



# MATERIAL SAFETY DATA SHEET



MSDS # 002

Revision: 11/20

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Supersedes: All previous

## SECTION I - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name: C4, CM1, and CG5

Family Name: Refractory Metal Carbide

Chemical Name: Tungsten Carbide with Cobalt binder

Synonyms: Hard Metal, Cemented WC, and Tungsten Carbide.

Molecular formula: Mixture

Product Use: Metal working Tools, Metallurgical Products, and Inserts.

Manufacturer: Circle Machine company 8782 Lanyard CT, Rancho Cucamonga, Ca 91730  
phone # (909) 919-7287

**EMERGENCY TELEPHONE NUMBER: CHEM.-TEL INC. 1-800-255-3924**

## SECTION II - COMPOSITION/INFORMATION ON INGREDIENTS

MATERIAL	CAS #	% BY WEIGHT	OSHA PEL TWA	ACGIH TLV TWA	NFPA HAZARD RATING SCALE		
					0-4		
			(Mg/m <sup>3</sup> )	(Mg/m <sup>3</sup> )	Health	Fire	Reactivity
**Tungsten Carbide	12070-12-1	70-98	15	10	1	0	0
*Cobalt	7440-48-4	2.0-3.0	0.1	0.02	2	3	0

\*Identifies substances that are subject to the requirements of Section 313 of Title III of Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372.

\*\*This substance is regulated by OSHA as a Particulate Not Otherwise Regulated (PNOR). The exposure limits listed for both OSHA and ACGIH refer to total dust; the OSHA PEL for the respirable fraction is 5 mg/m<sup>3</sup>.

## SECTION III - HAZARDS IDENTIFICATION

In the form of a powder, this odorless, colorless, gray material may be flammable and may cause respiratory and/or skin irritation. Overexposure to this material in the form of metallurgical powder, dust or mist from grinding or sweeping is hazardous to health. Cobalt is an eye, skin, and mucous membrane irritant and may cause temporary or permanent respiratory disease. Permanent respiratory disease can lead to disability or death. Pre-existing pulmonary and skin conditions such as emphysema, asthma, bronchitis and dermatitis may be aggravated by exposure to this material.

**[Note: Health effects listed are for exposure to metallurgical powders, dust, or mist from grinding. No health effects have been reported for exposure to this material in solid form.]**

**Inhalation:** Irritant/Sensitizer: 20 mg (Co)/m<sup>3</sup> is immediately dangerous to life and health.

Acute Overexposure: May cause respiratory tract irritation with wheezing, shortness of breath, and fits of coughing that may produce blood and soreness in the chest. May also cause weight loss, bronchitis, asthma, and inflammation of or damage to lung tissue.

Chronic Overexposure: May cause build-up of dust in the lungs, allergic respiratory reaction, obstructed airways, and lung disease, with symptoms as described in acute exposure. Previously exposed individuals may be at increased risk.

**Skin Contact:** Irritant/Sensitizer: In the form of metallurgical powder, dust, or mist from grinding.

Acute Overexposure: May cause irritation with inflammation, rash and itching. May also cause allergic skin reaction if previously exposed. A rash may develop, usually in the flexor areas of the elbow, neck and face.

Chronic Overexposure: May cause inflammation and/or rash (irritant or allergic contact dermatitis).

**Eye Contact:** Irritant.

Acute Overexposure: May cause irritation with redness, pain and itching.

Chronic Overexposure: May cause conjunctivitis.

**Ingestion:** Irritant: In the form of metallurgical powder, dust, or mist from grinding.

Acute Overexposure: May cause abnormally low blood pressure and gastrointestinal irritation with pain, vomiting, and sensations of hotness or nausea. Large doses may cause diarrhea. Severe over exposure may cause heart damage, convulsions, or enlargement of the thyroid.

Chronic Overexposure: May adversely affect the pancreas, thyroid gland, heart, or bone marrow.

#### ***SECTION IV - FIRST AID MEASURES***

Inhalation: **If symptoms of pulmonary involvement develop (coughing, wheezing, shortness of breath), remove from exposure area to fresh air immediately. If breathing has stopped, perform artificial respiration. Keep affected person warm and at rest, get medical attention immediately.**

Skin Contact: If irritation or rash occurs, remove contaminated clothing and shoes immediately. Wash affected area with soap or mild detergent and large amounts of water until no evidence of material remains (approximately 15-20 minutes). Get medical attention.

Eye Contact: If irritation occurs, wash eyes immediately with large amounts of water, occasionally lifting upper and lower lids, until no evidence of material remains (approximately 15-20 minutes). Get medical attention immediately.

Ingestion: If this material has been swallowed and person is conscious, immediately give person large amounts of water. Do not attempt to make an unconscious person drink or vomit. Get medical attention immediately. Induce vomiting only if specifically instructed by a physician.

#### ***SECTION -V - FIRE FIGHTING MEASURES***

Fire and Explosion Hazards: Under rare favoring conditions, finely divided powder or dust from grinding is expected to be a fire and explosion hazard when exposed to high

**MSDS # 002**

temperatures or ignition sources. Particle size and dispersion in air determine reactivity. This product, except as powder or dust, is NOT a fire hazard.

Flash Point: Not applicable

Fire-fighting Media: For localized powder fires smother with dry sand, dry dolomite, sodium chloride or soda ash. Use fire-extinguishing media appropriate to fight surrounding fire.

Special Fire-fighting Procedures: Move container from fire area if possible. Cool containers exposed to flame with water from side until well after fire is out. For massive fire in cargo area, use unmanned hose holder or monitor nozzles, or withdraws and let fire burn. Use powdered sodium chloride, or suitable dry powder. Avoid breathing fumes from burning material. Fire-fighting personnel must use proper respiratory protection and protective fire suits.

<b><i>SECTION -VI - ACCIDENTAL RELEASE MEASURES</i></b>
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Steps to be taken if Material is Released or Spilled: Sweep up with minimum amount of dust generation and place in suitable clean, dry containers for later disposal or reclamation. Residue should be cleaned up using a high efficiency particulate filter vacuum or wet clean up. Use appropriate personal protective equipment including respiratory protection.

<b><i>SECTION -VII- HANDLING AND STORAGE</i></b>
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Handling and Storage: Minimize free fall of powder and avoid dispersion of dust in air. Finely divided particles, dust, or fumes may be flammable or explosive. Keep away from sparks or ignition sources. Contents should be stored in a clean, cool area.

Other Precautions: Wash hands thoroughly after handling, before eating or smoking. Do not shake clothing, rags or other items to remove dust. Washing or vacuuming should remove dust. Periodic examinations are recommended for individuals regularly exposed to dust or mist.

<b><i>SECTION -VIII - EXPOSURE CONTROLS/PERSONAL PROTECTION</i></b>
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Ventilation: Provide local exhaust ventilation or general dilution to maintain exposure levels below the PEL and TLV.

Respiratory Protection:

0.05 mg (Co)/m<sup>3</sup> - Single-use approved dust and mist respirator.

0.5 mg (Co)/m<sup>3</sup> - Dust mask, except single-use respirator.

1 mg (Co)/m<sup>3</sup> - Dust mask, except single-use and quarter-mask respirator. Fume or high efficiency particulate respirator.

5 mg (Co)/m<sup>3</sup> - High efficiency particulate respirator with a full face-piece. Supplied-air respirator with a full face-piece, helmet or hood. Self-contained breathing apparatus with full face-piece.

20 mg (Co)/m<sup>3</sup> - Powered air-purifying respirator with a high efficiency filter with a full face-piece. Type "C" supplied-air respirator with a full face-piece operated in pressure-demand or other positive-pressure mode.

Fire fighting: Self-contained breathing apparatus with a full face-piece operated in pressure-demand or other positive-pressure mode. Clothing: Employee must wear

## MSDS # 002

appropriate protective clothing and equipment to prevent repeated or prolonged skin contact with this substance. Soiled clothing should be laundered separately.

Gloves: Employee must wear appropriate protective gloves or barrier creams to prevent contact with this substance.

Eye Protection: Safety glasses with side shields or goggles are recommended. Where there is any possibility that an employee's eyes may be exposed to this substance, the employer should provide an eye wash fountain within the immediate work area for emergency use. Contact lenses should not be worn when handling these materials.

### ***SECTION - IX - PHYSICAL AND CHEMICAL PROPERTIES***

**Appearance and Odor:** Gray powder or solid

**Boiling Point:** 2870°C (5198°F)

**Solubility in Water:** Practically insoluble

**Melting Point:** 1495°C (2723°F)

**Petroleum Based Solvent Solubility:** Practically insoluble  
**Specific Gravity:** (H<sub>2</sub>O = 1): 12 to 15.5

### ***SECTION -X - STABILITY AND REACTIVITY***

Stability: Stable under normal temperatures and pressure.

Decomposition: Thermal decomposition may release acrid smoke and irritating fumes.

Incompatibilities:

**Tungsten Carbide:** Chlorine Trifluoride: Reacts with a flame.

Fluorine: Incandescens.

Nitrogen Dioxide, Nitrous Oxide: Burns with incandescence if heated to dull red.

Iodine Pentafluoride, Lead Oxide: Reacts violently.

**Cobalt:** Ammonium Nitrate + Metals or Bromine Pentafluoride: Reacts violently and sometimes explosively.

Hydrazinium Nitrate: Decomposes explosively upon rapid heating.

Nitryl Fluoride, Acetylene: Reacts incandescently.

### ***SECTION -XI - TOXICOLOGICAL INFORMATION***

**Cobalt Carcinogenic status:** The International Agency for Research on Cancer (IARC) lists Cobalt and Cobalt compounds as Category 2B carcinogens (Possibly Carcinogenic to Humans). Cobalt fumes or dust may cause pulmonary, skin, or eye irritation. Cobalt may be a sensitizing agent for skin and respiratory system. Chronic exposure may affect the heart, pancreas, thyroid gland, or bone marrow.

Rat Oral LD<sub>Lo</sub>: 1500 mg/kg.

Rabbit Oral LD<sub>Lo</sub>: 20 mg/kg

Rat Intraperitoneal LD<sub>Lo</sub>: 250 mg/kg

Rabbit Intratracheal LD<sub>Lo</sub>: 100 mg/kg

Rat Intravenous LD<sub>Lo</sub>: 100 mg/kg

### ***SECTION -XII - DISPOSAL CONSIDERATIONS***

Waste Disposal Method: This material may be sold as a scrap for reclamation.

Alternatively, could be sent to an appropriate reclamation facility if available. If material

**MSDS # 002**

cannot be sent to a reclamation facility, disposal should be made in compliance with federal, provincial/state, and local environmental regulations.

<b><i>SECTION -XIII - REGULATORY INFORMATION</i></b>
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Ingredients/Products such as Cobalt Compounds are subject to the requirements of Section 313 of Title III of Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372.

<b><i>SECTION -XIV - OTHER INFORMATION</i></b>
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Although Circle Machine Company has attempted to provide current and accurate information herein, Circle Machine Company makes no representations regarding the accuracy or completeness of the information and assumes no liability for any loss, damage, injury of any kind which may result from or arise out of the use of or reliance on the information by any person.

To purchase Circle Machine Company products call (909) 919-7287.

For additional MSDSs or any other information, contact Circle Machine EHS Coordinator, phone (909) 919-7287 or Fax request: (909) 919-7270