



**MOMENTIVE**  
performance materials

## PolarTherm® Boron Nitride Powder Grades PT120, PT140, PT160, and PT180

Momentive Performance Materials PolarTherm boron nitride (BN) powders of grades PT120, PT140, PT160, and PT180 are primarily single-crystal hexagonal platelets possessing very high purity. These powders possess mean particle sizes in the range of 6 to 13  $\mu\text{m}$  and are >99% -325 mesh.

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

### PT120

PT120 has a hexagonal platelet structure with a slightly larger particle size (12-13  $\mu\text{m}$ ) than PT140, PT160, and PT180, as well as a lower surface area. It also has a more uniform particle size distribution.

### PT140

PT140 is refined to achieve a lower surface area. This gives improved blending results in many formulations.

### PT160

Grade PT160 falls in the middle of the PT120-180 range in terms of mean particle size (7-10  $\mu\text{m}$ ) and surface area (13  $\text{m}^2/\text{g}$ ), and, as such, is suitable as an additive in a broad range of materials.

### PT180

PT180 is processed to achieve agglomerated particles, and therefore 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.

### Applications:

Momentive PolarTherm BN powders' unique combination of thermal, electrical, and mechanical properties make them ideal 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
- Compounded thermoplastics

PT120, PT140, PT160, and PT180 are best suited for use in thin film or sheet applications due to their single-crystal nature and small particle size.

Momentive Performance Materials produces over 75 standard and custom grades of BN powders to meet a wide range of application requirements, and has over 40 years of expertise in the synthesis and refinement of boron nitride powders.

Shanghai Ping Yiao Trading Co.,Ltd

Tel: 86 21-64705533

Fax: 86 21-64820538

Add: A1210 Yin Hai Building, No.250, Caoxi Road, Xuhui District, Shanghai 200235 P.R.China

24H:86 15900706965

E-mail: info@pingyiao.com

Website: www.pingyiao.com

**polarTherm® Boron nitride powder Grades pT120, pT140, pT160, and pT180**

**General Characteristics of Boron Nitride**

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

**Elemental**

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

Typical Properties	Grade PT120	Grade PT140	Grade PT160	Grade PT180
Crystal (type)	Hexagonal (Graphitic)	Hexagonal (Graphitic)	Hexagonal (Graphitic)	Hexagonal (Graphitic)
Color	White	White	White	White
Mean Particle Size, $\mu\text{m}$	12 – 13	9 – 12	7 – 10	6 – 9
Crystal Size, $\mu\text{m}$	>10	8	4	3
Surface Area, $\text{m}^2/\text{g}$	2	7	13	17
Tap Density, $\text{g/cc}$	0.55	0.5	0.4	0.35
Oxygen, %	0.3	0.4	0.4	0.5
Sol. Borate, %	0.15	0.2	0.2	0.2
Carbon, %	0.02	0.03	0.03	0.03

See Momentive Performance Materials' Publication 81501 (PolarTherm) for more details on the full range of Momentive PolarTherm products.

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