

Boron Nitride (BN) ceramic powders are exceptionally lubricious additives for high performance solid and viscous lubricants. Applications for BN as a lubricant include:

- Fillers for solid polymer shapes used as sliding components, etc.
- Dispersions in oils, greases, and aqueous solutions
- Water and aerosol-based coatings for metalworking, glassforming, and other processing applications
- Metal matrix and ceramic-metal composites for abrasable seal and other demanding uses
- Electrodeposited, plasma, and thermal spray coatings

BN brings the following performance benefits to lubricating systems:

- Low coefficient of friction – measured as low as 0.12 in graphite-like BN grades\*

- High temperature and chemical stability lets BN perform where other lubricants fail
- High thermal conductivity improves heat dissipation and reduces localized overheating; this is combined with excellent dielectric properties
- A high load-carrying capacity makes BN useful under extreme pressure or vacuum
- Low thermal expansion minimizes internal force generation in high temperature applications
- BN's white color gives lubricating systems a cleaner appearance vs. graphite or molybdenum disulfide

#### Engineered to your specifications

GE Advanced Ceramics (formerly Advanced Ceramics Corp. and now part of GE Quartz) offers over 75 grades to suit your application, with a broad range of densities, surface areas, and particle sizes. GE also has the expertise to tailor the properties of BN powder to meet a broad range of customer requirements.

GE Advanced Ceramics is a leading producer of BN and serves the global market with facilities in the U.S., Europe and Asia.

#### GE Advanced Ceramics

\* Falex Corporation COF Test

## Boron Nitride powder additives for high performance lubrication



imagination at work



# Boron Nitride Lubrication Powders.

## Falex 4-Ball Extreme Pressure Test

BN and other solid lubricants were tested in Fomblin® oil samples, showing the following results. BN outperformed the other materials, accepting a 25-50% higher force before reaching the weld point.

Sample	Weld Point (kgf)	Average Scar Diameter (mm)	
		@ 315 kgf	@ 400 kgf
Fomblin® (F), control	315	WELD	
F/5% BN (Grade AC6004)	620	0.902	1.024
F/5% BN (Grade AC6003)	620	0.850	0.984
F/5% MoS <sub>2</sub>	500	0.861	1.001
F/5% SbO <sub>2</sub>	400	0.818	WELD
F/5% Graphite (S4742)	400	0.839	WELD
F/5% Graphite (GP603)	400	0.851	WELD
F/5% Teflon	500	no data	1.11

See : "Boron Nitride Powder – A High Performance Alternative for Solid Lubrication" (Pub. No. 81506) for additional information.

## Typical Properties for Selected BN Grades

	HCPL	AC6003	AC6004	AC6041	NX1
Crystal Size µm	8	0.5	10	4	0.5
Avg. Part Size µm	9-12	7-11	12-13	5-6	0.7
Avg. Surf Area m <sup>2</sup> /g	7	29	2	10	20
Tap Density g/cc	0.5	0.35	0.55	0.3	0.12
Oxygen %	0.4	2	0.3	0.3	0.9-1.2
Soluble Borates %	0.2	0.2	0.15	0.2	0.1
Carbon %	0.03	0.03	0.02	0.06	0.03

Additional product specification sheets are available from GE Advanced Ceramics.

## GE Advanced Ceramics

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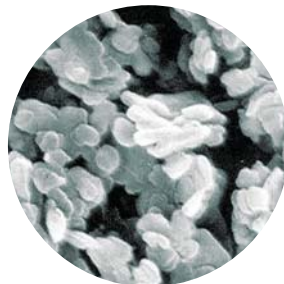
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1 Micron  
**NX1 10,000X**



10 Microns  
**HCPL 2000X**



2 Microns  
**AC6003 10,000X**



10 Microns  
**AC6004 2000X**



20 Microns  
**AC6041 1000X**

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