

# BORON NITRIDE COATINGS

## Aqueous Coatings for High Temperature Protection, Lubrication and Release

**Boron Nitride (BN) coatings** are composed of a high purity BN powder base paired with a high-temperature bond phase. Supplied in a liquid form suitable for brushing, they can be diluted with water to spraying and dipping consistencies and applied to a variety of porous and non-porous materials including ceramics, metals, graphite and glass.

Resistant to and non-wet by most molten metals, slags and drosses, **BN coatings** can be used up to 1372°C (2500°F) in a reducing atmosphere and up to 850°C (1562°F) in an oxidizing atmosphere, and retain many of its properties such as high temperature lubricity and corrosion resistance.



## New and Improved Grades

Suspension stability and effective solids dispersion are important for coating consistency and performance. A precisely engineered and high purity BN powder, a nearly neutral pH and a premium alumina binder makes for a new and robust base for Boron Nitride Coating grades SF+ and 10SF+. The improved binder dispersion offers more consistent and even coating layers for better adhesion and performance. The resulting solids stability reduces settling and allows for easy mixing and tighter viscosity ranges of the coating.

With these improvements, BN coatings not only offer excellent performance in a broad range of demanding applications on ceramic and metal substrates, but also a better fit for automated and robotic applications or when there is extended time between uses.

**Boron Nitride Coating - type SF+:** A general-purpose thick coating offers premium value and flexibility of concentrated BN in aqueous phase that can be used as is, or diluted with water to desired thickness and viscosity.

**Boron Nitride Coating - type 10SF+:** A ready-to-use formulation for spraying, brushing or dipping, 10SF+ combines simplified set-up, efficiency and performance in automated and robotic applications, eliminating possible variation caused by dilution on site.  
Specialized Grades

Specialized BN grades are differentiated by the type of inorganic binder used. These grades offer a range of physical properties such as hardness and adherence in more specialized applications with specific substrates.

**Boron Nitride Coating - type A:** A high-viscosity paste with a unique aluminum phosphate binder and higher solids content for custom dilution. Offers a very strong bond with many different refractories and glass substrates.

**Boron Nitride Coating - type V:** A thick composition with a magnesium silicate binder that dries to a harder coating, particularly useful in applications requiring additional durability such as moving parts in molten metal. Excellent for coating graphite.

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## BORON NITRIDE COATINGS

GENERAL PROPERTIES	Type SF+	Type 10SF+	Type A	Type V
Carrier Liquid	Water	Water	Water	Water
Binder Phase	Alumina	Alumina	Aluminium Phosphate	Magnesium Silicate
pH	5.5 – 7.5	5.5 – 7.5	1.0 - 3.0	>7.5
Viscosity (cps)	6,000 - 15,000	300 - 2,000	50,000 - 200,000	3,000 - 12,000
Specific Gravity (g/cc)	1.2	1	1	1
Color	White	White	White	White
Coverage, Ft <sup>2</sup> /gallon	100- 400	100- 400	100- 400	100- 400
Shelf Life at RT, Months	12+	12+	12+	12+
<b>Coating Composition</b>				
Total % solid Phase	31	16	55	33
Use content	>70	>60	>70	>90
<b>Use-Temperature</b>				
Reducing/Inert	1370°C	1370°C	1370°C	1370°C
Oxidizing	850°C	850°C	850°C	850°C
The properties listed are typical values and should not be treated as product specification. Custom color tinted formulations are available upon request.				

### Features/Benefits

- Ready to use, water based coatings for easy application;
- Excellent parting plane and lubricity provide outstanding release properties even at high temperatures;
- Non-wet by most molten metals, salts, fluxes - enables extreme resistance to molten metal corrosion and light metal drosses;
- Increases corrosion resistance and lifetime of refractory, metal and graphite components and tools.

### Key Applications

Hot pressing, forging, extrusion  
 Coating of launders, troughs, spoons, sieves, cups  
 Super-plastic and quick-plastic forging

### Target Markets

- Light metal processing
- Secondary aluminum manufacturing
- Glass manufacturing

### Available container sizes

Liquid coatings are available in 4-gallon cartons and 24-gallon crates. Once a container is opened, it should be used immediately. Shelf life for unopened containers at room temperature is minimum 12 months.