GE
Advanced Materials

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Boron Nitride (BN) Coatings

GE Advanced Materials' boron nitride coatings provide the benefits of BN – excellent lubricity, non-wetting, and high temperature stability – in an easy-to-apply medium for a wide range of applications.

Release Agents, Lubricants, and Protective Coatings

Boron nitride remains lubricious and inert even at extremely high temperatures. Coatings made with BN prevent sticking to increase the life of dies/molds, improve product surface finishes, and reduce production times.

Metal Processing

In molten metal processing and metalforming applications, BN coatings protect surfaces which come into contact with hot and molten metals. BN inhibits corrosion and chemical attack and provides easier release and longer mold/die life. Applications include casting, stamping, forging, extrusion, and powder metallurgy.

Glass Making

Boron nitride's high temperature lubricating properties make it ideal in glass making, where it helps to minimize surface defects, improves mold/die life and release, and reduces clean-up time. Most glass formulations will not stick to BN.

Plastic / Rubber

Producers of injection-molded plastics and elastomers benefit from BN in die and molding applications. Boron nitride improves die release and increases production speeds.

Boron nitride coatings are offered in a variety of forms and sizes.

Sintering

Sintering of metallic and ceramic powders is typically done on graphite plates. A coating of BN can essentially eliminate carbon contamination, reactivity, and sticking - all of which can occur at sintering temperatures.

Welding and Brazing

Boron nitride coatings are ideal for welding and furnace brazing. They protect surfaces from weld spatter and provide superior stop-off protection. BN coatings also protect MIG/MAG welding nozzles from weld spatter.

General Characteristics of Boron Nitride

- Electrical insulator
- Low dielectric constant and loss
- High temperature stability
- Thermal conductor
- Lubricious
- Inert
- Non-wetting

GE imagination at work

Easy Application

Boron nitride water-based coatings are available in one and five gallon containers, and in several grades. All formulations can be applied by brushing, rolling, dipping, or spraying using various commercially-available methods.

Water dilution is recommended to enhance application for grades with higher solids content. Dilution is required for grade GPC, due to its thick consistency. (Please see chart below for dilution details.) Multiple coats may be necessary for complete coverage. Forced drying at 80°C for 20 minutes is recommended for each layer. BN can also be dried at ambient temperatures, although longer drying time will be required.

BN coatings can be applied to either hot or cold surfaces. Dried coatings can be readily handled, smoothed, or polished with a soft, dry cloth.

In addition to the coatings described above, BN is also available in 13 oz. aerosol spray cans, shipped in 12-can cartons. Each can provides approximately 100 sq. ft. of coverage of high purity, extremely fine BN crystals in a fast-drying, solvent-based carrier. This product produces a smooth coating with even film build.

Instructions for Use

These instructions are general guidelines for usage. Actual use may dictate variations from established practices. Additional guidelines may be obtained by contacting any of GE's sales offices listed below.

All dilution should be done using distilled or deionized water. All solids must be re-suspended before using product.

Brushing: Agitation of the paint is recommended prior to each application. Unused coating should be kept covered when not in use to prevent evaporation of water or contamination of product.

Spraying: Use Binks Type 7 air gun or equivalent at 50/60 psi. Should thinning be necessary, use distilled or deionized water.

Dipping: Allow 40 minutes drying time at 80°C between immersions.

Boron Nitride Coatings

Grade	HPC	GPC	EPC	Aerosol Spray	FPD	FPC	LPC	RPC
Color	White	White	White Green (available as grade **CPC**)	White	White	White Green (available as grade **VPC**)	White Green (available as grade **TPC**)	White
Solvent Type	H_20	H_20	H_20	Organic Solvents	Dry	H_20	H_20	H_20
Contents Binder	BN/TiO2 Bentonite	BN Bentonite	BN Bentonite	BN Bentonite	BN/Alumina Bentonite	BN/Alumina Bentonite	BN/Alumina	BN Silicate
% Solids	36%	29%	11%	N/A	100%	16%	25%	23%
Relative Hardness*	4	4	4	3	2	2	2	1
Recommended Dilution, if required	2:1	2:1	Optional	-	Per Instructions	Optional	2:1	2:1
Use Temperature	850°C Oxidizing 1800°C Inert / Vacuum							550 °C
Application	High Purity - Forging, Lubrication	Concentrated - General Lubrication, Release	Economical - General Lubrication, Release	Convenience - General Lubrication, Release	Release, Forging, Lubrication, Refractory Protection	Release, Forging, Lubrication, Refractory Protection	Concentrated - Excellent Lubrication, Release, Refractory Protection	Release, Protective Coating
Electrical Resistivity of Boron Nitride Component	$>1 \times 10^{15}$ ohm-cm - typical							

Sales Offices

USA	GERMANY	JAPAN	CHINA
T: 440-878-5700	T: 49-4152-9380	T: 81-3-5114-3774	T: 86-21-6288-1088
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