

PBN ってなに？

What is PBN?

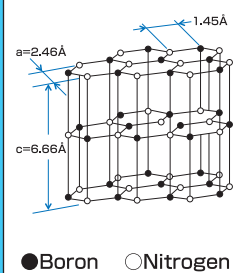
気相成長(CVD)で作られた高純度の窒化ホウ素です
GaN、有機 EL 用などの最先端技術にも応用が広がっています

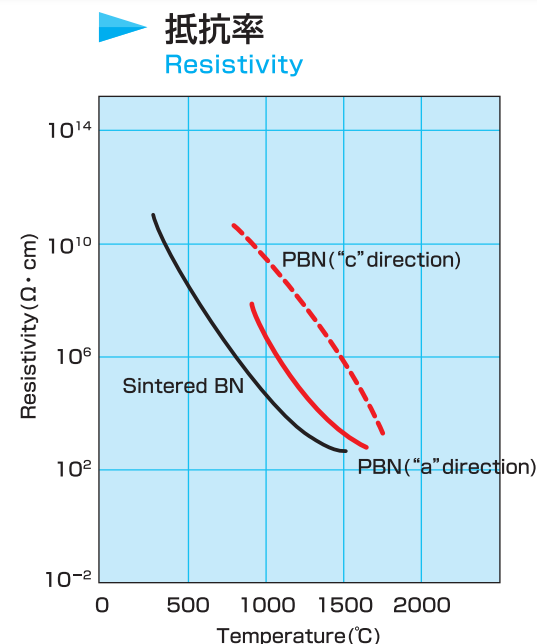
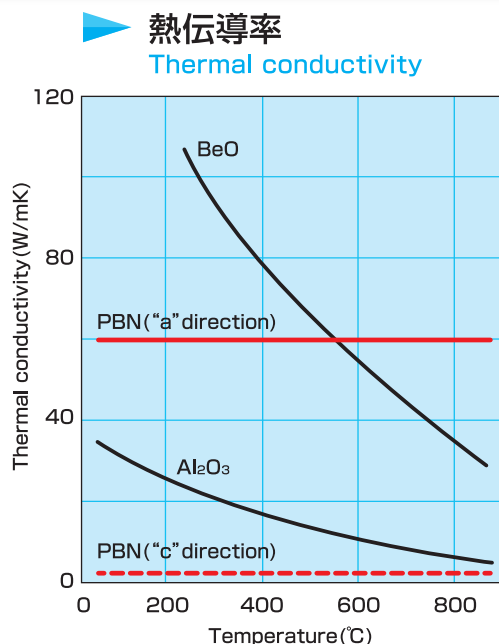
Ultra High Purity Boron Nitride manufactured using CVD method
Optimum for GaN and OLED production

特長 Advantage

- ▶ 高純度・高機能で多様な用途に対応
Various applications due to its high purity and high functionality
- ▶ 高温・真空状態で気相成長(CVD)させて製造した高純度の窒化ホウ素です
Exceptionally pure Pyrolytic Boron Nitride is produced using the CVD method at high temperature in vacuum.
- ▶ 耐熱性・耐食性・電気絶縁性に優れた性能を発揮するセラミックスとして、
いまでも用途は広がっています
PBN is being used in more applications in wider fields as a ceramic with excellent properties.
These properties include: high thermal resistance, heat conductivity, corrosion and insulation.

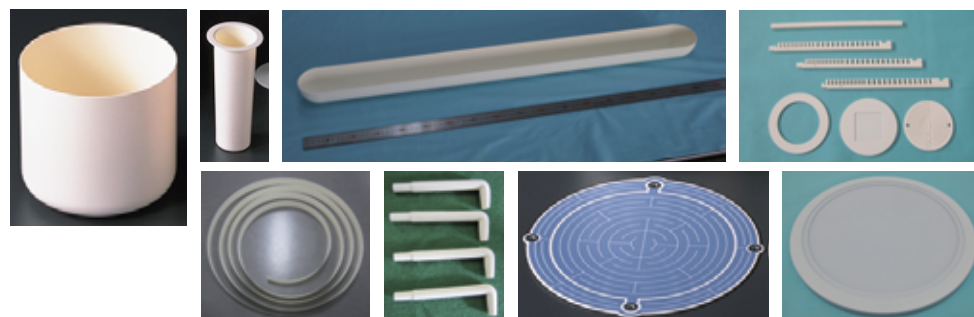
PBN の特性 Properties of PBN(Pyrolytic Boron Nitride)

		PBN
Manufacturing Process		CVD $\text{BCl}_3 + \text{NH}_3 \rightarrow \text{BN} + 3\text{HCl}$
Crystal Structure		hexagonal Boron Nitride  ● Boron ○ Nitrogen
Properties	Purity	< 1ppm
	Thermal Resistance (Sublimation Point)	2400°C
	Tensile Strength R.T. ("a" direction) 2200°C	41MPa 103MPa
	Resistivity (1000°C) "a" direction "c" direction	$3 \times 10^7 \Omega \cdot \text{cm}$ $3 \times 10^9 \Omega \cdot \text{cm}$



PBN の用途例 Examples of PBN applications

- ▶ 単結晶育成用ルツボ(GaAs, GaN, InP)
Crucibles for single crystal growth (GaAs, GaN, InP)
- ▶ エピタキシャル膜蒸着用ルツボ(MBE 用)
Crucibles for epitaxial evaporation (MBE)
- ▶ 金属蒸着用ルツボ、ボート、ハースライナー
(太陽電池 CIGS、 piezo 素子、アクチュエーター)
Crucibles/Boats/Hearth Liner for metal evaporation (PV-CIGS, piezo element, actuator)
- ▶ 分析用ルツボ
Crucibles for analysis
- ▶ ヒーター機能付き静電チャック
(Si, SiC ウエハ用)
Heaters with Electrostatics Chuck (Si, SiC wafer)
- ▶ PG / PBN ヒーター(スパッタ、MBE)
PG/PBN heaters (Sputtering, MBE)
- ▶ PBN コートグラファイト部品
(MOCVD 用ヒーター、サセプターなど)
PBN coated graphite parts (Heaters and susceptors for MOCVD machine)
- ▶ ヒーターサポートのような各種絶縁部品
Various types of insulators such as heater supports
- ▶ 熱電対保護管
Protection tubes for thermocouples
- ▶ 耐熱シート
(粉末焼成用セッター、セラミックス焼成体用セッターなど)
Thermal resistive sheet (setter for sintering, etc.)
- ▶ 高温腐食ガス供給用パイプ、ノズル
Pipes and nozzles for acid gas supply at high temperatures



ShinEtsu

お問い合わせ先：信越化学工業株式会社 精密材料事業部 TEL.03-3246-5226 FAX.03-3246-5366
Business contact: Shin-Etsu Chemical Co., Ltd. Advanced Materials Division Phone:+81-3-3246-5226 Fax:+81-3-3246-5366