

**MATERIAL SAFETY
DATA SHEET**

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MSDS9316

Chemical Name: Cemented Tungsten Carbide Product with Cobalt Binder
Trade Name and Synonyms: All Freud Cemented Tungsten Carbide Grades
Chemical Family: Refractory Metal Carbide Molecular Weight: N/A

PHYSICAL DATA SHEET

Appearance and Odor: Dark Gray Metal / No Odor
Boiling Point: N/A Specific Gravity (H2O=1) 11.00 to 15.35
Vapor Pressure (mm Hg): N/A Percent Volatile by Volume: 0
Vapor Density (Air = 1): N/A
Solubility in Water: Insoluble

HAZARDOUS INGREDIENTS

MATERIAL	Percent by WEIGHT		OSHA PEL (Unit)	ACGIH TLV (Unit)
Tungsten Carbide (limits for Tungsten)	85.0-98.0%	*	None Established	
Insoluble Compounds				5 mg/m3
(STEL=10mg/m3)				
Soluble Compounds				1 mg/m3 (STEL=3mg/m3)
Cobalt	2.0-15.0%	*	0.10 mg/m3	0.02 mg/m3
Tantalum Carbide (limits for Tantalum, metal and oxide dust)	0.0-.5%	*	5 mg/m3	5 mg/m3
Niobium Carbide	0.0-5%		None Established	None Established
Titanium Carbide	0.0-2%		None Established	None Established
Vanadium Carbide	0.0-2%			
Respirable dust (as V205)			0.5 mg/m3 (ceiling)	0.02 mg/m3
Fume (as V205)			0.1 mg/m3 (ceiling)	0.02 mg/m3

* Depends on grade specifications

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HEALTH HAZARD DATA

Routes of Exposure:

Exposure to hazardous ingredients may occur if the cemented tungsten carbide product with cobalt binder is subjected to grinding, handling or operations which generate dust, which can be inhaled, swallowed or come in contact with the skin or eyes.

Effects of Exposure:

(Even levels of exposure less than half the TLV or PEL can have the following effects.)

Inhalation Dust from grinding may cause irritation of the nose and throat, and may cause transient or permanent respiratory disease, including occupational asthma and interstitial fibrosis (lung scarring) in a small percentage of exposed individuals. Symptoms include productive cough, wheezing, 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. Productive cough can lead to ingestion through swallowing.

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

Eye Contact Can cause irritation.

Ingestion May produce a sensation of hotness with vomiting, nausea and diarrhea as symptoms. Reports outside the industry suggest that ingestion of significant amounts of cobalt may cause blood, heart thyroid, pancreas and possibly other organ problems.

Carcinogenicity Cobalt has been classified as a suspected carcinogen by IARC. Cobalt has not been classified as a known or suspected carcinogen by OSHA or NTP.

Emergency and First Aid Procedures: Applicable for dust or mists.

Inhalation If symptoms of pulmonary involvement develop (coughing, wheezing, shortness of breath, etc.), remove from exposure and seek medical attention. Inform physician of cobalt exposure.

Skin Contact If irritation or rash occurs, thoroughly wash affected area with soap and water and remove from exposure. If irritation or rash persists, seek medical attention and inform physician of cobalt exposure.

Eye Contact If irritation occurs, flush with copious amounts of water. If irritation persists, seek medical attention and inform physician of cobalt exposure.

Ingestion If substantial quantities are swallowed, dilute with a large amount of water, induce vomiting, seek medical attention and inform physician of cobalt exposure.

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FIRE AND EXPLOSION HAZARD DATA

Flash Point: N/A Test Methods Used: -- Flammable Limits: N/A LEL: --

Dusts generated in grinding operations may ignite if allowed to accumulate, and subjected to an ignition source.

Extinguishing Media:

For powder fires, smother with dry sand, dry dolomite, A.B.C. Type Fire Extinguishers, or flood with water.

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, fire fighters should use self-contained breathing apparatus.

Unusual Fire and Explosion Hazards:

Dust may present a fire 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.

REACTIVITY DATA

Stability:

Unstable	Conditions to Avoid: N/A
Stable X	

Incompatibility: Contact of dust with strong oxidizers may cause fire or explosions.	Materials to Avoid: Strong Acids
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Hazardous Decomposition Products: None

Hazardous Polymerization:	Conditions to Avoid: N/A
May Occur	
May Not Occur X	

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— **SPILL OR LEAK PROCEDURES**

Steps to be taken in case Material is Released or Spilled:

Ventilate area of spill. Clean up using methods which avoid dust generation such as vacuum (with appropriate filter to prevent airborne dust level which exceed PEL or TLV), wet dust mop or wet clean-up. If airborne dust is generated, use an appropriate NIOSH approved respirator.

Water Disposal Method:

Dispose of in accordance with local, state, and federal regulations. May be sold as scrap for reclaim.

— **SPECIAL PROTECTION INFORMATION**

Respiratory Protection:

Workers exposed to dust should use an appropriate NIOSH approved respirator. Respiratory protection shall be provided in accordance with 29CFR1910.134.

Ventilation:

Use local exhaust ventilation which is adequate to limit personal exposure to airborne dust to levels which do not exceed the PEL or TLV.

Protective Equipment:

Protective Gloves or Barrier Cream are recommended when contact with dust or mist is likely. Prior to applying the Barrier Cream or using Protective Gloves, Wash thoroughly. Safety glasses, side shields or goggles are recommended. An eyewash station should be readily accessible to areas of use. Do not wear contact lenses when working with this material. Protective clothing should be changed on a daily basis. Clean laundered work clothes should be worn daily. Showering after work is encouraged prior to changing to street clothes. Soiled protective clothing should be removed during breaks. Do not eat, drink or smoke or carry food or tobacco products in areas where cobalt dust or mist is generated, handled, processed or stored.

Medical examination:

Provide preplacement and periodic medical examinations for those regularly exposed to dust or mist.

— **SPECIAL PRECAUTIONS**

Precautions to be taken in Handling and Storage:

Maintain good housekeeping procedures to prevent dust accumulation during grinding and handling. Avoid dust inhalation and direct skin contact with dust. Store in closed container.

Other Precautions:

Clean up using methods which avoid dust generations such as vacuum (with appropriate filter to prevent airborne dust level which exceed the PEL or TLV), wet dust mop or wet clean-up. If airborne dust is generated, use an appropriate NIOSH approved respirator. Cleaning or changing dust collection equipment and other maintenance and repair work are potentially significant sources of exposure.

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SPECIAL PRECAUTIONS - Cont.

Wash hands thoroughly after handling, before eating and smoking. Wash exposed skin at the end of work shift. Do not shake clothing, rags or other items to remove dust. Dust should be removed by washing or vacuuming (with appropriate filters) the clothing, rags, or other items.

Periodic medical examinations are recommended for individuals regularly exposed to dust or mist.

In case of questions please call"

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Other Regulatory Information:

Superfund Amendments and Reauthorization Act (SARA) of 1986

Section 302 (Extremely Hazardous Substance): Not Applicable
Section 311/312 (Tier I/Tier II): Chronic Health Hazard
Section 313 (Toxic Chemical Release Inventory):

Cobalt

