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

Synonyms: Cemented Tungsten Carbide with Cobalt and/or Nickel Binder

Chemical Family: Refractory Metal Carbide

Manufacturer: Vista Metals, Inc.
1024 East Smithfield Street
McKeesport, PA 15135-0094
www.vistametalsinc.com

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

Section 2: Hazards Identification

2.1 Symbol:

Signal Word: Warning

Hazard Statement: May be harmful in contact with eyes or skin, if inhaled, or swallowed.

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 [1]	CAS Number
Tungsten Carbide (limit for insoluble tungsten)	70-97%	12070-12-1
Cobalt (cobalt and special binder grades only)	3-30%	7440-48-4
Nickel (nickel and special binder grades only)	6-15%	7440-02-0
Tantalum Carbide (limits for tantalum dust)	0-3%	7440-25-7
Niobium Carbide (grades with tantalum carbide)	0.2-2.2%	12069-94-2
Carbon (limit for carbon black)	4-6%	1333-86-4
Chromium Carbide	0.75-1.25%	7440-47-3
Titanium Carbide (limits for titanium dust)	0-10%	13463-67-7
Molybdenum	0.00-0.20%	7439-98-7

[1] Depends on grade specifications.

Section 4: First Aid Measures

If overexposure to dusts and mists from grinding occurs, have SDS 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.

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[1]	ACGIH TLV[2]
Tungsten Carbide with Cobalt Binder	0.1 mg/m^3 (use Co if >2% Co)	0.02 mg/m^3 (use Co if >2% Co)
Tungsten Carbide with Nickel Binder	1 mg/m^3 (use Ni)	1.5 mg/m^3 (use Ni)
Cobalt	0.1 mg/m^3 (dust and fume)	0.02 mg/m^3
Nickel	1 mg/m^3	1.5 mg/m^3 (inhalable)
Tantalum Carbide (limits for tantalum dust)	5 mg/m^3	Withdrawn
Niobium Carbide (grades with tantalum carbide)	Not established	Not established
Carbon (limit for carbon black)	3.5 mg/m^3	3.0 mg/m^3
Chromium Carbide	1 mg/m^3	0.5 mg/m^3
Titanium Carbide (limits for titanium dust)	15 mg/m^3	10 mg/m^3
Molybdenum	15 mg/m^3 (vacated)	10 mg/m^3 (inhalable) 3 mg/m^3 (respirable fraction)

[1] 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.
[2]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.

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 results 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 pmeumonitis. 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_{50} for cobalt is 6,171 mg/kg (oral, rat). The LD_{50} 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.

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:

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