

Please note that manufactured articles are generally outside of the requirements of the REACH and CLP regulations. IPS Ceramics believes that the provision of a safety data sheet is not a legal requirement for tungsten carbide shapes and components.

1) IDENTIFICATION OF THE SUBSTANCE / MIXTURE AND OF THE COMPANY

Products covered by this document: Tungsten carbide rods and shaped components.
Also known as 'cemented carbide'.

Relevant Uses Various – wear resistant inserts, location pins, fibre guides and mandrels, and as blanks for further machining, etc.

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2) HAZARDS IDENTIFICATION

No health hazards are known from exposure to this material in the as-supplied 'solid' form. During normal operation and usage, tungsten carbide products do not present inhalation, ingestion, or other chemical hazards and the main hazard is personal injury due to impact or abrasion with the article.

Operations such as wet or dry grinding, cutting, burning, and welding of products may release dusts or vapours which may present health hazards if the exposure limits described in Section 3 are exceeded.

Acute Health Effects:

Dust from grinding can cause irritation of the nose, throat, lungs, eyes, and mucous membranes. Skin exposure can cause an allergic rash.

Chronic Health Effects:

Chronic exposure to dust containing cobalt has the potential to cause permanent respiratory diseases, including occupational asthma, interstitial pneumonitis, fibrosis, and emphysema. Skin sensitization is also noted in a small percentage of cases. Ingestion of significant amounts of cobalt can cause blood, heart, and other organ effects.

3) COMPOSITION / INFORMATION ON INGREDIENTS

Rods and other shapes are made by mixing tungsten carbide and cobalt powders, shaping, and then sintering to produce dense, hard articles by firing to high temperature (over 1400°C). The main mineral present in the fired articles is tungsten carbide.

Component	CAS number	Weight (%)	Danger symbol	Risk phrase	WEL (15 minute)	WEL (8hr TWA)
Tungsten Carbide	12070-12-1	90	None	None	10 mg/m ³	5 mg/m ³
Cobalt	7440-48-4	10	None	None	-	0.1 mg m ³

4) FIRST AID MEASURES

ROUTE	SYMPTOM	FIRST AID
Ingestion	Coughing	Give clean water to drink.
Inhalation	Coughing	Move away from source.
Contact with skin	Soreness in damaged skin	Wash with soap and water.
Contact with eyes	Soreness	Flush with clean water.
		Seek medical assistance if soreness persists.

5) FIREFIGHTING MEASURES

The product is heat resistant, non-flammable and does not decompose on heating. Packaging material fires may be extinguished using a general-purpose fire extinguisher. No special precautions required.

6) ACCIDENTAL RELEASE MEASURES

Loose articles should be packed in boxes / crates or restacked on pallets. Broken items should be gathered up by any method that avoids the creation of airborne dust.

7) HANDLING AND STORAGE

Unlimited shelf life. Store in a dry place. Hands should be washed before eating, drinking, smoking, or touching one's eyes or face.

8) EXPOSURE CONTROLS / PERSONAL PROTECTION

Gloves are not essential for infrequent handling but should be worn for regular or prolonged contact, particularly where there are any cuts or skin conditions. If WELs are exceeded in the working area (see section 3), respirators should be worn.

9) PHYSICAL AND CHEMICAL PROPERTIES

Appearance	-	Grey solid
Melting point	-	Significant melting does not occur until above 2000°C
Bulk Density	-	14 g/cm ³
Solubility	-	Insoluble in water or organic solvents
Flammability	-	Non-flammable

10) STABILITY AND REACTIVITY

Insoluble and chemically inert to most weak acids, alkalis or solvents. Contact between dust from grinding and strong acids may release hydrogen.

11) TOXICOLOGY INFORMATION

The sintered, solid form of tungsten carbide is not considered to be toxic, however grinding, etc. may release particles of cobalt. Cobalt fumes or dust may cause irritation or allergic reactions of skin, eyes and lung. Long term exposure to excessive concentrations of airborne cobalt dust created by careless handling or machining of articles may be harmful to the lungs.

The International Agency for Research on Cancer (IARC) lists Cobalt metal as a Group 2A carcinogen (Probably Carcinogenic to Humans). 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 LDLo: 1500 mg/kg	Rabbit Oral LDLo: 20 mg/kg
Rat Intraperitoneal LDLo: 250 mg/kg	Rabbit Intratracheal LDLo: 100 mg/kg
Rat Intravenous LDLo: 100 mg/kg	

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12) ECOLOGICAL INFORMATION

Inert with respect to the environment. Non-biodegradable.

13) DISPOSAL CONSIDERATIONS

Tungsten carbide is a valuable material that should be sent for recycling where available. Dispose of as non-toxic material in accordance with local regulations for dry and inert waste.

14) TRANSPORT INFORMATION

The products are not classified as hazardous for transport. No special precautions required.

15) REGULATORY INFORMATION

CLP Classification, Labelling and Packaging of substances and mixtures (EC) No 1272/2008. Not classified - Hazard Warning Label not required.

Control of Substances Hazardous to Health (COSHH) regulations apply in the UK.

16) OTHER INFORMATION

Bibliography: Workplace Exposure Limits EH40 (UK Health & Safety Executive).

The information provided in this document is correct to the best of our knowledge at the date of issue. It is intended as a guide to safe handling, storage and use of our products. It is not a specification or guarantee of specific properties and no liability can be accepted for loss, injury or damage resulting from its use.