



# DATA SHEET

## Pyrolytic Boron Nitride (PBN)

PBN is a high purity (>99.995%) ceramic deposited into free-standing shapes (crucibles) and coatings on graphite using a Chemical Vapour Deposition (CVD) process. Crystal structure of this non-toxic ceramic is such that it exhibits a high degree of thermal anisotropy favourable for crystal growth and other applications.

### Features:

- High purity and chemical stability
- High dielectric strength
- Non-porous and low outgassing in UHV
- Excellent thermal shock resistance
- Non toxic
- Easily machined

### Applications include:

- Crystal growth – VGF, VB/HB, LEC crucibles
- MBE – crucibles and components
- Photovoltaic (CIGS) – boats and components
- MOCVD (HB-LED) – heater components
- OLED – crucibles
- Electrical – high temperature isolation

### Physical Properties:

Typical physical properties of PBN:

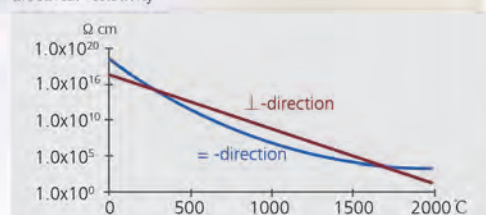
PROPERTIES	UNIT	ORIENTATION	VALUE
Density	g/cm <sup>3</sup>		1.95~2.2
Flexural strength	Mpa	=	80
Tensile strength	Mpa	=	40
Compressive strength	Mpa	=	100
Thermal expansion RT-1000°C	1/k	=	3.2x10 <sup>-6</sup>
		⊥	34x10 <sup>-6</sup>
Dielectric strength	V/mm		2x10 <sup>5</sup>
Loss tangent	tan	=	2x10 <sup>-4</sup>

Analysis by Glow Discharge Mass Spectrometry (G.D.M.S.)

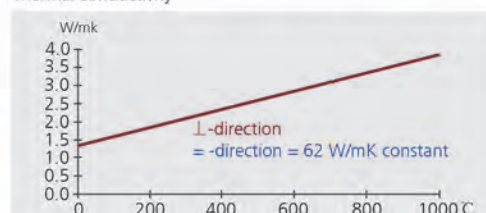
ELEMENT	ppm	ELEMENT	ppm
Li	<0.05	Si	<10
F	<1	Cl	<1
Na	<1	S	<0.5

Full analysis of elements available on request.

Electrical resistivity



Thermal conductivity



Vital Materials specialises in the manufacture of high purity materials and compounds for semiconductor, optoelectronic and other advanced industries. By following its unique vertical integration strategy, we are dedicated to developing advanced materials and technologies for fast growing, high technology industries in renewable energy, LED, telecommunications, IR detection, laser, fibre-optics and healthcare etc.

### Sales Offices:

China	Taiwan	Japan	Korea	Americas	Europe
Phone: (86) 020-83511906	Phone: (+886) 975 890 810	Phone: (+81) 90 8323 5337	Phone: (+63) 9189 105165	Phone: (+1) 630 778 0330	Phone: (+32) 497 918 001
Sales@vitalchem.com	Shufen.Xu@vitalchem.com; Sales@vitalchem.com	Ken.Mori@vitalchem.com; Sales@vitalchem.com	Vangie.Domingo@vitalchem.com; Sales@vitalchem.com	Andrew.lawrisuk@vitalchemusa.com Sales@vitalchem.com	Frank.Boghe@vitalchem.com; Sales@vitalchem.com

The statements, technical information and recommendations contained herein are believed to be accurate as of the date hereof. Since the conditions and methods of use of the product and of the information referred to herein are beyond our control, VITAL expressly disclaims any and all liability as to any results obtained or arising from any use, transportation, loading, transloading, unloading, storage, handling, processing or application of the product or reliance on such information.

NO WARRANTY OF FITNESS FOR ANY PARTICULAR PURPOSE, WARRANTY OF MERCHANTABILITY OR ANY OTHER WARRANTY, EXPRESS OR IMPLIED, IS MADE CONCERNING THE GOODS DESCRIBED OR THE INFORMATION PROVIDED HEREIN.

The information provided herein relates only to the specific product designated and may not be applicable when such product is used in combination with other materials or in any process. The user should thoroughly test any application before use. Before handling this material, read and understand the MSDS (Material Safety Data Sheet) for additional information on personal protective equipment and for safety, health and environmental information.

For environmental, safety and toxicological information, contact the appropriate sales office to request a Material Safety Data Sheet.