

BORIDE PRODUCTS

MATERIAL SAFETY DATA SHEET

MSDS # 913
K-0963-913

Date of Issue: 5/01
Supersedes: 4/99

SECTION 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name: ROCTEC 100, Abrasive Waterjet Nozzles, etc.
Chemical Name: Cemented Tungsten Carbide Product with Molybdenum Binder
Synonyms: Refractory Metal Carbide
Manufacturer: Boride Products, 2879 Aero Park Drive, Traverse City, MI 49686-9170

EMERGENCY TELEPHONE NUMBER: THE 3E COMPANY 1-800-451-8346

SECTION 2 - COMPOSITION/INFORMATION ON INGREDIENTS

Material	CAS Number	% by Weight	OSHA PEL TWA (mg/m ³)	ACGIH TLV TWA (mg/m ³)	NFPA HAZARD RATING SCALE		
					Health	0-4 Fire	Reactivity
**Molybdenum Carbide (Mo ₂ C)	12069-89-5	2-12	15	10	No rating	0	0
Tungsten Carbide (WC)	12070-12-1	88-98*	15	10	1	1	0

**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.

*** % composition depends upon grade specifications.

SECTION 3 - HAZARDS IDENTIFICATION

In the form of a powder, this gray material may be flammable and may cause respiratory and/or eye irritation. Overexposure to this material in the form of metallurgical powder, dust or mist from grinding or sweeping is hazardous to health. May cause temporary or permanent respiratory disease. Permanent respiratory disease can lead to disability or death. Preexisting pulmonary conditions such as emphysema, asthma, and bronchitis may be aggravated by exposure to this material. In addition, individuals with a history of kidney or liver disease may be at increased risk from exposure to molybdenum compounds.

[Note: Health effects listed are for exposure to metallurgical powders, dust, or mist from grinding. No health effects have been reported for exposure to this material in solid form.]

Inhalation: Irritant: 5000 mg (Mo)/m³ is immediately dangerous to life and health.

Acute Overexposure: May cause irritation of the nose and throat, shortness of breath, and fits of coughing which may produce blood and soreness in the chest. May also cause weight loss, bronchitis, asthma, and damage to lung tissue.

Chronic Overexposure: May cause damage to lung tissue, with symptoms as described in acute exposure. Previously exposed individuals may be at increased risk.

Skin Contact: Irritant/Sensitizer: In the form of metallurgical powder, dust, or mist from grinding.

Acute Overexposure: May cause irritation with inflammation, rash and itching. May also cause allergic skin reaction if previously exposed.

Chronic Overexposure: May cause inflammation and/or rash.

Eye Contact: Irritant.

Acute Overexposure: May cause irritation with redness, pain and itching.

Chronic Overexposure: May cause conjunctivitis.

Ingestion: Irritant: In the form of metallurgical powder, dust, or mist from grinding.

Acute Overexposure: May cause gastrointestinal irritation. Large doses may cause diarrhea.

Chronic Overexposure: None reported in humans.

SECTION 4 - FIRST AID MEASURES

Inhalation: If symptoms of pulmonary involvement develop (coughing, wheezing, shortness of breath), 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 immediately.

Skin Contact: If irritation or rash occurs, remove contaminated clothing and shoes immediately. Wash affected area with soap or mild detergent and large amounts of water until no evidence of material remains (approximately 15-20 minutes). Get medical attention.

Eye Contact: If irritation occurs, wash eyes immediately with large amounts of water, occasionally lifting upper and lower lids, until no evidence of material remains (approximately 15-20 minutes). Get medical attention immediately.

Ingestion: If this material has been swallowed and person is conscious, immediately give person large amounts of water. Do not attempt to make an unconscious person drink or vomit. Get medical attention immediately. Induce vomiting only if specifically instructed by a physician.

SECTION 5 - FIRE FIGHTING MEASURES

Fire and Explosion Hazards: Under rare favoring conditions, finely divided powder or dust from grinding is expected to be a fire and explosion hazard when exposed to high temperatures or ignition sources. Particle size and dispersion in air determine reactivity. This product, except as powder, dust, or fume, is not a fire hazard.

Flash Point: Not applicable.

Firefighting 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, use unmanned hose holder or monitor nozzles, or withdraw and let fire burn. Use powdered sodium chloride, or suitable dry powder. Avoid breathing fumes from burning material. Firefighting personnel must use proper respiratory protection and protective fire suits.

SECTION 6 - ACCIDENTAL RELEASE MEASURES

Steps to be Taken if Material is Released or Spilled: 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 vacuum or wet clean up. Use appropriate personal protective equipment including respiratory protection.

SECTION 7 - HANDLING AND STORAGE

Handling and Storage: Minimize free fall of powder and avoid dispersion of dust in air. Finely divided particles, dust, or fumes may be flammable or explosive. Keep away from sparks or ignition sources. Contents should be stored in a clean, cool area.

Other Precautions: Wash hands thoroughly after handling, before eating or smoking. Do not shake clothing, rags or other items to remove dust. Dust should be removed by washing or vacuuming. Periodic examinations are recommended for individuals regularly exposed to dust or mist.

SECTION 8 - EXPOSURE CONTROLS/PERSONAL PROTECTION

Ventilation: Provide local exhaust ventilation or general dilution to maintain exposure levels below the PEL and TLV.

Respiratory Protection:

75 mg (Mo)/m³ - Dust and mist respirator, except single-use respirator.

150 mg (Mo)/m³ - Dust mask, except single-use and quarter mask respirators. Fume or high efficiency particulate respirator. Supplied-air respirator. Self-contained breathing apparatus.

750 mg (Mo)/m³ - High efficiency particulate respirator with a full facepiece. Supplied-air respirator with a full facepiece, helmet, or hood. Self-contained breathing apparatus with a full facepiece.

Firefighting: Self-contained breathing apparatus with a full facepiece operated in pressure-demand or other positive-pressure mode.

Clothing: Protective clothing not required; however, avoid repeated or prolonged contact with this substance.

Gloves: Protective gloves are not required, but recommended.

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Eye Protection: Safety glasses with side shields or goggles are recommended. Where there is any possibility that an employee's eyes may be exposed to this substance, the employer should provide an eye wash fountain within the immediate work area for emergency use. Contact lenses should not be worn when handling these materials.

SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

Appearance and Odor: Odorless, silver, solid plate
Solubility in Water: Practically insoluble
Petroleum Based Solvent Solubility: Practically insoluble

Boiling Point: N/A
Melting Point: 2687°C (4869°F)
Specific Gravity: (H₂O = 1): 14.9 to 15.4

SECTION 10 - STABILITY AND REACTIVITY

Stability: Stable under normal temperatures and pressure.

Decomposition: Thermal decomposition may release toxic fumes. Precautions should be taken to prevent overexposure to freshly generated toxic molybdenum fumes which may be generated under thermal decomposition.

Incompatibilities:

Tungsten Carbide:

Chlorine Trifluoride: Reacts with a flame.

Fluorine: Incandescens.

Nitrogen Dioxide, Nitrous Oxide: Burns with incandescence if heated to dull red.

Iodine Pentafluoride, Lead Oxide: Reacts violently.

Molybdenum Carbide:

Oxidizers: Incompatible.

SECTION 11 - TOXICOLOGICAL INFORMATION

This material has not been identified as a suspected or known carcinogen. No other data are available.

SECTION 12 - ECOLOGICAL INFORMATION

No data are available.

SECTION 13 - DISPOSAL CONSIDERATIONS

Waste Disposal Method: 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, disposal should be made in compliance with federal, provincial/state, and local environmental regulations.

SECTION 14 - TRANSPORT INFORMATION

Some finely divided powder may be classified as 'flammable solid' according to the Department of Transportation and International Air Transportation Association guidelines. If a regulated powder is resold and shipped in the same physical form it was received, appropriate labeling, marking, documenting, and placarding must accompany the shipment.

SECTION 15 - REGULATORY INFORMATION

Some ingredients in tungsten carbide products, including Cobalt, Nickel, Copper, Chromium and Chromium Compounds, are subject to the requirements of Section 313 of Title III of Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372.

SECTION 16 - OTHER INFORMATION

Although Boride Products and Kennametal Inc. have attempted to provide current and accurate information herein, Boride Products and Kennametal Inc. make 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 technical information contact William Huston Materials & Development Manager 231-929-2105.

Prepared by: Boride Products and Kennametal Inc. Hazard Communication Committee