

MATERIAL SAFETY DATA SHEET



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Section 1	Product Information	Rev. Level: B	Page 1 of 5
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Trade Name and Synonyms: Cemented Carbide Product with Cobalt Binder Brazed Tools using Brazing Filler Metal

Chemical Family: Refractory Metal Carbide

Formula:

Section 2	Product Description and Hazardous Ingredients/Identify Information
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Material	CAS No.	Percent by Weight	OSHA TLV-TWA	ACGIH TLV-TWA
Tungsten Carbide	12070-12-1	37.6-97*	5 Mg/M3	5 Mg/M3 (as W)
Cobalt	7440-48-4	3-25*	0.05 Mg/M3	0.05 Mg/M3
Tantalum Carbide	12070-06-3	0-56.4*	5 Mg/M3 (as Ta)	5 Mg/M3 (as Ta)
Titanium Carbide	12070-08-5	0-12.6*	----	----
Niobium Carbide	12011-99-3	0-4.3*	----	----
Aluminum Oxide Coating	1344-28-1	0-0.5*	----	10 Mg/M3
Titanium Carbide Coating	12070-08-5	0-0.5*	----	----
Titanium Nitride Coating	25583-20-4	0-0.5*	----	----
Silver	7440-22-4	50.0 ⁱⁱⁱ	0.01 Mg/M3	0.1 Mg/M3
Cadmium Dust	7440-43-9	16.0 ⁱⁱⁱ	0.2 Mg/M3	0.05 Mg/M3
Copper Dust	7440-50-8	15.5 ⁱⁱⁱ	1 Mg/M3	1 Mg/M3
Zinc Dust (as Zinc Oxide)	7440-66-6	15.5 ⁱⁱⁱ	5 Mg/M3	5 Mg/M3
Nickel Dust	7440-02-0	3.0 ⁱⁱⁱ	1 Mg/M3	1 Mg/M3

* Depends on Grade Specifications

ⁱⁱⁱ For brazing filler metal on brazed tools. Filler metals are hazardous only in powder form as metal or metal oxide dust.

Section 3	Physical Data
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Melting Point F (C): Not applicable

Specific Gravity (H₂O = 1): 11.85-15.35* 9.52[†]

% Volatile by Volume: 0

Evaporation Rate: Not applicable

Appearance and Odor: Dark gray metal, odorless

Boiling Point: Not applicable

Vapor Pressure: Not applicable

Vapor Density (Air = 1): Not applicable

Solubility in Water: Insoluble

How Best Monitored: Air sample

* Depends on Grade Specifications

[†] Brazing Filler Metal



Flash Point F (C): Not applicable
LEL: Not applicable

Flammable Limits: Not applicable
UEL: Not applicable

Hard Cemented Carbide Products are not a fire hazard. Dusts generated in grinding operations or present in powders or sludge's may ignite if allowed to accumulate and are subjected to an ignition source.

Extinguishing Media: For powder fires, smother with dry sand, dry dolomite, ABC type fire extinguisher, or flood with water.

Unusual Fire and Explosion Hazards: Dusts 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.

Special Fire Fighting Procedures: For a powder fire confined to a small area, use a respirator approved for toxic dusts and fumes. For a large fire involving this material, fire fighters should use a self-contained breathing apparatus.

Section 5**Health Hazard Data**

Note: During normal operation and usage, cemented carbide products do not present inhalations, ingestion, or other chemical hazards of any kind. However, operations such as grinding, cutting, burning, and welding of such products may release dusts, fumes, or vapors which may present health hazards if the exposure limits described in Section 2 are exceeded. The health hazards described below relate to these non-routine operations, as well as exposure to components of powder or sludge.

Usual Route(s) of Entry: Inhalation, Skin Contact, Eye Contact, Ingestion

Grinding of cemented carbide products or handling powders or sludges will produce dust of potentially hazardous ingredients, which can be inhaled, swallowed, or come in contact with the skin or eyes.

Acute Health Effects from Overexposure to Dusts, Fumes and Vapors: Dust from grinding or handling powders or sludge's can cause irritation of the nose, throat, lungs, eyes and mucous membranes. Exposure to fumes or dusts from braze filler metal may cause central nervous system effects, irritation of the eyes, lungs, mucous membranes and metal fume fever (metallic taste in mouth, throat irritation and influenza like symptoms).

Chronic Health Effects from Overexposure to Dusts, Fumes and Vapors: Chronic exposure to dusts and fumes containing Cobalt carry the potential to cause permanent respiratory diseases, including occupational asthma, interstitial pneumonitis and fibrosis (hard-metal disease), and emphysema. Symptoms include productive cough, wheezing, dyspnea upon exertion, pleuritic chest pain, and weight loss. Skin sensitization is also noted in a small percentage of cases. Reports outside the industry suggest that ingestion of significant amounts of cobalt can cause blood, heart, and other organ problems.



Chronic exposure to Cadmium dusts and fumes may cause mild anemia, inflammation of the nose and throat, behavioral disorders (sleeplessness, loss of appetite, etc.), and significant renal peritubular damage. Cadmium has exhibited teratogenic effects in rates, mice, and hamsters; whether it does so in humans is not known.

Chronic exposure to Nickel dusts and fumes may cause pulmonary irritation and pneumonitis or sensitization dermatitis.

Individuals with Wilson's disease may wish to limit occupational exposure to copper dust.

Cadmium dust is listed by IARC and NTP as a Probable Human Carcinogen.

Emergency and First Aid Procedures

Inhalation: If symptoms of pulmonary involvement develop (coughing, wheezing, dyspnea, etc.), remove from exposure and seek medical attention.

Skin Contact: If irritation or rash occurs, thoroughly wash affected area with soap and water and isolate from exposure. If irritation or rash persists, seek medical attention.

Eye Contact: If irritation occurs, flush eyes with water for at least ten minutes. If irritation persists, seek medical attention.

Ingestion: If swallowing of greater than trace amounts is suspected, dilute by drinking large amounts of water. If substantial quantities are ingested, induce vomiting with Ipecac Syrup and seek additional medical attention.

Section 6**Reactivity Data**

Stability: Stable

Hazardous Decomposition Products: None

Conditions to Avoid: Not applicable

Hazardous Polymerization: Will not occur

Materials to Avoid: Strong Acids

Incompatibility: Contact of dust with strong oxidizers may cause fire or explosions.

Section 7**Spill or Leak Procedures**

Steps to be taken in Case Material is Released or Spilled: Ventilate area of the spill. Decontaminate and/or clean up area using methods, which avoid dust generation such as a high efficiency particulate air (HEPA) vacuum, wet dust mop, or wet clean up. If airborne dust is generated, use an appropriate NIOSH approved respirator.

Waste Disposal Method: Dispose of in accordance with appropriate government regulations. May be sold as scrap for reclamation.



NOTE: Cutting tools can break during use. To avoid injury, use safety precautions such as shields, machine guards, and eye protection. Operations such as grinding, cutting, burning, and welding of cemented carbide products may generate dusts, fumes or vapors which may require special handling procedures. The procedures described below relate to these non-routine operations, as well as handling powders and sludge's.

Personal Protection: Always wear safety glasses with side shields when grinding or cutting cemented carbide products. Use a NIOSH approved respirator with high efficiency particulate air (HEPA) cartridge whenever airborne concentrations of hazardous components exceed exposure limits listed in Section 2. Wear protective gloves (leather or rubber) or Barrier Cream, and clothing (cloth or rubber) to prevent skin contact with dusts and fumes.

Ventilation: Use adequate local (preferably) or general exhaust ventilation to ensure that concentrations of dusts, fumes, or vapors do not exceed exposure limits.

Hygienic Practices: Wash hands thoroughly after handling and before eating or smoking. Wash exposed skin at the end of the work shift. Smoking and consumption of food or beverages should be restricted from areas where hazardous components may be present. Do not shake clothing, rags, or other items to remove dust. Dust should be removed by laundering or vacuuming (with appropriate filters) the clothing, rags, or other items.

Section 9

Special Precautions

Precautions to be taken in Handling and Storing: Maintain good housekeeping procedures to prevent dust accumulation during grinding. Avoid dust inhalation and direct skin contact with dust.

Other Precautions: Clean up using methods which avoid dust generation such as a HEPA vacuum, wet dust mop, or wet clean-up. If airborne dust is generated, use an appropriate NIOSH approved respirator.

Periodic medical monitoring is recommended for individuals regularly exposed to dust or fumes, with particular attention paid to any potential sensitization effects of such substances.

Section 10

Regulatory Compliance

Regulation	Cadmium	Cobalt	Copper	Nickel	Silver	Zinc
	RQ-1#		RQ-5000#	RQ-1#	RQ-1000#	RQ-1000#
CERCLA	X		X	X	X	X
SARA Title 3 Sect. 313	X	X	X	X	X	X
RCRA Waste#	D006				D011	
Appendix IX	X	X	X	X	X	X
Banned California List (Land Ban Disposal)	X		X			
CWA 307	X	X	X	X	X	
IARC/NTP Carcinogen	X		X			
MI Critical Material	X	X	X	X	X	X
California Proposition 65	X		X			



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