

MATERIAL SAFETY DATA SHEET

**MITSUBISHI MATERIALS U.S.A. CORPORATION**

Nov 2000

Chemical Name: Titanium Carbonitride with Cobalt-Nickel  
 Trade name: All Mitsubishi Cermet Grade and Coated Cermet Grade  
 Chemical Family: Refractory Metal Carbides  
 Molecular Weight: N/A

PHYSICAL DATA

Appearance and Odor: Dark Grey Metal/No Odor  
 Boiling Point: N/A  
 Vapor Pressure (mmHg): N/A  
 Vapor Density (air=1): N/A  
 Solubility in Water: Insoluble  
 Specific Gravity (H<sub>2</sub>O=1): 5.0 to 9.0  
 Percent Volatile by volume: 0  
 Evaporation Rate: N/A  
 How Best Monitored: Air Sample

HAZARDOUS INGREDIENTS

Material	CAS Number	% by Mass	OSHA PEL (mg/m <sup>3</sup> )	ACGIH TLV (mg/m <sup>3</sup> )
Titanium Carbide (Limits for titanium dust)	12070-08-05	15-50*	5	N/A
Titanium Nitride (Limits for titanium dust)	25583-20-4	5-30*	N/A	N/A
Cobalt	7440-48-4	1-20*	0.1	0.02
Nickel	7440-02-0	0-20*	1	1
Tungsten Carbide (Limits for tungsten dust)	12070-12-1	5-30*	5(asW)	5(asW)
Tantalum Carbide (Limits for tantalum dust)	12070-06-3	0-20*	5(as Ta)	5(as Ta)
Niobium Carbide (Limits for niobium dust)	12069-94-2	0-20*	5	5
Molybdenum Carbide (Limits for molybdenum dust)	12069-89-5	0-20*	15(as Mo)	10(as Mo)
Zirconium Carbide	12070-14-3	0-5*	15	5

\* Depends on grade specifications

HEALTH HAZARD DATA

Route of Exposure: Grinding cermet product will produce dust of potentially hazardous ingredients which can be inhaled, swallowed, or come in contact with the skin or eyes.

Effects of overexposure

Inhalation: Dust from grinding can cause irritation of nose and throat. It also has the potential for causing transient or permanent respiratory disease, including occupational asthma and interstitial fibrosis, in a small percentage of exposed individuals. It is

reported that the cobalt dust is the most probable cause of such respiratory diseases. Symptoms include productive cough, wheezing, shortness of breath, chest tightness and weight loss. Interstitial fibrosis (lung scarring) can lead to permanent disability or death. Certain pulmonary condition may be aggravated by exposure.

**Skin Contact:** Can cause an irritation or an allergic skin rash due to cobalt sensitization, Certain skin conditions, such as dry skin, may be aggravated by exposures.

**Eye Contact:** Can cause irritation.

**Ingestion:** Reports outside the industry suggest that ingestion of significant amounts of cobalt has the potential for causing blood, heart and other organ problems.

Emergency and First Aid Procedures: Applicable for dusts or mists.

**Inhalation:** If symptoms of pulmonary involvement develop (coughing, wheezing, shortness of breath, etc.), remove from exposure and seek medical attention.

**Skin Contact:** If irritation or rash occurs, thoroughly wash affected area with soap and water and isolate from exposure. If irritation or rash persists, seek medical attention.

**Eye Contact:** If irritation occurs, flush with copious amounts of water. If irritation persists, seek medical attention.

**Ingestion:** If substantial quantities are swallowed, dilute with a large amount of water, induce vomiting and seek medical attention.

Carcinogenic Assessment :The National Toxicology Program (NTP) and the International Agency for Research on Cancer (IARC) found there was inadequate data for the carcinogenicity of chromium and trivalent chromium compounds. The IARC found that metallic cobalt and metallic nickel are possibly carcinogenic to humans. Cobalt has not been classified as a known or suspected carcinogen by the NTP or Occupational Safety and Health Administration (OSHA). However, for the state of California regulations under Proposition 65 (California Health and Safety Code Section 25249.5 et seq.) this product contains or produces a chemical(s) known to the State of California to cause cancer.

FIRE AND EXPLOSION HAZARD DATA

Flash Point: N/A  
Test Method Used: ---  
Flammable Limits: N/A  
LEL: ---  
UEL: ---

Cermet Product is not a fire hazard. Dusts generated in grinding operations may ignite if allowed to accumulate and are subject to an ignition source.

**Extinguisher Media:** For powder fires, smother with dry dolomite, ABC type fire extinguisher, or flood with water.

**Special Fire Fighting Procedures:** For a powder fire confined to small area, use a respirator approved for toxic dusts and fumes, for large fire involving this material, fire fighters should use self contained breathing apparatus.

**Unusual Fire and Explosion Hazards:** Dusts may present a fire explosion hazard under rare favoring conditions of particle size, dispersion, and strong ignition source. However, this is not expected to be a problem under normal handling conditions.

### REACTIVITY DATA

1. Stability: Unstable \_\_\_\_\_ Stable  X   
Conditions to avoid: N/A
2. Incompatibility: Contact of dust with strong oxidizers may cause fire or explosions.  
Materials to avoid: strong acids
3. Hazardous Decomposition Products: None
4. Hazardous Polymerization: May occur \_\_\_\_\_ Will not occur  X   
Conditions to avoid: N/A

### SPILL OR LEAK PROCEDURES

Steps to be taken in case material is released or spilled: Ventilate area of spill, Clean up using methods which avoid dust generation such as vacuum (with appropriate filter to prevent airborne dust levels which exceed the OSHA PEL or the ACGIH TLV), wet dust mop or wet clean-up. If airborne dust is generated, use an appropriate NIOSH approved respirator.

Waste Disposal Method: Disposed of in accordance with appropriate government regulations. May be sold as scrap for reclaim.

### SPECIAL PROTECTION INFORMATION

Respiratory Protection: Use an appropriate NIOSH approved respirator if airborne dust concentrations exceed the appropriate OSHA PEL or ACGIH TLV. All appropriate requirements set forth in 29 CFR 1910,134 should be met.

Ventilation: Use local exhaust ventilation, which is adequate to limit personal exposure to airborne dust levels that do not exceed the OSHA PEL or ACGIH TLV. If such equipment is not available use respirators as specified above.

Protective Gloves: Protective Gloves or Barrier Cream are recommended when contact with dust or mist is likely. Prior to applying the Barrier Cream or use of Protective Gloves, wash thoroughly.

Eye Protection: Safety glasses with side shields or goggles are recommended.

Other Protective Equipment: N/A

### SPECIAL PRECAUTIONS

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.

Other Precautions: Clean up using methods which avoid dust generation such as vacuum (with appropriate filter to prevent airborne dust levels which exceed the OSHA PEL or the ACGIH TLV), wet dust mop or wet clean-up. If airborne dust is generated, use an appropriate NIOSH approved respirator.

Wash hands thoroughly after handling, before eating or smoking. Wash exposed skin at the end of work shift. Do not shake clothing, rags or other items to remove dust. Dust should be removed by washing or vacuuming (with appropriate filters) the clothing, rags or other items.

Periodic medical examinations are recommended for individuals regularly exposed to dust or mist.

In case of questions, please call:

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