



PolarTherm* Boron Nitride Powder

PT140, PT160 and PT180

Momentive Performance Materials produces over 70 standard and custom grades of BN powders to meet a wide range of application requirements, and has over 50 years of expertise in the synthesis and refinement of boron nitride powders.

Potential Applications

Momentive PolarTherm BN powders' unique combination of thermal, electrical, and mechanical properties make them excellent candidates to consider for use in a range of thermal management materials, including:

- Gap fillers and underfills
- Potting and molding compounds
- Silicone and other compliant pads
- Liquid encapsulants
- Printed circuit board pre-pregs and laminates

PT140, PT160, and PT180 are best considered for use in thin film or sheet applications due to their single-crystal nature and small particle size.

Key Features & Typical Benefits

- Thermal Conductor
- Electrical Insulator
- Low Dielectric Constant/Loss
- High Temperature Stability
- Lubricious
- Inert and Chemically Stable
- Non-Wetting

Typical Trace Element Content ¹ (ppm, per element)	
Ca, Si	<500
Cu, Al, Mg, Fe, K	<100
Cl, S	<50
Na	<20
Other Metals	<10 ppm each

Typical Physical Properties ¹	PT140	PT160	PT180
Crystal (Type)	Hexagonal (Graphitic)	Hexagonal (Graphitic)	Hexagonal (Graphitic)
Color	White	White	White
Mean Particle Size μm	9-12	7-10	6-9
Crystal Size μm	8	4	3
Surface Area m^2/g	7	13	17
Tap Density g/cm^3	0.5	0.4	0.35
Oxygen %	0.4	0.4	0.5
Soluble Borates %	0.2	0.2	0.2
Carbon %	0.03	0.03	0.03

Momentive Performance Materials PolarTherm boron nitride (BN) powders of grades PT140, PT160, and PT180 are single-crystal hexagonal platelets possessing very high purity. These powders possess mean particle sizes in the range of 6 to 13 μm and are >99% -325 mesh.

The high-temperature processing and single-crystal nature of these powder grades make them outstanding candidates for thermal conduction.

PolarTherm Boron Nitride Powder, Grades PT140, PT160, and PT180

PT140

PT140 is refined to achieve a lower surface area, which may improve blending results in many formulations.

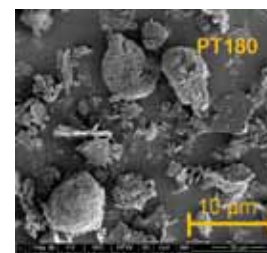
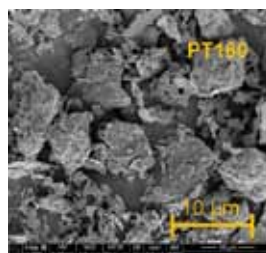
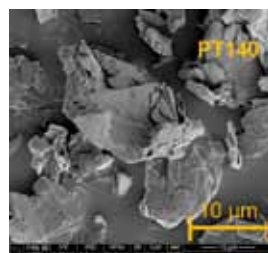
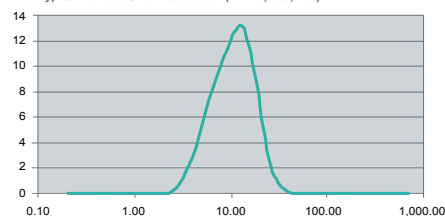
PT160

Grade PT160 falls in the middle of the PT140-180 range in terms of mean particle size (7-10 μm) and surface area (13 m^2/g), and is therefore maybe be considered for use as an additive in a range of materials.

PT180

PT180 is processed to achieve agglomerated particles, and has a higher specific surface area than similar grades. This results in a random crystal orientation when loaded in a polymer matrix, thus creating numerous thermal paths enhancing the overall thermal conductivity.

Typical Particle Size Distribution (PT140, 160, 180)¹



¹ Typical data are average and actual results may vary.
² Typical data shall not be used as product specifications.

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