanoscale silver / Nanosilver / Metallic silver | | | |
| Vanadium carbide (VC) | Vanadium carbide | (CAS-No.) 12070-10-9 | 0.02 - 0.5 | Not classified |
| Zinc | C.I. Pigment Black 16 / C.I. Pigment Metal 6 / Zinc (metallic) / Pigment Black 16 | (CAS-No.) 7440-66-6 | 0.05 - 0.45 | Acute Tox. 4 (Oral), H302 Comb. Dust |
| Lead | C.I. Pigment Metal 4 / Lead metal / Lead, elemental / Lead (elemental) / Lead (metal) / C.I. 77575 / Lead massive / Inorganic lead / Lead monoxide | (CAS-No.) 7439-92-1 | 0.073 - 0.34 | Carc. 1B, H350 Lact, H362 Repr. 1A, H360 STOT RE 1, H372 Comb. Dust |
| Sulfur | Sulphur / Sulphur, molten / Elemental sulfur / Brimstone / SULFUR / Elemental sulphur / Sulfur, elemental / Ammonium sulphate | (CAS-No.) 7704-34-9 | 0.00049 - 0.34 | Flam. Sol. 2, H228 Skin Irrit. 2, H315 Aquatic Acute 3, H402 Aquatic Chronic 3, H412 Comb. Dust |
| Phosphorus elemental | Phosphorus / Red phosphorus / Phosphorus, red / Phosphorus, amorphous / Phosphorus (amorphous, red) / Phosphorus amorphous / Phosphorus red / Phosphorus (red) / Phosphorus elemental (red) / Phosphorus (red, yellow, white) / Phosphorus (white) / Phosphorus (yellow) / Phosphorous (yellow) | (CAS-No.) 7723-14-0 | 0.073 - 0.14 | Acute Tox. 1 (Oral), H300 Acute Tox. 2 (Dermal), H310 Acute Tox. 4 (Inhalation:dust,mist), H332 Skin Corr. 1A, H314 Eye Dam. 1, H318 Aquatic Acute 1, H400 Aquatic Chronic 1, H410 |
| Aluminum | Aluminium powder (stabilized) / Aluminium powder / Aluminium (metal) / CI 77000 / C.I. 77000 / Aluminum, metal / Aluminum, elemental / Aluminum metal / Aluminium, metal / Aluminium metal / Aluminium / Aluminium metal, powder / Aluminium powders / Aluminium powder (stabilised) / Pigment Metal 1 / Aluminum powder | (CAS-No.) 7429-90-5 | 0.07 - 0.09 | Flam. Sol. 1, H228 Water-react. 2, H261 Comb. Dust |
| Titanium nitride | Titanium nitride (TiN) / BALINIT A | (CAS-No.) 25583-20-4 | 0.01 - 0.03 | Not classified |

Full text of H-phrases: 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%).

SECTION 4: FIRST AID MEASURES

4.1. Description of First-aid Measures

General: Never give anything by mouth to an unconscious person. If you feel unwell, seek medical advice (show the label where possible).

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.

Skin Contact: Remove contaminated clothing. Drench affected area with 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: Remove contact lenses, if present and easy to do. Continue rinsing. Rinse cautiously with water for at least 15 minutes. Obtain medical attention.

Ingestion: Rinse mouth. Do NOT induce vomiting. Obtain medical attention.

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4.2. Most Important Symptoms and Effects Both Acute and Delayed

General: The health effects listed below are not likely to occur unless dust or fumes are generated by processing. May cause cancer. Causes damage to organs through prolonged or repeated exposure. May cause allergy or asthma symptoms or breathing difficulties if inhaled. Skin sensitization. May damage fertility. May damage the unborn child. May cause harm to breast-fed children. Harmful if swallowed. Final product may have sharp edges.

Inhalation: May cause cancer by inhalation. Exposure may produce cough, mucous secretions, shortness of breath, chest tightness or other symptoms indicative of an allergic/sensitization reaction. Inhalation of dust may cause pulmonary fibrosis. Dust may be harmful or cause irritation. 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: May cause an allergic skin reaction. Contact with hot, molten metal will cause thermal burns. Mechanical damage via flying particles and chipped slag is possible.

Eye Contact: During metal processing, 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. . Fumes from thermal decomposition may cause eye irritation.

Ingestion: For particulates and dust: This material is harmful orally and can cause adverse health effects or death in significant amounts.

Chronic Symptoms: May cause cancer. Causes damage to organs through prolonged or repeated exposure. May damage fertility or the unborn child. Repeated inhalation of iron oxide dust can cause siderosis a benign condition.

Aluminum: Inhalation of finely divided aluminum powder may cause pulmonary fibrosis.

Copper: Overexposure to fumes may cause metal fume fever (chills, muscle aches, nausea, fever, dry throat, cough, weakness, lassitude); metallic or sweet taste; discoloration of skin and hair. Tissue damage of mucous membranes may follow chronic dust exposure.

Chromium: Certain hexavalent chromium compounds have been demonstrated to be carcinogenic on the basis of epidemiological investigations on workers and experimental studies in animals. Increased incidences of respiratory cancer have been found in chromium (VI) workers. There is an increased incidence of lung cancer in industrial workers exposed to chromium (VI) compounds. Please refer to IARC volume 23 for a more detailed discussion.

Lead: Exposure can result in lassitude (weakness, exhaustion), insomnia; facial pallor; anorexia, weight loss, malnutrition; constipation, abdominal pain, colic; anemia; gingival lead line; tremor; encephalopathy; kidney disease; hypertension.

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.

Molybdenum: Chronic exposure to molybdenum compounds is suspected of causing cancer. Compounds are also known to cause irritation to the skin, eyes, and respiratory tract.

Nickel: May cause a form of dermatitis known as nickel itch and intestinal irritation, which may cause disorders, convulsions and asphyxia.

Silicon: Can cause chronic bronchitis and narrowing of the airways.

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.

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. Repeated exposure to tantalum alloys may cause fibrosis, chronic rhinitis and "hard metal pneumoconiosis".

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

If exposed or concerned, get medical advice and attention. If medical advice is needed, have product container or label at hand.

SECTION 5: FIRE-FIGHTING MEASURES

5.1. Extinguishing Media

Suitable Extinguishing Media: Use class D extinguishing media on fines, dust, or molten metal. Use water spray on chips and fines.

Unsuitable Extinguishing Media: Do not use a heavy water stream. Use of heavy stream of water may spread fire. Do not use water when molten material is involved, may react violently or explosively on contact with water.

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5.2. Special Hazards Arising From the Substance or Mixture

Fire Hazard: Metallic dusts may ignite or explode. Combustible Dust.

Explosion Hazard: Dust explosion hazard in air. If excessive dust is generated from processing, it may present a dust explosion hazard when dispersed in air at sufficient quantities in the presence of an ignition source.

Reactivity: Hazardous reactions will not occur under normal conditions.

5.3. Advice for Firefighters

Precautionary Measures Fire: Exercise caution when fighting any chemical 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: Metal oxides.

Other Information: Do not allow run-off from fire fighting to enter drains or water courses. Risk of dust explosion.

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. For particulates and dust: Do not breathe dust. Do not get in eyes, on skin, or on clothing. Do not handle until all safety precautions have been read and understood. Remove ignition sources. Keep away from heat, hot surfaces, sparks, open flames, and other ignition sources. No smoking.

6.1.1. For Non-Emergency Personnel

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

Emergency Procedures: 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. Ventilate area.

6.2. Environmental Precautions

Prevent entry to sewers and public waters. Avoid release to the environment. Collect spillage.

6.3. Methods and Materials for Containment and Cleaning Up

For Containment: Contain solid spills with appropriate barriers and prevent migration and entry into sewers or streams. Avoid generation of dust during clean-up of spills.

Methods for Cleaning Up: Clean up spills immediately and dispose of waste safely. 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. Use only non-sparking tools. Contact competent authorities after a spill.

6.4. Reference to Other Sections

See Section 8 for exposure controls and personal protection and Section 13 for disposal considerations.

SECTION 7: HANDLING AND STORAGE

7.1. Precautions for Safe Handling

Additional Hazards When Processed: This product is physiologically inert in its massive form. However, user-generated dust and/or fumes may pose a physiological hazard if inhaled or ingested. Avoid inhalation of metal dusts and fumes. May cause an influenza-like illness. Avoid skin and eye contact with dusts to prevent mechanical irritation. User-generated dust is easily ignited and difficult to extinguish. 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: Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Do not breathe dust, particulates, or fumes. Avoid contact with eyes, skin and clothing. Avoid contact during pregnancy/while nursing. Handle empty containers with care because they may still present a hazard. Avoid creating or spreading dust. Keep away from heat, sparks, open flames, and hot surfaces. No smoking.

Hygiene Measures: Handle in accordance with good industrial hygiene and safety procedures.

7.2. Conditions for Safe Storage, Including Any Incompatibilities

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Technical Measures: Comply with applicable regulations. Avoid creating or spreading dust. Use explosion-proof electrical, ventilating, lighting equipment. Proper grounding procedures to avoid static electricity should be followed.

Storage Conditions: Keep container closed when not in use. Store in a dry, cool place. Keep/Store away from direct sunlight, extremely high or low temperatures and incompatible materials. Store locked up/in a secure area.

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

7.3. Specific End Use(s)

Blank for Manufacturing Cutting Tools. When used as intended, this product is physiologically inert. Do not modify or sharpen product; return tools to Harvey Tool Company for alteration.

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.

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

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|------------------------------------|--------------------------------------|--|
| Nova Scotia | OEL TWA (mg/m ³) | 0.2 mg/m ³ (fume) |
| Nunavut | OEL STEL (mg/m ³) | 3 mg/m ³ (dust and mist) 0.6 mg/m ³ (fume) |
| Nunavut | OEL TWA (mg/m ³) | 0.2 mg/m ³ (fume) 1 mg/m ³ (dust and mist) |
| Northwest Territories | OEL STEL (mg/m ³) | 3 mg/m ³ (dust and mist) 0.6 mg/m ³ (fume) |
| Northwest Territories | OEL TWA (mg/m ³) | 0.2 mg/m ³ (fume) 1 mg/m ³ (dust and mist) |
| Ontario | OEL TWA (mg/m ³) | 0.2 mg/m ³ (fume) 1 mg/m ³ (dust and mist) |
| Prince Edward Island | OEL TWA (mg/m ³) | 0.2 mg/m ³ (fume) |
| Québec | VEMP (mg/m ³) | 0.2 mg/m ³ (fume) 1 mg/m ³ (dust and mist) |
| Saskatchewan | OEL STEL (mg/m ³) | 0.6 mg/m ³ (fume) 3 mg/m ³ (dust and mist) |
| Saskatchewan | OEL TWA (mg/m ³) | 0.2 mg/m ³ (fume) 1 mg/m ³ (dust and mist) |
| Yukon | OEL STEL (mg/m ³) | 0.2 mg/m ³ (fume) 2 mg/m ³ (dust and mist) |
| Yukon | OEL TWA (mg/m ³) | 0.2 mg/m ³ (fume) 1 mg/m ³ (dust and mist) |
| Nickel (7440-02-0) | | |
| USA ACGIH | ACGIH TWA (mg/m ³) | 1.5 mg/m ³ (inhalable particulate matter) |
| USA ACGIH | ACGIH chemical category | Not Suspected as a Human Carcinogen |
| USA OSHA | OSHA PEL (TWA) (mg/m ³) | 1 mg/m ³ |
| USA NIOSH | NIOSH REL (TWA) (mg/m ³) | 0.015 mg/m ³ |
| USA IDLH | US IDLH (mg/m ³) | 10 mg/m ³ |
| Alberta | OEL TWA (mg/m ³) | 1.5 mg/m ³ |
| British Columbia | OEL TWA (mg/m ³) | 0.05 mg/m ³ |
| Manitoba | OEL TWA (mg/m ³) | 1.5 mg/m ³ (inhalable particulate matter) |
| New Brunswick | OEL TWA (mg/m ³) | 1 mg/m ³ |
| Newfoundland & Labrador | OEL TWA (mg/m ³) | 1.5 mg/m ³ (inhalable particulate matter) |
| Nova Scotia | OEL TWA (mg/m ³) | 1.5 mg/m ³ (inhalable particulate matter) |
| Nunavut | OEL STEL (mg/m ³) | 3 mg/m ³ (inhalable fraction) |
| Nunavut | OEL TWA (mg/m ³) | 1.5 mg/m ³ (inhalable fraction) |
| Northwest Territories | OEL STEL (mg/m ³) | 3 mg/m ³ (inhalable fraction) |
| Northwest Territories | OEL TWA (mg/m ³) | 1.5 mg/m ³ (inhalable fraction) |
| Ontario | OEL TWA (mg/m ³) | 1 mg/m ³ (inhalable) |
| Prince Edward Island | OEL TWA (mg/m ³) | 1.5 mg/m ³ (inhalable particulate matter) |
| Québec | VEMP (mg/m ³) | 1 mg/m ³ |
| Saskatchewan | OEL STEL (mg/m ³) | 3 mg/m ³ (inhalable fraction) |
| Saskatchewan | OEL TWA (mg/m ³) | 1.5 mg/m ³ (inhalable fraction) |
| Yukon | OEL STEL (mg/m ³) | 3 mg/m ³ |
| Yukon | OEL TWA (mg/m ³) | 1 mg/m ³ |
| Silver (7440-22-4) | | |
| USA ACGIH | ACGIH TWA (mg/m ³) | 0.1 mg/m ³ (dust and fume) |
| USA OSHA | OSHA PEL (TWA) (mg/m ³) | 0.01 mg/m ³ |
| USA NIOSH | NIOSH REL (TWA) (mg/m ³) | 0.01 mg/m ³ (dust) 0.9 µg/m ³ (nanoparticles <100 nm) |

CEMENTED TUNGSTEN CARBIDE CUTTING TOOLS; UNCOATED OR ALTIN COATED; SDS GROUP 13

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| | | |
|------------------------------------|--------------------------------------|--|
| USA IDLH | US IDLH (mg/m ³) | 10 mg/m ³ (dust) |
| Alberta | OEL TWA (mg/m ³) | 0.1 mg/m ³ |
| British Columbia | OEL STEL (mg/m ³) | 0.03 mg/m ³ |
| British Columbia | OEL TWA (mg/m ³) | 0.01 mg/m ³ |
| Manitoba | OEL TWA (mg/m ³) | 0.1 mg/m ³ (dust and fume) |
| New Brunswick | OEL TWA (mg/m ³) | 0.1 mg/m ³ |
| Newfoundland & Labrador | OEL TWA (mg/m ³) | 0.1 mg/m ³ (dust and fume) |
| Nova Scotia | OEL TWA (mg/m ³) | 0.1 mg/m ³ (dust and fume) |
| Nunavut | OEL STEL (mg/m ³) | 0.3 mg/m ³ (metal) |
| Nunavut | OEL TWA (mg/m ³) | 0.1 mg/m ³ (metal) |
| Northwest Territories | OEL STEL (mg/m ³) | 0.3 mg/m ³ (metal) |
| Northwest Territories | OEL TWA (mg/m ³) | 0.1 mg/m ³ (metal) |
| Ontario | OEL TWA (mg/m ³) | 0.1 mg/m ³ (dust and fume) |
| Prince Edward Island | OEL TWA (mg/m ³) | 0.1 mg/m ³ (dust and fume) |
| Québec | VEMP (mg/m ³) | 0.1 mg/m ³ |
| Saskatchewan | OEL STEL (mg/m ³) | 0.3 mg/m ³ |
| Saskatchewan | OEL TWA (mg/m ³) | 0.1 mg/m ³ |
| Yukon | OEL STEL (mg/m ³) | 0.03 mg/m ³ |
| Yukon | OEL TWA (mg/m ³) | 0.01 mg/m ³ |
| Nickel compounds | | |
| USA NIOSH | NIOSH REL (TWA) (mg/m ³) | 0.015 mg/m ³ (except Nickel carbonyl) |
| USA IDLH | US IDLH (mg/m ³) | 10 mg/m ³ (except Nickel carbonyl) |
| Copper compounds | | |
| USA ACGIH | ACGIH TWA (mg/m ³) | 1 mg/m ³ (dust and mist) |
| USA NIOSH | NIOSH REL (TWA) (mg/m ³) | 1 mg/m ³ (dust and mist) |
| USA IDLH | US IDLH (mg/m ³) | 100 mg/m ³ (dust and mist) |
| Manitoba | OEL TWA (mg/m ³) | 1 mg/m ³ (dust and mist) |
| Newfoundland & Labrador | OEL TWA (mg/m ³) | 1 mg/m ³ (dust and mist) |
| Nova Scotia | OEL TWA (mg/m ³) | 1 mg/m ³ (dust and mist) |
| Prince Edward Island | OEL TWA (mg/m ³) | 1 mg/m ³ (dust and mist) |
| Silver compounds | | |
| British Columbia | OEL STEL (mg/m ³) | 0.03 mg/m ³ |
| British Columbia | OEL TWA (mg/m ³) | 0.01 mg/m ³ |
| Aluminum (7429-90-5) | | |
| USA ACGIH | ACGIH TWA (mg/m ³) | 1 mg/m ³ (respirable particulate matter) |
| USA ACGIH | ACGIH chemical category | Not Classifiable as a Human Carcinogen |
| USA OSHA | OSHA PEL (TWA) (mg/m ³) | 15 mg/m ³ (total dust) 5 mg/m ³ (respirable fraction) |
| USA NIOSH | NIOSH REL (TWA) (mg/m ³) | 10 mg/m ³ (total dust) 5 mg/m ³ (respirable dust) |
| Alberta | OEL TWA (mg/m ³) | 10 mg/m ³ (dust) |
| British Columbia | OEL TWA (mg/m ³) | 1 mg/m ³ (respirable) |
| Manitoba | OEL TWA (mg/m ³) | 1 mg/m ³ (respirable particulate matter) |
| New Brunswick | OEL TWA (mg/m ³) | 10 mg/m ³ (metal dust) |
| Newfoundland & Labrador | OEL TWA (mg/m ³) | 1 mg/m ³ (respirable particulate matter) |
| Nova Scotia | OEL TWA (mg/m ³) | 1 mg/m ³ (respirable particulate matter) |
| Nunavut | OEL STEL (mg/m ³) | 20 mg/m ³ (metal-dust) |
| Nunavut | OEL TWA (mg/m ³) | 10 mg/m ³ (metal-dust) |
| Northwest Territories | OEL STEL (mg/m ³) | 20 mg/m ³ (metal-dust) |
| Northwest Territories | OEL TWA (mg/m ³) | 10 mg/m ³ (metal-dust) |

CEMENTED TUNGSTEN CARBIDE CUTTING TOOLS; UNCOATED OR ALTIM COATED; SDS GROUP 13

Safety Data Sheet

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| | | |
|-----------------------------|--------------------------------------|--|
| Ontario | OEL TWA (mg/m ³) | 1 mg/m ³ (respirable) |
| Prince Edward Island | OEL TWA (mg/m ³) | 1 mg/m ³ (respirable particulate matter) |
| Québec | VEMP (mg/m ³) | 10 mg/m ³ |
| Saskatchewan | OEL STEL (mg/m ³) | 20 mg/m ³ (dust) |
| Saskatchewan | OEL TWA (mg/m ³) | 10 mg/m ³ (dust) |
| Chromium (7440-47-3) | | |
| USA ACGIH | ACGIH TWA (mg/m ³) | 0.5 mg/m ³ (inhalable particulate matter) |
| USA OSHA | OSHA PEL (TWA) (mg/m ³) | 1 mg/m ³ |
| USA NIOSH | NIOSH REL (TWA) (mg/m ³) | 0.5 mg/m ³ |
| USA IDLH | US IDLH (mg/m ³) | 250 mg/m ³ |
| Alberta | OEL TWA (mg/m ³) | 0.5 mg/m ³ |
| British Columbia | OEL TWA (mg/m ³) | 0.5 mg/m ³ (total) |
| Manitoba | OEL TWA (mg/m ³) | 0.5 mg/m ³ (inhalable particulate matter) |
| New Brunswick | OEL TWA (mg/m ³) | 0.5 mg/m ³ |
| Newfoundland & Labrador | OEL TWA (mg/m ³) | 0.5 mg/m ³ (inhalable particulate matter) |
| Nova Scotia | OEL TWA (mg/m ³) | 0.5 mg/m ³ (inhalable particulate matter) |
| Nunavut | OEL STEL (mg/m ³) | 1.5 mg/m ³ (metal) |
| Nunavut | OEL TWA (mg/m ³) | 0.5 mg/m ³ (metal) |
| Northwest Territories | OEL STEL (mg/m ³) | 1.5 mg/m ³ (metal) |
| Northwest Territories | OEL TWA (mg/m ³) | 0.5 mg/m ³ (metal) |
| Ontario | OEL TWA (mg/m ³) | 0.5 mg/m ³ |
| Prince Edward Island | OEL TWA (mg/m ³) | 0.5 mg/m ³ (inhalable particulate matter) |
| Québec | VEMP (mg/m ³) | 0.5 mg/m ³ |
| Saskatchewan | OEL STEL (mg/m ³) | 1.5 mg/m ³ |
| Saskatchewan | OEL TWA (mg/m ³) | 0.5 mg/m ³ |
| Yukon | OEL STEL (mg/m ³) | 3 mg/m ³ |
| Yukon | OEL TWA (mg/m ³) | 0.1 mg/m ³ |
| Lead (7439-92-1) | | |
| USA ACGIH | ACGIH TWA (mg/m ³) | 0.05 mg/m ³ |
| USA ACGIH | ACGIH chemical category | Confirmed Animal Carcinogen with Unknown Relevance to Humans |
| USA ACGIH | Biological Exposure Indices (BEI) | 200 µg/l Parameter: Lead - Medium: blood - Sampling time: not critical (Note: Persons applying this BEI are encouraged to counsel female workers of child-bearing age about the risk of delivering a child with a PbB (lead in blood level) over the current CDC reference value.) |
| USA OSHA | OSHA PEL (TWA) (mg/m ³) | 50 µg/m ³ |
| USA NIOSH | NIOSH REL (TWA) (mg/m ³) | 0.05 mg/m ³ |
| USA IDLH | US IDLH (mg/m ³) | 100 mg/m ³ |
| Alberta | OEL TWA (mg/m ³) | 0.05 mg/m ³ |
| British Columbia | OEL TWA (mg/m ³) | 0.05 mg/m ³ |
| Manitoba | OEL TWA (mg/m ³) | 0.05 mg/m ³ |
| New Brunswick | OEL TWA (mg/m ³) | 0.05 mg/m ³ |
| Newfoundland & Labrador | OEL TWA (mg/m ³) | 0.05 mg/m ³ |
| Nova Scotia | OEL TWA (mg/m ³) | 0.05 mg/m ³ |
| Nunavut | OEL STEL (mg/m ³) | 0.15 mg/m ³ |
| Nunavut | OEL TWA (mg/m ³) | 0.05 mg/m ³ |
| Northwest Territories | OEL STEL (mg/m ³) | 0.15 mg/m ³ |
| Northwest Territories | OEL TWA (mg/m ³) | 0.05 mg/m ³ |

CEMENTED TUNGSTEN CARBIDE CUTTING TOOLS; UNCOATED OR ALTIN COATED; SDS GROUP 13

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| | | |
|-------------------------------|---|--|
| Ontario | OEL TWA (mg/m ³) | 0.05 mg/m ³ (designated substances regulation) 0.05 mg/m ³ (applies to workplaces to which the designated substances regulation does not apply) |
| Prince Edward Island | OEL TWA (mg/m ³) | 0.05 mg/m ³ |
| Québec | VEMP (mg/m ³) | 0.05 mg/m ³ |
| Saskatchewan | OEL STEL (mg/m ³) | 0.15 mg/m ³ |
| Saskatchewan | OEL TWA (mg/m ³) | 0.05 mg/m ³ |
| Yukon | OEL STEL (mg/m ³) | 0.45 mg/m ³ (dust and fume) |
| Yukon | OEL TWA (mg/m ³) | 0.15 mg/m ³ (dust and fume) |
| Manganese (7439-96-5) | | |
| USA ACGIH | ACGIH TWA (mg/m ³) | 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) (mg/m ³) | 5 mg/m ³ (fume) |
| USA NIOSH | NIOSH REL (TWA) (mg/m ³) | 1 mg/m ³ (fume) |
| USA NIOSH | NIOSH REL (STEL) (mg/m ³) | 3 mg/m ³ |
| USA IDLH | US IDLH (mg/m ³) | 500 mg/m ³ |
| Alberta | OEL TWA (mg/m ³) | 0.2 mg/m ³ |
| British Columbia | OEL TWA (mg/m ³) | 0.2 mg/m ³ (total) 0.02 mg/m ³ (respirable) |
| Manitoba | OEL TWA (mg/m ³) | 0.02 mg/m ³ (respirable particulate matter) 0.1 mg/m ³ (inhalable particulate matter) |
| New Brunswick | OEL TWA (mg/m ³) | 0.2 mg/m ³ |
| Newfoundland & Labrador | OEL TWA (mg/m ³) | 0.02 mg/m ³ (respirable particulate matter) 0.1 mg/m ³ (inhalable particulate matter) |
| Nova Scotia | OEL TWA (mg/m ³) | 0.02 mg/m ³ (respirable particulate matter) 0.1 mg/m ³ (inhalable particulate matter) |
| Nunavut | OEL STEL (mg/m ³) | 0.6 mg/m ³ |
| Nunavut | OEL TWA (mg/m ³) | 0.2 mg/m ³ |
| Northwest Territories | OEL STEL (mg/m ³) | 0.6 mg/m ³ |
| Northwest Territories | OEL TWA (mg/m ³) | 0.2 mg/m ³ |
| Ontario | OEL TWA (mg/m ³) | 0.2 mg/m ³ |
| Prince Edward Island | OEL TWA (mg/m ³) | 0.02 mg/m ³ (respirable particulate matter) 0.1 mg/m ³ (inhalable particulate matter) |
| Québec | VEMP (mg/m ³) | 0.2 mg/m ³ (total dust and fume) |
| Saskatchewan | OEL STEL (mg/m ³) | 0.6 mg/m ³ |
| Saskatchewan | OEL TWA (mg/m ³) | 0.2 mg/m ³ |
| Yukon | OEL Ceiling (mg/m ³) | 5 mg/m ³ |
| Molybdenum (7439-98-7) | | |
| | Internal OEL Value(s) | 5 mg/m ³ (Molybdenum (as Mo), Soluble Compounds) |
| USA ACGIH | ACGIH TWA (mg/m ³) | 10 mg/m ³ (inhalable particulate matter) 3 mg/m ³ (respirable particulate matter) |
| USA OSHA | OSHA PEL (TWA) (mg/m ³) | 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) (mg/m ³) | 5 mg/m ³ (Molybdenum (as Mo), Soluble Compounds) |
| USA IDLH | US IDLH (mg/m ³) | 5000 mg/m ³ |
| Alberta | OEL TWA (mg/m ³) | 10 mg/m ³ (total) 3 mg/m ³ (respirable) |
| British Columbia | OEL TWA (mg/m ³) | 3 mg/m ³ (respirable) 10 mg/m ³ (inhalable) |

CEMENTED TUNGSTEN CARBIDE CUTTING TOOLS; UNCOATED OR ALTIN COATED; SDS GROUP 13

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| | | |
|---|--------------------------------------|--|
| Manitoba | OEL TWA (mg/m ³) | 10 mg/m ³ (inhalable particulate matter) 3 mg/m ³ (respirable particulate matter) |
| Newfoundland & Labrador | OEL TWA (mg/m ³) | 10 mg/m ³ (inhalable particulate matter) 3 mg/m ³ (respirable particulate matter) |
| Nova Scotia | OEL TWA (mg/m ³) | 10 mg/m ³ (inhalable particulate matter) 3 mg/m ³ (respirable particulate matter) |
| Nunavut | OEL STEL (mg/m ³) | 20 mg/m ³ (metal-inhalable fraction) 6 mg/m ³ (metal-respirable fraction) |
| Nunavut | OEL TWA (mg/m ³) | 10 mg/m ³ (metal-inhalable fraction) 3 mg/m ³ (metal-respirable fraction) |
| Northwest Territories | OEL STEL (mg/m ³) | 20 mg/m ³ (metal-inhalable fraction) 6 mg/m ³ (metal-respirable fraction) |
| Northwest Territories | OEL TWA (mg/m ³) | 10 mg/m ³ (metal-inhalable fraction) 3 mg/m ³ (metal-respirable fraction) |
| Ontario | OEL TWA (mg/m ³) | 10 mg/m ³ (metal-inhalable) 3 mg/m ³ (metal-respirable) |
| Prince Edward Island | OEL TWA (mg/m ³) | 10 mg/m ³ (inhalable particulate matter) 3 mg/m ³ (respirable particulate matter) |
| Saskatchewan | OEL STEL (mg/m ³) | 20 mg/m ³ (inhalable fraction) 6 mg/m ³ (respirable fraction) |
| Saskatchewan | OEL TWA (mg/m ³) | 10 mg/m ³ (inhalable fraction) 3 mg/m ³ (respirable fraction) |
| Phosphorus elemental (7723-14-0) | | |
| Alberta | OEL TWA (mg/m ³) | 0.1 mg/m ³ (yellow) |
| New Brunswick | OEL TWA (mg/m ³) | 0.1 mg/m ³ (yellow) |
| New Brunswick | OEL TWA (ppm) | 0.02 ppm (yellow) |
| Québec | VEMP (mg/m ³) | 0.1 mg/m ³ (yellow) |
| Silicon (7440-21-3) | | |
| USA OSHA | OSHA PEL (TWA) (mg/m ³) | 15 mg/m ³ (total dust) 5 mg/m ³ (respirable fraction) |
| USA NIOSH | NIOSH REL (TWA) (mg/m ³) | 10 mg/m ³ (total dust) 5 mg/m ³ (respirable dust) |
| British Columbia | OEL TWA (mg/m ³) | 10 mg/m ³ (total dust) 3 mg/m ³ (respirable fraction) |
| New Brunswick | OEL TWA (mg/m ³) | 10 mg/m ³ |
| Nunavut | OEL STEL (mg/m ³) | 20 mg/m ³ |
| Nunavut | OEL TWA (mg/m ³) | 10 mg/m ³ |
| Northwest Territories | OEL STEL (mg/m ³) | 20 mg/m ³ |
| Northwest Territories | OEL TWA (mg/m ³) | 10 mg/m ³ |
| Québec | VEMP (mg/m ³) | 10 mg/m ³ (containing no Asbestos and <1% Crystalline silica-total dust) |
| Saskatchewan | OEL STEL (mg/m ³) | 20 mg/m ³ |
| Saskatchewan | OEL TWA (mg/m ³) | 10 mg/m ³ |
| Yukon | OEL STEL (mg/m ³) | 20 mg/m ³ |
| Yukon | OEL TWA (mg/m ³) | 30 mppcf 10 mg/m ³ |
| Sulfur (7704-34-9) | | |
| Alberta | OEL TWA (mg/m ³) | 10 mg/m ³ |
| Tungsten (7440-33-7) | | |
| USA ACGIH | ACGIH TWA (mg/m ³) | 3 mg/m ³ (respirable particulate matter) |

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| | | |
|-------------------------------------|--|---|
| USA NIOSH | NIOSH REL (TWA) (mg/m ³) | 5 mg/m ³ |
| USA NIOSH | NIOSH REL (STEL) (mg/m ³) | 10 mg/m ³ |
| Alberta | OEL STEL (mg/m ³) | 10 mg/m ³ |
| Alberta | OEL TWA (mg/m ³) | 5 mg/m ³ |
| British Columbia | OEL STEL (mg/m ³) | 10 mg/m ³ |
| British Columbia | OEL TWA (mg/m ³) | 5 mg/m ³ |
| Manitoba | OEL TWA (mg/m ³) | 3 mg/m ³ (respirable particulate matter) |
| Newfoundland & Labrador | OEL TWA (mg/m ³) | 3 mg/m ³ (respirable particulate matter) |
| Nova Scotia | OEL TWA (mg/m ³) | 3 mg/m ³ (respirable particulate matter) |
| Nunavut | OEL STEL (mg/m ³) | 10 mg/m ³ |
| Nunavut | OEL TWA (mg/m ³) | 5 mg/m ³ |
| Northwest Territories | OEL STEL (mg/m ³) | 10 mg/m ³ |
| Northwest Territories | OEL TWA (mg/m ³) | 5 mg/m ³ |
| Ontario | OEL STEL (mg/m ³) | 10 mg/m ³ |
| Ontario | OEL TWA (mg/m ³) | 5 mg/m ³ |
| Prince Edward Island | OEL TWA (mg/m ³) | 3 mg/m ³ (respirable particulate matter) |
| Saskatchewan | OEL STEL (mg/m ³) | 10 mg/m ³ |
| Saskatchewan | OEL TWA (mg/m ³) | 5 mg/m ³ |
| Yukon | OEL STEL (mg/m ³) | 10 mg/m ³ |
| Yukon | OEL TWA (mg/m ³) | 5 mg/m ³ |
| Zinc oxide (ZnO) (1314-13-2) | | |
| USA ACGIH | ACGIH TWA (mg/m ³) | 2 mg/m ³ (respirable particulate matter) |
| USA ACGIH | ACGIH STEL (mg/m ³) | 10 mg/m ³ (respirable particulate matter) |
| USA OSHA | OSHA PEL (TWA) (mg/m ³) | 5 mg/m ³ (fume) 15 mg/m ³ (total dust) 5 mg/m ³ (respirable fraction) |
| USA NIOSH | NIOSH REL (TWA) (mg/m ³) | 5 mg/m ³ (dust and fume) |
| USA NIOSH | NIOSH REL (STEL) (mg/m ³) | 10 mg/m ³ (fume) |
| USA NIOSH | NIOSH REL (ceiling) (mg/m ³) | 15 mg/m ³ (dust) |
| USA IDLH | US IDLH (mg/m ³) | 500 mg/m ³ |
| Alberta | OEL STEL (mg/m ³) | 10 mg/m ³ (respirable) |
| Alberta | OEL TWA (mg/m ³) | 2 mg/m ³ (respirable) |
| British Columbia | OEL STEL (mg/m ³) | 10 mg/m ³ (respirable) |
| British Columbia | OEL TWA (mg/m ³) | 2 mg/m ³ (respirable) |
| Manitoba | OEL STEL (mg/m ³) | 10 mg/m ³ (respirable particulate matter) |
| Manitoba | OEL TWA (mg/m ³) | 2 mg/m ³ (respirable particulate matter) |
| New Brunswick | OEL STEL (mg/m ³) | 10 mg/m ³ (fume) |
| New Brunswick | OEL TWA (mg/m ³) | 10 mg/m ³ (particulate matter containing no Asbestos and <1% Crystalline silica, dust) 5 mg/m ³ (fume) |
| Newfoundland & Labrador | OEL STEL (mg/m ³) | 10 mg/m ³ (respirable particulate matter) |
| Newfoundland & Labrador | OEL TWA (mg/m ³) | 2 mg/m ³ (respirable particulate matter) |
| Nova Scotia | OEL STEL (mg/m ³) | 10 mg/m ³ (respirable particulate matter) |
| Nova Scotia | OEL TWA (mg/m ³) | 2 mg/m ³ (respirable particulate matter) |
| Nunavut | OEL STEL (mg/m ³) | 10 mg/m ³ (dust and fume; respirable fraction) |
| Nunavut | OEL TWA (mg/m ³) | 2 mg/m ³ (dust and fume; respirable fraction) |
| Northwest Territories | OEL STEL (mg/m ³) | 10 mg/m ³ (dust and fume; respirable fraction) |
| Northwest Territories | OEL TWA (mg/m ³) | 2 mg/m ³ (dust and fume; respirable fraction) |
| Ontario | OEL STEL (mg/m ³) | 10 mg/m ³ (respirable) |
| Ontario | OEL TWA (mg/m ³) | 2 mg/m ³ (respirable) |

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| | | |
|--------------------------------------|---|---|
| Prince Edward Island | OEL STEL (mg/m ³) | 10 mg/m ³ (respirable particulate matter) |
| Prince Edward Island | OEL TWA (mg/m ³) | 2 mg/m ³ (respirable particulate matter) |
| Québec | VECD (mg/m ³) | 10 mg/m ³ (fume) |
| Québec | VEMP (mg/m ³) | 10 mg/m ³ (containing no Asbestos and <1% Crystalline silica-total dust) 5 mg/m ³ (fume) |
| Saskatchewan | OEL STEL (mg/m ³) | 10 mg/m ³ (dust and fume, respirable fraction) |
| Saskatchewan | OEL TWA (mg/m ³) | 2 mg/m ³ (dust and fume, respirable fraction) |
| Yukon | OEL STEL (mg/m ³) | 10 mg/m ³ (fume) |
| Yukon | OEL TWA (mg/m ³) | 5 mg/m ³ (fume) 30 mppcf (dust) 10 mg/m ³ (dust) |
| Vanadium (7440-62-2) | | |
| USA OSHA | OSHA PEL (Ceiling) (mg/m ³) | 0.5 mg/m ³ (respirable dust) 0.1 mg/m ³ (fume) |
| USA NIOSH | NIOSH REL (TWA) (mg/m ³) | 1 mg/m ³ (Ferrovanadium dust) |
| USA NIOSH | NIOSH REL (STEL) (mg/m ³) | 3 mg/m ³ (Ferrovanadium dust) |
| Manganese compounds | | |
| USA OSHA | OSHA PEL (Ceiling) (mg/m ³) | 5 mg/m ³ |
| USA NIOSH | NIOSH REL (TWA) (mg/m ³) | 1 mg/m ³ |
| USA NIOSH | NIOSH REL (STEL) (mg/m ³) | 3 mg/m ³ |
| USA IDLH | US IDLH (mg/m ³) | 500 mg/m ³ |
| Québec | VEMP (mg/m ³) | 0.2 mg/m ³ (total dust and fume) |
| Yukon | OEL Ceiling (mg/m ³) | 5 mg/m ³ |
| Manganese inorganic compounds | | |
| USA ACGIH | ACGIH TWA (mg/m ³) | 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 |
| Alberta | OEL TWA (mg/m ³) | 0.2 mg/m ³ |
| British Columbia | OEL TWA (mg/m ³) | 0.2 mg/m ³ (total) 0.02 mg/m ³ (respirable) |
| Manitoba | OEL TWA (mg/m ³) | 0.02 mg/m ³ (respirable particulate matter) 0.1 mg/m ³ (inhalable particulate matter) |
| New Brunswick | OEL TWA (mg/m ³) | 0.2 mg/m ³ |
| Newfoundland & Labrador | OEL TWA (mg/m ³) | 0.02 mg/m ³ (respirable particulate matter) 0.1 mg/m ³ (inhalable particulate matter) |
| Nova Scotia | OEL TWA (mg/m ³) | 0.02 mg/m ³ (respirable particulate matter) 0.1 mg/m ³ (inhalable particulate matter) |
| Nunavut | OEL STEL (mg/m ³) | 0.6 mg/m ³ |
| Nunavut | OEL TWA (mg/m ³) | 0.2 mg/m ³ |
| Northwest Territories | OEL STEL (mg/m ³) | 0.6 mg/m ³ |
| Northwest Territories | OEL TWA (mg/m ³) | 0.2 mg/m ³ |
| Ontario | OEL TWA (mg/m ³) | 0.02 mg/m ³ (respirable) 0.1 mg/m ³ (inhalable) |
| Prince Edward Island | OEL TWA (mg/m ³) | 0.02 mg/m ³ (respirable particulate matter) 0.1 mg/m ³ (inhalable particulate matter) |
| Saskatchewan | OEL STEL (mg/m ³) | 0.6 mg/m ³ |
| Saskatchewan | OEL TWA (mg/m ³) | 0.2 mg/m ³ |
| Cobalt inorganic compounds | | |
| USA ACGIH | ACGIH TWA (mg/m ³) | 0.02 mg/m ³ (inhalable particulate matter) |

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| | | |
|---------------------------------|-------------------------------------|--|
| USA ACGIH | ACGIH chemical category | dermal sensitizer, Confirmed Animal Carcinogen with Unknown Relevance to Humans |
| USA ACGIH | Biological Exposure Indices (BEI) | 15 µg/l Parameter: Cobalt - Medium: urine - Sampling time: end of shift at end of workweek (nonspecific) |
| Alberta | OEL TWA (mg/m ³) | 0.02 mg/m ³ |
| British Columbia | OEL TWA (mg/m ³) | 0.02 mg/m ³ |
| Manitoba | OEL TWA (mg/m ³) | 0.02 mg/m ³ (inhalable particulate matter) |
| New Brunswick | OEL TWA (mg/m ³) | 0.02 mg/m ³ |
| Newfoundland & Labrador | OEL TWA (mg/m ³) | 0.02 mg/m ³ (inhalable particulate matter) |
| Nova Scotia | OEL TWA (mg/m ³) | 0.02 mg/m ³ (inhalable particulate matter) |
| Nunavut | OEL STEL (mg/m ³) | 0.06 mg/m ³ |
| Nunavut | OEL TWA (mg/m ³) | 0.02 mg/m ³ |
| Northwest Territories | OEL STEL (mg/m ³) | 0.06 mg/m ³ |
| Northwest Territories | OEL TWA (mg/m ³) | 0.02 mg/m ³ |
| Ontario | OEL TWA (mg/m ³) | 0.02 mg/m ³ |
| Prince Edward Island | OEL TWA (mg/m ³) | 0.02 mg/m ³ (inhalable particulate matter) |
| Québec | VEMP (mg/m ³) | 0.02 mg/m ³ |
| Saskatchewan | OEL STEL (mg/m ³) | 0.06 mg/m ³ |
| Saskatchewan | OEL TWA (mg/m ³) | 0.02 mg/m ³ |
| Lead inorganic compounds | | |
| USA ACGIH | ACGIH TWA (mg/m ³) | 0.05 mg/m ³ |
| USA ACGIH | ACGIH chemical category | Confirmed Animal Carcinogen with Unknown Relevance to Humans |
| USA ACGIH | Biological Exposure Indices (BEI) | 200 µg/l Parameter: Lead - Medium: blood - Sampling time: not critical (Note: Persons applying this BEI are encouraged to counsel female workers of child-bearing age about the risk of delivering a child with a PbB (lead in blood level) over the current CDC reference value.) |
| USA OSHA | OSHA PEL (TWA) (mg/m ³) | 50 µg/m ³ |
| Alberta | OEL TWA (mg/m ³) | 0.05 mg/m ³ |
| British Columbia | OEL TWA (mg/m ³) | 0.05 mg/m ³ |
| Manitoba | OEL TWA (mg/m ³) | 0.05 mg/m ³ |
| New Brunswick | OEL TWA (mg/m ³) | 0.05 mg/m ³ |
| Newfoundland & Labrador | OEL TWA (mg/m ³) | 0.05 mg/m ³ |
| Nova Scotia | OEL TWA (mg/m ³) | 0.05 mg/m ³ |
| Nunavut | OEL STEL (mg/m ³) | 0.15 mg/m ³ |
| Nunavut | OEL TWA (mg/m ³) | 0.05 mg/m ³ |
| Northwest Territories | OEL STEL (mg/m ³) | 0.15 mg/m ³ |
| Northwest Territories | OEL TWA (mg/m ³) | 0.05 mg/m ³ |
| Ontario | OEL TWA (mg/m ³) | 0.05 mg/m ³ (designated substances regulation, except Tetraethyllead (Lead, elemental Lead, inorganic and organic compounds of Lead) 0.05 mg/m ³ (applies to workplaces to which the designated substances regulation does not apply) |
| Prince Edward Island | OEL TWA (mg/m ³) | 0.05 mg/m ³ |
| Québec | VEMP (mg/m ³) | 0.05 mg/m ³ |
| Saskatchewan | OEL STEL (mg/m ³) | 0.15 mg/m ³ |
| Saskatchewan | OEL TWA (mg/m ³) | 0.05 mg/m ³ |
| Yukon | OEL STEL (mg/m ³) | 0.45 mg/m ³ (dust and fume) |
| Yukon | OEL TWA (mg/m ³) | 0.15 mg/m ³ (dust and fume) |

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| | | |
|---|--|--|
| Lead compounds | | |
| USA NIOSH | NIOSH REL (TWA) (mg/m ³) | 0.05 mg/m ³ |
| USA IDLH | US IDLH (mg/m ³) | 100 mg/m ³ |
| Tungsten, insoluble compounds | | |
| USA NIOSH | NIOSH REL (TWA) (mg/m ³) | 5 mg/m ³ |
| USA NIOSH | NIOSH REL (STEL) (mg/m ³) | 10 mg/m ³ |
| Alberta | OEL STEL (mg/m ³) | 10 mg/m ³ |
| Alberta | OEL TWA (mg/m ³) | 5 mg/m ³ |
| British Columbia | OEL STEL (mg/m ³) | 10 mg/m ³ |
| British Columbia | OEL TWA (mg/m ³) | 5 mg/m ³ |
| New Brunswick | OEL STEL (mg/m ³) | 10 mg/m ³ |
| New Brunswick | OEL TWA (mg/m ³) | 5 mg/m ³ |
| Nunavut | OEL STEL (mg/m ³) | 10 mg/m ³ |
| Nunavut | OEL TWA (mg/m ³) | 5 mg/m ³ |
| Northwest Territories | OEL STEL (mg/m ³) | 10 mg/m ³ |
| Northwest Territories | OEL TWA (mg/m ³) | 5 mg/m ³ |
| Ontario | OEL STEL (mg/m ³) | 10 mg/m ³ |
| Ontario | OEL TWA (mg/m ³) | 5 mg/m ³ |
| Québec | VECD (mg/m ³) | 10 mg/m ³ |
| Québec | VEMP (mg/m ³) | 5 mg/m ³ |
| Saskatchewan | OEL STEL (mg/m ³) | 10 mg/m ³ |
| Saskatchewan | OEL TWA (mg/m ³) | 5 mg/m ³ |
| Yukon | OEL STEL (mg/m ³) | 10 mg/m ³ |
| Yukon | OEL TWA (mg/m ³) | 5 mg/m ³ |
| Tungsten compounds | | |
| USA ACGIH | ACGIH TWA (mg/m ³) | 3 mg/m ³ (in the absence of cobalt-respirable particulate matter) |
| Manitoba | OEL TWA (mg/m ³) | 3 mg/m ³ (in the absence of Cobalt-respirable particulate matter) |
| Newfoundland & Labrador | OEL TWA (mg/m ³) | 3 mg/m ³ (in the absence of Cobalt-respirable particulate matter) |
| Nova Scotia | OEL TWA (mg/m ³) | 3 mg/m ³ (in the absence of Cobalt-respirable particulate matter) |
| Prince Edward Island | OEL TWA (mg/m ³) | 3 mg/m ³ (in the absence of Cobalt-respirable particulate matter) |
| Vanadium compounds | | |
| USA NIOSH | NIOSH REL (ceiling) (mg/m ³) | 0.05 mg/m ³ (except Vanadium metal and Vanadium carbide-dust and fume) |
| Vanadium carbide (VC) (12070-10-9) | | |
| USA NIOSH | NIOSH REL (TWA) (mg/m ³) | 1 mg/m ³ (Ferrovanadium dust) |
| USA NIOSH | NIOSH REL (STEL) (mg/m ³) | 3 mg/m ³ (Ferrovanadium dust) |
| Cobalt (7440-48-4) | | |
| USA ACGIH | ACGIH TWA (mg/m ³) | 0.02 mg/m ³ (inhalable particulate matter) |
| USA ACGIH | ACGIH chemical category | dermal sensitizer, Confirmed Animal Carcinogen with Unknown Relevance to Humans |
| USA ACGIH | Biological Exposure Indices (BEI) | 15 µg/l Parameter: Cobalt - Medium: urine - Sampling time: end of shift at end of workweek (nonspecific) |
| USA OSHA | OSHA PEL (TWA) (mg/m ³) | 0.1 mg/m ³ (dust and fume) |
| USA NIOSH | NIOSH REL (TWA) (mg/m ³) | 0.05 mg/m ³ (dust and fume) |
| USA IDLH | US IDLH (mg/m ³) | 20 mg/m ³ (dust and fume) |

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| | | |
|-------------------------|-------------------------------|---|
| Alberta | OEL TWA (mg/m ³) | 0.02 mg/m ³ |
| British Columbia | OEL TWA (mg/m ³) | 0.02 mg/m ³ |
| Manitoba | OEL TWA (mg/m ³) | 0.02 mg/m ³ (inhalable particulate matter) |
| New Brunswick | OEL TWA (mg/m ³) | 0.02 mg/m ³ |
| Newfoundland & Labrador | OEL TWA (mg/m ³) | 0.02 mg/m ³ (inhalable particulate matter) |
| Nova Scotia | OEL TWA (mg/m ³) | 0.02 mg/m ³ (inhalable particulate matter) |
| Nunavut | OEL STEL (mg/m ³) | 0.06 mg/m ³ |
| Nunavut | OEL TWA (mg/m ³) | 0.02 mg/m ³ |
| Northwest Territories | OEL STEL (mg/m ³) | 0.06 mg/m ³ |
| Northwest Territories | OEL TWA (mg/m ³) | 0.02 mg/m ³ |
| Ontario | OEL TWA (mg/m ³) | 0.02 mg/m ³ |
| Prince Edward Island | OEL TWA (mg/m ³) | 0.02 mg/m ³ (inhalable particulate matter) |
| Québec | VEMP (mg/m ³) | 0.02 mg/m ³ |
| Saskatchewan | OEL STEL (mg/m ³) | 0.06 mg/m ³ |
| Saskatchewan | OEL TWA (mg/m ³) | 0.02 mg/m ³ |
| Yukon | OEL STEL (mg/m ³) | 0.15 mg/m ³ (dust and fume) |
| Yukon | OEL TWA (mg/m ³) | 0.05 mg/m ³ (dust and fume) |

8.2. Exposure Controls

Appropriate Engineering Controls: Suitable eye/body wash equipment should be available in the vicinity of any potential exposure. It is recommended that all dust control equipment such as local exhaust ventilation and material transport systems involved in handling of this product contain explosion relief vents or an explosion suppression system or an oxygen-deficient environment. Use local exhaust or general dilution ventilation or other suppression methods to maintain dust levels below exposure limits. Power equipment should be equipped with proper dust collection devices. Proper grounding procedures to avoid static electricity should be followed. Use explosion-proof equipment. Ensure adequate ventilation, especially in confined areas. Ensure all national/local regulations are observed.

Personal Protective Equipment: Gloves. Protective clothing. Protective goggles. Insufficient ventilation: wear respiratory protection.



Materials for Protective Clothing: Chemically resistant materials and fabrics.

Hand Protection: Wear protective gloves.

Eye and Face Protection: Chemical safety goggles.

Skin and Body Protection: Wear suitable protective clothing.

Respiratory Protection: If exposure limits are exceeded or irritation is experienced, approved respiratory protection should be worn. In case of inadequate ventilation, oxygen deficient atmosphere, or where exposure levels are not known wear approved respiratory protection.

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 | : Grey to grey with dark grey coat |
| Odor | : Odorless |
| Odor Threshold | : Not available |
| pH | : Not available |
| Evaporation Rate | : Not available |
| Melting Point | : Not available |
| Freezing Point | : Not available |
| Boiling Point | : Not available |

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| | |
|--|--------------------------|
| Flash Point | : Not available |
| Auto-ignition Temperature | : Not available |
| Decomposition Temperature | : Not available |
| Flammability (solid, gas) | : Not available |
| Lower Flammable Limit | : Not available |
| Upper Flammable Limit | : Not available |
| Vapor Pressure | : Not available |
| Relative Vapor Density at 20°C | : Not available |
| Relative Density | : Not available |
| Density | : 15.7 g/cm ³ |
| Specific Gravity | : Not available |
| Solubility | : Insoluble |
| Partition Coefficient: N-Octanol/Water | : Not available |
| Viscosity | : Not available |

SECTION 10: STABILITY AND REACTIVITY

- 10.1. **Reactivity:** Hazardous reactions will not occur under normal conditions.
- 10.2. **Chemical Stability:** Stable under recommended handling and storage conditions (see section 7).
- 10.3. **Possibility of Hazardous Reactions:** Hazardous polymerization will not occur.
- 10.4. **Conditions to Avoid:** Direct sunlight, extremely high or low temperatures, and incompatible materials. Sparks, heat, open flame and other sources of ignition. Dust accumulation (to minimize explosion hazard).
- 10.5. **Incompatible Materials:** Strong acids, strong bases, strong oxidizers.
- 10.6. **Hazardous Decomposition Products:** Not expected to decompose under ambient conditions. Thermal decomposition generates: Metal oxides. Toxic fumes.

SECTION 11: TOXICOLOGICAL INFORMATION

11.1. Information on Toxicological Effects - Product

Acute Toxicity (Oral): Harmful if swallowed.

Acute Toxicity (Dermal): Not classified

Acute Toxicity (Inhalation): Not classified

LD50 and LC50 Data:

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|---|--------------------------|
| ATE US/CA (oral) | 645.87 mg/kg body weight |

Skin Corrosion/Irritation: Not classified

Eye Damage/Irritation: Not classified

Respiratory or Skin Sensitization: May cause an allergy or asthma symptoms or breathing difficulties if inhaled. May cause an allergic skin reaction.

Germ Cell Mutagenicity: Not classified

Carcinogenicity: May cause cancer.

Specific Target Organ Toxicity (Repeated Exposure): Causes damage to organs through prolonged or repeated exposure.

Reproductive Toxicity: May damage fertility or the unborn child. May cause harm to breast-fed children.

Specific Target Organ Toxicity (Single Exposure): Not classified

Aspiration Hazard: Not classified

Symptoms/Injuries After Inhalation: May cause cancer by inhalation. Exposure may produce cough, mucous secretions, shortness of breath, chest tightness or other symptoms indicative of an allergic/sensitization reaction. Inhalation of dust may cause pulmonary fibrosis. Dust may be harmful or cause irritation. 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: May cause an allergic skin reaction. Contact with hot, molten metal will cause thermal burns. Mechanical damage via flying particles and chipped slag is possible. Nickel: May cause a form of dermatitis known as nickel itch and intestinal irritation, which may cause disorders, convulsions and asphyxia.

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Symptoms/Injuries After Eye Contact: During metal processing, 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. . Fumes from thermal decomposition may cause eye irritation.

Symptoms/Injuries After Ingestion: For particulates and dust: This material is harmful orally and can cause adverse health effects or death in significant amounts.

Chronic Symptoms: May cause cancer. Causes damage to organs through prolonged or repeated exposure. May damage fertility or the unborn child. Repeated inhalation of iron oxide dust can cause siderosis a benign condition.

Aluminum: Inhalation of finely divided aluminum powder may cause pulmonary fibrosis.

Copper: Overexposure to fumes may cause metal fume fever (chills, muscle aches, nausea, fever, dry throat, cough, weakness, lassitude); metallic or sweet taste; discoloration of skin and hair. Tissue damage of mucous membranes may follow chronic dust exposure.

Chromium: Certain hexavalent chromium compounds have been demonstrated to be carcinogenic on the basis of epidemiological investigations on workers and experimental studies in animals. Increased incidences of respiratory cancer have been found in chromium (VI) workers. There is an increased incidence of lung cancer in industrial workers exposed to chromium (VI) compounds. Please refer to IARC volume 23 for a more detailed discussion.

Lead: Exposure can result in lassitude (weakness, exhaustion), insomnia; facial pallor; anorexia, weight loss, malnutrition; constipation, abdominal pain, colic; anemia; gingival lead line; tremor; encephalopathy; kidney disease; hypertension.

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.

Molybdenum: Chronic exposure to molybdenum compounds is suspected of causing cancer. Compounds are also known to cause irritation to the skin, eyes, and respiratory tract.

Silicon: Can cause chronic bronchitis and narrowing of the airways.

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.

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.

Repeated exposure to tantalum alloys may cause fibrosis, chronic rhinitis and "hard metal pneumoconiosis".

11.2. Information on Toxicological Effects - Ingredient(s)

LD50 and LC50 Data:

| | |
|-------------------------------|----------------------------------|
| Nickel (7440-02-0) | |
| LD50 Oral Rat | > 9000 mg/kg |
| LC50 Inhalation Rat | > 10.2 mg/l (Exposure time: 1 h) |
| Silver (7440-22-4) | |
| LD50 Oral Rat | > 5000 mg/kg |
| LD50 Dermal Rat | > 2000 mg/kg |
| Zinc (7440-66-6) | |
| LD50 Oral Rat | 630 mg/kg |
| Iron (7439-89-6) | |
| LD50 Oral Rat | 98.6 g/kg |
| Carbon (7440-44-0) | |
| LD50 Oral Rat | > 10000 mg/kg |
| Chromium (7440-47-3) | |
| LD50 Oral Rat | > 5000 mg/kg |
| LC50 Inhalation Rat | > 5.41 mg/l/4h |
| Manganese (7439-96-5) | |
| LD50 Oral Rat | > 2000 mg/kg |
| LC50 Inhalation Rat | > 5.14 mg/l/4h |
| Molybdenum (7439-98-7) | |

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| | |
|---|--|
| LD50 Oral Rat | > 2000 mg/kg |
| LD50 Dermal Rat | > 2000 mg/kg |
| LC50 Inhalation Rat | > 3.92 mg/l/4h |
| Phosphorus elemental (7723-14-0) | |
| LD50 Oral Rat | 3030 µg/kg |
| LD50 Dermal Rat | 100 mg/kg |
| LC50 Inhalation Rat | 4.3 mg/l (Exposure time: 1 h) |
| Silicon (7440-21-3) | |
| LD50 Oral Rat | 3160 mg/kg |
| Sulfur (7704-34-9) | |
| LD50 Oral Rat | > 3000 mg/kg |
| LD50 Dermal Rabbit | > 2000 mg/kg |
| LC50 Inhalation Rat | > 9.23 mg/l/4h |
| Zinc oxide (ZnO) (1314-13-2) | |
| LD50 Oral Rat | > 5000 mg/kg |
| LD50 Dermal Rat | > 2000 mg/kg |
| Vanadium (7440-62-2) | |
| LD50 Oral Rat | > 2000 mg/kg |
| Cobalt (7440-48-4) | |
| LD50 Oral Rat | 215.9 - 1140 mg/kg |
| LC50 Inhalation Rat | > 10 mg/l (Exposure time: 1 h) |
| LC50 Inhalation Rat | < 0.05 mg/l/4h |
| ATE US/CA (oral) | 215.90 mg/kg body weight |
| 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. |
| Nickel compounds | |
| IARC Group | 1 |
| National Toxicology Program (NTP) Status | Known Human Carcinogens. |
| OSHA Hazard Communication Carcinogen List | In OSHA Hazard Communication Carcinogen list. |
| Chromium (7440-47-3) | |
| IARC Group | 3 |
| Lead (7439-92-1) | |
| IARC Group | 2A |
| National Toxicology Program (NTP) Status | Reasonably anticipated to be Human Carcinogen. |
| OSHA Hazard Communication Carcinogen List | In OSHA Hazard Communication Carcinogen list. |
| Cobalt compounds | |
| 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. |
| Lead inorganic compounds | |
| IARC Group | 2A |
| OSHA Hazard Communication Carcinogen List | In OSHA Hazard Communication Carcinogen list. |
| Lead compounds | |
| National Toxicology Program (NTP) Status | Reasonably anticipated to be Human Carcinogen. |
| OSHA Hazard Communication Carcinogen List | In OSHA Hazard Communication Carcinogen list. |
| Cobalt (7440-48-4) | |

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| | |
|---|---|
| IARC Group | 2B |
| National Toxicology Program (NTP) Status | Evidence of Carcinogenicity, Reasonably anticipated to be Human Carcinogen. |
| OSHA Hazard Communication Carcinogen List | In OSHA Hazard Communication Carcinogen list. |

SECTION 12: ECOLOGICAL INFORMATION

12.1. Toxicity

Ecology - General: Very toxic to aquatic life with long lasting effects.

| | |
|---|--|
| Nickel (7440-02-0) | |
| LC50 Fish 1 | 100 mg/l (Exposure time: 96 h - Species: Brachydanio rerio) |
| EC50 Daphnia 1 | 100 mg/l (Exposure time: 48 h - Species: Daphnia magna) |
| LC50 Fish 2 | 15.3 mg/l |
| EC50 Daphnia 2 | 1 mg/l (Exposure time: 48 h - Species: Daphnia magna [Static]) |
| Silver (7440-22-4) | |
| LC50 Fish 1 | 0.00155 - 0.00293 mg/l (Exposure time: 96 h - Species: Pimephales promelas [static]) |
| EC50 Daphnia 1 | 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]) |
| Manganese (7439-96-5) | |
| LC50 Fish 1 | > 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) |
| Phosphorus elemental (7723-14-0) | |
| LC50 Fish 1 | 33.2 mg/l Red Phosphorous (Exposure time: 96 h - Species Danio rerio [static]) |
| EC50 Daphnia 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 Daphnia 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 Daphnia 1 | 736 mg/l (Exposure time: 48 h - Species: Daphnia magna) |
| LC50 Fish 2 | 14 mg/l (Exposure time: 96 h - Species: Lepomis macrochirus [static]) |
| Zinc oxide (ZnO) (1314-13-2) | |
| LC50 Fish 1 | 970 µg/l (780 ug Zn/L; Exposure time: 96 h - Species: Pimephales promelas) |
| LC50 Fish 2 | 1.793 mg/l (Exposure time: 96 h - Species: Zebrafish) |
| NOEC Chronic Fish | 0.026 mg/l (Species: Jordanella floridae) |
| Cobalt (7440-48-4) | |
| LC50 Fish 1 | > 100 mg/l (Exposure time: 96 h - Species: Brachydanio rerio [static]) |

12.2. Persistence and Degradability

| | |
|--|---|
| CEMENTED TUNGSTEN CARBIDE CUTTING TOOLS; UNCOATED OR ALTIN COATED; SDS GROUP 13 | |
| Persistence and Degradability | May cause long-term adverse effects in the environment. |
| Copper (7440-50-8) | |
| Persistence and Degradability | Not readily biodegradable. |

12.3. Bioaccumulative Potential

| | |
|--|----------------------|
| CEMENTED TUNGSTEN CARBIDE CUTTING TOOLS; UNCOATED OR ALTIN COATED; SDS GROUP 13 | |
| Bioaccumulative Potential | Not established. |
| Phosphorus elemental (7723-14-0) | |
| BCF Fish 1 | < 200 |
| Cobalt (7440-48-4) | |
| BCF Fish 1 | (no bioaccumulation) |

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12.4. **Mobility in Soil** Not available

12.5. **Other Adverse Effects**

Other Information: Avoid release to the environment.

SECTION 13: DISPOSAL CONSIDERATIONS

13.1. **Waste treatment methods**

Waste Disposal Recommendations: Dispose of contents/container in accordance with local, regional, national, territorial, provincial, and international regulations.

Ecology - Waste Materials: Avoid release to the environment. This material is hazardous to the aquatic environment. Keep out of sewers and waterways.

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

SECTION 15: REGULATORY INFORMATION

15.1. **US Federal Regulations**

| CEMENTED TUNGSTEN CARBIDE CUTTING TOOLS; UNCOATED OR ALTIN COATED; SDS GROUP 13 | |
|--|---|
| SARA Section 311/312 Hazard Classes | Health hazard - Carcinogenicity Health hazard - Specific target organ toxicity (single or repeated exposure) Health hazard - Respiratory or skin sensitization Health hazard - Reproductive toxicity Health hazard - Acute toxicity (any route of exposure) Physical hazard - Combustible dust |
| Titanium nitride (25583-20-4) | |
| Listed on the United States TSCA (Toxic Substances Control Act) inventory | |
| Aluminum (7429-90-5) | |
| Listed on the United States TSCA (Toxic Substances Control Act) inventory Subject to reporting requirements of United States SARA Section 313 | |
| SARA Section 313 - Emission Reporting | 1 % (dust or fume only) |
| Copper (7440-50-8) | |
| Listed on the United States TSCA (Toxic Substances Control Act) inventory 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 % |
| Nickel (7440-02-0) | |
| Listed on the United States TSCA (Toxic Substances Control Act) inventory Subject to reporting requirements of United States SARA Section 313 | |
| CERCLA RQ | 100 lb (only applicable if particles are < 100 µm) |
| SARA Section 313 - Emission Reporting | 0.1 % |
| Silver (7440-22-4) | |
| Listed on the United States TSCA (Toxic Substances Control Act) inventory 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 % |

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| | |
|--|---|
| Zinc (7440-66-6) | |
| Listed on the United States TSCA (Toxic Substances Control Act) inventory 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) |
| Nickel compounds | |
| Subject to reporting requirements of United States SARA Section 313 | |
| SARA Section 313 - Emission Reporting | 0.1 % |
| Copper compounds | |
| Subject to reporting requirements of United States SARA Section 313 | |
| SARA Section 313 - Emission Reporting | 1 % (This category does not include CAS numbers 147-14-8, 1328-53-6, or 14302-13-7, or copper phthalocyanine compounds that are substituted with only hydrogen and/or chlorine and/or bromine.) |
| Silver compounds | |
| Subject to reporting requirements of United States SARA Section 313 | |
| SARA Section 313 - Emission Reporting | 1 % |
| Zinc compounds | |
| Subject to reporting requirements of United States SARA Section 313 | |
| SARA Section 313 - Emission Reporting | 1 % |
| Iron (7439-89-6) | |
| Listed on the United States TSCA (Toxic Substances Control Act) inventory | |
| Aluminum (7429-90-5) | |
| Listed on the United States TSCA (Toxic Substances Control Act) inventory 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 | |
| Chromium (7440-47-3) | |
| Listed on the United States TSCA (Toxic Substances Control Act) inventory 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 % |
| Lead (7439-92-1) | |
| Listed on the United States TSCA (Toxic Substances Control Act) inventory Subject to reporting requirements of United States SARA Section 313 | |
| CERCLA RQ | 10 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 | 0.1 % |
| Manganese (7439-96-5) | |
| Listed on the United States TSCA (Toxic Substances Control Act) inventory Subject to reporting requirements of United States SARA Section 313 | |
| SARA Section 313 - Emission Reporting | 1 % |
| Molybdenum (7439-98-7) | |
| Listed on the United States TSCA (Toxic Substances Control Act) inventory | |

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| | |
|---|--|
| 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) |
| Silicon (7440-21-3) | |
| Listed on the United States TSCA (Toxic Substances Control Act) inventory | |
| Sulfur (7704-34-9) | |
| Listed on the United States TSCA (Toxic Substances Control Act) inventory | |
| Tungsten (7440-33-7) | |
| Listed on the United States TSCA (Toxic Substances Control Act) inventory | |
| Zinc oxide (ZnO) (1314-13-2) | |
| Listed on the United States TSCA (Toxic Substances Control Act) inventory | |
| Vanadium (7440-62-2) | |
| Listed on the United States TSCA (Toxic Substances Control Act) inventory | |
| Subject to reporting requirements of United States SARA Section 313 | |
| SARA Section 313 - Emission Reporting | 1 % (except when contained in an alloy) |
| Manganese compounds | |
| Subject to reporting requirements of United States SARA Section 313 | |
| SARA Section 313 - Emission Reporting | 1 % |
| Cobalt inorganic compounds | |
| Subject to reporting requirements of United States SARA Section 313 | |
| SARA Section 313 - Emission Reporting | 0.1 % |
| Lead inorganic compounds | |
| Subject to reporting requirements of United States SARA Section 313 | |
| SARA Section 313 - Emission Reporting | 0.1 % |
| Lead compounds | |
| Subject to reporting requirements of United States SARA Section 313 | |
| Vanadium compounds | |
| Subject to reporting requirements of United States SARA Section 313 | |
| SARA Section 313 - Emission Reporting | 1 % |
| Tungsten carbide (12070-12-1) | |
| Listed on the United States TSCA (Toxic Substances Control Act) inventory | |
| Chromium carbide (Cr₃C₂) (12012-35-0) | |
| Listed on the United States TSCA (Toxic Substances Control Act) inventory | |
| Titanium carbide (TiC) (12070-08-5) | |
| Listed on the United States TSCA (Toxic Substances Control Act) inventory | |
| Tantalum carbide (TaC) (12070-06-3) | |
| Listed on the United States TSCA (Toxic Substances Control Act) inventory | |
| Niobium carbide (NbC) (12069-94-2) | |
| Listed on the United States TSCA (Toxic Substances Control Act) inventory | |
| Vanadium carbide (VC) (12070-10-9) | |
| Listed on the United States TSCA (Toxic Substances Control Act) inventory | |
| Cobalt (7440-48-4) | |

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Listed on the United States TSCA (Toxic Substances Control Act) inventory
Subject to reporting requirements of United States SARA Section 313

| | |
|--|-------|
| SARA Section 313 - Emission Reporting | 0.1 % |
|--|-------|

15.2. US State Regulations

California Proposition 65



WARNING: This product can expose you to Lead, which is known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.

| Chemical Name (CAS No.) | Carcinogenicity | Developmental Toxicity | Female Reproductive Toxicity | Male Reproductive Toxicity |
|-------------------------|-----------------|------------------------|------------------------------|----------------------------|
| Nickel (7440-02-0) | X | | | |
| Nickel compounds | X | | | |
| Lead (7439-92-1) | X | X | X | X |
| Lead compounds | X | X | X | X |
| Cobalt (7440-48-4) | X | | | |

Aluminum (7429-90-5)

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

Copper (7440-50-8)

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

Nickel (7440-02-0)

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

Silver (7440-22-4)

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

Zinc (7440-66-6)

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

Nickel compounds

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

Copper compounds

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

Silver compounds

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

Zinc compounds

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

Aluminum (7429-90-5)

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

Chromium (7440-47-3)

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

Lead (7439-92-1)

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

Manganese (7439-96-5)

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

Molybdenum (7439-98-7)

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

Phosphorus elemental (7723-14-0)

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

Silicon (7440-21-3)

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

Sulfur (7704-34-9)

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

Tungsten (7440-33-7)

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

Zinc oxide (ZnO) (1314-13-2)

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

Vanadium (7440-62-2)

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

Manganese compounds

| |
|---|
| U.S. - New Jersey - Right to Know Hazardous Substance List U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List U.S. - Pennsylvania - RTK (Right to Know) List |
|---|

Cobalt compounds

| |
|---|
| U.S. - New Jersey - Right to Know Hazardous Substance List U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List U.S. - Pennsylvania - RTK (Right to Know) List |
|---|

Lead compounds

| |
|---|
| U.S. - New Jersey - Right to Know Hazardous Substance List U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List U.S. - Pennsylvania - RTK (Right to Know) List |
|---|

Chromium compounds

| |
|---|
| U.S. - New Jersey - Right to Know Hazardous Substance List U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List U.S. - Pennsylvania - RTK (Right to Know) List |
|---|

Vanadium compounds

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

Tungsten carbide (12070-12-1)

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

Cobalt (7440-48-4)

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

15.3. Canadian Regulations

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) |
|---|

Copper (7440-50-8)

| |
|---|
| Listed on the Canadian DSL (Domestic Substances List) |
|---|

Nickel (7440-02-0)

| |
|---|
| 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) |
|---|

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| |
|--|
| Iron (7439-89-6) |
| 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) |
| Chromium (7440-47-3) |
| Listed on the Canadian DSL (Domestic Substances List) |
| Lead (7439-92-1) |
| 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) |
| Phosphorus elemental (7723-14-0) |
| Listed on the Canadian DSL (Domestic Substances List) |
| Silicon (7440-21-3) |
| Listed on the Canadian DSL (Domestic Substances List) |
| Sulfur (7704-34-9) |
| Listed on the Canadian DSL (Domestic Substances List) |
| Tungsten (7440-33-7) |
| Listed on the Canadian DSL (Domestic Substances List) |
| Zinc oxide (ZnO) (1314-13-2) |
| Listed on the Canadian DSL (Domestic Substances List) |
| Vanadium (7440-62-2) |
| Listed on the Canadian DSL (Domestic Substances List) |
| Tungsten carbide (12070-12-1) |
| Listed on the Canadian DSL (Domestic Substances List) |
| Chromium carbide (Cr₃C₂) (12012-35-0) |
| Listed on the Canadian DSL (Domestic Substances List) |
| Titanium carbide (TiC) (12070-08-5) |
| Listed on the Canadian DSL (Domestic Substances List) |
| Tantalum carbide (TaC) (12070-06-3) |
| Listed on the Canadian DSL (Domestic Substances List) |
| Niobium carbide (NbC) (12069-94-2) |
| Listed on the Canadian DSL (Domestic Substances List) |
| Vanadium carbide (VC) (12070-10-9) |
| Listed on the Canadian NDSL (Non-Domestic Substances List) |
| Cobalt (7440-48-4) |
| 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 : 01/28/2020

Revision

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:

CEMENTED TUNGSTEN CARBIDE CUTTING TOOLS; UNCOATED OR ALTiN COATED; SDS GROUP 13

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| | |
|--|---|
| Acute Tox. 1 (Oral) | Acute toxicity (oral) Category 1 |
| Acute Tox. 2 (Dermal) | Acute toxicity (dermal) Category 2 |
| Acute Tox. 4 (Inhalation:dust,mist) | Acute toxicity (inhalation:dust,mist) 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 3 | Hazardous to the aquatic environment - Chronic Hazard Category 3 |
| Aquatic Chronic 4 | Hazardous to the aquatic environment - Chronic Hazard Category 4 |
| Carc. 1 | Carcinogenicity, Category 1 |
| Carc. 1B | Carcinogenicity Category 1B |
| Carc. 2 | Carcinogenicity Category 2 |
| Comb. Dust | Combustible Dust |
| Eye Dam. 1 | Serious eye damage/eye irritation Category 1 |
| Flam. Sol. 1 | Flammable solids Category 1 |
| Flam. Sol. 2 | Flammable solids Category 2 |
| Lact | Reproductive toxicity (Lact.) |
| Repr. 1 | Reproductive toxicity, Category 1 |
| Repr. 1A | Reproductive toxicity Category 1A |
| Repr. 2 | Reproductive toxicity Category 2 |
| Resp. Sens. 1B | Respiratory sensitization, Category 1B |
| 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 |
| Water-react. 2 | Substances and mixtures which in contact with water emit flammable gases Category 2 |
| H228 | Flammable solid |
| H261 | In contact with water releases flammable gas |
| H300 | Fatal if swallowed |
| H302 | Harmful if swallowed |
| H310 | Fatal 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 |
| H332 | Harmful if inhaled |
| H334 | May cause an allergy or asthma symptoms or breathing difficulties if inhaled |
| H350 | May cause cancer |
| H351 | Suspected of causing cancer |
| H360 | May damage fertility or the unborn child |
| H361 | Suspected of damaging fertility or the unborn child |
| H362 | May cause harm to breast-fed children |
| H372 | Causes damage to organs through prolonged or repeated exposure |
| H400 | Very toxic to aquatic life |
| H401 | Toxic to aquatic life |

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| | |
|------|--|
| H402 | Harmful to aquatic life |
| H410 | Very 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)