

STOVE BRIGHT® INDUSTRIAL USER GUIDE



Because of the high temperatures involved, stove paints are formulated to be used in particular ways. This guide contains instructions for proper use of Stove Bright® High Temperature Paint. Care in following these steps can help prevent the most common problems.

PREPARE THE SURFACE

Remove **all** rust. We recommend sandblasting, sanding, or grinding to remove rust.

Remove oil, grease, graphite, or other hard to remove contaminants. We have found Lacquer Thinner, Xylene, and Toluene to be effective against the toughest surface contaminants. Wipe with a clean white rag when cleaning the surface – colored rags can leave dye behind and therefore affect the performance of the paint. Change rag often to be sure you are using a clean rag. After surface prep and wipe down let the units stand for 10 minutes and then wipe one more time with clean rag with solvent; if the rag shows sign of debris, then repeat cleaning process.

Caution: Do NOT use petroleum distillate type solvents like paint thinner and mineral spirits. These products leave a residue that inhibits the adhesion qualities of Stove Bright® High Temperature Paint.

Caution: Do NOT use “tack cloth” or other chemically treated cloth. These products leave a residue that inhibits the adhesion qualities of Stove Bright® High Temperature Paint.

Cold-Rolled Steel preparation: For best results follow the recommendations above. If you choose to simply clean the surface using an automated wash system, then be sure to use an alkaline wash followed by two rinse cycles. Do not use any type of phosphate treatment. The final rinse cycle should be an RO or DI rinse. Be sure the metal is thoroughly dry before applying paint. To reduce the risk of flash rust, hand wipe or force dry the metal using infrared heaters, or other warm air method. Metal should be coated within 12 hours of washing to help avoid flash rust.

Aluminized Steel preparation: Use an acid etching chemical to provide a profile for the paint to adhere. Be sure all residues are removed before coating.

Contact FORREST Technical Coatings for guidance on preparing other types of substrate for optimum coating performance from Stove Bright® High Temperature Paint.

TROUBLE SHOOTING: Surface preparation

If rust is not removed completely before painting, rust will reappear on the newly painted surface over time. Painting over rust with Stove Bright® High Temperature Paint does not stop oxidation. That is why it is critical to remove all of the rust before painting.

Paint coming off the surface in large patches indicates a problem with surface preparation. The best remedy is to remove all the paint, prepare the surface again and repaint.

Paint bubbling or blistering typically indicates a problem with surface preparation. The most likely cause is a contaminant on the surface that was not removed during surface preparation.

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APPLICATION:

Because the chemistry is so specialized, care must be taken to apply the paint correctly for the best results. The viscosity of the paint, the tendency for the paint elements to separate, and the requirement for a relatively thin dry film thickness for the paint finish all contribute to special considerations in application.

Mixing:

Stove Bright® High Temperature Paint in bulk form (gallons, 5 gallon buckets, 52 gallon drums, etc.) will tend to have the solids and pigments separate during storage. The first step then is to manually agitate the paint with a stir stick or paddle, scraping the sides and bottom of the container for several minutes.

Caution: Do NOT use a drill or other electric powdered device for the manual stirring. Sparks from an electric device can ignite fumes that rise from the paint.

Next we recommend agitating the paint with an air powered mixer for 10 to 15 minutes before attempting to apply the paint.

NOTE: A mechanical paint shaker can be used to agitate the paint before loading it to spray. We recommend loading the bulk container upside-down on the shaker. Shake for 15 to 20 minutes.

The paint will tend to stay mixed for a very short period of time. When the paint starts to separate the result can be blotchy or inconsistent appearance qualities. The longer the paint is sprayed without agitation the more likely that not only will the finish quality diminish, but the coating performance will be affected due to less mixed paint on the metal.

We recommend paint application equipment that includes constant agitation during delivery of the paint to the paint gun. Some of the paint equipment suppliers can provide a lid for a 5 gallon bucket that has an agitation paddle built into the lid with settings to slowly agitate the paint while it is being fed to the gun. Similar devices are available for drums. Contact your paint equipment provider for information on the application systems best suited to your use of Stove Bright® High Temperature Paint.

Application Equipment:

You can get a great, long-lasting finish that will survive peak temperatures to 1200°F (649°C) by following the suggestions for equipment and techniques listed below. The following types of spray guns and application systems work well:

High Volume Low Pressure (HVLP) [numbers from Binks Mach1 HVLP manual]

Fluid Tip size: 1.0 mm to 1.2 mm Gun Inlet Air Pressure: 38 psi Regulator Pressure: 50 psi

Air-assisted airless guns [numbers from Graco G15 manual]

Tip size: 0.011 to 0.013 Graco spec: 411 or 413 Fluid Pressure: 600 psi

Conventional guns

Tip size: 0.012 to 0.014 tip Pressure at tip: 35 to 40 psi

NOTE: Check the owner's manual for your particular spray equipment to select the correct tip size for application of low viscosity paint. Typically the tip size correct for Stove Bright® will not be the smallest size available for your gun, but rather the next size up. Set air pressure and fluid pressure as instructed in your spray gun owner's manual.

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Applying the Paint:

Keeping the air settings low from the gun to the part allows the paint to arrive wet on the surface, while reducing the overspray. This will help the paint cover more and provide a smoother finish.

Stove Bright® High Temperature Paint is delivered “ready-to-spray”. You may reduce the product to optimize the spray from your equipment, but we recommend that you limit reduction to no more than 10% by volume with recommended solvent listed on the specific product technical data sheet.

NOTE: Too much reduction solvent can affect spray pattern, coverage and the appearance of the finish. If you find any of these symptoms, check your equipment owner’s manual for options to change the tip size to accommodate the paint viscosity without as much reduction. Typically the tip size correct for Stove Bright® will not be the smallest size available for your gun, but rather the next size up. Note that adjusting pressure at the tip can also help get better results from the paint.

Recommended dry film thickness is between 20 and 40 microns for best results. This can be achieved by applying two coats. The first coat should be a tack coat or mist coat. This is a spray of paint applied from the correct distance (approximately 10 inches from the substrate) with a smooth movement of the gun. The second coat is a flow coat that will adhere easily when sprayed a few minutes after the tack coat with a slightly slower gun movement to deliver more paint than the tack coat. For the first few units or parts coated, we recommend inspecting the finish of the second coat after 15 minutes dry time. If the coat seems blotchy or inconsistent, then applying a 3rd light coat will provide an excellent finish appearance and still be within the boundaries of the recommended dry film thickness.

Electrostatic application may require a slower thinner such as Xylene as well as an electrostatic additive such as our 03M000. Please consult your FORREST Technical Coatings specialist for assistance with this type of application.

TROUBLE SHOOTING: Application

If the paint peels or looks like shattered glass and comes off in thin strips, this is an indication that too much paint (over 50um) was applied. The best remedy for this condition is to remove as much of the paint as possible, wipe down the surface (as described in surface preparation) and repaint.

NOTE: Because the tolerance for the dry film thickness of the finish is a bit tight, you may wish to try varying pressure, tip size and application technique to get the correct result before entering into mass production mode. You can use a wet film gauge to estimate Dry Film Thickness. You must use the device immediately after application to get a good reading because the paint dries so quickly. If using a Dry Film Thickness gauge, the paint film must be thoroughly set (2 hours) to give an accurate reading.

If the finish is textured or gritty, it indicates dry spray occurred during application. This happens when the spray gun is too far from the surface, and the paint actually partially dries in the air before reaching the surface. The best remedy is to sand down the paint (you do not need to remove all of the paint), wipe down the surface with a clean white cloth and Acetone, and then apply the paint – paying special attention to the distance the spray gun is relative to the substrate.

If the paint does not appear to cover – if the metal or previous color shows through – then lightly sand the existing coating and wipe down. Then be sure the paint is stirred and agitated before spraying. If you do not have constant agitation for your spray system, you may wish to invest in this technology to help with consistent coverage and appearance of the finish.

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TROUBLE SHOOTING: Application (continued)

If the paint is a metallic color of Stove Bright® High Temperature Paint, and the appearance does not show enough metallic, then adjust you spray pressure and the distance you spray from the substrate to fine tune the application to allow the metallic to float on the top of the film.

If the paint is a metallic color of Stove Bright® High Temperature Paint, and the appearance shows too much metallic, then adjust you spray pressure and the distance you spray from the substrate to fine tune the application to allow the paint to cover the metallic flake on the top of the film.

If the dried finish appears cloudy, you may have a condition called blushing. If you can control temperature and humidity in your paint application area, then try to have setting between 65°F and 75°F with relative humidity below 50%. If you cannot control the variables of temperature and humidity in the painting environment effectively, then contact your FORREST Technical Coatings specialist for options to reduce blushing through additives. To recoat a part that is blushing, you may wish to lightly scuff the previous paint coat and wiping down with acetone before applying another light coat in controlled conditions.

Dry times & Curing:

Dry time will vary with temperature, film thickness, air movement and humidity. For conditions at 75°F with 50% humidity you can expect the following dry times for the recommended film thickness:

Tack free or dry to touch: **15 minutes**

Dry to handle or package: **2 hours**

Full air-dry cure: **7 days**

For these atmospherics we recommend recoating within 30 minutes of previous coat. Following the procedure of using a tack coat and a second coat, we recommend waiting only a few minutes after the tack coat to get the best results from your flow coat (2nd coat). If you plan to apply more paint after the second coat, you can get a smooth finish with good coverage, recoating within 10 to 15 minutes of the previous coat allows the two coats to flow together without sagging or runs.

You can reduce the time from painting to the “Dry to Handle” stage by force drying the paint. This is done by first waiting 5 - 10 minutes after painting to allow the solvents to flash-off, then applying heat (no flame or spark) to bring the surface temperature to a range of 180°F to 220°F for a period of 15 to 20 minutes. Allow the unit to cool (should only require a few minutes to cool) after this heating cycle and it will be ready to handle and package.

Initial burn in-service:

The coating is set in its final heat resistant form by exposing the coating to in-service temperatures through a process we call the initial burn. The process varies slightly for the type of unit that was painted, but the result should be a color stable finish for normal operating temperatures for the unit that will last for years. During the initial burn process the product typically gives off an odor and a small amount of visible smoke as some of the elements of the paint are actually burned while other chemistry is set to hold the pigments and coating integrity for future burns by the exposure to very high heat. Please contact your FORREST Technical Coatings specialist for detailed instructions about the initial burn process for wood, pellet and gas stove units.