



SAINT-GOBAIN BORON NITRIDE

# POWDER SOLUTIONS



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## Functional Fillers & Additives to Enable High Performance Solutions in Demanding Applications

Saint-Gobain Boron Nitride Powder Solutions merge the key properties of hexagonal boron nitride (hBN) and over 60 years of manufacturing expertise to offer a complete portfolio of hBN powders.

With a variety of engineered particle shapes and sizes available, Saint-Gobain Boron Nitride Powder Solutions enable our customers to maximize the benefits of boron nitride in a wide array of markets and applications.

### OUR PARTICLE OFFERING

#### PLATELET PARTICLES

Average diameter from **1 to 30  $\mu\text{m}$**



Due to its lamellar crystal structure, the simplest form of hBN particles are platelets. Three classes of platelet powders are included in the Saint-Gobain Boron Nitride Powder Solutions portfolio to provide a balance of form and function.

*Platelets provide the best value for:*

- › High shear mixing operations
- › Lubrication enhancement
- › Applications that require fine particles

#### ENGINEERED AGGLOMERATES

Average particle sizes from **35 to 350  $\mu\text{m}$**



In many cases, the high aspect ratio and surface area of BN platelets can pose processing challenges. Saint-Gobain Boron Nitride Powder Solutions offers a range of engineered agglomerated powders with varied size, shape and density to maximize value.

*Benefits include:*

- › More isotropic thermal properties
- › Improved flowability for easy handling
- › Enhanced particle packing

Thermal Conductivity

**30 / 300**  
thru-plane in-plane  
W/mK

Dielectric Strength

**80**  
kV/mm

Dielectric Constant

**4**

Coefficient of Friction

**< 0.3**

Mohs Hardness

**1.5**

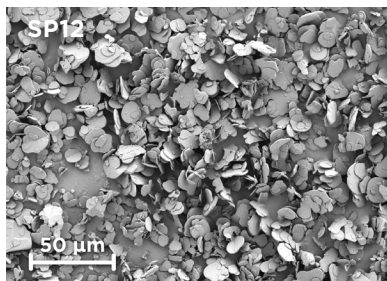




## Powder Class Descriptions

### Powder Class

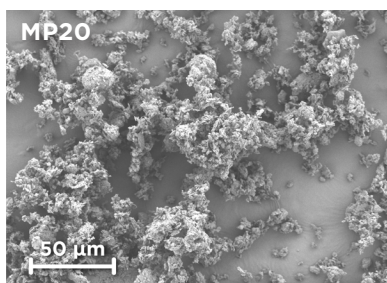
### Applications



#### Standard Platelets

Standard Platelets powders are high purity single crystals of BN with no agglomeration and tight size distribution around the D50.

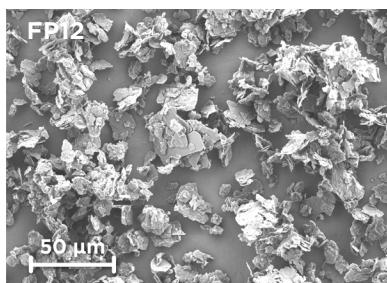
- › Dielectric thermal filler
- › Potting compound
- › Polymer processing aid
- › Lubricant additive
- › Mold release
- › Nucleation aid
- › Cosmetic formulations



#### Modified Platelets

MP20 and MP50 are made of submicron BN crystals with different oxygen levels. MP05 is a higher density, slightly agglomerated particle of high purity platelets.

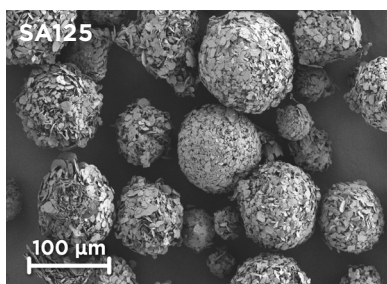
- › Powder metal additive
- › Polymer processing aid
- › Lubricant additive



#### Flowable Platelets

Free-flowing, loosely agglomerated powder. Well suited for cost sensitive, high volume thermal filler applications, like thermally conductive thermoplastics.

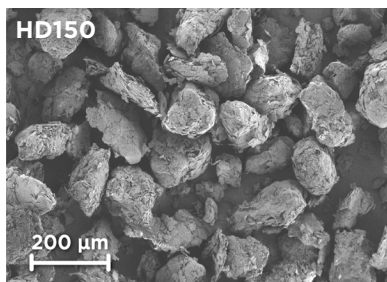
- › Dielectric thermal filler
- › Thermoplastic filler



#### Spherical Agglomerates

Agglomerate powders with tight size distributions and spherical morphology for excellent packing and flowability. Provides higher through-plane thermal conductivity than platelet powders.

- › High performance dielectric thermal filler
- › Potting compound filler
- › Thermal spray powder feed



#### High Density Agglomerates

Tightly packed platelets in strong, blocky-shaped agglomerates. Best thermal filler option when high through-plane thermal conductivity is needed.

- › High performance dielectric thermal filler
- › Potting compound filler
- › Thermal spray powder feed

**Typical Powder Properties**

d10 μm	d50 μm	d90 μm	Tap Density g/cm <sup>3</sup>	Surface Area m <sup>2</sup> /g	BN Content %	B <sub>2</sub> O <sub>3</sub> %	O <sub>2</sub> %
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**Standard Platelets**

SP1	0.3	1.2	3.5	0.20	18	98.2	0.15	1.7
SP2	0.6	2.2	4.2	0.20	12	98.6	0.06	1.3
SP5	3.3	5.5	10	0.30	9.0	99.3	0.10	0.6
SP6	3.9	6.5	12	0.45	8.0	99.6	0.04	0.4
SP8	4.2	8.5	19	0.45	2.8	99.3	0.02	0.7
SP12	6.0	12	23	0.50	1.8	99.3	0.02	0.7
SP16	7.4	16	29	0.50	1.6	99.4	0.02	0.6
SP30	14	30	50	0.55	1.1	99.7	0.02	0.3

**Modified Platelets**

MP50	0.6	3.3	20	0.60	40	95.0	0.90	4.8
MP20	1.0	5.4	20	0.55	40	98.0	0.40	1.7
MP05	4.4	10	20	0.65	15	99.2	0.30	0.7

**Flowable Platelets**

FP12	100.0	400	800	0.75	14	99.3	0.07	0.6
FP30	100.0	400	800	1.00	1.2	95.5	0.09	2.7

**Spherical Agglomerates**

SA35	20	35	55	0.50	4.2	99.5	0.03	0.3
SA75	55	75	105	0.50	4.0	99.5	0.03	0.3
SA125	95	130	185	0.45	3.9	99.5	0.03	0.3
SA300	200	315	500	0.40	2.8	99.5	0.02	0.3

**High Density Agglomerates**

HD75	40	80	110	0.75	2.6	99.7	0.02	0.3
HD125	60	120	200	0.80	2.4	99.8	0.02	0.2
HD200	110	180	250	0.75	2.7	99.8	0.02	0.2

*Typical properties, not to be used as product specification*

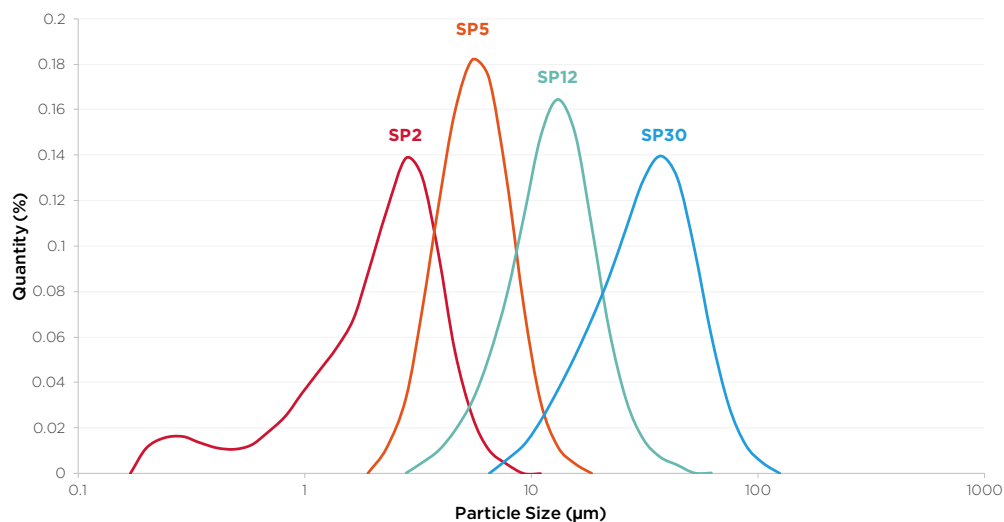


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## Typical Powder Properties - Particle Size Distributions

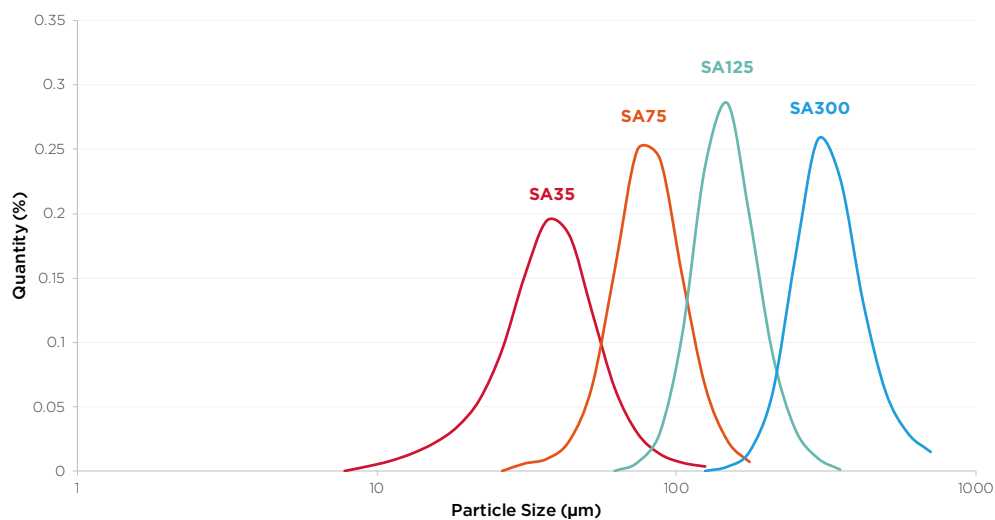
### Standard Platelets

Particle Size Distributions



### Spherical Agglomerates

Particle Size Distributions



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