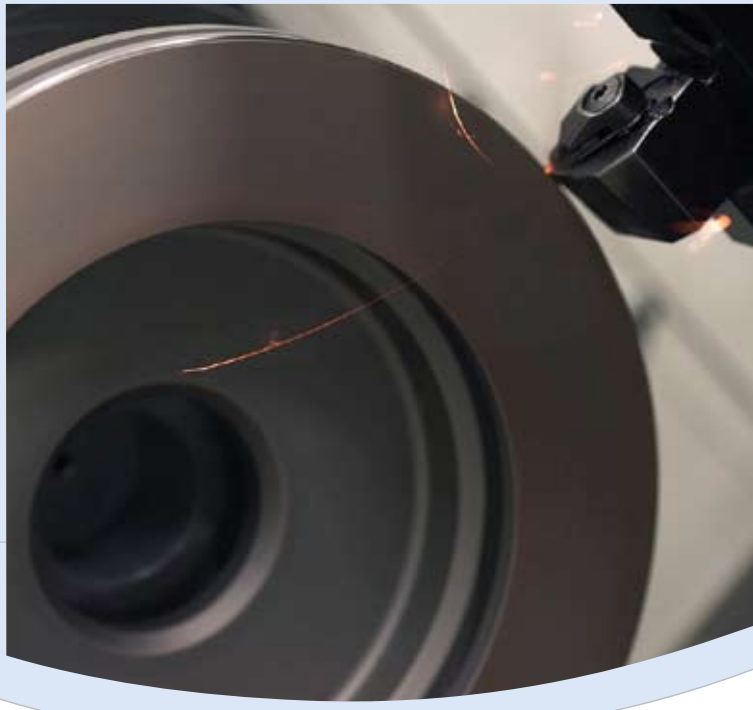
elementsix™

PCBN Metalworking



Materials Safety Data Sheet

SECTION 1 PRODUCT AND COMPANY IDENTIFICATION

Product Name:	AMBORITE
Product Description:	AMB90, DBA90, DBC50, DBN45 POLYCRYSTALLINE CUBIC BORON NITRIDE (PCBN) PRODUCT
Recommended Use:	ABRASIVE CUTTING TOOL MATERIAL USED IN MACHINING OF HARD FERROUS METALS
Manufacturer:	ELEMENT SIX Ltd., SHANNON AIRPORT, Co CLARE, IRELAND
Emergency Telephone:	+353-61-471655
Date Prepared:	27/10/2004

SECTION 2 COMPOSITION / INFORMATION ON INGREDIENTS

MATERIAL	CAS No	% BY WEIGHT	OSHA PEL-TWA	ACGIH TLV-TWA
CBN	10043-11-5	25..95%	10mg/m^3	10mg/m^3
Cobalt	7440-48-4	10..15%	0.1mg/m^3	0 .02mg/m^3
Aluminium Nitride	24304-00-5	1..20%	Not Established	Not Established
Aluminium Di Boride	12041-50-8	0..20%	Not Established	Not Established
Aluminium Oxide	1344-28-1	1..5%	15mg/m^3	10mg/m^3
Titanium Di Boride	12045-63-5	1..10%	Not Established	Not Established
Titanium Carbide	12070-08-05	1..10%	5mg/m^3	--
Titanium Carbide Nitride	12347-09-0	1..10%	Not Established	Not Established
Titanium Aluminide	12004-78-3	0..2%	Not Established	Not Established
Tungsten Boride	12007-09-9	0..5%	Not Established	Not Established
Tungsten Carbide	12070-12-1	0..50%	5mg/m^3	5mg/m^3

SECTION 3 HAZARD IDENTIFICATION

Sintered Polycrystalline Cubic Boron Nitride does not in its intact form present a health hazard. Cubic Boron Nitride is non-toxic. Operations such as grinding, cutting, heating or welding will produce dusts, fumes or vapours, which may present a health hazard if the occupational exposure limits are exceeded as detailed in section 2 of this document.

Dust, fumes, vapours generated during operations can enter the body through inhalation, ingestion and skin contact. Long-term inhalation of cobalt may lead too occupational asthma, permanent respiratory diseases, interstitial pneumonitis, hard-metal disease and emphysema.

Ingestion of significant amounts of cobalt may cause blood, organ or other organ effects. Cobalt is listed by IARC as a category 2B- possibly carcinogenic to humans. Cobalt is listed by ACGIH as an animal carcinogen. Cobalt is known to the State of California to cause cancer.

Aluminium compounds are found commonly in industry and are active chemically and may exhibit dangerous toxic and reactive properties.

Boron compounds are toxic and can cause boron poisoning.

SECTION 4 FIRST AID MEASURES

Inhalation: If high concentrations are inhaled or if worker exhibits trouble breathing, remove to fresh air, if symptoms persist, seek medical attention.
Skin Contact: Wash affected areas thoroughly with soap and water. Seek medical attention if rash occurs.
Eye Contact: Remove contact lenses. Flush eyes with water for 15 minutes. Seek medical attention if irritation persists.
Ingestion: Seek medical attention.

SECTION 5 FIRE FIGHTING MEASURES

FLASH POINT: n/a, LOWER EXPLOSIVE LIMIT: n/a, UPPER EXPLOSIVE LIMIT: n/a
Polycrystalline Cubic Boron Nitride is not a fire hazard under normal conditions. However dust produced from grinding may be flammable and may pose a fire hazard if allowed to accumulate in the prescience of an ignition source.
Extinguishing Media: Dry chemical, CO_2, Foam or water.
Special Exposure Hazards: Hydrogen gas, boron, aluminium and their oxides, Oxides of cobalt, carbon dioxide, carbon monoxide and hazards as identified in Section 3 of this document.
Special PPE for Fire Fighters: For a dust fire confined to small area, use a approved respirator to avoid toxic dust and fumes. For large fires, fire fighters should use self-contained breathing apparatus.

SECTION 6 ACCIDENTAL RELEASE MEASURES

Personal Precaution: Clean-up personnel should wear appropriate personal protective equipment as detailed in Section 8 of this document. Respiratory protection should be worn if hazardous components exceed exposure limits listed in Section 2 of this document.
Environmental Precaution: Isolate the area where the spill has occurred, do not walk through or scatter the spilled material.
Method of cleaning-up: Clean up spilled material. Avoid generating dust during clean-up operations.

SECTION 7 HANDLING AND STORAGE

Handling: Polycrystalline Cubic Boron Nitride products used under normal operating conditions do not require special safety precautions other than the normal safety procedures for handling and using cutting tools such as safety glasses and gloves.
In grinding, cutting, burning or welding operations, generated dust or fumes may require special consideration. Wash hands after handling, before eating or smoking. Wash exposed skin. Smoking and consumption of food or drink should be restricted from areas where hazardous components may arise. Maintain good housekeeping procedures to avoid dust accumulation during grinding. Avoid dust inhalation and direct skin contact with dust. Periodic medical monitoring is recommended for individuals regularly exposed to dust or fumes, with particular attention to any potential sensitisation.

Storage: Keep material in closed containers and store in a cool dry area.

SECTION 8 EXPOSURE CONTROLS/ PERSONAL PROTECTION

Engineering Measures: Provide local exhaust ventilation in areas where debris, dust or fumes may be released, to ensure that concentrations do not exceed exposure limits.

Personal Protection Equip: Wear safety glasses with side shields when grinding or cutting this product. Wear appropriate NIOSH approved respirator of airborne concentrations of hazardous components exceed exposure limits as detailed in Section2 of this document. Wear protective gloves or barrier cream to avoid irritation and sensitisation.
Wear appropriate clothing to avoid skin contact with dust generated during grinding operations.

Hygiene Measures: Wash hands before eating or smoking.

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Grey layer of cubic boron nitride un-backed or on a tungsten carbide back..		
Odour: none	PH: n/a	Boiling Point: n/a
Flash point: n/a	Flammability: n/a	Explosive properties: n/a
Vapour Pressure: n/a	Relative Density: n/a	Oxidising properties: n/a
Solubility in Water: n/a	Partition Coeff: n/a	Viscosity: n/a
Vapour Density: n/a	Evaporation Rate: n/a	

SECTION 10 STABILITY AND REACTIVITY

Stability: Stable
Conditions to avoid: Non known
Materials to avoid: Contact with strong acids. Aluminium Nitride will react with water or steam to produce toxic or corrosive fumes.

SECTION 11 TOXICOLOGICAL INFORMATION

Cobalt: The International agency for Research on Cancer (IARC) lists cobalt and cobalt compounds as a Category 2B carcinogens (possibly Carcinogenic to humans). Cobalt fumes or dust may cause pulmonary, skin or eye irritation. Cobalt may be a sensitising agent for skin and respiratory systems. Chronic exposure may affect the heart, pancreas, thyroid gland or bone marrow.
Rat Oral LD_{Lo}: 1500mg/kg Rabbit Oral LD_{Lo}: 20 mg/kg
Rat Intraperitoneal LD_{Lo}: 250 mg/kg Rabbit Intratracheal LD_{Lo}: 100mg/kg
Rat Intravenous LD_{Lo} 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).
Boron compounds have toxic effects on the central nervous system.

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 sensitisation and mucous membrane irritation in dust form.

SECTION 12 ECOLOGICAL INFORMATION

Mobility: Not relevant.
Persistence / Degradability: Not relevant.
Bioaccumulation: Not relevant.
Eco-toxicity: This product is not expected to be toxic to the environment. Adopt sound working practices, so that the product is not released into the environment.

SECTION 13 DISPOSAL CONSIDERATIONS

Dispose of in accordance with appropriate government regulation. May be sold as scrap for reclaim.

SECTION 14 TRANSPORT INFORMATION

ADR: Not regulated. *RID:* Not regulated. *IMDG:* Not regulated. *ICAO / IATA:* Not regulated.

SECTION 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 in 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 Reauthorisation 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

The information contained herein is based on our state of knowledge at the above-specified date. It refers solely to the product indicated and constitutes no guarantee of particular quality. It is the duty of the user that this information is appropriate and complete with respect to the specified use intended. This MSDS cancels and replaces any preceding release.