

Safety Data Sheet

Spec Tool Co.

PCBN (Polycrystalline Cubic Boron Nitride)



1. Product and Company Identification

Product Name: PCBN

Trade Name, Polycrystalline Cubic Boron Nitride

Primary Use: Abrasive material used on metals, concrete, masonry and building materials.

Company: Spec Tool Company

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2. Hazard Identification



Warning

PCBN is in inert state and does not present a health hazard. Dust from grinding can cause irritation of skin and eyes.

Use only with adequate ventilation. Long term inhalation of cobalt & carbide & nitride may lead to occupational asthma, permanent respiratory diseases, interstitial pneumonitis, hard metal disease and emphysema. Ingestion of significant amounts of cobalt may cause blood, organ or other effects.

3. Composition/ Information on Ingredients

Substance	CAS-No.	Percentage by Weight	OSHA PEL	ACGIH TLV
Cubic Boron Nitride	10043-11-5	40-95	10 mg/m ³	10 mg/m ³
Cobalt	7440-48-4	3-15	0.1 mg/m ³	0.2 mg/m ³
Aluminium Nitride	24304-00-5	1-20	-	-
Aluminium Oxide	1344-28-1	1-5	15 mg/m ³	10 mg/m ³
Titanium Carbide	12070-08-5	1-40	5 mg/m ³	-
Titanium Nitride	25583-20-4	1-40	-	-
Tungsten Carbide	12070-12-1	0-60	5 mg/m	5 mg/m ³
Nickel Aluminide	12004-71-6	1-5	-	-
Titanium Carbide Nitride	12347-09-0	1-10	-	-
Titanium Aluminide	12004-78-3	0-5	-	-

4. First Aid Measures

General Information	Workplace hygiene: No eating, no drinking, no smoking in the working area. Thoroughly wash your hands before eating, drinking or smoking.
In Case of Inhalation	If high concentrations are inhaled or if symptoms of pulmonary involvement develop (coughing, wheezing, shortness of breath, etc.), remove the worker from exposure. Give oxygen in the case of breathing

	difficulty. In the case of breath-holding, seek medical attention after giving artificial respiration immediately. - If irritation or rash persists, seek medical attention.
In Case of Skin Contact	Wash affected area with soap and water and isolate from exposure. If irritation or rash persists, seek medical attention.
In Case of Eye Contact	Flush with clean running water immediately. If irritation or rash persists, seek medical attention.
In Case of Ingestion	Rinse mouth and drink copious amounts of water and seek medical attention.

5. Fire Fighting Measures

Suitable extinguishing media	Dry chemicals, CO2, foam or water. Do not allow the material to enter drains/ surface water/ ground-water.
Special exposure hazards arising from the substance or preparation itself, combustion products, resulting gases	Carbide / PCBN blanks, and carbide / PCBN products are no fire hazard. The dust produced by grinding, however, can be flammable and carry the danger of fire, if accumulated.
Special protective equipment for fire-fighters	Firefighters should wear approved SCBA and full turn-out gear.

6. Accidental Release Measures

Cleanup using methods which avoid dust generation. Such methods include, vacuum (with appropriate filter to prevent airborne dust levels which exceed PEL or TLV), wet dust mop, or wet cleanup. If airborne dust is generated, use an appropriate NIOSH approved respirator.

Wash hands thoroughly after handling, before eating or smoking. Wash exposed skin at the end of work shift. Do not shake clothing, rags, or other items to remove dust. Dust should be removed by washing or vacuuming (with appropriate filters) the clothing rags or other items.

Periodic medical examinations are recommended for individuals regularly exposed to dust or mist.

7. Handling and Storage

Recommended Work Practices: Use only with adequate ventilation. Avoid breathing dust. Wash thoroughly after handling and use, especially before eating, drinking or smoking. Consider potential exposure to components of the base materials or coatings being machined. Refer to OSHA's substance specific standards for additional work practice requirements where applicable.

Dust generated during machining or processing may spontaneously combust or create a fire or dust explosion hazard. Use good housekeeping to prevent the accumulation of dusts around the workplace.

Storage: Store in a dry location.

8. Exposure Controls/Personal Protection

Routes of Exposure: Grinding cemented carbide / PCBN product will produce dust of potentially hazardous ingredients which can be inhaled, swallowed or come in contact with skin or eyes

Ventilation: Use local exhaust or general ventilation as required to minimize exposure to dust and maintain the concentration of contaminants below the TLVs.

Respiratory Protection: Use NIOSH approved respirator if exposure limits are exceeded or where dust exposures are excessive. Consider the potential for exposure to components of the coatings or base material being brushed or machined in selecting proper respiratory protection. Refer to OSHA's specific standards for lead, cadmium, etc. where appropriate. Selection of respiratory protection depends on the contaminant type, form and concentration. Select and use respirators in accordance with OSHA 1910.134 and good industrial hygiene practice.

Gloves: Avoid skin contact with dust. Follow facility requirements regarding gloves use to avoid safety hazard.

Eye Protection: Safety goggles or safety glasses with side shields should be used.

Other: Protective clothing as needed to prevent contamination of personal clothing. Hearing protection may be required.

9. Physical & Chemical Properties

Appearance:	Black layer of Polycrystalline Cubic Boron Nitride on a tungsten carbide back	Solubility in Water:	Insoluble
Odor:	No Odor	Specific Gravity:	N/A
Boiling point:	N/A	Percent Volatile by Volume:	0
Vapor Pressure:	N/A	Evaporation Rate:	N/A
Vapor Density:	N/A	How Best Monitored:	Air Sample
PH Value:	N/A	Flash Point:	N/A

10. Stability & Reactivity

Stability: Stable

Conditions to Avoid: N/A

Incompatibility: None

Hazardous Decomposition Products: None

Hazardous Polymerization: Will not occur

11. Toxicological Properties

Cobalt: The International Agency for research on Cancer (IARC) lists cobalt and cobalt compounds as a category 2B carcinogens (possible carcinogenic to humans). Cobalt fumes or dust may cause pulmonary, skin or eye irritation. Cobalt may be a sensitizing agent for skin and respiratory systems. Chronic exposure may affect the heart, pancreas, thyroid gland or bone marrow.

Rat Oral LDLo: 1,500mg/kg

Rabbit Oral LDLo: 20mg/kg

Rat Intraperitoneal LDLo: 250mg/kg

Rabbit Intratracheal LDLo: 100mg/kg

Rat Intravenous LDLo: 100mg/kg

Inhalation exposure to cobalt dust can produce two types of lung condition: Interstitial lung disease (hard metal disease) or occupational asthma (hypersensitivity allergic obstructive airway syndrome). Skin exposure can result in an allergic red rash (cobalt itch). Cobalt is an anticipated human carcinogen based on animal studies (IARC Group 2B). Cobalt is listed as an animal carcinogen (A3) by ACGIH and as a possible human carcinogen by IARC (2B).

Medical Restrictions: Persons with a history of allergies should not work with this product.

Tungsten Carbide: toxicity has not been quantified, may cause pulmonary and skin sensitization and mucous membrane irritation in dust form.

12. Ecological Information

No ecological data is available for this product. Dust generated may be hazardous to the environment.

13. Disposal Considerations

Some of the principal components such as tungsten carbide and cobalt are the rare metals and it is preferable to recover and recycle them.

Dispose of as an industrial waste in accordance with the law regarding an industrial waste.

14. Transport Information

Not regulated

15. Regulatory Information

Regulations: This MSDS has been prepared according to EU-regulation. EC Directives 67/548/EEC & 88/379/EEC. ISO 11014 Safety Data Sheet for Chemical Products.

OSHA: This product is not hazardous under normal conditions of use. Dust generated when grinding, cutting, burning, or welding this product may be hazardous as already detailed in sections 2 and 3 of this document.

TSCA: Components of this product are listed in the TSCA inventory.

SARA: Cobalt is subject to the requirements of section 313 of Title III of Amendment and Reauthorization Act of 1986.

State Regulatory Information: This product contains cobalt, which is listed in California Proposition 65 as a known cancer-causing chemical.

16. Other Information

NFPA Hazard Rating:

Ingredient	Health	Fire	Reactivity
Cubic Boron Nitride	1	0	0
Cobalt	2	3	0
Aluminium Nitride	2	0	1
Aluminium Oxide	1	0	0
Titanium Carbide	1	3	0
Titanium Nitride	1	0	0
Tungsten Carbide	1	3	0
Nickel Aluminide	1	0	0
Titanium Nitride	1	0	0
Titanium Carbide Nitride	1	0	0
Titanium Aluminide	1	0	0

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