

Diamond Blade Material Safety Data Sheet

I General Information

Manufacturer: MK Diamond Products, Inc.
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 Date of Preparation/Revision: January, 2004
 Trade Name & Synonyms: Diamond Blades, Core-Bits, Grinding Cups, Pellets, and Buttons - All Sizes and Specifications

II Hazardous Ingredients

May contain one or more of the following Principle Hazardous Components Composition per 29CFR 1910/1200 (G) (4)

	CAS Number	OSHA PEL mg/in3	ACGIH TLV mg/in3	Carcinogen (Y/N)
Boron	744042-8	NAIF	NAIF	N
Carbon	744044-0	NAIF	NAIF	N
Chromium	744047-3	1.0	0.5	Y
Chromium Boride	12007-164	NAIF	NAIF	Y
Cobalt	7440484	0.1	.05	N
Copper	7440-50-8	1.0	1.0	N
Iron	7439-89-6	NAIF	NAIF	N
Manganese	7439-96-5	5.0	5.0	N
Molybdenum	7439-98-7	15.0	10.0	N
Nickel	7440-02-0	1.0	1.0	Y
Niobium Carbide	12069-94-2	NAIF	NAIF	N
Phosphorus	7723-14-0	0.1	0.1	N
Silicon	7440-21-3	15.0	10.0	N
Tantalum Carbide	12070-06-3	NAIF	NAIF	N
Tin	7440-31-5	2.0	2.0	N
Titanium Carbide	12070-08-5	NAIF	NAIF	N
Titanium Hydride	7704-98-5	NAIF	NAIF	N
Tungsten	7440-33-7	NAIF	5.0	N
Tungsten Carbide	12070-12-1	NAIF	NAIF	N
Zinc	7440-66-6	NAIF	NAIF	N
Particulate not otherwise classified	NAIF	15.0	10.0	N

III Physical Data

• Boiling Point (F)	N/A	• Specific Gravity	2-18
• Vapor Pressure (mm Hg)	N/A	• Percent Volatile by Volume (%)	N/A
• Vapor Density (Air =1)	N/A	• Evaporation Rate (Water = 1)	N/A
• Solubility in Water	N/A	• PH	N/A
• Appearance & Odor	Solid Product/No Odor		

IV Fire & Explosion Hazard Data

• Flash Point (Test Method)	N/A	• Auto Ignition Temperature	↓
• Flammable Limits	N/A	LEL	N/A
• Extinguishing Media	N/A	UEL	N/A

Special Fire Fighting Procedures: Material is not flammable in this product form. Dust from grinding is expected to be a fire hazard when exposed to high temperatures or ignition sources.

Unusual Fire & Explosion Hazards: N/A

Route of Entry / Health Effects / First Aid	
INHALATION	These products in their usual physical state do not present an inhalation hazard. However, when subjected to cutting, grinding, brazing, abrasive blasting or similar operations, potentially hazardous fumes, dust, or mist may be emitted. In most cases, airborne material from the material being cut or from abrasives used in processing will be significantly greater than from the products components.
Boron	Nuisance particulate; no known health effects.
Chromium, Chromium Boride	Chromium dust can cause irritation of the nose, throat and mucous membranes as well as soreness of the nose and throat. May aggravate pre-existing lung disorders. The IARC has determined that chromium and certain chromium compounds are casually associated with cancer in humans but the compounds responsible for the carcinogenic effects in humans can not be specified. This that chromium in all forms must be identified as a carcinogen under OSHA (29CFR 1910.1200). The ACGIH has concluded that only specific water insoluble hexavalent chromium compounds are carcinogenic to man. There are reports of a nodular type of pulmonary disease with impairment of lung function. Chromates may cause an ulceration and perforation of the nasal septum. Liver damage and allergic skin rash have been reported.
Cobalt	20mg(Co)/m ³ is immediately dangerous to life and health. Inhalation in the form of metallurgical powder or dust or mist from grinding may cause irritation of the nose and throat. Acute Overexposure may cause shortness of breath, asthma, dyspnea on exertion, wheezing, interstitial pneumonitis, and/or lung densities. Chronic Overexposure may cause pneumoconiosis, sensitization of the respiratory tract, obstructed airways syndrome, interstitial lung disease, and density, of the lung with symptoms as described in acute overexposure. Cobalt has not been classified as a known or suspected carcinogen by NTP or OSHA. Cobalt and compounds were classified as group 2B (possibly carcinogenic to humans) by IARC. Cobalt has been listed as a suspected carcinogen on the NIOSH Toxic Substances List.
Copper	Acute overexposure can produce an acute reaction known as "metal fume fever". Symptoms consist of chills and fever (very similar to and easily confused with flu symptoms) which come on a few hours after large exposures. Chronic overexposure to copper may result in anemia, kidney and liver damage.
Iron	Acute overexposure may cause mucous membrane irritation. Chronic overexposure may cause respiratory irritation, siderofibrosis, bronchitis, benign puenmoconiosis and siderosis.
Manganese	Manganese effects the central nervous system. Inhalation of high concentrations of manganese causes an influenza-like illness (metal fume fever). Symptoms are usually insidious and may include headache, restless sleep, change in personality, lack of coordination of voluntary muscles, irritability and pathologic laughter. Secondary symptoms include visual hallucinations, double vision, impaired hearing, uncontrollable impulses, mental confusion and euphoria.
Molybdenum	References available at this time do not report ill health effects as a result of acute or chronic overexposure to molybdenum metal. Chronic respiratory disease may be aggravated by exposure to dust or fumes.
Nickel	Acute overexposure may cause respiratory irritation, cough, pneumonitis, and fever. Pulmonary edema may be a delayed symptom. Pulmonary sensitization reaction or anaphylaxis may occur in previously exposed individuals. Chronic overexposure may cause mucous membrane irritation and pulmonary sensitization. The NTP has listed nickel as a possible cancer hazard. The IARC concluded there was sufficient evidence that nickel refining was carcinogenic to humans and limited evidence that nickel and certain nickel compounds were carcinogenic to humans. The IARC could not state with certainty which forms of nickel are human carcinogens but said "metallic nickel seems less likely to be so than nickel subsulphide or nickel oxides". The inhalation of nickel powder has not resulted in an increased incidence of malignant tumors in rodents. Studies of workers exposed to nickel powder and to dust and fume generated in the production of nickel alloys and of stainless steel have not indicated a respiratory cancer hazard. Inhalation may cause irritation to upper respiratory tract. Respiratory irritation and pneumonitis; several nickel compounds including nickel oxide are suspected lung and nasal carcinogens.
Niobium Carbide	Acute overexposure may cause respiratory mutation.
Phosphorus	Inhalation of phosphorus vapors may cause respiratory tract irritation. Chronic exposure to phosphorus may cause gastrointestinal distress, anemia, and garlic breath. A classical effect of chronic phosphorus is necrosis of the jaw. Inhalation of dust may be an irritant to pre-existing respiratory conditions.
Silicon	May produce X-ray changes in the lungs without disability.
Tantalum Carbide	None reported in humans.
Tin	Acute overexposure may cause irritation of the eyes, nose, throat and skin. May cause irritation of the respiratory tract. Chronic overexposure to tin dust or fume can cause a condition of lungs known as stannosis, resulting in benign lung tumors.
Titanium Hydride	Acute Overexposure: Irritation of respiratory system.

Titanium Carbide	Acute overexposure may be considered a nuisance dust and may result in simple dust accumulation in the lungs. Chronic overexposure may cause fibrosis of pneumocomosis.
Tungsten	Irritant Acute overexposure may cause irritating coughing. Chronic overexposure may cause pulmonary fibrosis.
Tungsten Carbide	Acute overexposure may cause coughing dyspnea, soreness in the chest; weight loss, hemoptysis, bronchitis and asthma May also cause pulmonary fibrosis. Radiological changes may be noticed in lungs. Chronic overexposure may cause "haul metal lung" with symptoms as described in acute overexposure. Previously exposed individuals may be at an increased risk.
Zinc	Acute overexposure to high levels of zinc vapor (zinc oxide fumes) may result in tightness of chest; metallic taste, cough, dimness, fever, chills, headache, nausea, and dry throat. Overexposure may produce symptoms known as metal fume fever or "zinc shakes"; an acute, self-limiting condition without recognized complications. Symptoms of metal fume fever include: chills, fever, muscular pain, nausea and vomiting. Chronic overexposure to zinc may cause respiratory tract irritation with nasopharyngitis and laryngitis.
Particulate not otherwise classified	Acute and chronic inhalation of nuisance dusts may lead to chronic bronchitis, emphysema and bronchial asthma.
INGESTION	These products in their usual physical state do not present an ingestion hazard. However, when subjected to cutting, grinding, brazing, abrasive blasting or similar operations, potentially hazardous fumes, dust, or mist may be emitted. In most cases, airborne material from the material being cut or from abrasives used in processing will be significantly greater than from the products components.
Chromium, Chromium Boride	Insoluble chromium compounds exhibit very low oral toxicity No specific signs of chromium toxicity have been reported. May aggravate pre-existing lung disorders.
Cobalt	Acute overexposure may cause hypotension, pain, vomiting and sensations of hotness or nausea Severe exposure may cause pericardial effusion, convulsions, or enlargement of the thyroid-Chronic overexposure may adversely affect the pancreas, thyroid gland, heart or bone marrow.
Iron	May cause irritation of the mouth and throat Ingestion of considerable quantities may cause vomiting.
Nickel	Single dose oral toxicity is minimal, amounts ingested in industrial use are unlikely to cause injury. Acute oral dose LD50 in rats is greater than 5000 mg/kg. NIOSH concluded that nickel and its inorganic compounds are not carcinogenic when ingested.
Niobium Carbide, Tantalum Carbide, Titanium Carbide	Acute overexposure: Systemic poisoning not known to occur. Chronic overexposure: None reported in humans.
Titanium Hydride	Acute overexposure: Irritant to digestive tract; possible gas embolism.
Tungsten	Irritant System toxicity is considered to be very low. May cause nausea, vomiting, and irritation of the gastrointestinal tract.
Tungsten Carbide	Acute overexposure may cause gastrointestinal irritation. Large doses may cause diarrhea.
SKIN	These products in their usual physical state do not present a contact hazard. However, when subjected to cutting, grinding, brazing, abrasive blasting or similar operations, potentially hazardous fumes, dust, or mist may be emitted. In most cases, airborne material from the material being cut or from abrasives used in processing will be significantly greater than from the products components.
Chromium, Chromium Boride	Repeated or prolonged contact with certain chromium compounds can cause eczematous dermatitis.
Cobalt	Acute overexposure may cause sensitization dermatitis in persons who are previously exposed. A rash may develop, usually in the flexor areas of the elbow, neck and face. Chronic overexposure may cause contact dermatitis. Sensitization dermatitis may follow inhalation or prolonged contact.
Iron	None reported in humans.
Nickel	Acute overexposure may cause swelling and irritation. Skin sensitization may occur in previously exposed individuals. Chronic exposure may cause sensitization dermatitis. Repeated contact is not likely to cause absorption with skin in toxic quantities.
Niobium Carbide, Tantalum Carbide, Titanium Carbide	None reported in humans.
Titanium Hydride, Tin	May cause irritation.

Tungsten	Acute overexposure may cause irritation with redness, pain, and itching. Chronic overexposure may cause dermatitis.
Tungsten Carbide	Acute overexposure may cause irritation dermatitis eczema, and itching. May also cause sensitization dermatitis if previously exposed. Chronic over exposure may cause contact dermatitis.
EYES	These products in their usual physical state do not present a contact hazard. However, when subjected to cutting, grinding, brazing, abrasive blasting or similar operations, potentially hazardous fumes, dust, or mist may be emitted. In most cases, airborne material from the material being cut or from abrasives used in processing will be significantly greater than from the products components.
Chromium, Chromium Boride, Tin, Titanium Hydride	May cause irritation.
Cobalt, Iron, Nickel, Niobium Carbide, Tantalum Carbide, Titanium Carbide, Tungsten Carbide	Acute overexposure may cause irritation with redness, pain, and itching. Chronic overexposure may cause conjunctivitis.
Tungsten	Acute overexposure may cause irritation, redness and conjunctivitis. Chronic overexposure may cause conjunctivitis.
FIRST AID	These products in their usual physical state do not present an ingestion, inhalation, ingestion, or contact hazard. However, when subjected to cutting, grinding, brazing, abrasive blasting or similar operations, potentially hazardous fumes, dust, or mist may be emitted. In most cases, airborne material from the material being cut or from abrasives used in processing will be significantly greater than from the products components.
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.
INGESTION	If material has been swallowed and person is conscious immediately give person large amounts of water. After water has been swallowed, induce vomiting. Do not attempt to make an unconscious person drink or vomit Get medical attention immediately.
SKIN	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.
EYES	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.

VI Reactivity Data	
Stability	Stable under normal temperatures and pressure.
Conditions to Avoid	NAIF
Incompatibility	NAIF
Materials to Avoid	NAIF
Hazardous Polymerization	Not known to occur.
Hazardous Decomposition Products	The breakdown of a material into compounds or elements that may have specific hazard properties different than the original material. The only way to determine the true identity of the decomposition products is by sampling and analysis (See ANSI/AWS fl.1 'Method for Sampling Airborne Particles Generated by Welding and Allied Processes", available from the American Welding Society). Fumes and gases from welding, brazing, sintering, etc. cannot, be classified simply. The composition and quantity of both are dependent upon the metal being welded, brazed or sintered, the process, procedure and powder used. Other conditions which influence the composition and quantity of the fumes and gases to which workers may be exposed include: the number of welders, furnaces and the volume of work area, the quality. and amount of ventilation and the presence of contaminates in the atmosphere.

VII Environmental Protection Procedures

Some of the materials may be subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372

Spill Response: Clean up with a minimum of dust generation

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

VIII Special Protection Information

Eye Protection	Safety glasses with side shields or goggles are recommended to prevent possible incursion by powder
Respiratory Protection (Specify Type)	NIOSH approved respirators for dusts, mists and fumes if airborne levels exceed occupational exposure limits.
Skin Protection	Protective gloves or barrier creams. Wear appropriate protective clothing and equipment to prevent repeated or prolonged skin contact with this substance. Soiled clothing should be laundered separately.
Ventilation Recommended	Local exhaust when cutting, grinding, melting, heating, brazing, welding or sintering to assure health exposure limits are not exceeded. Periodic air quality testing is needed to ensure adherence to acceptable limits.
Other	Cutting or processing may create elevated noise levels which could affect hearing. Hearing protection as needed.

IX Special Precautions

Hygienic Practices in Handling & Storage: NAIF

Precautions for Repair & Maintenance of Contaminated Equipment: NAIF

Other Precaution: NAIF

THIS MSDS FULFILLS FEDERAL OSHA HAZARD COMMUNICATION REQUIREMENTS ONLY AND MAY NOT FULFILL ALL LOCAL AND/OR STATE REQUIREMENTS. ADDITIONAL INFORMATION MAY BE REQUIRED BY LOCAL REGULATIONS.

THIS MSDS WAS DEVELOPED FROM INFORMATION ON THE CONSTITUENT SUBSTANCES OF THIS PRODUCT, NOT FROM TEST DATA ON THE PRODUCT ITSELF.

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Glossary Of Terms

ACGIH	American Conference on Governmental Industrial Hygienists
ANSI	American National Standards Institute
IARC	International Agency for Research on Cancer
N/A	Not Applicable
NAIF	No Applicable Information Found
NIOSH	National Institute for Occupational Safety and Health
NTP	National Toxicology Program
PEL	Permissible Exposure Limit
LEL	Lower Exposure Limit
UEL	Upper Exposure Limit
TLV	Threshold Limit Values