



**CHINATUNGSTEN**

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## Tungsten Carbide Material Safety Data Sheet

**CHEMICAL NAME:** Cemented Tungsten Carbide with Cobalt/Nickel Binder; Cemented Carbide Products with Cobalt/Nickel Binder

**TRADE NAME & SYNONYMS:** All Federal Carbide Cemented Tungsten Carbide Grades

**CHEMICAL FAMILY:** Refractory Metal Carbide

**MOLECULAR WEIGHT:** Varies with grade composition

### PHYSICAL DATA

**Physical State:** Solid

**pH:** N/A

**Boiling Point:** N/A

**Specific Gravity (H<sub>2</sub>O = 1):** 5.0 – 15.0

**Freezing Point:** N/A

**Odor Threshold:** N/A

**Vapor Pressure:** N/A

**Percent Volatile by Volume:** 0

**Vapor Density:** A

**Evaporation Rate:** N/A

**Water Solubility:**

Insoluble

**Coefficient of Water/Oil Distribution:** Not established

**Appearance:** Dark Gray

Metal

**Odor:** Odorless

N/A – Not applicable

### HAZARDOUS INGREDIENTS

Material	CAS#	% by Weight*	OSHA TWA (mg/m <sup>3</sup> )	ACGIH TWA (mg/m <sup>3</sup> )	OSHA STEL (mg/m <sup>3</sup> )
Tungsten Carbide (limits for tungsten dusts)	12070-12-1	40 – 97	5	5	10
Cobalt	7440-48-4	0 – 30	0.1	0.02	-
Nickel	7440-02-0	0 – 30	1	1	-
Tantalum Carbide (limits for tantalum dusts)	12070-06-3	0 – 50	5	5	-
Chromium Carbide (limits for trivalent chromium dusts)	7440-47-3	0 - 5	1.0	0.5	-

\* Depends on grade specification.

TWA – Time Weighted Average (an employee's average airborne exposure in any 8 hour shift of a 40

hour work week).

STEL – Short Term Exposure level (an employee's 15 minute time weighted average exposure at any time during a work day).

This product contains substances that are subject to the reporting requirements of Section 313 of the Title III of the Superfund Amendments and Realization Act of 1986 and 40 CFR Part 372.

During normal usage cemented carbide products do not present inhalation, ingestion, or other chemical hazards of any kind. Wet or dry grinding of these products may release dusts of potentially hazardous ingredients that can be inhaled, swallowed, or come in contact with skin or eyes. During wet grinding, the dust can be suspended or dissolved in the coolant mist.

## HEALTH HAZARD DATA

### Routes of Exposure:

- Skin Contact.
- N/A Skin Absorption.
- Eye Contact.
- Acute Inhalation.
- Chronic Inhalation.
- Ingestion.

### Effects of Exposure:

- Carcinogenicity.
- Nickel - IARC 2B, NTP 2.
- Cobalt – IARC 2B.
- N/A Reproductive Toxicity.
- N/A Teratogenicity.
- N/A Mutagenicity.
- N/A Synergistic Materials.

**Inhalation** – Dusts or mists can cause irritation of the nose and throat. Inhalation can result in an allergic reaction in individuals previously sensitized causing difficult breathing. Dusts or mists also have the potential for causing transient or permanent respiratory disease, including occupational asthma and interstitial fibrosis in a small percentage of exposed individuals. Symptoms include productive cough, wheezing, shortness of breath, chest tightness and weight loss. Nickel is suspected of causing nasal and lung cancer. Symptoms include pain, bleeding, nasal obstruction, vision impairment, weight loss and voice resonance change.

**Skin Contact** – Can cause irritation or an allergic skin rash due to chromium, cobalt or nickel sensitization in people susceptible to allergic reactions.

**Eye Contact** – Can cause irritation or conjunctivitis.

**Ingestion** – Ingestion of large amounts of cobalt over a period of time has the potential for causing blood, heart and other organ problems. Current scientific information indicates no adverse effects are likely from ingestion of small amounts of nickel dust generated from these products.

**Carcinogenicity:**

The National Toxicology Program (NTP) found there was sufficient evidence of carcinogenicity of nickel in experimental animals and limited evidence of the carcinogenicity of nickel in humans. The International Agency for Research on Cancer (IARC) found there was inadequate evidence that metallic cobalt and metallic nickel are carcinogenic to humans, but since there was sufficient evidence that they are carcinogenic to animals, IARC concluded that metallic cobalt and metallic nickel are possibly carcinogenic to humans. IARC and NTP found there was inadequate data for the carcinogenicity of chromium and trivalent chromium compounds. Cobalt has not been classified as a known or suspected carcinogen by NTP or OSHA. Nickel and chromium have not been classified as a known or suspected carcinogen by OSHA.

**Conditions Aggravated by Exposure:**

Lung and other pulmonary and skin conditions may be aggravated by exposure.

**Emergency and First Aid Procedures:**

**Inhalation** – If symptoms of pulmonary involvement develop (coughing, wheezing, shortness of breath, 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 with large amounts of water. If irritation persists, seek medical attention.

**Ingestion** – If substantial quantities are swallowed, dilute with a large amount of water, induce vomiting and seek medical attention.

## **FIRE AND EXPLOSION HAZARD DATA**

**Flash Point:** N/A.

**Lower Explosive Limit:** N/A.

**Upper Explosive Limit:** N/A.

**Test Method Used to Determine Flash Point:** N/A

**Autoignition Temperature:** N/A. Hard cemented carbide product is not a fire hazard. Dusts generated in grinding operations may ignite if allowed to accumulate and are subjected to an ignition source.

**Flammable Limits:** N/A

**Extinguishing Media:** For powder fires, smother with dry sand, dry dolomite, ABC type fire extinguisher 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:** Dusts may present a fire or explosion hazard when exposed to a high temperature or ignition sources. However, this is not expected to be a problem under normal handling conditions.

**Hazardous Combustion Products:** May generate toxic fumes when heated.

## REACTIVITY DATA

**Stability:** These products are stable.

**Hazardous Polymerization:** Will not occur.

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

**Materials to Avoid:** Strong acids and oxidizers.

**Hazardous Decomposition Products:** Thermal decomposition may release tungsten carbide, cobalt and nickel metallic oxides.

## SPILL OR LEAK PROCEDURES

**Steps to be taken in case material is released or spilled:** Ventilate area of spill. Clean up using methods that avoid dust generation such as vacuum (with appropriate filter to prevent airborne dust levels that exceed the limits described above), wet dust mop or wet clean-up. If airborne dust is generated, use an appropriate NIOSH approved respirator.

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

## SPECIAL PROTECTION INFORMATION

**Respiratory Protection:** Use an appropriate NIOSH approved respirator if airborne dust concentrations exceed the exposure limits described above. All appropriate requirements set forth in 29 CFR 1910.134 should be met.

**Ventilation:** Use local exhaust ventilation that is adequate to limit personnel exposure to airborne dust levels that do not exceed the exposure limits described above. If such equipment is unavailable, use an appropriate NIOSH approved respirator.

**Protective Gloves:** Protective gloves or barrier cream are recommended when contact with dust is likely. Prior to applying the barrier cream or use of protective gloves, wash thoroughly.

**Eye Protection:** Safety glasses with side shields or goggles are recommended.

**Other Protective Equipment:** Full body protective clothing is advisable if contact with dusts, mists, or fume is expected. Work clothing should be changed daily if contamination of the clothing is suspected.

## SPECIAL PRECAUTIONS

**Precautions to be Taken in Handling and Storage:** Practice good housekeeping procedures to prevent the accumulation of dusts and mists during grinding. The generation of dusts and mists may present a health hazard if exposure limits, as described above, are exceeded. Avoid inhalation and direct skin contact with dusts and mists.

**Other precautions:** Clean up using methods which avoid dust generation such as vacuum (with appropriate filter to prevent airborne dust levels which exceed the exposure limits described above). If airborne dust is generated, use an appropriate NIOSH approved respirator. Wash hands thoroughly after handling, before eating or smoking. Wash exposed skin and remove soiled clothing at the end of the 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 dusts or mists.