



Product Name: Polycrystalline Diamond Insert Grades
Product Descriptions: All polychrystalline diamond and SECOMAX PCD insert grades.
Company Name: Carboloy Inc.
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Date Prepared: May 4, 2007
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NFPA Hazard Rating: HEALTH 3; FLAMMABILITY 0; REACTIVITY 0

SECTION 2

COMPOSITION, INFORMATION ON INGREDIENTS

Material (CAS #)	Percent by Weight	OSHA PEL-TWA	ACGIH TLV-TWA
Diamond (Carbon) (7782-40-3)	5-100*	15 mg/m ³ (inhalable)** 5 mg/m ³ (respirable)**	10 mg/m ³ (inhalable)** 3 mg/m ³ (respirable)**
Tungsten carbide (12070-12-1)	7 - 97*	---	5 mg/m ³ (as W)
Cobalt (7440-48-4)	3 - 25*	0.1 mg/m ³	0.02 mg/m ³

Notes:

- * Exact Percentages Depend on Grade Specifications
- ** Exposure limit for Particulate Not Otherwise Classified

SECTION 3

HAZARDS IDENTIFICATION

Emergency Overview:

During normal operation and usage, polycrystalline diamond products do not present inhalation, ingestion, or other chemical hazards. However, operations such as grinding, cutting, burning, and welding of such products may release dusts, fumes, or vapors which may present health hazards, if the exposure limits described in Section 2 are exceeded. The health hazards described below relate to these non-routine operations, as well as exposure to component materials.

Primary Routes of Entry: Inhalation, ingestion, skin contact

Wet or dry grinding of polycrystalline diamond products will produce dusts of potentially hazardous ingredients that can be inhaled, swallowed, or come in contact with the skin or eyes.

Acute Health Effects:

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

Chronic Health Effects:

Chronic exposure to respirable dust containing cobalt carries the potential to cause permanent respiratory diseases, including occupational asthma, interstitial pneumonitis and fibrosis (hard-metal disease), and emphysema. Symptoms include productive cough, wheezing, dyspnea (upon exertion), pleuritic chest pain, and weight loss. Skin sensitization is also noted in a small percentage of cases. Reports outside the industry suggest that ingestion of significant amounts of cobalt can cause blood, heart, and other organ effects.

Carcinogenicity:

Cobalt metal with tungsten carbide is listed by IARC as Category 2A – probably carcinogenic to humans. Cobalt is listed by ACGIH as an animal carcinogen (A3). Cobalt is known to the State of California to cause cancer.

SECTION 4

FIRST AID MEASURES

Inhalation:

If symptoms of pulmonary involvement develop (coughing, wheezing, dyspnea, etc.), remove to fresh air. If symptoms persist, seek medical attention.

Skin Contact:

If irritation or rash occurs, thoroughly wash affected area with soap and water. If irritation or rash persists, seek medical attention.

Eye Contact:

Remove contact lenses at once. Flush eyes with water for at least fifteen minutes. If irritation persists, seek medical attention.

Ingestion:

If swallowing of greater than trace amounts is suspected, drink large amounts of water.

SECTION 5

FIRE FIGHTING MEASURES

Flash Point: Not applicable **Lower Explosive Limit:** Not applicable **Upper Explosive Limit:** Not applicable

Polycrystalline diamond cutting tools are not a fire hazard under normal conditions of use. However, dusts generated in grinding may be sensitive to static discharge or ignite if allowed to accumulate, then be exposed to an ignition source.

Extinguishing Media:

For dust fires, smother with dry sand, dry dolomite, ABC type fire extinguisher, or flood with water.

Special Fire Fighting Procedures:

For a dust fire confined to a small area, use a respirator approved for toxic dusts and fumes. For a large fire involving this material, fire fighters should use a self-contained breathing apparatus. See Section 3 and 8 for specific hazard identification and exposure control measures.

Unusual Fire and Explosion Hazards:

Dusts may present a fire or explosion hazard under rare favoring conditions of particle size, dispersion, concentration, and strong ignition source. However, this is not expected to be a problem under normal handling conditions.

Hazardous Combustion Products:

Oxides of cobalt, carbon dioxide, and carbon monoxide. See Section 3 for specific hazard identification.

Steps to be Taken in Case Material is Released or Spilled:

Clean up area using methods that avoid dust generation such as a high efficiency particulate air (HEPA) vacuum, wet dust mop, or wet clean-up. Use an appropriate National Institute of Occupational Safety and Health (NIOSH)-approved respirator whenever airborne concentrations of hazardous components exceed exposure limits listed in Section 2.

SECTION 7

HANDLING AND STORAGE

Under normal operating conditions, the use of polycrystalline diamond products do not require special safety precautions beyond normal safety procedures for handling and using cutting tools, such as safety glasses and gloves. However, operations such as grinding, cutting, burning, and welding of polycrystalline diamond products may generate dusts or fumes which may require special handling procedures. The procedures described below relate to these non-routine operations.

Hygienic Practices:

Wash hands thoroughly after handling, and before eating or smoking. Wash exposed skin at the end of the work shift. Smoking and consumption of food or beverages should be restricted from areas where hazardous components may be present. Do not shake clothing, rags, or other items to remove dust. Dust should be removed by laundering or vacuuming (with appropriate filters) the clothing, rags, or other items.

Precautions to be Taken in Handling and Storage:

Maintain good housekeeping procedures to prevent dust accumulation during grinding. Avoid dust inhalation and direct skin contact with dust. See Section 6 for specific health hazards.

Other Precautions:

Clean up using methods that avoid dust generation such as a HEPA vacuum, wet dust mop, or wet clean-up. Use a NIOSH-approved respirator whenever airborne concentrations of hazardous components exceed exposure limits listed in Section 2. See Section 6 for specific health hazards.

Note:

Periodic medical monitoring is recommended for individuals regularly exposed to dust or fumes, with particular attention to any potential sensitization effects of such substances.

SECTION 8

EXPOSURE CONTROLS, PERSONAL PROTECTION

Personal Protection:

Always wear safety glasses with side shields when grinding or cutting polycrystalline diamond products. Use a NIOSH-approved respirator with a HEPA cartridge whenever airborne concentrations of hazardous components exceed exposure limits listed in Section 2. Wear protective gloves (leather or rubber) or barrier cream, and clothing to prevent skin contact with dusts. See Section 6 for specific health hazards.

Ventilation:

Use adequate local (preferably) or general exhaust ventilation to ensure that concentrations of dusts or fumes do not exceed exposure limits.

Appearance and Odor:	Black layer of polycrystalline diamond on cemented tungsten carbide backing. No odor	Specific Gravity (H₂O=1):	Not applicable
Boiling Point:	Not applicable	Percent Volatile by Volume:	Not applicable
Vapor Pressure (mm Hg):	Not applicable	Evaporation Rate:	Not applicable
Vapor Density (Air=1):	Not applicable	Solubility in Water:	Insoluble

SECTION 10

STABILITY AND REACTIVITY

Stability: Stable

Conditions to Avoid: None known

Incompatibility: Strong acids. Contact of dust with strong oxidizers may cause fire or explosions.

Hazardous Decomposition Products: None

Hazardous Polymerization: Will Not Occur

SECTION 11

TOXICOLOGICAL INFORMATION

Cobalt: The International Agency for Research on Cancer (IARC) lists cobalt and cobalt compounds as Category 2B carcinogens (Possibly Carcinogenic to Humans). Cobalt fumes or dust may cause pulmonary, skin, or eye irritation. 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 LD₅₀: 1500 mg/kg

Rabbit Oral LD₅₀: 20 mg/kg

Rat Intraperitoneal LD₅₀: 250 mg/kg

Rabbit Intratracheal LD₅₀: 100 mg/kg

Rat Intravenous LD₅₀: 100 mg/kg

Tungsten carbide: Toxicity has not been quantified. May cause pulmonary and skin sensitization and mucous membrane irritation in dust form.

SECTION 12

ECOLOGICAL INFORMATION

No data available.

SECTION 13

DISPOSAL CONSIDERATIONS

Waste Disposal Method:

Dispose of in accordance with appropriate government regulations. May be sold as scrap for reclamation.

DOT Proper Shipping Name:	Not regulated by this mode of transportation
IMO Proper Shipping Name:	Not regulated by this mode of transportation
IATA Proper Shipping Name:	Not regulated by this mode of transportation
AFI Prop. Shipping Name:	Not regulated by this mode of transportation

SECTION 15

REGULATORY INFORMATION

OSHA:

This product, under normal conditions of use, is not hazardous under the criteria of the Federal OSHA Hazard Communication Standard 29 CFR 1910.1200. However, dust generated while grinding, cutting, burning or welding, this product may be hazardous as noted in Sections 2 and 3.

TSCA:

Components of this product are listed on the TSCA inventory.

SARA:

Cobalt is subject to the requirements of Section 313 of Title III of Superfund 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.

SECTION 16

OTHER INFORMATION

Users Responsibilities

This Material Safety Data Sheet provides information consistent with recommended applications of these products and anticipated non-routine activities involving the product. It is the user's responsibility to identify and protect against health and safety hazards presented by modification of polycrystalline diamond products after manufacture. Individuals handling polycrystalline diamond products should be informed of all relevant hazards and recommended safety precautions, and should have access to the information contained in this MSDS.

Disclaimer

The information contained herein is based upon data provided by manufacturers and suppliers of raw materials used in the manufacture of polycrystalline diamond products. The information is offered in good faith as accurate and correct, but no representations, guarantees, or warranties of any kind are made as to its accuracy or completeness, suitability for particular applications, hazards connected with the use of the product, or the results to be obtained from the use thereof. User assumes all risk and liability of any use or handling of any material beyond Seco Tools Inc's control. Variations in methods, conditions, equipment used to store, handle, or process the material, and hazards connected with the use of the product are solely the responsibility of the user and remain at its sole discretion.

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