



# Cemented Carbide – Article (Sintered WC + Co)

## Safety Data Sheet

Revision Date: 23-JUN-2020

Supersedes: 27-May-2015

Version: 2.1

### SECTION 1: IDENTIFICATION

#### *Product Identifier / Other Means of Identification*

##### **Product Name / Identifier**

All H.B. Carbide cemented tungsten carbide grades.

*Common grade designations:* HB-2, HB-3, HB-110, HB-115, HB-119, HB-212, HB-312, HB-315, HB-320, HB-325, HB-406, HB-410, HB-411, HB-512, HB-710.

##### **Chemical Name(s)**

Tungsten Carbide (WC), Vanadium Carbide (VC) and/or Chromium Carbide (Cr<sub>3</sub>C<sub>2</sub>) with a Cobalt (Co) binder.

##### **Synonyms**

Carbide, Tungsten Carbide, Hard Metal, Cemented Carbide, Cermet, Carbide Pre-forms.

#### *Recommended Product Use / Restrictions on Use*

##### **Product Use**

Mining Tools, Construction Tools, Round Tools, Metalworking Tools, Metallurgical Products and Inserts.

##### **Restrictions for Product Use**

Cutting, sharpening or grinding of hard-metal tools may produce dusts of hazardous substances. These may be inhaled, ingested or come into contact with the skin if proper exposure controls (ventilation, dust/mist collection, personal protection equipment) are not used.

Return hard-metal tools to the appropriate locations for reconditioning or recycling.

#### *Supplier Details / Emergency Phone Number*

##### **Company**

<b>H.B Carbide Company</b>	<b>Telephone: 989-370-6133</b>
<b>4210 Doyle Drive</b>	<b>Fax: 989-786-4494</b>
<b>Lewiston, MI 49756</b>	

##### **Emergency Telephone Number(s)**

CHEMTREC (North America): 1-800-424-9300  
CHEMTREC (International): +1-703-527-3887

### SECTION 2: HAZARD(S) IDENTIFICATION

##### **Warning**

*Fragmentation Hazard:* Cemented carbide cutting tools can potentially fragment while in use. Personal protection equipment and machine guards should always be used.

*Breathing Hazard:* Wet or dry grinding of cemented carbide products may release dust or mist of potentially hazardous ingredients. These could potentially be inhaled, swallowed or come in contact with skin and eyes. Use proper ventilation control and respiratory protection.

During normal usage, cemented carbide products do not present inhalation, ingestion or other chemical hazards of any kind.

#### *Classification of Article*

**GHS-US Classification:** Not applicable for articles under prescribed conditions of use.

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## Labeling Elements

<b>Hazard Pictograms:</b>	Not applicable for articles under prescribed conditions of use.
<b>Signal Word:</b>	Not applicable for articles under prescribed conditions of use.
<b>Hazard Statements:</b>	Not applicable for articles under prescribed conditions of use.
<b>Precautionary Statements:</b>	Not applicable for articles under prescribed conditions of use.

## Other Hazards

Wet or dry grinding of cemented carbide products may release dust or mist of potentially hazardous ingredients. These could potentially be inhaled, swallowed or come in contact with skin and eyes.

### Acute Effects

Eyes	Can cause irritation, redness, swelling and/or conjunctivitis.
Skin	Can cause irritation or an allergic skin rash, or cobalt sensitization in people susceptible to allergic reactions. Material is not expected to be absorbed through the skin.
Ingestion	Material is not expected to be ingested. Ingestion of large amounts may cause nausea, diarrhea and or stomach pain.
Inhalation	Material is not expected to be inhaled in high concentrations. Inhalation of high concentrations of dust/mist/fumes may cause respiratory or nasal irritation, coughing or difficulty breathing.

### Chronic Effects

Prolonged or repeated skin contact with dust may cause severe skin irritation or dermatitis.

Prolonged or repeated inhalation of dust/mist/fumes may cause transient or permanent respiratory disease including occupational asthma and interstitial fibrosis in a small percentage of exposed individuals. Symptoms include unproductive coughs, wheezing, shortness of breath, chest tightness and weight loss.

## SECTION 3: COMPOSITION / INFORMATION ON INGREDIENTS

Identification Name	CAS No.	EINECS No.	Content (Wt%)*	Classification	
				CLP**	DSD***
Tungsten Carbide	12070-12-1	235-123-0	75 to 94%	Not Classified	Not Classified
Cobalt	7440-48-4	231-158-0	6 to 25%	Skin Sens. 1 (H317) Resp. Sens. 1 (H334) Aq. Chron. 4 (H413)	Xn R42/43; R53 (2), 22, 24, 37, 61
Vanadium Carbide	12070-10-9	235-122-5	0 to 0.45%	Not Classified	Not Classified
Chromium Carbide	12012-35-0	234-576-1	0 to 0.65%	Not Classified	Not Classified
			* Per grade specification	** Annex VI of Regulation (EC) No 1272/2008 *** DSD Classification Table 3.2	

## SECTION 4: FIRST AID MEASURES

### Description of Necessary First Aid Measures

#### Eyes

In the case of contact with powder or dust, flush eyes with plenty of water for at least 10 minutes. If irritation persists, get medical attention.

#### Skin

In the case of contact with powder or dust, wash the skin with plenty of water. Remove contaminated clothing and shoes and launder before reuse. If irritation persists, get medical attention.

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## Inhalation

In the case of lung irritation (coughing, wheezing, breathing difficulty), remove from exposure area to fresh air. If irritation persists, get medical attention.

## Ingestion

Rinse mouth with water and drink plenty of water as well. Seek medical attention.

## General Advice

After first aid, get the appropriate medical attention.

### ***Most Important Symptoms / Effects, Acute and Delayed***

In the case of dust generation, metal powders or dust may cause mechanical eye and skin irritation. Inhalation of metal powder or dust may cause mild respiratory irritation.

### ***Indication of Immediate Medical Attention and Special Treatment Needed (if necessary)***

None known.

## **SECTION 5: FIRE-FIGHTING MEASURES**

### ***Suitable (and Unsuitable) Extinguishing Media***

During normal use and operation, sintered tools (hard-metal articles) do not present a fire hazard.

### ***Specific Hazards Arising from the Article Use***

During normal use and operation, sintered tools (hard-metal articles) do not present a fire hazard.

### ***Special Protective Equipment and Precautions for Firefighters***

Not Applicable

## **SECTION 6: ACCIDENTAL RELEASE MEASURES**

### ***Personal Precautions, Protective Equipment and Emergency Procedures***

Cemented carbide (sintered) articles, when used under normal conditions, do not present hazards that require accidental release measures. Wet or dry grinding of cemented carbide products may release dust or mist of potentially hazardous ingredients. Avoid inhaling, swallowing or allowing to come in contact with skin and eyes. Use proper safety equipment to avoid dust/mist exposure. Use of personal protection equipment must be utilized (i.e. gloves, safety glasses, dust respirator). Ventilate the area if necessary.

### ***Environmental Precautions***

In the case of dust/mist generation from dry or wet grinding of cemented carbide articles, contain and recycle to avoid release into the environment.

### ***Methods and Materials for Containment and Cleanup***

Dust, mist, slurry and fragments from cemented carbide articles should be captured and recycled.

## **SECTION 7: HANDLING AND STORAGE**

### ***Precautions for Safe Handling***

#### **Handling**

Do not smoke, eat or drink while using cemented carbide articles. Wash hands thoroughly after handling. Minimize generation of dust and avoid dispersion of dust into the air.

#### **Other Precautions**

Do not shake clothing, rags or other items to remove dust.

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## Conditions for Safe Storage, Including Any Incompatibilities

### Storage

Cemented carbide articles do not present conditions that require safe storage considerations.

### Incompatibilities

Cemented carbide articles do not present conditions for incompatibilities.

## SECTION 8: EXPOSURE CONTROLS / PERSONAL PROTECTION

### Control Parameters (e.g. occupational exposure limit values or biological limit values)

Cemented carbide in sintered (hard-metal) form does not present any known exposure risk. When grinding, particulates can become airborne (dust/mist) which can come into contact with the skin/eyes or be inhaled/ingested. Precautions to prevent these types of exposures should be practiced.

Component*	CAS No.	Value	Control Parameters	Basis
Cemented Tungsten Carbide	11107-01-0 12718-69-3	TWA-REL	0.05 mg Co/m <sup>3</sup>	NIOSH Recommended Exposure Limits (for cemented tungsten carbide containing >2% Co)
		TWA-PEL	0.1 mg Co/m <sup>3</sup>	Occupational Exposure Limits (OSHA) – Table Z-1 Limits for Air Contaminates (for cemented tungsten carbide containing >2% Co)
Tungsten Carbide	12070-12-1	TWA	5 mg/m <sup>3</sup>	ACGIH Threshold Limit Values (TLV)
		STEL	10 mg/m <sup>3</sup>	ACGIH Threshold Limit Values (TLV)
		TWA	5 mg/m <sup>3</sup>	NIOSH recommended exposure limits
		STEL	10 mg/m <sup>3</sup>	NIOSH recommended exposure limits
Cobalt	7440-48-4	TWA	0.1 mg/m <sup>3</sup>	Occupational Exposure Limits (OSHA) – Table Z-1 Limits for Air Contaminates
		TWA	0.02 mg/m <sup>3</sup>	ACGIH Threshold Limit Values (TLV)
		TWA	0.05 mg/m <sup>3</sup>	NIOSH Recommended Exposure Limits
				Remarks: <ul style="list-style-type: none"> <li>• Pulmonary function</li> <li>• Asthma</li> <li>• Myocardial effects</li> <li>• Confirmed animal carcinogen with unknown relevance to humans.</li> </ul>
Vanadium Carbide	12070-10-9	TWA	1 mg/m <sup>3</sup>	NIOSH recommended exposure limits
		STEL	3 mg/m <sup>3</sup>	NIOSH recommended exposure limits
Chromium Carbide	12012-35-0	TWA	0.5 mg/m <sup>3</sup>	Occupational Exposure Limits (OSHA) – Table Z-1 Limits for Air Contaminates
		TWA	0.5 mg/m <sup>3</sup>	ACGIH Threshold Limit Values (TLV)

\*Component in the form of dust or mist due to grinding

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## Appropriate Engineering Controls

### Ventilation

When dust, mist or fumes are generated as a result of dry or wet grinding, local exhaust ventilation should be used to minimize exposure.

### Safety Shower / Eyewash

A safety shower and eyewash station should be provided in the work area.

## Individual Protection Measures (PPE)

### Eye and Face Protection

Safety glasses should be used as appropriate for grinding or manufacturing with cemented carbide.

### Skin Protection

Protective gloves and clothing should be worn, as appropriate, to prevent contact of dust or slurry with the skin. Wash hands and skin thoroughly after contact with carbide, especially before eating or drinking.

### Respiratory Protection

In the case of dust or mist generation, use a half-face or full-face respirator equipped with high efficiency particulate (HEPA) filter cartridges. P-Series particulate respirators should be considered for particulates that may contain oil.

## SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Appearance	Gray Solid
Odor	None
Odor Threshold	None
pH	Not applicable
Melting Point / Freezing Point	1495°C (2723°F)
Initial Boiling Point	2870°C (5198°F)
Boiling Range	No data
Flash Point	Not applicable
Evaporation Rate	Not applicable
Flammability	Not applicable
Upper/Lower Flammability or Explosive Limits	No data
Vapor Pressure	Not applicable
Vapor density	Not applicable
Relative Density	13.13 – 14.95 g/cc
Solubility (H <sub>2</sub> O, 20°C)	Relatively insoluble
Partition Coefficient: n-octanol/water	No data
Auto-Ignition Temperature	No data
Decomposition Temperature	Unknown
Viscosity	Not applicable

## SECTION 10: STABILITY AND REACTIVITY

Reactivity	Not reactive
Chemical Stability	Chemically stable
Possibility of Hazardous Reactions	Not applicable

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<b>Conditions to Avoid</b>	Sharpening/grinding which produce dust or powder.
<b>Incompatible Materials</b>	None known
<b>Hazardous Decomposition Products</b>	When heated, may produce metal oxides and fumes.

### SECTION 11: TOXICOLOGICAL INFORMATION

#### *Information on the Likely Routes of Exposure (inhalation, ingestion, skin and eye contact).*

Cemented carbide in sintered (hard-metal) form does not present any known exposure risk. When grinding, particulates can become airborne (dust/mist) which can come in contact with the skin/eyes or be inhaled/ingested. Precautions to prevent these types of contacts should be practiced.

#### *Symptoms Related to the Physical, Chemical and Toxicological Characteristics*

Cobalt in tungsten carbide has been identified by the International Agency for Research on Cancer (IARC) as a Group 2A carcinogen (Probably Carcinogenic to Humans). Cobalt when inhaled is presumed to be potentially carcinogenic to humans, largely based on animal evidence.

Symptoms of exposure to dust/mist include un-productive coughing, wheezing, shortness of breath, chest tightness and weight loss.

#### *Delayed, Immediate and Chronic Effects from Short and Long Term Exposure*

Chronic inhalation has the potential for causing transient or permanent respiratory disease, including occupational asthma and interstitial fibrosis.

Interstitial fibrosis (lung scarring) can lead to permanent disability.

Certain pulmonary conditions may be aggravated by exposure.

Skin and eye irritation may be a symptom of exposure.

#### *Numerical Measures of Toxicity*

<b>Cobalt:</b>	Rat Oral LD <sub>50</sub> : 1500 mg/kg	Rabbit Oral LD <sub>50</sub> : 20 mg/kg
	Rat Intraperitoneal LD <sub>50</sub> : 250 mg/kg	Rabbit Intratracheal LD <sub>50</sub> : 100 mg/kg
	Rat Intravenous LD <sub>50</sub> : 100 mg/kg	
<b>Tungsten Carbide</b>	Toxicity has not been quantified, but may cause pulmonary and skin sensitization and mucous membrane irritation in dust form.	
<b>Vanadium Carbide</b>		
<b>Chromium</b>	Inadequate evidence for the carcinogenicity of chromium and chromium compounds in experimental animals.	

### SECTION 12: ECOLOGICAL INFORMATION

<b>Ecotoxicity</b>	Cemented carbide articles (sintered, as provided) do not present an ecological hazard.
<b>Persistence and Degradability</b>	Not Applicable
<b>Bioaccumulative Potential</b>	Not applicable
<b>Mobility in the Soil</b>	Not applicable
<b>Other Adverse Effects</b>	None known

### SECTION 13: DISPOSAL CONSIDERATIONS

#### **Responsibility for proper waste disposal is with the owner of the waste.**

Owners are encouraged to recycle cemented carbide articles. These are valuable articles and should be sent to the appropriate recycling facility. If the articles cannot be sent to the proper recycling facility, dispose of all waste products in accordance with local, state/provincial, federal and national regulations.

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## SECTION 14: TRANSPORTATION INFORMATION

Cemented carbide articles are not classified or regulated.

## SECTION 15: REGULATORY INFORMATION

### *Safety, Health and Environmental Regulations Specific for the Product in Question*

US Federal Regulations: None known for solid hard-metal articles.

EU Regulations: Solid hard-metal articles do not contain SVHC

## SECTION 16: OTHER INFORMATION

### *Revisions*

Rev.	Date	Description
2.0	27-May-2015	Rewritten to comply with The Globally Harmonized System of Classification and Labelling of Chemicals (GHS).
2.1	23-JUN-2020	Reviewed and updated grade listing (Section 1) and relative density (Section 9).

### *Acronyms and Abbreviations*

ACGIH	American Conference of Governmental Industrial Hygienists
Aq.	Aquatic
CAS	Chemical Abstract Service
Chron.	Chronic
CLP	Classification, Labeling and Packaging
Cr <sub>3</sub> C <sub>2</sub>	Chromium Carbide
DSD	Dangerous Substance Directive
EINECS	European Inventory of Existing Commercial Chemical Substances
HEPA	High Efficiency Particulate Arrestor
IARC	International Agency for Research on Cancer
LD <sub>Lo</sub>	Lethal Dose Low (Lowest published lethal dose)
NIOSH	National Institute for Occupational Safety and Health
No.	Number
OSHA	Occupational Safety & Health Administration
PEL	Permissible Exposure Limit
PPE	Personal Protection Equipment
R	Risk Phrase
REL	Recommended Exposure Limit
Sens.	Sensitizer
STEL	Short Term Exposure Limits
SVHC	Substances of Very High Concern
TLV	Threshold Limit Value
TWA	Time Weighted Average
VC	Vanadium Carbide
WC	Tungsten Carbide
Xn	Harmful