

MATERIAL SAFETY DATA SHEET

**TITANIUM DIBORIDE POWDER**

**1. CHEMICAL PRODUCT & COMPANY IDENTIFICATION**

**Momentive Performance Materials**  
**22557 West Lunn Road**  
**Strongsville, Ohio 44149**  
**+1 440 878 5600**

**EMERGENCY TELEPHONE NO.:**  
24 hr. CHEMTREC: 1-800-424-9300

**TRADE NAME:** TITANIUM DIBORIDE POWDER

**MSDS NUMBER:** 100

**CHEMICAL NAME:**  
Titanium Diboride

**SYNONYMS:**  
Not Applicable

**PREPARED BY:**  
Momentive Performance Materials

**DATE OF ISSUE / LATEST REVISION:**  
July 14, 2004 / June 19, 2007

**2. HAZARDS IDENTIFICATION**

**EMERGENCY OVERVIEW**

**CAUTION!** May cause skin, eye, and respiratory tract irritation. Dusts may be electrically conductive and may cause shorting of nearby electrical equipment. Gray odorless powder.

**POTENTIAL HEALTH EFFECTS:**

Eye: Direct contact with dusts may cause mechanical irritation.

Skin Contact: Dusts may cause mechanical irritation.

Skin Absorption: Not absorbed through intact skin.

Ingestion: Not an expected route of exposure. May cause gastrointestinal irritation.

Inhalation: Not an expected route of exposure. Inhalation of dusts may cause respiratory tract irritation.

Medical Conditions Aggravated by Exposure: Pre-existing skin or respiratory disorders.

Chronic & Carcinogenicity: Prolonged exposures to high concentrations of dusts may cause a benign pneumoconiosis. The product is not known to be a carcinogen or suspected carcinogen. Dusts may possibly aggravate pre-existing lung and skin disorders. See Section 11 -

Toxicological Information for additional information.

Routes of Exposure: Skin, respiratory tract (dusts).

### 3. COMPOSITION / INFORMATION ON INGREDIENTS

<u>Component</u>	<u>CAS #</u>	<u>Percent</u>	<u>OSHA (TLV)</u>	<u>ACGIH (PEL)</u>	<u>Units</u>
Titanium diboride	12045-63-5	> 90	Not Est.	Not Est.	Not Est.
Titanium nitride	25583-20-4	< 2	Not Est.	Not Est.	Not Est.
Titanium carbide	12070-08-5	< 2	Not Est.	Not Est.	Not Est.
Titanium Dioxide	13463-67-7	< 2	10 (T) 2B	15 (T) 5 (R)	mg/M <sup>3</sup> mg/M <sup>3</sup>
Chromium diboride	12007-16-8	0-3	Not Est.	Not Est.	Not Est
Cobalt	7440-48-4	0-1	0.02, A3	0.1	mg/M <sup>3</sup>
Iron	7349-89-6	0-1	Not Est.	Not Est.	Not Est
Nickel	7440-02-0	0-1	0.1, A1	1	mg/M <sup>3</sup>
Tungsten	7440-33-7	0-1	5 10 STEL	Not Est.	mg/M <sup>3</sup>

mg/M<sup>3</sup>

#### Notes:

1. Titanium nitride, carbide, and dioxide, while listed separately above, have a combined maximum 5% in the final product.
2. Chromium diboride, cobalt, iron, nickel, and tungsten are specific product additives. The additives comprise a maximum of 5% of the total product mixture.

T = Total Dust

R = Respirable Dust

STEL = Short Term Exposure Limit

A1 = Confirmed Human Carcinogen

A3 = Animal Carcinogen. No evidence for human carcinogenicity.

2B = Possible human carcinogen (IARC Class 2B) based on evidence in experimental animals

PEL - OSHA Permissible Exposure Limit; TLV - ACGIH Threshold Limit Value; TWA - Time Weighted Average

OSHA revoked the Final Rule Limits of January 19, 1989 in response to the 11<sup>th</sup> Circuit Court of Appeals decision (AFL-CIO v. OSHA) effective June 30, 1993. See 29 CFR 1910.1000 (58 FR 35338).

### 4. FIRST AID MEASURES

**Inhalation:** If inhaled, remove to fresh air. If not breathing give artificial respiration using a barrier device. If breathing is difficult give oxygen. Get medical attention if irritation persists.

**Eyes:** Do not rub eyes. Flush with large amounts of water for at least 15 minutes. Eyelids should be held away from the eyeball to ensure thorough rinsing. Get medical attention if irritation persists.

**Skin:** Wash skin gently with soap and water and remove contaminated clothing. Get medical attention if irritation persists. Remove any contaminated clothing and launder thoroughly before reuse.

**Ingestion:** Do not induce vomiting. If large amounts of the product are ingested, give 2 glasses of water. Never give anything by mouth to an unconscious person. Seek medical attention.

## 5. FIRE FIGHTING MEASURES

**FLASH POINT:** NA    **LEL:** NA    **UEL:** NA    **AUTO IGN. TEMP.:** NA

Product is non-flammable. Product in or near fires should be cooled with a water spray or fog. Firefighters must wear NIOSH/MSHA approved positive pressure self-contained breathing apparatus with full face mask and full protective clothing.

## 6. ACCIDENTAL RELEASE MEASURES

Dike area with earth, sand, or other non-reactive material to prevent spread of release. Do not walk through spilled material. Shovel or wipe up into a container for later disposal. Avoid cleanup procedures that may result

in water pollution. Personal safety and exposure recommendations described elsewhere in this data sheet apply to exposure during clean up of spilled material. See Section 13.

## 7. HANDLING AND STORAGE

**Storage:** Store in original containers away from incompatibles. Avoid freezing.

**Handling:** Avoid contact with the eyes and skin. Avoid generating and breathing dust. Use with adequate local exhaust ventilation. Wear protective clothing to minimize skin contact. Remove contaminated clothing and clean before reuse. Wash thoroughly after work using soap and water. Keep away from children.

**Empty Containers:** Product packaging may contain product residue. Do not reuse.

## 8. EXPOSURE CONTROL - PERSONAL PROTECTION

**Engineering Controls:** Ventilation and other forms of engineering controls are the preferred means for controlling exposures. The need for local exhaust ventilation should be evaluated by a professional industrial hygienist. Local exhaust ventilation systems should be designed by a professional engineer.

**RESPIRATORY:** If exposure limits are exceeded or respiratory irritation is experienced, NIOSH/MSHA approved respiratory protection should be worn. Supplied air respirators may be required for non-routine or emergency situations. Respiratory protection must be provided in accordance with OSHA regulations (see 29 CFR 1910.134).

**EYE PROTECTION:** Chemical splash goggles or safety glasses with side shields.

**PROTECTIVE GLOVES:** Polymeric gloves.

**GENERAL:** Avoid unnecessary skin contact with this material. Polymeric coated apron or other body covering is recommended. All soiled or dirty clothing and personal protective equipment should be thoroughly cleaned before reuse.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

**APPEARANCE & PHYSICAL STATE:** Gray powder with a minimum particle diameter of 3 – 16 microns.

**MELT POINT:** > 3000° F

**VAPOR DENSITY (AIR=1):** Not Applicable

**OCTANOL/WATER PARTITION COEFFICIENT:** Not Determined

**VAPOR PRESSURE:** Water ~ 17 mm Hg @ 70° F.

**EVAPORATION RATE BuOAC = 1:** << 1

**ODOR:** None

**SPECIFIC GRAVITY/BULK DENSITY:**  
SG = 4.5 g/cc

**% VOLATILE BY VOLUME:** 60-65 (Water)

**BOILING POINT:** > 7050° F

**% SOLUBILITY (H<sub>2</sub>O):** Insoluble

**pH:** Not Determined

**OTHER:** Not Applicable

## 10. STABILITY AND REACTIVITY

**STABILITY & POLYMERIZATION:** Product is stable. Hazardous polymerization will not occur.

**INCOMPATIBILITY (CONDITIONS TO AVOID):** Very fine powders (< 3 microns diameter) may be pyrophoric and should be stored under an argon atmosphere.

**HAZARDOUS DECOMPOSITION PRODUCTS:** None that are known. Product is stable to 3000° F.

**Conditions to Avoid:** None known.

## 11. TOXICOLOGICAL INFORMATION

Boron nitride is physiologically inert and is considered a "nuisance" dust. Other boron compounds may be highly toxic and considered poisonous. Free boron will not be liberated under normal operating conditions or thermal decomposition of boron nitride. Exposure to boron nitride will not result in boron poisoning. Bentonite clays have a very low order of acute toxicity.

The International Agency for Research on Cancer (IARC) has determined titanium dioxide to be a possible human carcinogen (Class 2B) based on evidence in experimental animals. Rats exposed to high doses of titanium dioxide by inhalation or intratracheal instillation showed an increased incidence of lung tumors.

## 12. ECOLOGICAL INFORMATION

No ecotoxicity data is available. Product is inert. It is not expected to present an environmental hazard.

## 13. DISPOSAL CONSIDERATIONS

As prepared, product is considered non-hazardous. Dispose in accordance with all local, state, and federal or provincial regulations. If used or waste product is disposed of testing should be conducted to determine hazard characteristics. Empty containers will have product residues. Do not reuse.

## 14. TRANSPORTATION INFORMATION

### U.S. Department of Transportation (DOT)

**Proper Shipping Name:** Not Regulated

**Hazard Class:** Not applicable

**UN/NA Code:** Not applicable

**Packing Group:** Not applicable

## 15. REGULATORY INFORMATION

### U.S. Regulations

#### Comprehensive Environmental Response and Liability Act of 1980 (CERCLA) Reportable Quantity:

This product is not subject to CERCLA reporting requirements. Report spills required under federal, state and local regulations.

#### Clean Water Act (CWA):

This product, as supplied, contains the following substances which are regulated pollutants under the Clean Water Act (40 CFR 122.21 and 122.42 with reference to Appendix D, Tables II-V). Facilities must notify the appropriate permitting agency prior to introducing this product into its storm water and process waste water discharges.

Chemical Name

Boron, total (as boron nitride)

**Toxic Substances Control Act (TSCA):** All components of this product are listed or exempt from listing on the TSCA inventory.

**OSHA Hazard Communication Categories:** Irritant.

#### Superfund Amendments and Reauthorization Act (SARA) Title III Information:

**SARA Section 311/312 Hazard Categories:** Acute Hazard

**This product contains the following toxic chemical(s) subject to reporting requirements of SARA Section 313:** None

#### California Proposition 65:

**This product contains no chemicals known to the State of California to cause cancer.**

## 16. OTHER INFORMATION

Not Est. = Not Established

NA = Not Applicable

#### NFPA Ratings:

Health: 1                      Flammability: 1                      Reactivity: 0

#### HMIS Ratings:

Health: 1                      Flammability: 1                      Reactivity: 0

## Revision Indication

This MSDS has been revised in the following section(s):

October 6, 2006

Section 3 – Composition/Information on Ingredients  
Section 11 – Toxicological Information

October 9, 2006

Document footer – Trademark note removed

June 4, 2007

Section 1 – Company name updated  
Document footer – Company name updated  
Disclaimer – Version updated

June 19, 2007

Section 1 – Latest revision date corrected  
Document footer – Page numbers corrected, date corrected, trademark note removed  
Various – Spelling errors corrected

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