



MATERIAL SAFETY DATA SHEET

MSDS # 317
K-0963-317

Revision Date: 12/05/03
Supercedes: 3/02

1. PRODUCT AND COMPANY IDENTIFICATION

Product Names/Powder Grades:	KD230, KD240, CBN		
Chemical Name:	Boron Nitride with Aluminum Boride and Aluminum Nitride		
Synonyms:	Cubic Boron Nitride, CBN		
Chemical Family:	Metal mixture		
Formula:	Not applicable - mixture		
Product Use:	Metalworking Tools, Metallurgical Products, Powders and Inserts		
COMPANY ADDRESS	Kennametal, Inc. 1600 Technology Way P.O. Box 231 Latrobe, PA 15650	ADDITIONAL MSDS: 724-539-5000 TECHNICAL INFORMATION: 724-539-5066	EMERGENCY TELEPHONE NUMBER: CHEMTREC: 1-800-424-9300

2. COMPOSITION/INFORMATION ON INGREDIENTS

Components	CAS Number	% by Wt	OSHA PEL (mg/m ³)	ACGIH TLV-TWA (mg/m ³)	Canadian Provincial Limits (mg/m ³)
*Aluminum Boride	12041-50-8	0.1 – 10.0	15	10	None
*Aluminum Nitride	24304-00-5	0.1 – 10.0	15	10	None
*Boron Nitride	24304-00-5	80.0 – 99.8	15	10	None

*This substance is regulated by OSHA as a Particulate Not Otherwise Regulated (PNOR). The exposure limits listed for both OSHA and ACGIH refer to total dust; the OSHA PEL for the respirable fraction is 5 mg/m³.

Additional Exposure Standards: None
OSHA REGULATORY STATUS: In solid form, not hazardous. Powder, dust or fume: irritant, lung toxin

In solid form, this material is not hazardous (tools, inserts). Powder or dust generated from grinding of tools or inserts and fumes generated from high-temperature processes are hazardous materials.

3. HAZARDS IDENTIFICATION

WARNING!

USE ONLY WITH ADEQUATE VENTILATION. EXPOSURE TO DUST, POWDER, OR FUMES MAY CAUSE EYE IRRITATION. KEEP CONTAINERS CONTAINING POWDER CLOSED. AVOID CONTACT WITH EYES, SKIN AND CLOTHING. WASH THOROUGHLY AFTER HANDLING.

HAZARD RATINGS (For powder or dust)

Hazardous Materials Identification System (HMIS)
National Fire Protection Association (NFPA)

Degree of hazard (0 = low, 4 = extreme)

Health: 1* Flammability: 0
Mixture. Not rated.

Reactivity: 0

Personal Protection: E

HUMAN THRESHOLD RESPONSE DATA

Odor Threshold: Unknown

Irritation Threshold: Unknown

Immediately Dangerous to Life or Health (IDLH) Value(s): The IDLH for this product is not known.

POTENTIAL HEALTH EFFECTS

ACUTE EFFECTS

Eye: Powder or dust can cause mild reversible irritation consisting of redness, swelling, and pain.

Skin: Material not expected to be absorbed through the skin. Contact with dust or powder may mild cause irritation consisting of redness and/or swelling.

Inhalation: Inhalation of high concentrations of powder, dust, or fume may cause respiratory and nasal irritation, coughing, and difficulty breathing.

Ingestion: Ingestion of large amounts of dust or powder may cause nausea, diarrhea and or stomach pain.

CHRONIC EFFECTS: None known or expected.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE:

Exposure to dust or powder may aggravate an existing dermatitis, asthma, emphysema, or other respiratory disease.

POTENTIAL ENVIRONMENTAL EFFECTS

None known. Product has not been tested for environmental properties.

4. FIRST AID MEASURES

PROCEDURES

EYE CONTACT:	In case of contact, flush eyes with plenty of water for at least 15 minutes. If irritation persists, get medical attention.
SKIN CONTACT:	In case of contact, wash skin with plenty of water. Remove contaminated clothing and shoes and launder before reuse. If skin irritation develops and persists or recurs, get medical attention.
INHALATION:	If symptoms of lung irritation occur (coughing, wheezing or breathing difficulty), remove from exposure area to fresh air immediately. If breathing has stopped, perform artificial respiration. Keep affected person warm and at rest. Get medical attention.
INGESTION:	If swallowed, and person is conscious, immediately give person large amounts of water. Get medical attention. Never give anything by mouth to an unconscious or convulsing person. Induce vomiting only if instructed by a physician.
NOTE TO PHYSICIANS	If ingested, administer medicinal absorbent charcoal. In case of respiratory difficulty, administer oxygen therapy. Check victim's state of consciousness, breathing and pulse, and administer CPR if indicated. There is no specific antidote to the active ingredients in this product; use symptomatic treatment.

5. FIRE FIGHTING MEASURES

Property	Value	Property	Value
Flash Point (°C):	Not applicable	Burning Rate of Material:	Not applicable
Lower Explosive Limit:	Not applicable	Autoignition Temp.:	Not applicable
Upper Explosive Limit:	Not applicable	Flammability Classification: (defined by 29 CFR 1910.1200)	Not applicable

UNUSUAL FIRE AND EXPLOSION HAZARDS:	None expected.
EXTINGUISHING MEDIA:	For localized powder fires, smother with dry sand, dry dolomite, sodium chloride or soda ash. Use fire-extinguishing media appropriate to fight surrounding fire.
SPECIAL FIREFIGHTING PROCEDURES:	Move container from fire area if possible. Cool containers exposed to flame with water from side until well after fire is out. For massive fire in cargo area, uses unmanned hose holder or monitor nozzles, or withdraw and let fire burn. Use powdered sodium chloride, or other suitable dry powder. Avoid breathing fumes from burning material. Fire-fighting personnel should use proper respiratory protection and protective fire suits including self-contained breathing apparatus with a full facepiece operated in pressure-demand or other positive-pressure mode.

6. ACCIDENTAL RELEASE MEASURES

For transportation-related and large spills call 3E COMPANY: 1-800-451-8346. For small spills, using protective equipment as prescribed in Section 8, sweep up with minimum amount of dust generation and place in suitable clean, dry containers for later disposal or reclamation. Residue should be cleaned up using a high efficiency particulate filter (HEPA) vacuum or wet clean up. Dispose in accordance with Section 13.

7. HANDLING AND STORAGE

HANDLING:	No smoking, eating, or drinking while using this product. Wash hands thoroughly after handling. Minimize free fall of powder and avoid dispersion of dust in air. Finely divided particles, dust, or fumes may be flammable or explosive. Contents should be stored in a clean, cool area.
STORAGE:	Contents should be stored in a clean, cool area.

OTHER PRECAUTIONS: Do not shake clothing, rags or other items to remove dust. Dust should be removed by washing or HEPA vacuuming.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING CONTROLS:	Provide local exhaust ventilation or general dilution ventilation to maintain exposure levels below the PEL and TLV.
EYE / FACE PROTECTION:	Safety glasses with side shields or goggles are recommended. An eye wash fountain should be available within the immediate work area. Contact lenses should not be worn when handling these materials.
SKIN PROTECTION:	Wear impervious gloves and other protective clothing (aprons, coveralls) as appropriate to prevent skin contact when using this. Wash thoroughly after handling, especially before eating, drinking, or smoking.
RESPIRATORY PROTECTION:	If exposures above the PEL/TLV are possible, use a NIOSH-approved half-face or full-face respirator equipped with High Efficiency Particulate (HEPA) filter cartridges.
GENERAL HYGIENE CONSIDERATIONS:	Do not eat, drink, or smoke while using this product. Wash hands thoroughly after use.

9. PHYSICAL AND CHEMICAL PROPERTIES

Property	Value	Property	Value
Appearance:	Gray solid or powder	Vapor Density (air = 1):	Not applicable
Odor:	None	Boiling Point (°F):	> 2200°C (> 3992°F)
Molecular Weight:	Mixture	Melting point:	2000°C (3632°F)
Physical State:	solid	Specific gravity (g/cc):	2.3 – 2.8
pH:	Not applicable	Viscosity (cps):	Not applicable
Vapor Pressure (mm Hg):	Not applicable	Decomposition Temperature:	No data

Property	Value	Property	Value
Solubility in Water (20 °C):	Practically insoluble	Evaporation Rate:	Not Applicable
Volatiles, Percent by volume:	Not applicable	Octanol/water partition coefficient:	Unknown

10. STABILITY AND REACTIVITY

STABILITY: Stable under normal temperatures and pressure
 CONDITIONS TO AVOID: Avoid exposure to heat, sparks, or flame.
 MATERIALS TO AVOID: Acids, bases, strong oxidizers.
 HAZARDOUS DECOMPOSITION PRODUCTS: When heated to decomposition, may produce metal oxides and fumes. Inhalation of high concentrations of metal fumes may cause a condition known as "metal fume fever" which is characterized by flu-like symptoms.
 HAZARDOUS POLYMERIZATION: Will not occur.

11. TOXICOLOGICAL INFORMATION

POTENTIAL EXPOSURE ROUTES: This product may be encountered through skin contact, eye contact, ingestion, or inhalation of dusts, fumes or powder.

ACUTE ANIMAL TOXICITY DATA:

For Product:		For Components:		
		Boron Nitride	Aluminum Boride	Aluminum Nitride
Oral LD ₅₀	Believed to be > 5 g/kg based on components.	No data	No data	No data
Dermal LD ₅₀	Believed to be > 2 g/kg based on components	No data	No data	No data
Inhalation LC ₅₀	No data	No data	No data	No data
Irritation	Eye, skin and respiratory irritant.	No data	No data	No data

SUBCHRONIC/ CHRONIC TOXICITY DATA: No information for product.

CARCINOGENICITY: Not listed as a carcinogen according to NTP, OSHA, ACGIH, or IARC.

MUTAGENICITY: This product is not known or reported to be mutagenic.

REPRODUCTIVE, TERATOGENICITY, OR DEVELOPMENTAL EFFECTS: This product is not known or reported to cause reproductive or developmental effects.

NEUROLOGICAL EFFECTS: This product is not known or reported to cause neurological effects.

INTERACTIONS WITH OTHER CHEMICALS WHICH ENHANCE TOXICITY: None known or reported.

12. ECOLOGICAL INFORMATION

ECOTOXICITY:	MOBILITY:	PERSISTENCE/DEGRADABILITY:	BIOACCUMULATION:
No data.	No data.	No data.	No data.

13. DISPOSAL CONSIDERATIONS

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

This is a valuable material that should be sent to an appropriate reclamation facility if available. If material cannot be sent to a reclamation facility, dispose of all waste product and containers in accordance with local, state, federal, and national regulations.

14. TRANSPORT INFORMATION

DOT/IMO/IATA	Cutting Tool – Not Classifiable or regulated by DOT.
PROPER SHIPPING NAME	Powder Form - May be classifiable or regulated by DOT as a flammable solid or toxic/poisonous substance. If a powder is resold and shipped in the same physical form it was received, appropriate labeling, marking, documenting, and placarding may be needed. Contact Kennametal Corporate EHS Department at (724) 539-5066 for information on powder classification.
HAZARD CLASS	
UN NO.	
PACKING GROUP	
LABEL	
REPORTABLE QUANTITY	None

15. REGULATORY INFORMATION

INVENTORY STATUS

United States (TSCA) All ingredients are on the inventory or are exempt from listing.
 CERCLA: None
 SARA 313: None
 SARA 312 HAZARD CLASS: Health: Acute – No, Chronic - No Fire: None Reactivity: None Release of Pressure: None
 SARA 302 EHS LIST: None of the components of this product are listed.

STATE RIGHT-TO-KNOW STATUS

Component	CA Prop. 65	New Jersey	Pennsylvania	Massachusetts	Michigan
Aluminum Boride	Not listed	Not listed	Not listed	Not listed	Not listed
Aluminum nitride	Not listed	Not listed	Not listed	Not listed	Not listed

Component	CA Prop. 65	New Jersey	Pennsylvania	Massachusetts	Michigan
Boron Nitride	Not listed	Not listed	Not listed	Not listed	Not listed

Canada DSL List: The components of this product are on the DSL or are exempt from reporting under the New Substances Notification Regulations.

IDL: None listed

WHMIS: D2B. In the form of a pressed and sintered item, this is a manufactured article and is not a "controlled product" under WHMIS.

This product has been classified in accordance with the hazard criteria of the *Controlled Products Regulations* and the MSDS contains all the information required by the *Controlled Products Regulations*.

16. OTHER INFORMATION

REVISIONS: New format – 12/05/03

PREPARED BY: Kennametal, Inc.

NOTICE:

This information is intended for industrial use only by our customers. Any use by third parties is at their own risk. This MSDS meets the regulatory requirements and standards for U.S. products. It may not meet the requirements in all other locations. Although Kennametal Inc. has attempted to provide current and accurate information herein, Kennametal Inc. makes no representations regarding the accuracy or completeness of the information and assumes no liability for any loss, damage, injury of any kind which may result from or arise out of the use of or reliance on the information by any person.

For free powder handling or metallurgical safety booklets write: Kennametal Inc., MSDS Coordinator, P.O. Box 231, Latrobe, PA 15650

For additional MSDSs or any other information, contact: Kennametal Corporate Compliance Office, phone 724-539-5747 or FAX: 724-539-5439

For technical information contact: Corporate EHS, phone 724-539-5445 or fax 724-539-5372

To purchase Kennametal products call: 1-800-446-7738 or visit our website at www.kennametal.com