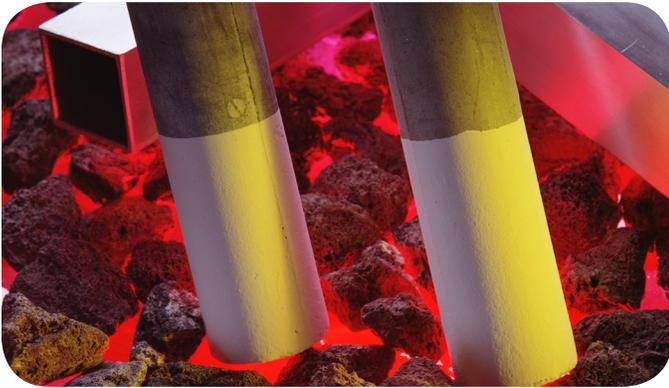


### Boron Nitride Coatings



#### Best Practices and Troubleshooting

Combat® coatings leverage Boron Nitride's unique surface protection properties to guard the contact surface against degradation due to extreme conditions of high temperature or corrosion. Various grades are differentiated by the type and concentrations of binder used to enhance the adherence of Boron Nitride slurry to the contact surface, and are generally intended for specific applications.

Amongst the three application methods – spraying, brushing and dipping, spraying is the most commonly used. Since all applications are unique in surface, conditions and services, it is not unusual to conduct trials to find a fit for the specific need. Moreover, high heat or corrosive conditions can result in high cost of downtime, damage, and personal safety and therefore may warrant reasonable care in the application.

Saint-Gobain's team of application experts provides complete assistance to help you find a solution tailored for your specific parameters.

Combat coatings are safe and people friendly compounds and don't contain harsh chemicals. To learn more about storing and handling of Combat coatings please consult the MSDS (Material Safety Data Sheet) found at [www.bn.saintgobain.com](http://www.bn.saintgobain.com).

**This technical bulletin provides a best-practices guideline when dealing with Combat coatings.**

#### SURFACE PREPARATION

All surfaces should be clean and dry and free of any grease, oil, loose scale or particles and drawing compounds. If the surface is shiny and smooth, some surface roughening with fine-grained sandpaper may be necessary. Typical material surfaces include metals, refractory ceramics, graphite, etc.

Ceramic surfaces should be examined for signs of scaling or oxidation.

#### COATING PREPARATION

As with most coatings, a thorough mixing operation should be performed by shaking and/or stirring until the coating is well suspended and uniform in texture. Coatings can be used straight from the container or thinned with water. Any dilution of the coatings can easily be done by adding and uniformly mixing water for desired consistency. A coverage guideline is to use one gallon of coating to cover 150 ft<sup>2</sup> of surface area if coating is diluted 1 part water to 1 part coating.

For spraying, the consistency may need to be adjusted to get a thin coat, and may need some trials.

#### SPRAYING

For optimum results, some spray techniques should be followed.

1. Use standard spraying equipment such as Binks Model No. 7 spray gun at approximately 50 psi.
2. At a distance of 6 to 12 inches, use short bursts rather than a continuous spray. This distance and technique will minimize excessive build-up and allows for a uniform, homogeneous surface.
3. It is recommended to use multiple thin coats (approximately 0.001") allowing ample drying in between compared to using fewer thick coats, as thick coats tend to crack upon drying and flake/peel off.
4. Allow each coating layer to air dry completely before applying subsequent layers to prevent cracking and flaking. The coating substrate may be heated to 100-200°F prior to spraying to aid in drying/adhesion.

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5. During application adjust the spray angle and sweeping motion in order to cover all pores and surfaces. Make sure to start the gun facing away from the surfaces to be sprayed due to initial spurting. Many guns will exhibit this tendency to fluctuate at start up and will adversely affect the resulting surface.

#### BRUSHING

When brushing, coating should be applied in a series of layers, with a soft bristled brush using a minimum brush action to prevent re-wetting and re-dispersion of the previous layer. Each layer should air dry completely before applying subsequent layers.

#### DIPPING

When dipping, apply only one layer as peeling may occur if more than one layer is applied. Therefore the consistency of the coating should be such that the desired thickness is achieved with one layer.

#### CLEANING UP

Always clean air tools or brushes immediately in water after use. In some cases, Boron Nitride coatings can become hard to remove when cleaning is postponed. Special cleaning attention should be given to gun orifices, needles and hoses.

#### TROUBLESHOOTING

The most common problem is excessive thickness in coating layers, resulting in flaking, peeling and cracking. If you can't apply a thin layer, then the coating is too thick and further dilution may be required. One thick layer is not a replacement for multiple applications of thin layers. The following table provides a summary of some common problems and solutions:

#### COMBAT COATINGS TROUBLESHOOTING

Problem	Cause	Solution
Won't stick on the first coat	Improper surface conditions	Recheck to assure correct type of coating has been selected for the application. Check and correct for surface smoothness, cleanliness, foreign matter, greases, oils, dirt, dust, etc.
Flaking, peeling, cracking on first coat	Coating layer is too thick	Dilute the coating to obtain a thinner consistency and to obtain coating layers of 0.001". Consistency is important to watch as coverage and thickness will vary as a result. To get the consistency just right, a clean pail or drum with capacity for dilution with water usually works well.
Overcoat won't stick	First coat is not completely dry	Remove loose coating and start over allowing for more drying time.
Flaking, peeling, cracking on overcoat	Coating is too thick	Thin the consistency and practice producing thinner layers on a test area.
Uneven coating with spray gun	Spurting gun; mixture not properly mixed; uncontrolled sweeping motion	Practice gun operation aiming at test area during start-up. Remix to uniform consistency.

For further information on Combat® boron nitride coating solutions, contact us at [bnsales@saint-gobain.com](mailto:bnsales@saint-gobain.com).



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