

BORON NITRIDE COATINGS

BNSP coatings are composed of Boron Nitride powder and a high temperature bond phase.

Supplied in different concentrations suitable for different applications. These products can be brushing, spraying, and dipping and applied to a variety of porous and non-porous materials such as graphite, metals, ceramics and organics.

BNSP coatings can be used up to 1400 °C in a reducing atmosphere and 900 °C in a oxidizing atmosphere, and will retain the properties of boron nitride such as:

- ⇒ Excellent lubrication and mold release.
- ⇒ Electrical insulation.
- ⇒ Heat resistance.
- ⇒ Thermal shock resistance.
- ⇒ Corrosion resistance
- ⇒ Low wettability against molten metals, salts, fluxes and slags.



COATINGS GRADES

BNSP-W

Boron nitride water based coatings in different boron nitride contents for different applications such as:

- Aluminum extrusion.
- Non ferrous foundries: aluminum, magnesium, zinc
- Glass bending.
- Superplastic forming.
- Welding, brazing and soldering.

Key attributes:

- Non-wetted by molten aluminum, magnesium, and their drosses
- Protects ceramics, metals and graphite
- Maintenance is reduced
- Dilutable to any level
- Applied like housepaint
- Thermal shock resistance

BNSP-A

Boron nitride alcohol based coating.

Same application and attributes that BNSP-W coatings but with a higher dry speed.

SHS CERAMICAS coatings are proven lubricants and release agents for high temperature use where graphite and similar products fail. With BNSP Coatings it is possible to coat metals, ceramics and graphite to protect these against aggressive melts during high temperature applications.

COATINGS PROPERTIES

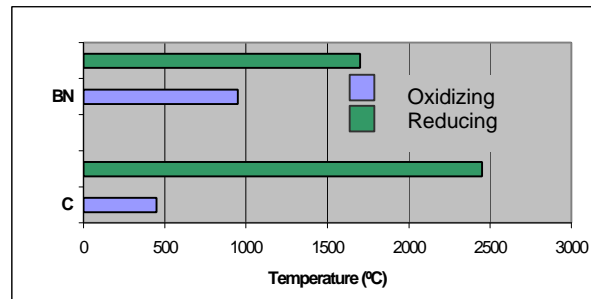
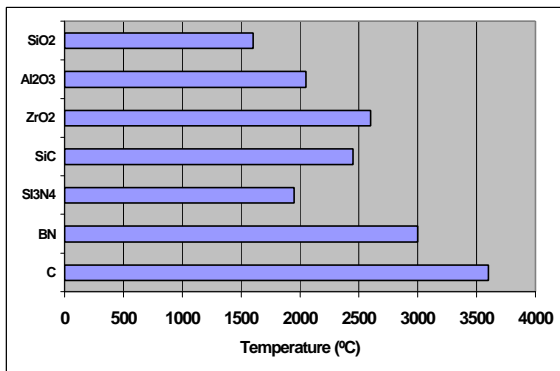
SHS coatings protect surfaces from extreme conditions of high temperature, corrosion or oxidation.

SHS boron nitride powder is common to all these coatings. The binder in each varies in type and concentration. The purpose of the binder is to improve the adherence of the boron nitride to the contact surface while the boron nitride performs the protection function.

Boron nitride has many advantages when is compared with other alternative materials for similar applications. Here below two comparative charts. One refers to the melting points of different ceramic materials compare with that of graphite, and the other chart refers to the maximum use temperature of boron nitride and graphite in oxidizing and reducing atmospheres.

PROPERTIES	BNSP-WL5/25				BNSP-WM15/25		BNSP-WH20	BNSP-A
Active ingredient	BN							
Binder	Alumina				Silicate		Phosphate	Cellulose/ Hectorite
Purity (% BN)	98							
Max. use temp. (°C)	900 Air				900 Air		900 Air	900 Air
	1400 Vac				1400 Vac		1400 Vac	1400 Vac
	1800 Inert				1800 Inert		1800 Inert	1800 Inert
Hardness	Low				Low		Med	Low
Adherence	Med				Med		High	Med
Liquid carrier	Water				Water		Water	Ethanol/ Acetone
Percent active ingredient (% BN)	5	10	20	25	15	25	20	25
Specific gravity (g/cm ³)	1,03	1,07	1,10	1,18	1,10	1,20	1,20	0,95
pH	~6,0	~5,0	~4,0	~3,0	7-8		1,5-2,5	-
Dried Composition (% solids)	8	14	25	31	18	29	33	29
Viscosity (cps)	~500 (2/60)	~1000 (2/60)	~1000 (3/60)	~1500 (3/60)	~5000 (4/60)	~10000 (4/60)	~10000 (4/60)	~800 (3/60)
Coverage (m ² /l)	5-15				5-15		5-15	5-15
Color	White				White		White	White
Shelf life (months)	12				12		12	12

The values given, are typical average values. They do not represent a specification. Please contact your relevant sales manager.
Coverage values depend upon coating thickness and substrate porosity and roughness.



SHS CERAMICAS coatings, when applied to metal, ceramic or graphite as a thin economical layer, will produce a surface to wich molten aluminum, magnesium and their alloys and drosses will neither stick nor adhere.

Uses:

- Ceramic throughs
- Dross press heads
- Aluminum extrusion
- Ladles
- Ceramic runners
- Permanent molds
- Immersion tubes
- Filter bowls
- Ceramic stalk tubes
- Skimmers

APPLICATIONS-RECOMENDATIONS

BNSP-WL

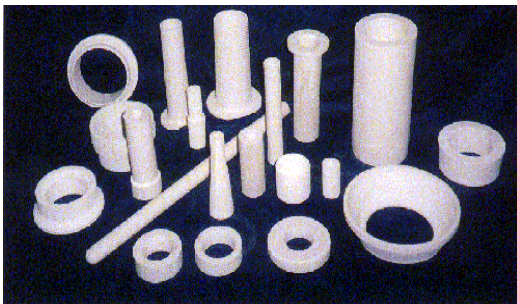
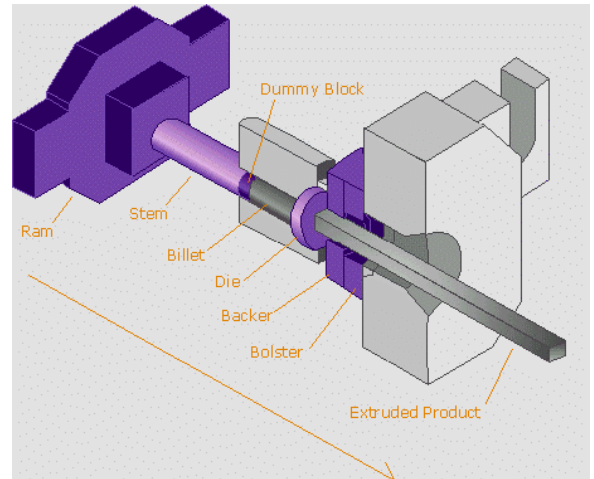
Coating grades formulating using alumina as binder and different boron nitride concentrations for general purposes. A higher boron nitride content assure a better performance in tougher working conditions. These grades contains an acid to stabilize the alumina binder system and is necessary to obtain the coating durability.

BNSP-WL5: The lowest boron nitride concentrated product specially formulated for the aluminum extrusion process. Ready to use.
A thin boron nitride layer is guaranteed.

BNSP-WL10: Same coating properties as WL20 type. Ready to use for dipping or other applications that need a diluted product.

BNSP-WL20: Standard product that can be used just as it is or to be diluted to the necessary concentration.

BNSP-WL25: Thickest version of this type of coating. Very versatile paint and can be brushed or to provide thicker coatings.



BNSP-WM

Coating grades formulating using silicates as binder system. It assures a high adherence in general application. Also when it is not convenient a low pH. These products have a neutral pH.

BNSP-WM25: The thickest version of coating.

BNSP-WM15: Same coating properties as WM25. Thinner layer.

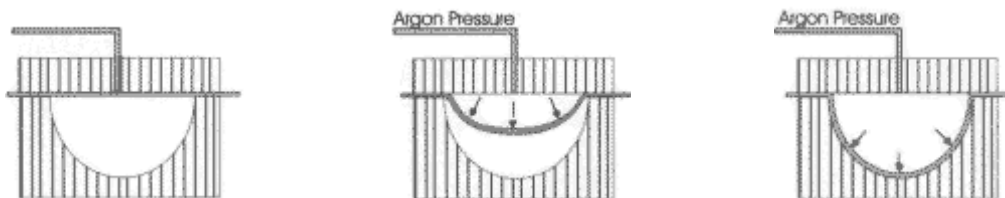
BNSP-WH

Boron nitride coating formulated with a high boron nitride powder content, and using phosphates as binder that assures an extremely high adherence. Specially recommended to be used in the glass bending process. These products have an acid pH.



BNSP-A

Boron nitride coating formulated using alcohol as carrier. Use when de customer wishes a faster-drying paint. Specially conceived to be used in superplastic forming processes.
Application: brushing



COATINGS PREPARATION

As with most coatings, shaking or stirring should be done until the coating is well suspended and uniform in texture. All surfaces to which coatings are to be applied should be clean, dry and free from grease or oil. Metal or other smooth surfaces may require surface roughening to ensure best adherence. Roughened or porous surfaces normally do not require further preparation. Dilute with distilled water if is necessary. Thoroughly dry before use. Do not contact wet coatings with molten metals.

SPRAYING

- Use standard spraying equipment
- Spray at a distance of 15 to 30 cm
- Use short bursts rather than a continuous spray
- Coating should be applied in thin layers and kept as dry as possible to minimize cracking and peeling
- Let the applied layer air dry completely before applying more layers
- Adjust the spray angle and sweeping motion in order to cover all pores and surfaces

BRUSHING

Coatings should be applied in a series of layers using a minimum brush action to prevent re-wetting and re-dispersion of the previous layer. Air dry completely before applying more layers.

DIPPING

In this case, it is difficult to apply more than one layer. The consistency should be such that the maximum thickness is applied in a single coat. If peeling occurs, the coating should be diluted with water.

CLEAN-UP

Clean air tools or brushes immediately after use. BNSP coatings can become hard to remove when not removed quickly. Special cleaning attention should be given to gun orifices, needles and hoses.

STORAGE

BNSP coatings should be protected from freezing. Previously frozen product is not usable. A storage temperature of > 5°C is recommended.

HANDLING

Avoid prolonged exposure to skin. MSDS is available.

PACKAGING

All SHS CERAMICAS coatings are packaged in plastic pails of following weights:

BNSP-WL5/10 :	5 and 25 Kg.
BNSP-WL20/25 :	1 and 5 Kg.
BNSP-WM15/25 :	1 and 5 Kg.
BNSP-WH20 :	1 and 5 Kg.
BNSP-A25 :	1 and 5 Kg.

Minimum shipment 5 Kg.

