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Quality of BN

All BN is Not the Same

HEXAGONAL BORON NITRIDE (CHEMICAL SYMBOL BN)

Hexagonal Boron Nitride (h-BN) provides not only superior stability to molten aluminum but also total "non-wetting" so that a Teflon®-like non-stick surface can be created by painting a layer of BN onto most any substrate -- be it ceramic, metal or graphite.

Hexagonal BN corresponds to the same crystal structure as graphite and is sometimes referred to as "white graphite". Boron Nitride exhibits excellent thermal conductivity, high electrical resistivity, chemical stability [being stable in air up to about 1000 C or 1832 F] and excellent high temperature lubricity. The more common uses for h-BN are for cosmetics (provides lubricity and sheen), thermal fill for plastics (provides thermal conduction away from hot spots), paints for use with molten metals, high temperature lubricant, ceramic hot pressing, and feedstock for cubic BN (c-BN) production.

Boron Nitride is most commonly produced using what is known as the Melamine Process where melamine powder (yes, the same stuff used to make melamine plastics) is mixed with boric acid and reacted in nitrogen up to 2000 C. These high firing temperatures are required to achieve a high degree of "crystallinity" and purity. Otherwise, the BN powder is "chalky" and not lubricating, and a substantial amount of unreacted boric oxide will be retained. A low-fired, lower-cost BN powder is sometimes used (by other coating manufacturers) to produce lower cost BN paints. However, the low crystallinity of low-fired BN produces a soft, chalky (non-lubricating) paint with very poor adherence and wear resistance, and the higher boric content greatly reduces the chemical resistance of the coating and will lead to substantial pickup of impurities if used with molten metals.

Other producers of BN powder employ a batch production process in which the BN is produced in large pots. Powder produced toward the center of the pot will have different characteristics (crystallinity, purity, etc.) than powder produced near the edge, top or bottom of the pot. Although the contents of the pot(s) are blended, the overall quality of the powder is reduced from the ideal.

ZYP Coatings, Inc. has developed a new, unique, state-of-the-art, continuous process for producing Boron Nitride that provides for highly uniform, ultra high crystalline, ultra high purity powder and is the highest quality BN powder available for paints. In fact, the purity is so high that the powder meets the very strict purity/crystallinity requirements for the most costly cosmetic grade BN powder. Further, the geometry and powder size of the BN powder is controlled within very tight specifications that have been proven ideal for paints.

Thus, "All BN is not the same." The BN used by ZYP Coatings, Inc. for its BN paints is ultra-high-purity made by our unique process to produce the very best BN coatings available.

Teflon® … reg. trademark of DuPont