

Section 1: Identification of the Substance/Mixture and of the Company/Undertaking

1.1 Product identifier

Product Name • Tungsten Carbide Drill, End Mill and Router Products, Coated

Product Description • Cemented Carbide product with Cobalt Binder. Dark Gray Metal/Odorless. Coated with Ti-Namite, -A, -B, -C, -M, -X, Di-Namite.

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

Relevant identified use(s) • Rotary cutting tools for machining and metalworking industries

1.3 Details of the supplier of the safety data sheet

Manufacturer • Kyocera SGS Precision Tools, Inc.
55 S. Main Street
Munroe Falls, OH 44262
United States
www.kyocera-sgstool.com
ehs@kyocera-sgstool.com

Telephone (General) • 330-680-6667

1.4 Emergency telephone number

Manufacturer • 330-680-6667

Section 2: Hazards Identification

EU/EEC

According to: Regulation (EC) No 1272/2008 (CLP)/REACH 1907/2006 [amended by 453/2010]

According to: EU Directive 67/548/EEC (DSD) or 1999/45/EC (DPD)

2.1 Classification of the substance or mixture

CLP • Not classified

DSD/DPD • Not classified

2.2 Label Elements

CLP

Hazard statements • No label element(s) required

DSD/DPD

Risk phrases • No label element(s) required

2.3 Other Hazards

CLP • This material is exempt from CLP/REACH obligations as an article as specified in REACH (1907/2006) and related ECHA guidance.

DSD/DPD • According to European Directive 1999/45/EC this preparation is not considered dangerous.

United States (US)

According to: OSHA 29 CFR 1910.1200 HCS

2.1 Classification of the substance or mixture

OSHA HCS • Not classified
2012

2.2 Label elements

OSHA HCS
2012

Hazard statements • No label element(s) required

2.3 Other hazards

OSHA HCS • OSHA Hazard Communication Standard (29 CFR 1910.1200) requirements for Material Safety Data
2012 Sheets do not apply to the product(s) described in this document. This product is excluded from this regulation as an article.

Canada

According to: WHMIS

2.1 Classification of the substance or mixture

WHMIS • Not classified

2.2 Label elements

WHMIS • No label element(s) required

2.3 Other hazards

WHMIS • Under Canadian regulations (Workplace Hazardous Materials Information System (WHMIS) - Hazardous Products Act (HPA), Section 11(1)), these product(s) are exempt and considered manufactured article(s) under stated normal conditions of use.

2.4 Other information

- This material, as an article, does not legally require a SDS

Section 3 - Composition/Information on Ingredients

3.1 Substances

- Material does not meet the criteria of a substance in accordance with Regulation (EC) No 1272/2008.

3.2 Mixtures

Composition		
Chemical Name	Identifiers	%
Tungsten carbide	CAS:12070-12-1 EINECS:235-123-0	80% TO 97%
Cobalt	CAS:7440-48-4 EINECS:231-158-0	3% TO 20%
Tantalum carbide	CAS:12070-06-3 EINECS:235-118-3	0% TO 15%
Vanadium carbide	CAS:11130-21-5 EINECS:234-380-6	0.1% TO 2%
Titanium Nitride (TiN)	CAS:25583-20-4 EINECS:247-117-5	0% TO 0.01%
Titanium Diboride (TiB2)	CAS:12045-63-5 EINECS:234-961-4	0% TO 0.01%

Titanium Carbonitride (TiCN)	NDA	0% TO 0.01%
Titanium Aluminum Nitride (AlTiN)	NDA	0% TO 0.01%
Crystalline Diamond (C)	CAS:7782-40-3	0% TO 0.01%
Aluminum Titanium Silicon Nitride (AlTiSiN)	NDA	0% TO 0.01%

Section 4 - First Aid Measures

4.1 Description of first aid measures

- Inhalation** • First aid is not expected to be necessary if material is used under ordinary conditions and as recommended. If signs/symptoms develop, move person to fresh air. Administer oxygen if breathing is difficult. Give artificial respiration if victim is not breathing. If signs/symptoms continue, get medical attention.
- Skin** • First aid is not expected to be necessary if material is used under ordinary conditions and as recommended. Wash skin with soap and water. If signs/symptoms develop, get medical attention.
- Eye** • First aid is not expected to be necessary if material is used under ordinary conditions and as recommended. If contact with material occurs flush eyes with water. If signs/symptoms develop, get medical attention.
- Ingestion** • First aid is not expected to be necessary if material is used under ordinary conditions and as recommended. If signs/symptoms develop, get medical attention.

4.2 Most important symptoms and effects, both acute and delayed

- Under normal conditions of use, no health effects are expected.

4.3 Indication of any immediate medical attention and special treatment needed

- Notes to Physician** • No specific actions or treatments recommended related to exposure to this material.

Section 5 - Firefighting Measures

5.1 Extinguishing media

- Suitable Extinguishing Media** • Hard Cemented Carbide Product – use extinguishing media appropriate for surrounding fire. For powder fires smother with dry sand, dry dolomite, ABC type fire extinguisher, or flood with water.
- Unsuitable Extinguishing Media** • No data available.

5.2 Special hazards arising from the substance or mixture

- Unusual Fire and Explosion Hazards** • Hard Cemented Carbide Product is not a fire hazard. Dusts generated in grinding operations may present a fire or explosion hazard under rare favoring conditions of particle size, dispersion and strong ignition source. However, this is not expected to be a problem under normal handling conditions.
- Hazardous Combustion Products** • No data available

5.3 Advice for firefighters

- Wear positive pressure self-contained breathing apparatus (SCBA). Structural firefighters' protective clothing will only provide limited protection.

Section 6 - Accidental Release Measures

6.1 Personal precautions, protective equipment and emergency procedures

- Personal Precautions** • No special precautions expected to be necessary if material is used under ordinary conditions and as recommended. If airborne dust is generated, use an appropriate respirator.

Emergency Procedures • No emergency procedures are expected to be necessary if material is used under ordinary conditions as recommended. Use normal clean up procedures.

6.2 Environmental precautions

- Avoid run off to waterways and sewers.

6.3 Methods and material for containment and cleaning up

Containment/Clean-up Measures • Pick up large pieces and sweep up any smaller ones.
If dusts are generated, clean up using methods to avoid dust generation, such as vacuum (with appropriate filter to prevent airborne dust levels which exceed the PEL or TLV), wet dust mop or wet clean up.

6.4 Reference to other sections

- Refer to Section 8 - Exposure Controls/Personal Protection and Section 13 - Disposal Considerations.

Section 7 - Handling and Storage

7.1 Precautions for safe handling

Handling • Use good safety and industrial hygiene practices. Use only with adequate ventilation. Maintain good housekeeping procedures to prevent dust accumulation during grinding. Minimize free fall of powder and avoid dispersion of dust in air. Finely divided particles, dust, or fumes may be flammable or explosive. Avoid dust inhalation and direct skin contact with dust. Do not strike or impact product with hardened steel hammer or similar device because of possible fracture/shattering of product. Product should be pressed if inserted into another metal part or product. Wash thoroughly with soap and water after handling and before eating, drinking, or using tobacco. Wear appropriate personal protective equipment. Make sure tool is properly seated and safely clamped or held in place according to approved procedures. Always use machine guards and wear safety glasses and protective clothing to prevent injury in the event of tool breakage.

7.2 Conditions for safe storage, including any incompatibilities

Storage • Store in a cool, dry place.

7.3 Specific end use(s)

- Refer to Section 1.2 - Relevant identified uses.

Section 8 - Exposure Controls/Personal Protection

8.1 Control parameters

	Exposure Limits/Guidelines					
	Result	ACGIH	Canada Ontario	Canada Quebec	China	NIOSH
Crystalline Diamond (C)	STELs	Not established	Not established	Not established	16 mg/m ³ STEL (free SiO ₂ <10%; except asbestos and toxic substances; use PC-STEL of silica when free SiO ₂ >10%, total) <i>as Particulates not otherwise classified (PNOC)</i>	Not established
	TWAs	10 mg/m ³ TWA (inhalable particles, recommended); 3 mg/m ³ TWA (respirable particles, recommended) <i>as Particulates not otherwise classified (PNOC)</i>	10 mg/m ³ TWA (inhalable); 3 mg/m ³ TWA (respirable) <i>as Particulates not otherwise classified (PNOC)</i>	10 mg/m ³ TWAEV (including dust, inert or nuisance particulates; containing no Asbestos and <1% Crystalline silica, total dust) <i>as Particulates not</i>	8 mg/m ³ TWA (free SiO ₂ <10%; except asbestos and toxic substances; use PC-STEL of silica when free SiO ₂ >10%, total) <i>as Particulates not otherwise classified (PNOC)</i>	Not established

				<i>otherwise classified (PNOC)</i>		
Vanadium carbide (11130-21-5)	STELs	Not established	Not established	Not established	Not established	3 mg/m ³ STEL (listed under Ferrovandium dust)
	TWAs	Not established	Not established	Not established	Not established	1 mg/m ³ TWA (listed under Ferrovandium dust)
Cobalt (7440-48-4)	STELs	Not established	Not established	Not established	0.1 mg/m ³ STEL	Not established
	TWAs	0.02 mg/m ³ TWA	0.02 mg/m ³ TWA	0.02 mg/m ³ TWAEV	0.05 mg/m ³ TWA	0.05 mg/m ³ TWA (dust and fume)
Exposure Limits/Guidelines (Con't.)						
		Result		OSHA		
Crystalline Diamond (C)		TWAs		15 mg/m ³ TWA (total dust); 5 mg/m ³ TWA (respirable fraction) <i>as Particulates not otherwise classified (PNOC)</i>		
Cobalt (7440-48-4)		TWAs		0.1 mg/m ³ TWA (dust and fume)		

Exposure Control Notations

Canada Quebec

•Cobalt (7440-48-4): **Carcinogens:** (C3 carcinogen - effect detected in animals)

ACGIH

•Cobalt (7440-48-4): **Carcinogens:** (A3 - Confirmed Animal Carcinogen with Unknown Relevance to Humans)

Germany TRGS

•Cobalt (7440-48-4): **Carcinogens:** (Category 1B (as inhalable dust/aerosol)) | **Developmental Toxins:** (Based on current data, this substance cannot be classified according to the categories in Annex I of the CLP regulation (as inhalable dust/aerosol, except hard metals, cobalt containing spinels and organic cobalt desiccants)) | **Reproductive Toxins:** (Based on current data, this substance cannot be classified according to the categories in Annex I of the CLP regulation (as inhalable dust/aerosol)) | **Germ Cell Mutagens:** (Based on current data, this substance cannot be classified according to the categories in Annex I of the CLP regulation (as inhalable dust/aerosol, except hard metals, cobalt containing spinels and organic cobalt desiccants))

Germany DFG

•Cobalt (7440-48-4): **Carcinogens:** (Category 2 (considered to be carcinogenic for man)) | **Sensitizers:** (respiratory and skin sensitizer) | **Skin:** (skin notation)

Exposure Limits Supplemental

OSHA

•Crystalline Diamond (C) as Particulates not otherwise classified (PNOC): **Mineral Dusts:** (15 mppcf TWA (respirable fraction); 5 mg/m³ TWA (respirable fraction); 50 mppcf TWA (total dust); 15 mg/m³ TWA (total dust))

ACGIH

•Cobalt (7440-48-4): **BEIs:** (15 µg/L Medium: urine Time: end of shift at end of workweek Parameter: Cobalt (nonspecific)) | **TLV Basis - Critical Effects:** (asthma; myocardial effects; pulmonary function) | **Notice of Intended Changes (TLVs):** (0.02 mg/m³ TWA (inhalable particulate matter); skin; dermal and respiratory sensitizer; A3 - confirmed animal carcinogen with unknown relevance to humans; BEI; TLV basis: pulmonary function)

8.2 Exposure controls

Engineering

- Adequate ventilation systems as needed to control concentrations of airborne contaminants below applicable threshold limit values.

Measures/Controls

Personal Protective Equipment

Respiratory

- In case of insufficient ventilation, wear suitable respiratory equipment.

Eye/Face

- Wear safety glasses.

Skin/Body

- Protective gloves or barrier cream.

Environmental

Exposure Controls

- Controls should be engineered to prevent release to the environment, including procedures to prevent spills, atmospheric release and release to waterways. Follow best practice for site management and disposal of waste.

Key to abbreviations

ACGIH = American Conference of Governmental Industrial Hygiene

BEI = Biological Exposure Indices

NIOSH = National Institute of Occupational Safety and Health

OSHA = Occupational Safety and Health Administration

STEL = Short Term Exposure Limits are based on 15-minute exposures

TWA = Time-Weighted Averages are based on 8h/day, 40h/week exposures

TWAEV = Time-Weighted Average Exposure Value

Section 9 - Physical and Chemical Properties

9.1 Information on Basic Physical and Chemical Properties

Material Description			
Physical Form	Solid	Appearance/Description	Dark gray metal with no odor.
Color	Dark gray.	Odor	Odorless
Odor Threshold	Not relevant		
General Properties			
Boiling Point	Not relevant	Melting Point/Freezing Point	Not relevant
Decomposition Temperature	Not relevant	pH	Not relevant
Specific Gravity/Relative Density	11 to 15.5 Water=1	Water Solubility	Negligible < 0.1 %
Viscosity	Not relevant	Explosive Properties	Not relevant
Oxidizing Properties:	Not relevant		
Volatility			
Vapor Pressure	Not relevant	Vapor Density	Not relevant
Evaporation Rate	Not relevant		
Flammability			
Flash Point	None	UEL	Not relevant
LEL	Not relevant	Autoignition	Not relevant
Flammability (solid, gas)	Not relevant		
Environmental			
Octanol/Water Partition coefficient	Not relevant		

9.2 Other Information

- No additional physical and chemical parameters noted.

Section 10: Stability and Reactivity

10.1 Reactivity

- No dangerous reaction known under conditions of normal use.

10.2 Chemical stability

- Stable under normal temperatures and pressures.

10.3 Possibility of hazardous reactions

- Hazardous polymerization will not occur.

10.4 Conditions to avoid

- No data available.

10.5 Incompatible materials

- Strong Acids. Contact of dust with strong oxidizers can cause fire or explosion.

10.6 Hazardous decomposition products

- None

Section 11 - Toxicological Information

11.1 Information on toxicological effects

Other Material Information

- Note: Health effects listed are for exposure powders, dust, or mist from grinding. No health effects have been reported for exposure in solid form.

GHS Properties	Classification
Acute toxicity	EU/CLP•Not relevant OSHA HCS 2012•Not relevant

Skin corrosion/Irritation	EU/CLP•Not relevant OSHA HCS 2012•Not relevant
Serious eye damage/Irritation	EU/CLP•Not relevant OSHA HCS 2012•Not relevant
Skin sensitization	EU/CLP•Not relevant OSHA HCS 2012•Not relevant
Respiratory sensitization	EU/CLP•Not relevant OSHA HCS 2012•Not relevant
Aspiration Hazard	EU/CLP•Not relevant OSHA HCS 2012•Not relevant
Carcinogenicity	EU/CLP•Not relevant OSHA HCS 2012•Not relevant
Germ Cell Mutagenicity	EU/CLP•Not relevant OSHA HCS 2012•Not relevant
Toxicity for Reproduction	EU/CLP•Not relevant OSHA HCS 2012•Not relevant
STOT-SE	EU/CLP•Not relevant OSHA HCS 2012•Not relevant
STOT-RE	EU/CLP•Not relevant OSHA HCS 2012•Not relevant

Potential Health Effects

Inhalation

Acute (Immediate)

- Dust from grinding can cause irritation of the nose and throat. It also has the potential for causing transient or permanent respiratory disease, including occupational asthma and interstitial fibrosis, in a small percentage of exposed individuals. It is reported that cobalt dust is the most probable cause of such respiratory diseases. Symptoms include productive cough, wheezing, and shortness of breath, chest tightness and weight loss. Interstitial fibrosis (lung scarring) can lead to permanent disability or death. Certain pulmonary conditions may be aggravated by exposure.

Chronic (Delayed)

- No data available

Skin

Acute (Immediate)

- Can cause irritation or an allergic skin rash due to cobalt sensitization. Certain skin conditions, such as dry skin, may be aggravated by exposure.

Chronic (Delayed)

- No data available

Eye

Acute (Immediate)

- May cause irritation.

Chronic (Delayed)

- No data available

Ingestion

Acute (Immediate)

- Reports outside the industry suggest that ingestion of significant amounts of cobalt has the potential for causing blood, heart and other organ problems.

Chronic (Delayed)

- No data available

Carcinogenic Effects

- The International Agency for Research on Cancer (IARC) lists Cobalt and Cobalt compounds as Category 2B carcinogens (Possibly carcinogenic to Humans). However, due to the form of the product exposure is unlikely.

Carcinogenic Effects		
	CAS	IARC
Cobalt	7440-48-4	Group 2B-Possible Carcinogen

Section 12 - Ecological Information

12.1 Toxicity

- No ecological data is available for this product.

12.2 Persistence and degradability

- No ecological data is available for this product.

12.3 Bioaccumulative potential

- No ecological data is available for this product.

12.4 Mobility in Soil

- No ecological data is available for this product.

12.5 Results of PBT and vPvB assessment

- The PBT and vPvB criteria of Annex XIII to the regulation does not apply to inorganic substances.

12.6 Other adverse effects

- No hazards to the environment are expected from this product. However, consideration must be given to potential environment effects of the base material being processed.

Section 13 - Disposal Considerations

13.1 Waste treatment methods

Product waste • Dispose of content and/or container in accordance with local, regional, national, and/or international regulations.

Packaging waste • Dispose of content and/or container in accordance with local, regional, national, and/or international regulations.

Section 14 - Transport Information

	14.1 UN number	14.2 UN proper shipping name	14.3 Transport hazard class(es)	14.4 Packing group	14.5 Environmental hazards
DOT	NDA	Not Regulated	NDA	NDA	NDA
TDG	NDA	Not Regulated	NDA	NDA	NDA
IMO/IMDG	NDA	Not Regulated	NDA	NDA	NDA
IATA/ICAO	NDA	Not Regulated	NDA	NDA	NDA

14.6 Special precautions for user

- None known.

14.7 Transport in bulk according to Annex II of Marpol and the IBC Code • Not relevant.

Section 15 - Regulatory Information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

SARA Hazard Classifications

- None

Component	CAS	State Right To Know		
		MA	NJ	PA
Cobalt	7440-48-4	Yes	Yes	Yes
Crystalline Diamond (C)	7782-40-3	No	No	No
Tantalum carbide	12070-06-3	No	No	No

Titanium Diboride (TiB2)	12045-63-5	No	No	No
Titanium Nitride (TiN)	25583-20-4	No	No	No
Tungsten carbide	12070-12-1	No	Yes	No
Vanadium carbide	11130-21-5	No	No	No

Inventory						
Component	CAS	Canada DSL	Canada NDSL	China	EU EINECS	EU ELNICS
Cobalt	7440-48-4	Yes	No	Yes	Yes	No
Crystalline Diamond (C)	7782-40-3	Yes	No	Yes	Yes	No
Tantalum carbide	12070-06-3	Yes	No	No	Yes	No
Titanium Diboride (TiB2)	12045-63-5	Yes	No	Yes	Yes	No
Titanium Nitride (TiN)	25583-20-4	Yes	No	Yes	Yes	No
Tungsten carbide	12070-12-1	Yes	No	Yes	Yes	No
Vanadium carbide	11130-21-5	Yes	No	No	Yes	No

Inventory (Con't.)			
Component	CAS	Japan ENCS	TSCA
Cobalt	7440-48-4	No	Yes
Crystalline Diamond (C)	7782-40-3	No	Yes
Tantalum carbide	12070-06-3	Yes	Yes
Titanium Diboride (TiB2)	12045-63-5	Yes	Yes
Titanium Nitride (TiN)	25583-20-4	Yes	Yes
Tungsten carbide	12070-12-1	Yes	Yes
Vanadium carbide	11130-21-5	Yes	Yes

Canada

Labor

Canada - WHMIS 1988 - Classifications of Substances

•Titanium Diboride (TiB2)	12045-63-5	Not Listed
•Cobalt	7440-48-4	D2A, D2B
•Tungsten carbide	12070-12-1	Not Listed
•Tantalum carbide	12070-06-3	Not Listed
•Titanium Nitride (TiN)	25583-20-4	Not Listed
•Crystalline Diamond (C)	7782-40-3	Not Listed
•Vanadium carbide	11130-21-5	Not Listed

Canada - WHMIS 1988 - Ingredient Disclosure List

•Titanium Diboride (TiB2)	12045-63-5	Not Listed
•Cobalt	7440-48-4	0.1 %
•Tungsten carbide	12070-12-1	Not Listed
•Tantalum carbide	12070-06-3	Not Listed
•Titanium Nitride (TiN)	25583-20-4	Not Listed
•Crystalline Diamond (C)	7782-40-3	Not Listed
•Vanadium carbide	11130-21-5	Not Listed

Europe

Other

EU - CLP (1272/2008) - Annex VI - Table 3.2 - Classification (OBSOLETE)

•Titanium Diboride (TiB2)	12045-63-5	Not Listed
•Cobalt	7440-48-4	R42/43 R53
•Tungsten carbide	12070-12-1	Not Listed
•Tantalum carbide	12070-06-3	Not Listed

•Titanium Nitride (TiN)	25583-20-4	Not Listed
•Crystalline Diamond (C)	7782-40-3	Not Listed
•Vanadium carbide	11130-21-5	Not Listed
EU - CLP (1272/2008) - Annex VI - Table 3.2 - Concentration Limits (OBSOLETE)		
•Titanium Diboride (TiB2)	12045-63-5	Not Listed
•Cobalt	7440-48-4	Not Listed
•Tungsten carbide	12070-12-1	Not Listed
•Tantalum carbide	12070-06-3	Not Listed
•Titanium Nitride (TiN)	25583-20-4	Not Listed
•Crystalline Diamond (C)	7782-40-3	Not Listed
•Vanadium carbide	11130-21-5	Not Listed
EU - CLP (1272/2008) - Annex VI - Table 3.2 - Labelling (OBSOLETE)		
•Titanium Diboride (TiB2)	12045-63-5	Not Listed
•Cobalt	7440-48-4	Xn R:42/43-53 S:(2)-22-24-37-61
•Tungsten carbide	12070-12-1	Not Listed
•Tantalum carbide	12070-06-3	Not Listed
•Titanium Nitride (TiN)	25583-20-4	Not Listed
•Crystalline Diamond (C)	7782-40-3	Not Listed
•Vanadium carbide	11130-21-5	Not Listed
EU - CLP (1272/2008) - Annex VI - Table 3.2 - Notes - Substances and Preparations (OBSOLETE)		
•Titanium Diboride (TiB2)	12045-63-5	Not Listed
•Cobalt	7440-48-4	Not Listed
•Tungsten carbide	12070-12-1	Not Listed
•Tantalum carbide	12070-06-3	Not Listed
•Titanium Nitride (TiN)	25583-20-4	Not Listed
•Crystalline Diamond (C)	7782-40-3	Not Listed
•Vanadium carbide	11130-21-5	Not Listed
EU - CLP (1272/2008) - Annex VI - Table 3.2 - Safety Phrases (OBSOLETE)		
•Titanium Diboride (TiB2)	12045-63-5	Not Listed
•Cobalt	7440-48-4	S:(2)-22-24-37-61
•Tungsten carbide	12070-12-1	Not Listed
•Tantalum carbide	12070-06-3	Not Listed
•Titanium Nitride (TiN)	25583-20-4	Not Listed
•Crystalline Diamond (C)	7782-40-3	Not Listed
•Vanadium carbide	11130-21-5	Not Listed

United States

Labor

U.S. - OSHA - Process Safety Management - Highly Hazardous Chemicals

•Titanium Diboride (TiB2)	12045-63-5	Not Listed
•Cobalt	7440-48-4	Not Listed
•Tungsten carbide	12070-12-1	Not Listed
•Tantalum carbide	12070-06-3	Not Listed
•Titanium Nitride (TiN)	25583-20-4	Not Listed
•Crystalline Diamond (C)	7782-40-3	Not Listed
•Vanadium carbide	11130-21-5	Not Listed

U.S. - OSHA - Specifically Regulated Chemicals

•Titanium Diboride (TiB2)	12045-63-5	Not Listed
•Cobalt	7440-48-4	Not Listed
•Tungsten carbide	12070-12-1	Not Listed
•Tantalum carbide	12070-06-3	Not Listed
•Titanium Nitride (TiN)	25583-20-4	Not Listed
•Crystalline Diamond (C)	7782-40-3	Not Listed
•Vanadium carbide	11130-21-5	Not Listed

Environment

U.S. - CAA (Clean Air Act) - 1990 Hazardous Air Pollutants

•Titanium Diboride (TiB2)	12045-63-5	Not Listed
•Cobalt	7440-48-4	Not Listed
•Tungsten carbide	12070-12-1	Not Listed
•Tantalum carbide	12070-06-3	Not Listed
•Titanium Nitride (TiN)	25583-20-4	Not Listed
•Crystalline Diamond (C)	7782-40-3	Not Listed

•Vanadium carbide	11130-21-5	Not Listed
U.S. - CERCLA/SARA - Hazardous Substances and their Reportable Quantities		
•Titanium Diboride (TiB2)	12045-63-5	Not Listed
•Cobalt	7440-48-4	Not Listed
•Tungsten carbide	12070-12-1	Not Listed
•Tantalum carbide	12070-06-3	Not Listed
•Titanium Nitride (TiN)	25583-20-4	Not Listed
•Crystalline Diamond (C)	7782-40-3	Not Listed
•Vanadium carbide	11130-21-5	Not Listed
U.S. - CERCLA/SARA - Radionuclides and Their Reportable Quantities		
•Titanium Diboride (TiB2)	12045-63-5	Not Listed
•Cobalt	7440-48-4	Not Listed
•Tungsten carbide	12070-12-1	Not Listed
•Tantalum carbide	12070-06-3	Not Listed
•Titanium Nitride (TiN)	25583-20-4	Not Listed
•Crystalline Diamond (C)	7782-40-3	Not Listed
•Vanadium carbide	11130-21-5	Not Listed
U.S. - CERCLA/SARA - Section 302 Extremely Hazardous Substances EPCRA RQs		
•Titanium Diboride (TiB2)	12045-63-5	Not Listed
•Cobalt	7440-48-4	Not Listed
•Tungsten carbide	12070-12-1	Not Listed
•Tantalum carbide	12070-06-3	Not Listed
•Titanium Nitride (TiN)	25583-20-4	Not Listed
•Crystalline Diamond (C)	7782-40-3	Not Listed
•Vanadium carbide	11130-21-5	Not Listed
U.S. - CERCLA/SARA - Section 302 Extremely Hazardous Substances TPQs		
•Titanium Diboride (TiB2)	12045-63-5	Not Listed
•Cobalt	7440-48-4	Not Listed
•Tungsten carbide	12070-12-1	Not Listed
•Tantalum carbide	12070-06-3	Not Listed
•Titanium Nitride (TiN)	25583-20-4	Not Listed
•Crystalline Diamond (C)	7782-40-3	Not Listed
•Vanadium carbide	11130-21-5	Not Listed
U.S. - CERCLA/SARA - Section 313 - Emission Reporting		
•Titanium Diboride (TiB2)	12045-63-5	Not Listed
•Cobalt	7440-48-4	0.1 % de minimis concentration
•Tungsten carbide	12070-12-1	Not Listed
•Tantalum carbide	12070-06-3	Not Listed
•Titanium Nitride (TiN)	25583-20-4	Not Listed
•Crystalline Diamond (C)	7782-40-3	Not Listed
•Vanadium carbide	11130-21-5	Not Listed
U.S. - CERCLA/SARA - Section 313 - PBT Chemical Listing		
•Titanium Diboride (TiB2)	12045-63-5	Not Listed
•Cobalt	7440-48-4	Not Listed
•Tungsten carbide	12070-12-1	Not Listed
•Tantalum carbide	12070-06-3	Not Listed
•Titanium Nitride (TiN)	25583-20-4	Not Listed
•Crystalline Diamond (C)	7782-40-3	Not Listed
•Vanadium carbide	11130-21-5	Not Listed
U.S. - RCRA (Resource Conservation & Recovery Act) - Constituents for Detection Monitoring		
•Titanium Diboride (TiB2)	12045-63-5	Not Listed
•Cobalt	7440-48-4	(total)
•Tungsten carbide	12070-12-1	Not Listed
•Tantalum carbide	12070-06-3	Not Listed
•Titanium Nitride (TiN)	25583-20-4	Not Listed
•Crystalline Diamond (C)	7782-40-3	Not Listed
•Vanadium carbide	11130-21-5	Not Listed
U.S. - RCRA (Resource Conservation & Recovery Act) - List for Hazardous Constituents		
•Titanium Diboride (TiB2)	12045-63-5	Not Listed
•Cobalt	7440-48-4	(total)
•Tungsten carbide	12070-12-1	Not Listed
•Tantalum carbide	12070-06-3	Not Listed
•Titanium Nitride (TiN)	25583-20-4	Not Listed

•Crystalline Diamond (C)	7782-40-3	Not Listed
•Vanadium carbide	11130-21-5	Not Listed
U.S. - RCRA (Resource Conservation & Recovery Act) - TSD Facilities Ground Water Monitoring		
•Titanium Diboride (TiB2)	12045-63-5	Not Listed
•Cobalt	7440-48-4	(total)
•Tungsten carbide	12070-12-1	Not Listed
•Tantalum carbide	12070-06-3	Not Listed
•Titanium Nitride (TiN)	25583-20-4	Not Listed
•Crystalline Diamond (C)	7782-40-3	Not Listed
•Vanadium carbide	11130-21-5	Not Listed

United States - California

Environment

U.S. - California - Proposition 65 - Carcinogens List

•Titanium Diboride (TiB2)	12045-63-5	Not Listed
•Cobalt	7440-48-4	carcinogen, 7/1/1992 (powder)
•Tungsten carbide	12070-12-1	Not Listed
•Tantalum carbide	12070-06-3	Not Listed
•Titanium Nitride (TiN)	25583-20-4	Not Listed
•Crystalline Diamond (C)	7782-40-3	Not Listed
•Vanadium carbide	11130-21-5	Not Listed

U.S. - California - Proposition 65 - Developmental Toxicity

•Titanium Diboride (TiB2)	12045-63-5	Not Listed
•Cobalt	7440-48-4	Not Listed
•Tungsten carbide	12070-12-1	Not Listed
•Tantalum carbide	12070-06-3	Not Listed
•Titanium Nitride (TiN)	25583-20-4	Not Listed
•Crystalline Diamond (C)	7782-40-3	Not Listed
•Vanadium carbide	11130-21-5	Not Listed

U.S. - California - Proposition 65 - Maximum Allowable Dose Levels (MADL)

•Titanium Diboride (TiB2)	12045-63-5	Not Listed
•Cobalt	7440-48-4	Not Listed
•Tungsten carbide	12070-12-1	Not Listed
•Tantalum carbide	12070-06-3	Not Listed
•Titanium Nitride (TiN)	25583-20-4	Not Listed
•Crystalline Diamond (C)	7782-40-3	Not Listed
•Vanadium carbide	11130-21-5	Not Listed

U.S. - California - Proposition 65 - No Significant Risk Levels (NSRL)

•Titanium Diboride (TiB2)	12045-63-5	Not Listed
•Cobalt	7440-48-4	Not Listed
•Tungsten carbide	12070-12-1	Not Listed
•Tantalum carbide	12070-06-3	Not Listed
•Titanium Nitride (TiN)	25583-20-4	Not Listed
•Crystalline Diamond (C)	7782-40-3	Not Listed
•Vanadium carbide	11130-21-5	Not Listed

U.S. - California - Proposition 65 - Reproductive Toxicity - Female

•Titanium Diboride (TiB2)	12045-63-5	Not Listed
•Cobalt	7440-48-4	Not Listed
•Tungsten carbide	12070-12-1	Not Listed
•Tantalum carbide	12070-06-3	Not Listed
•Titanium Nitride (TiN)	25583-20-4	Not Listed
•Crystalline Diamond (C)	7782-40-3	Not Listed
•Vanadium carbide	11130-21-5	Not Listed

U.S. - California - Proposition 65 - Reproductive Toxicity - Male

•Titanium Diboride (TiB2)	12045-63-5	Not Listed
•Cobalt	7440-48-4	Not Listed
•Tungsten carbide	12070-12-1	Not Listed
•Tantalum carbide	12070-06-3	Not Listed
•Titanium Nitride (TiN)	25583-20-4	Not Listed
•Crystalline Diamond (C)	7782-40-3	Not Listed
•Vanadium carbide	11130-21-5	Not Listed

United States - Pennsylvania

Labor

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

•Titanium Diboride (TiB2)	12045-63-5	Not Listed
•Cobalt	7440-48-4	
•Tungsten carbide	12070-12-1	Not Listed
•Tantalum carbide	12070-06-3	Not Listed
•Titanium Nitride (TiN)	25583-20-4	Not Listed
•Crystalline Diamond (C)	7782-40-3	Not Listed
•Vanadium carbide	11130-21-5	Not Listed


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

•Titanium Diboride (TiB2)	12045-63-5	Not Listed
•Cobalt	7440-48-4	Not Listed
•Tungsten carbide	12070-12-1	Not Listed
•Tantalum carbide	12070-06-3	Not Listed
•Titanium Nitride (TiN)	25583-20-4	Not Listed
•Crystalline Diamond (C)	7782-40-3	Not Listed
•Vanadium carbide	11130-21-5	Not Listed

15.2 Chemical Safety Assessment

- Chemical Safety Assessment is not required.

15.3 Other Information

-  **WARNING:** This product can expose you to chemicals including Cobalt, which is known to the State of California to cause cancer. For more information go to www.p65warnings.ca.gov.

Section 16 - Other Information

Revision Date	• 21/June/2018
Preparation Date	• 16/October/2012
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Key to abbreviations

NDA = No Data Available