

# SINTERED TUNGSTEN CARBIDE WITH COBALT and/or NICKEL BINDER

## WARNING

GRINDING SINTERED TUNGSTEN CARBIDE PRODUCTS WILL PRODUCE DUSTS OF POTENTIALLY HAZARDOUS INGREDIENTS, WHICH CAN BE SWALLOWED, INHALED, OR COME INTO CONTACT WITH THE SKIN OR EYES.

If overexposure to grinding dusts and mists occurs, have MSDS and label information available and contact a Poison Control Center or seek medical attention immediately.

### FIRST AID:

- Eye Contact: Flush eyes immediately with large amounts of water, occasionally lifting upper and lower lids, until no evidence of chemical remains (at least 15 to 20 minutes). If irritation persists, 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.
- Inhalation: If symptoms of pulmonary involvement develop, (coughing, wheezing, shortness of breath) remove from exposure and seek medical attention.
- Ingestion: If substantial quantities are swallowed, dilute with a large amount of water, induce vomiting and seek medical attention.

### FIRE INSTRUCTIONS:

- Hard cemented carbides are not a fire hazard, however dusts and mists generated in grinding operations may present a fire or explosion hazard when exposed to high temperature or ignition sources. Particle size and dispersion in air determine reactivity. However, this is not expected to be a problem under normal handling conditions.

### STORAGE:

- Contents should be stored in a clean, cool area. Keep away from sparks and ignition sources.

This product contains the following hazardous components:

- CAS 12070-12-1 Tungsten Carbide
- CAS 7440-48-4 Cobalt
- CAS 7440-02-0 Nickel
- CAS 12070-06-3 Tantalum Carbide
- CAS 12012-35-0 Chromium Carbide

For additional information, read the Vista Metals, Inc. Material Safety Data Sheet



<p><b>EMERGENCY PHONE:</b> (01)(800) 245-1387 [USA] (Mon. - Fri. 8:00AM - 5:00PM EST)</p>
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# Material Safety Data Sheet

## Sintered Tungsten Carbide with Cobalt and/or Nickel Binder

### Section 1: Product and Company Identification

**Product Name:** Sintered Tungsten Carbide with Cobalt and/or Nickel Binder    **Manufacturer:** Vista Metals, Inc.  
 1024 East Smithfield Street  
 McKeesport, PA 15135-0094  
**Synonyms:** Cemented Tungsten Carbide with Cobalt and/or Nickel Binder    [www.vistametalsinc.com](http://www.vistametalsinc.com)

**Emergency Phone:** (01)(800)-245-1387 (USA)  
 (Monday-Friday 8:00 am – 5:00 pm EDT)

**Chemical Family:** Refractory Metal Carbide

### Section 2: Hazards Identification

- 2.1 Emergency Overview:** Sintered Tungsten Carbide with Cobalt and/or Nickel Binder is a dark gray metal with no odor. During normal operation and usage, cemented carbide products do not present inhalation or ingestion hazards. However, grinding cemented carbide products will produce dusts of potentially hazardous ingredients which can be ingested, inhaled, or come into contact with the skin and eyes.
- 2.2 OSHA Regulatory Status:**  
 Dusts and mists generated during grinding of this material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).
- 2.3 Potential Health Effects:**  
**Eye Contact:** May cause eye irritation  
**Skin Contact:** May cause skin irritation or allergic skin rash  
**Inhalation:** May cause irritation of the upper respiratory system  
**Ingestion:** May cause systemic effects  
**Chronic Effects:** Carbon black, metallic cobalt, and metallic nickel are listed as IARC Group 2B (possibly carcinogenic to humans). Metallic chromium is listed as an IARC Group 3 (not classifiable).
- 2.4 Potential Environmental Effects:** No data available at this time.

### Section 3: Composition/Information on Ingredients

Chemical Name	Weight Percent <sup>1</sup>	CAS Number
Tungsten Carbide (limit for insoluble tungsten)	70-97%	12070-12-1
Cobalt (cobalt binder grades only)	3-30%	7440-48-4
Nickel (nickel binder grades only)	6-15%	7440-02-0
Tantalum Carbide (limits for tantalum dust)	0-3%	12070-06-3
Niobium (grades with tantalum carbide)	0.2-2.2%	7440-03-1
Carbon (limit for carbon black)	4-6%	1333-86-4
Chromium Carbide (VM-S101, S102, S103)	0.75-1.25%	12012-35-0
Molybdenum (VM-Z101, Z02)	0.00-0.20%	7439-98-7

<sup>1</sup> Depends on grade specifications.

### Section 4: First Aid Measures

If overexposure to dusts and mists from grinding occurs, have MSDS and label information available and contact a poison control center or seek medical attention immediately.

**4.1 First Aid Procedures:**

- Eye Contact:** Flush eyes immediately with large amounts of water, occasionally lifting upper and lower lids, until no evidence of chemical remains (at least 15 to 20 minutes). If irritation persists, seek medical attention.
- Skin Contact:** If irritation or rash occurs, thoroughly wash affected area with soap and water and isolate from exposure.
- Inhalation:** If symptoms of pulmonary involvement develop (i.e. coughing, wheezing, shortness of breath), remove from exposure and seek medical attention.
- Ingestion:** If substantial quantities are swallowed, dilute with a large amount of water, induce vomiting, and seek medical attention.

**4.2 Note to Physicians:**

- Medical Conditions aggravated by long term exposure include chronic pulmonary, upper respiratory tract, and skin disorders.
- Target Organs:** Respiratory system, skin, bladder, kidneys, and eyes.
- Primary Routes of Entry:** Skin contact, eye contact, inhalation, ingestion.

## Material Safety Data Sheet

### Sintered Tungsten Carbide with Cobalt and/or Nickel Binder

#### Section 5: Fire Fighting Measures

##### 5.1 Flammable Properties:

Hard cemented carbides are not a fire hazard, however dusts and mists generated in grinding operations may present a fire or explosion hazard when exposed to high temperatures or ignition sources. Particle size and dispersion in air determine reactivity. However, this is not expected to be a problem under normal handling conditions.

Flash Point: None  
 Auto-Ignition: Not applicable  
 Lower Flammable Limit (LFL): Not applicable  
 Upper Flammable Limit (UFL): Not applicable

##### 5.2 Extinguishing Media:

###### 5.2.1 Suitable Extinguishing Media:

- Remove oxygen by sealing container or by smothering with dry sand, dry dolomite, or powdered sodium chloride; use an ABC type fire extinguisher or flood with water.
- Move container from fire area if possible.
- For massive fire in cargo area, use unmanned hose holder or monitor nozzles, or else withdraw and let fire burn out.

###### 5.2.2 Unsuitable Extinguishing Media:

- Not applicable

##### 5.3 Protection of Firefighters

###### 5.3.1 Specific Hazards Arising from Chemicals

- May generate toxic metal fumes when heated.

###### 5.3.2 Protective Equipment and Precautions for Firefighters

- For a fire contained to a small area, use a respirator approved for toxic dust and fumes. For a large fire, firefighters should use self-contained breathing apparatus.

#### Section 6: Accidental Release Measures

##### 6.1 Personal Precautions:

- If airborne dust is present, use personal protection recommended in Section 8.

##### 6.2 Environmental Precautions:

- Material is not hazardous to the environment.

##### 6.3 Methods for Containment:

- Not Applicable

##### 6.4 Methods for Clean-Up

- Clean up using methods that avoid dust generation such as a vacuum with HEPA filter, wet mop, or wipe.
- Place in suitable clean, dry container for later disposal or reclamation.

##### 6.5 Other Information

- Not Applicable

#### Section 7: Handling and Storage

##### 7.1 Handling

- Avoid dispersion of grinding dust and mist into the air.
- Do not breathe dust.
- Avoid contact with skin, eyes, or clothing.
- Wash hands thoroughly after handling, before eating or smoking. Do not shake clothing, rags, or other items to remove dust. Dust should be removed by washing or vacuuming.

##### 7.2 Storage

- Material should be stored in a clean, cool area. Keep away from sparks and ignition sources.

#### Section 8: Handling and Storage

##### 8.1 Exposure Guidelines

Chemical Name	OSHA PEL <sup>1</sup>	ACGIH TLV <sup>2</sup>
Tungsten Carbide (limit for insoluble tungsten)	None Established	5 mg/m <sup>3</sup>
Cobalt (cobalt binder grades only)	0.1 mg/m <sup>3</sup> (dust and fume)	0.02 mg/m <sup>3</sup>
Nickel (nickel binder grades only)	1 mg/m <sup>3</sup>	1.5 mg/m <sup>3</sup> (inhalable)
Tantalum Carbide (limits for tantalum dust)	5 mg/m <sup>3</sup>	5 mg/m <sup>3</sup>
Niobium (grades with tantalum carbide)	None Established	None Established
Carbon (limit for carbon black)	3.5 mg/m <sup>3</sup>	3.5 mg/m <sup>3</sup>
Chromium Carbide (VM-S101, S102, S103)	1 mg/m <sup>3</sup>	0.5 mg/m <sup>3</sup>
Molybdenum (VM-Z101, Z02)	15 mg/m <sup>3</sup> (vacated)	10 mg/m <sup>3</sup> (inhalable) 3 mg/m <sup>3</sup> (respirable fraction)

<sup>1</sup> The OSHA PEL is the employee's time-weighted average exposure in any 8 hour workshift of a 40 hour week which may not be exceeded.

<sup>2</sup> The ACGIH TLV is the time-weighted average concentration for an 8 hour workday in a 40 hour week to which nearly all workers may be repeatedly exposed with adverse effect.

# Material Safety Data Sheet

## Sintered Tungsten Carbide with Cobalt and/or Nickel Binder

### 8.2 Engineering Controls

Use local exhaust ventilation that is adequate to limit personal exposure to airborne dust to levels that do not exceed the PEL or TLV. If such equipment is not available, use respirators as specified in 8.3.3.

### 8.3 Personal Protective Equipment

#### 8.3.1 Eye/Face Protection

- Safety glasses with side shields are recommended.

#### 8.3.2 Skin Protection

- Protective gloves are recommended when contact with dust or mist is likely. Prior to donning gloves, wash hands thoroughly.

#### 8.3.3 Respiratory Protection

- Use an appropriate NIOSH approved respirator when airborne dust concentrations exceed the appropriate PEL or TLV. All applicable requirements set forth in 29 CFR 1910.134 should be met.

#### 8.3.4 General Hygiene Considerations

- Avoid breathing dust.
- Avoid contact with skin, eyes, and clothing.
- Wash hands thoroughly after handling and before eating or smoking.

## Section 9: Physical and Chemical Properties

Appearance and Odor:	Dark gray metal/no odor	Solubility in Water:	Insoluble
Physical State:	Solid	Freezing/Melting Point:	Not available
Boiling Point:	Not applicable	pH:	Not applicable
Specific Gravity:	11.0-15.5	Molecular Weight:	Not determined
Vapor Pressure:	Not applicable	Vapor Density:	Not applicable
Evaporation Rate:	Not applicable		

## Section 10: Stability and Reactivity

### 10.1 Chemical Stability:

- Stable under normal conditions of temperature and pressure.

### 10.2 Conditions to Avoid:

- Not applicable

### 10.3 Incompatible Materials

- Acids, strong oxidizers
- Fluorine gas (material ignites on contact with fluorine gas)

### 10.4 Hazardous Decomposition Products

- Not applicable

### 10.5 Possibility of Hazardous Reactions:

- Will not occur under normal conditions

## Section 11: Toxicological Information

**Eye Contact:** Can cause irritation or conjunctivitis

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

**Inhalation:**

**Cobalt:** 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 or pulmonary diseases, including occupational asthma, pulmonary fibrosis, and interstitial pneumonitis in some individuals. It is reported that cobalt dust is the most probable cause of such respiratory diseases. Reports have also indicated a lack of correlation between onset of symptoms, length of exposure, and the development of interstitial pneumonitis. Symptoms may include a productive cough, wheezing, shortness of breath, chest tightness, dyspnea, and retrosternal pain.

**Nickel:** Acute toxicity from nickel inhalation can cause headache, sore throat, and hoarseness. Nickel is also suspected of causing nasal and lung cancer. Symptoms may include pain, bleeding, nasal obstruction, vision impairment, weight loss, and voice resonance change.

**Ingestion:** Ingestion of significant amounts of cobalt has the potential of 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 this product. The LD<sub>50</sub> for cobalt is 6,171 mg/kg (oral, rat). The LD<sub>50</sub> for nickel is 5 g/kg (oral, rat).

**Conditions Aggravated by Exposure:**

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

**Carcinogenicity** Metallic cobalt, metallic nickel, and carbon black are listed as an IARC Group 2B (possibly carcinogenic to humans). Metallic nickel is also listed under NTP as reasonably expected to be a carcinogen. Metallic chromium is listed as an IARC Group 3 (not classifiable).

## Section 12: Ecological Information

No data available.

**Material Safety Data Sheet**  
**Sintered Tungsten Carbide with Cobalt and/or Nickel Binder**

**Section 13: Disposal Considerations**

May be sold as scrap or reclaim.

Ensure disposal in compliance with all applicable federal, state, local, and provincial regulations. Contact the manufacturer for additional information.

**Section 14: Transport Information**

**14.1 Basic Shipping Information**

- U.S. Department of Transportation (49 CFR 171 to 180)
  - Hazardous Classification: Not applicable
  - Proper Shipping Name: Not applicable
  - Packing Group: None

**14.2 Additional Information**

- Labeling Requirement: Not applicable

**Section 15: Regulatory Information**

OSHA 29 CFR 1910.1200:	Covered under the OSHA "Hazard Communication" standard.
Toxic Substances Control Act:	All components are on the TSCA inventory.
CERCLA 40 CFR 302:	Reportable Quantity is one hundred pounds for nickel. There is no reportable quantity for cobalt.
SARA Title III:	Hazard categories are Chronic.

**Section 16: Other Information**

CERCLA Ratings (Scale 0-3):      Health 0      Fire 0      Reactivity 0      Persistence 0

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Any comments or questions should be directed to:

**Mr. Jim Harchelroad, Safety Director**  
**Vista Metals, Inc.**  
**1024 East Smithfield Street**  
**McKeesport, PA 15135**  
**(01) (800) 245-1387 [USA]**

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 **CARBIDIE**1576 Arona Road  
Irwin, PA 15642-4565  
USA  
Telephone: 724-864-5900  
Toll Free Phone: 800-227-2434  
Fax: 724-864-2443  
[www.kennametal.com](http://www.kennametal.com)**WARNING**

This information must be transmitted to all persons who may come into contact with dust generated from the enclosed product.

**CEMENTED CARBIDE PRODUCTS WITH COBALT BINDER**

All Carbidie carbide grades except CD-6N, CD-10N, CD-12N

The above grades contain Tungsten Carbide and Cobalt, with some grades containing Tantalum Carbide.

**READ MATERIAL SAFETY DATA SHEET FOR APPLICABLE CARBIDE GRADE BEFORE GRINDING PRODUCT.**

**WARNING:** GRINDING OF THIS PRODUCT WILL PRODUCE DUST OF POTENTIALLY HAZARDOUS INGREDIENTS.

Dust from grinding this product can cause nose, throat, skin and eye irritation and temporary or permanent respiratory disease in a small percentage of exposed individuals. Permanent respiratory disease can lead to disability or death. Coolant mist from wet grinding may contain dust.

- Avoid breathing dust or mist.
- Avoid prolonged skin contact with dust or mist.
- Use adequate ventilation when grinding.
- Maintain dust level below OSHA and ACGIH levels
- Use protective devices.
- Wash hands thoroughly after handling, before eating or smoking.
- Dispose of material according to local, state and/or federal regulations.