

3M Advanced Materials Division

# 3M™ Titanium Diboride Powders

3M™ Titanium Diboride (TiB<sub>2</sub>) is distinguished by its high hardness, extremely high electrical conductivity, thermal stability and inertness to nonferrous metal melts.

3M titanium diboride powders are used for wear protection applications in a variety of industries, including ceramic manufacturing, plant engineering, chemical processing and construction. 3M titanium diboride offers excellent resistance to abrasion, chemical attack, extreme heat and high pressures.

## Typical Physical Properties

(Not for specification purposes)

Property	3M™ Titanium Diboride Powders
Chemical Formula	TiB <sub>2</sub>
Molecular Weight	69.54 g/mol
Crystal Structure	Hexagonal
Specific Gravity	4.510 kg/m <sup>3</sup>
Melting Point	2,900°C (5,252°F)
Hardness (Mohs Scale)	9.5
Maximum Application Temperature, oxidizing atmosphere inert atmosphere	800°C (1,472°F) 2,400°C (4,352°F)

## Applications

- Component in ceramic composites such as evaporation boats or crucibles
- Refractory components

## About 3M Technical Ceramics

3M is a leading manufacturer of advanced ceramic products and materials for industrial applications.



3M™ Titanium Diboride Powder

Our extensive range of ceramic materials includes borides (TiB<sub>2</sub>, ZrB<sub>2</sub>), carbides (SiC, B<sub>4</sub>C) and nitrides (Si<sub>3</sub>N<sub>4</sub>, BN). We offer these products in a variety of forms, including functional additives and final articles such as bearings, seal rings, blast nozzles and crucibles.

3M technical ceramic products are manufactured at fully dedicated, ISO 9001 and 14001 Certified facilities. Our manufacturing processes are optimized for quality, efficiency and consistency – helping ensure reliable and repeatable product performance. We have more than 85 years of experience in designing and manufacturing cutting-edge ceramic solutions, and we continually work to develop new applications for ceramic materials in cooperation with our customers and with research institutions. To learn more about our high-performance ceramic products, contact us at [info.technical-ceramics@3M.com](mailto:info.technical-ceramics@3M.com).

## Chemical Resistance

Property	
HCl, HF	No reaction
HNO <sub>3</sub> + H <sub>2</sub> O <sub>2</sub> , H <sub>2</sub> SO <sub>4</sub> (hot)	Noticeable reaction
Alkali melts, carbonate melts, bisulfate melts	Not suitable
Carbon	No reaction up to 2,200°C (3,992°F)
Nonferrous metal melts, cryolite basic slags	No attack

## Typical Chemical Composition

(Not for specification purposes)

Product Data	
Particle Size	- 400 mesh
Ti	>66%
B	>29%
C	<2.0%
B <sub>2</sub> O <sub>3</sub>	<2.5%
O	<2.5%
N	<0.8%
Fe	<0.3%

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