

COMBAT®

Boron Nitride Industrial Powders

Platelet Powders for High Temperature Metals Processing and Lubrication Applications

Commonly referred to as “white graphite”, hexagonal Boron Nitride (hBN) is an advanced synthetic ceramic produced at temperatures above 1600°C by reacting boric acid and nitrogen. The resulting product, having a lamellar crystal structure, is a slippery white powder that has excellent oxidation resistance and lubricating properties, even at elevated temperatures >600°C.

An excellent powder lubricant, hBN is white (clean appearance), non-toxic, electrically non-conductive and thermally conductive. This unique combination of properties makes it superior to other solid lubricants such as graphite, molybdenum disulfide, and PTFE.

Combat® Boron Nitride Industrial powders are available in a wide variety of grades and particle morphologies. The key features required for the numerous and varied applications are high temperature stability and lubricity.

Some typical applications are BN based coatings (high temperature molten metal and glass mold release), additives to powder metal compositions to reduce machine tool wear, lubricating graphite components in aluminum extrusion, electro-less nickel plating solutions, thermal spray compositions for abradable coatings, sintering media for non-oxide ceramics, and many more.

PRODUCT DATA SHEET



Features/Benefits

- Non-wet by molten metals
- Chemically inert and corrosion resistant
- Lubricious at temperatures up to 1800°C in inert atmospheres
- Excellent high temperature stability and oxidation resistant in air up to 900°C
- High thermal conductivity for efficient heat dissipation from components
- Non-toxic, safe for human contact and the environment
- White, clean appearance

Key Applications

- Aluminum extrusion
- Powder metal additive
- Electro-less nickel plating solutions
- Thermal spray powders for abradable coatings
- Sintering or HIP'ing (hot isostatic pressing) media

Target Markets

- Aerospace
- Automotive
- Military
- Recreational Vehicles

COMBAT® BORON NITRIDE INDUSTRIAL POWDERS, PLATELETS - STANDARD GRADES AND TYPICAL PROPERTIES

Part Number	Chemistry, %			Particle Size Distribution, US Mesh					Other Physical		
	BN	O ₂	B ₂ O ₃	mV	D10	D50	D90	Max.	US Sieve, 95%	Tap Density, g/cc	Surface Area, m ² /g
PHPP325	94.0	6.0	1.0	7	0.5	2	20	53	-325	0.55	25
PHPP325B	98.0	2.0	1.0	6	1	4	14	37	-325	0.6	60
MCFP	96.0	3.0	2.0	12	2	12	30	60	-325	0.7	14
PSHP325	99.5	0.5	0.3	12	2	12	30	60	-325	0.6	15
PSHP605	99.5	0.4	0.02	6	4	6	11	22	-400	0.4	7
PCPS302	98.8	1.2	0.1	2	1	2	4	11	NA	0.2	15
PCPS308	99.5	0.5	0.02	10	4	8	18	44	NA	0.5	4
PCPS3012	99.6	0.4	0.02	13	5	12	22	52	NA	0.5	3.5
PCPS3016	99.6	0.4	0.02	18	7	16	31	74	NA	0.6	2
PCPS330	99.8	0.2	0.02	31	11	30	49	103	NA	0.6	1

General Properties

Appearance	White	
Crystal Structure	Hexagonal	
Apparent Density	gm/cc	2.2
Refractive Index	1.74	
Coefficient of Friction	< 0.3	
Dielectric Constant	3-4	
Thermal Conductivity*	W/mK	30-130

For further information, please visit us at www.bn.saint-gobain.com .com, or contact your Combat product specialist at bnsales@saint-gobain.com.



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