



# Titanium Diboride Powder

HCT-30 and HCT-F

Titanium Diboride (TiB<sub>2</sub>) is produced by Momentive Performance Materials using a continuous chemical process that controls stoichiometry and particle size to create high purity powder.

## Potential Applications

- Electrically conductive composites such as aluminum evaporation boats
- Complex, sinterable TiB<sub>2</sub> shapes
- Additives for producing specialty ceramic composite materials
- Refractory material and antioxidant additive that is nonreactive to most molten nonferrous metals and alloys
- Thermal management materials

## Key Features & Typical Benefits

### Extreme Hardness

Nearly as hard as diamond when sintered, TiB<sub>2</sub> is tough enough to be considered for use in military armor and may improve the fracture toughness of ceramic cutting tools and other components.

### Electrical/Thermal Conductivity

As an excellent conductor of both electricity and heat, TiB<sub>2</sub> may be valuable in electronic and specialty applications. TiB<sub>2</sub> enhances thermal conductivity when used as a filler in polymeric matrices.

### Chemical Resistance

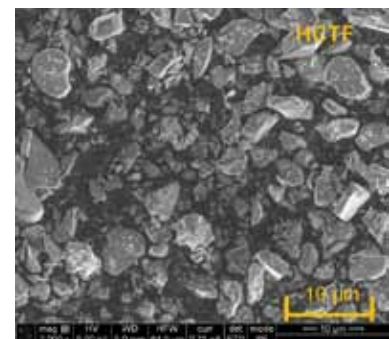
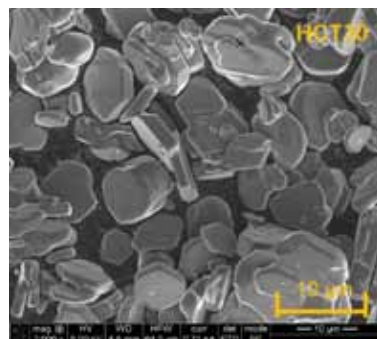
Titanium Diboride will not react with molten, nonferrous metals including Cu, Zn and Al. TiB<sub>2</sub> is used as crucibles, vacuum metallization components and electrodes for processing these materials.

Typical Physical Properties <sup>1</sup>	HCT-30	HCT-F
Surface Area m <sup>2</sup> /g	0.25	1.0
Mean Particle Size μm	14	3-6
Screen Analysis	99% -325 Mesh	100% -325 Mesh
Typical Chemical Analysis <sup>1</sup>	HCT-30	HCT-F
Titanium (%)	67-69	67-69
Boron (%)	29-32	29-32
Carbon (%), max	0.50	0.50
Oxygen (%), max	0.50	3.0
Nitrogen (%), max	0.20	0.20
Trace Metal Analysis (%), typical	Fe - 0.02 Zr - 0.015	Fe - 0.03 Zr - 0.015

## Titanium Diboride Shapes\*

Typical Physical Properties <sup>1</sup>	Value
Density (theoretical)	4.52 g/cm <sup>3</sup>
Melting Point	2850 - 2900°C
Thermal Expansion	8.1 x 10 <sup>6</sup> /°C
Thermal Conductivity <sup>10</sup> @ 25°C	60-120 W/m-K
Electric Resistivity	10-30 micro-ohm-cm
Flexural Strength	350-500 MPa
Modulus of Elasticity	550 GPa
Knoop Hardness	3000 kg/mm <sup>2</sup>

Typical Chemical Resistance <sup>1</sup>	
Oxidation	Resistant Below 1000°C
Molten Metals (Non Iron), Non-Basic Slags, Cryolite	Resistant
Hydrogen Fluoride, Hydrochloric Acid	No Reaction
Hot Sulfuric Acid	Reacts
Nitric Acid, Hydrogen Peroxide	Soluble
Molten Alkaline, Carbonate and Bisulfate Compounds	Dissociates
Molten Fe, Ni, Co	Reacts
Molten Cu, Zn, Al	No/Low Reaction



<sup>1</sup> Typical data are average and actual results may vary. Typical data shall not be used as product specifications.  
\* Properties will vary depending on method of fabrication.

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