HEXAGONAL BORON NITRIDE POWDER (HBN)

Hexagonal Boron Nitride Powder is known for its lubricious properties and is an extremely popular dry lubricant. The material has excellent thermal stability and chemical inertness and is therefore often used as a mold release agent for molten metals and salts. The Hexagonal structure of the Boron Nitride improves the strength and hold ability of powder composites.

TYPICAL ANALYSIS

<table>
<thead>
<tr>
<th>Chemistry</th>
<th>SPEC</th>
<th>TYP</th>
</tr>
</thead>
<tbody>
<tr>
<td>BN</td>
<td>99.0 Min</td>
<td>99.1</td>
</tr>
<tr>
<td>B₂O₃</td>
<td>-</td>
<td>.18</td>
</tr>
<tr>
<td>Free B</td>
<td>-</td>
<td>.16</td>
</tr>
<tr>
<td>Na₂O₃</td>
<td>&lt; 0.1</td>
<td>.07</td>
</tr>
<tr>
<td>Fe₂O₃</td>
<td>&lt; 0.07</td>
<td>.05</td>
</tr>
<tr>
<td>CaO</td>
<td>&lt; 0.07</td>
<td>.055</td>
</tr>
<tr>
<td>MgO</td>
<td>&lt; 0.01</td>
<td>.006</td>
</tr>
<tr>
<td>Al₂O₃</td>
<td>&lt; 0.05</td>
<td>.01</td>
</tr>
<tr>
<td>TiO₂</td>
<td>&lt; 0.005</td>
<td>.001</td>
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</tbody>
</table>

TYPICAL PROPERTIES

- Lubricious
- Thermal Stability
- Chemical Inertness
- High Hardness
- High Temperature Insulator

TYPICAL APPLICATIONS

<table>
<thead>
<tr>
<th>lubricant</th>
<th>Thermally Conductive Filler</th>
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<tbody>
<tr>
<td>Cosmetics</td>
<td>Refractory</td>
</tr>
<tr>
<td>Mold Release</td>
<td>High Temperature Insulator</td>
</tr>
<tr>
<td>High Temperature Equipment</td>
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</tr>
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</table>
# HEXAGONAL BORON NITRIDE POWDER TECHNICAL DATA

## Properties

<table>
<thead>
<tr>
<th>Physical</th>
<th>Chemical Formula</th>
<th>g/cm³</th>
<th>ASTM C20</th>
<th>ZBN</th>
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<tbody>
<tr>
<td>Density, ρ</td>
<td>-</td>
<td></td>
<td>-</td>
<td>2.28</td>
</tr>
<tr>
<td>Color</td>
<td>-</td>
<td></td>
<td>-</td>
<td>white</td>
</tr>
<tr>
<td>Crystal Structure</td>
<td>-</td>
<td></td>
<td>-</td>
<td>hexagonal</td>
</tr>
<tr>
<td>Water Absorption</td>
<td>% @R.T.</td>
<td></td>
<td>ASTM C373</td>
<td>0.0-1.0</td>
</tr>
<tr>
<td>Hardness</td>
<td>Mohs</td>
<td></td>
<td>-</td>
<td>2</td>
</tr>
<tr>
<td>Hardness</td>
<td>knoop (kg/mm²)</td>
<td></td>
<td>Knoop 100g</td>
<td>25-205</td>
</tr>
</tbody>
</table>

## Mechanical

| Compressive Strength | MPa @ R.T. | ASTM C773 | 23.5 |
| Tensile Strength     | MPa @ R.T. | ACMA Test #4 | 2.41(1000°C) |
| Modulus of Elasticity (Young's Modulus) | GPa | ASTM C848 | 675 |
| Flexural Strength (MOR) | MPa @ R.T. | ASTM F417 | 51.8 |
| Poisson's Ratio, υ   | -         | ASTM C818 | 0.05 |
| Fracture Toughness, KIC | MPa x m¹/² | Notched Beam Test | 2.6 |

## Thermal

| Max. Use Temperature (°C denotes inert atm.) | °C | No load cond. | 985 |
| Thermal Shock Resistance | ΔT (°C) | Quenching | >1500 |
| Thermal Conductivity | W/m-K @ R.T. | ASTM C408 | 20 |
| Coefficient of Linear Thermal Expansion, αl | μm/m-°C (-25°C through ±1000°C) | ASTM C372 | 1.0-2.0 |
| Specific Heat, cp | cal/g-°C @ R.T. | ASTM C351 | 0.19 |

## Electrical

| Dielectric Constant | 1MHz @ R.T. | ASTM D150 | 4.0 |
| Dielectric Strength | kV/mm | ASTM D116 | 374 |
| Electrical Resistivity | Ωcm @ R.T. | ASTM D1829 | 10¹³ |

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