
BORON CARBIDE (INDIA) PVT. LTD.



Bhukhanvala Chambers, Plot No. B-28, Veera Indl. Est., Veera Desai Road Extn.,
Off Link Road, Andheri (W), Mumbai - 400 053. **Visit us at : www.boroncarbide.org**
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Usage of Boron Carbide as a Wear Additive in Diamond Tools

Traditionally Tungsten (W) and Tungsten carbide (WC) have been used to alter wear characteristics of Diamond Tools. While Boron Carbide (B_4C) is the third hardest material known to man after Diamond and CBN and with a much higher hardness than WC it has not been extensively used in the Diamond Tool industry.

The limited use of B_4C in place of W and WC in the Diamond Tool industry has been primarily due to the uneven grading and inconsistent particle shapes and distributions of B_4C powders that have been available traditionally in the market.

Boron Carbide (India) Pvt Ltd, a part of the Bhukhanvala Group has been manufacturing boron carbide powders for the Power, Refractory and Abrasive industries since 1990. In a focused development effort that has brought the group's expertise in Diamond Tools and innovations in powder processing, the company has successfully developed a special type of B_4C powder to make it suitable for use in the manufacture of diamond tools. This has been made through a breakthrough in the powder manufacturing process which allows control on both particle shapes and distribution.

The use of Vajrabor Boron Carbide powder has been commercially successful in the diamond tool products manufactured by the Bhukhanvala Group.

The ability to use B_4C in place of Tungsten and Tungsten carbide brings substantial value to the Diamond Tool manufacturing process:

- With nearly twice the Knoop hardness of WC; Vajrabor Boron Carbide powders are a superior replacement of both W and WC powders as wear additives in the bonds of Diamond circular saws
- Vajrabor Boron Carbide has a density of only 2.5 gms/cm³ compared to 14.2 gms/cm³ for Tungsten Carbide and 18.5 gms/cm³ for Tungsten powders. This means that for the same amount of wear particles required, the amount of B_4C is substantially lower than W and WC. This results in a substantial reduction in the density of the bond and an overall reduction in the weight of the bond resulting in major savings in the bond cost.

Boron Carbide (India) offers its powders for the Diamond Tool industry applications in the following recommended grades:

Vajrabor HP1.5 :	to replace 0.7 micron WC Powders
Vajrabor HP3.5:	to replace 3.0 micron W and WC Powders
Vajrabor HP8:	to replace 8.0 micron W and WC Powders

Customised sizes of B_4C powders can be made on request

For further information please contact:

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