Capstone Mfg., LLC Application Instructions

TC Ceramic

Equipment needed in the application of TC Ceramic

Airless sprayer: Recommended sprayer would be a Graco Bulldog 33:1 or 41:1, Graco 1595 electric sprayer or the GM 7000, 7900 or 10000 gasoline powered units. Pump must be capable of pumping no less than 1.25 gallons (4.7 liters) per minute at 3000 psi. For Bulldog pumps, adjust the pressure to create 3000psi in the hose.

Tips: Recommended tip size is a .021" reversible nozzle tip, depending on the surface to be coated. (419 to 721)

Spray gun: Graco Contractor gun. Recommended is the Silver Plus with a 3/8inch (0.95cm) hose swivel. **NOTE:** ***Remove all filters in the gun handle and pick up tube!*** For smaller jobs an AR-1 spray gun can be used. This gun requires compressed air at 80-120 psi in excess of 100 feet (30 meters)

Hose: 50 feet (15 meters) of 3/8 inch (9.5mm) hose. From the pump to the spray gun, **never** use a ¼ inch (6.35mm) hose. Always use a 3/8 inch (9.5mm) inch hose or larger. When the distance from the pump to the point of applications exceeds 100 feet (30 meters), the first 2 sections of 50 foot (15meter) hose needs to be ½ inch (1.3cm), then stepped down to 3/8 inch (9.5mm) hose for no more than 2 sections of 20 meters each. Keep in mind, the longer the hose and then higher the elevation from the pump to the spray gun, the greater the problems. In this case a ½" (1.3cm) hose may be required.

Mixing equipment: ½ inch (1.3cm) variable speed electric drill with standard "mud paddle".

Brushes or Rollers: Smooth textured 4" (10cm) brush and TC Ceramic roller.

Cleanup: Access to water and water based solvents or paint thinner.

Surface Preparation

- Clean the surface to be coated with a pressure washer, leaving the substrate free of solvents, grease, dirt or dust.
- If the surface has been cleaned with a solvent, make sure that all solvent oils and protective compounds have been removed from the surface.
- Once cleaned, make sure the surface to be coated is completely dry.
- Although primer is not required for most surfaces, if rust or other conditions persist after cleaning we would recommend a high temperature inorganic zinc primer that can withstand the temperature of the surface to be coated.
- Some surfaces, such as glossy paint, or glaze, can be sanded for optimal adhesion.

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Product Preparation

- For ease of mixing and storing, TC Ceramic is packaged in five gallon (19 liter) hard plastic pails. TC Ceramic is ready to use as packaged. No additives or product combination is required.
- TC Ceramic is best mixed using a standard "Mud" paddle (normally used to mix light plaster materials or dry wall compound) powered by a ½ inch (1.25 cm) electric variable speed drill.

When properly mixed, TC Ceramic will have a smooth creamy texture with no lumps or foreign matter. TC Ceramic is not a type of paint. It is an insulating coating. Do not use TC Ceramic with high speeds with the mud paddle trying to make it look like ordinary paint. High speed mixing can break the microshperes.

Application Parameters

The temperature parameters for TC Ceramic allow the product to be applied, in most cases, without disruption of service or having to shut down a hot surface. The application temperature range is 45°F to 300°F (7.2°C to 150°C). If a hotter surface needs to be coated, contact Capstone Mfg. for additional instructions. TC ceramic must be applied in successive thin coats and each coat must be allowed to dry completely prior to the application of the next coat. One "coat" is approximately 15 mils (15/1000 of an inch or 0.375mm) which is approximately two to three passes with the spray gun. One Gallon of TC Ceramic will cover approximately 50-60 square feet (4.65 to 5.58 square meters) at a thickness of 15 mils 0.375mm) to 18 (0.5mm). To calculate an uneven surface such as uneven metals or corrugated metal surfaces it is best to add 25% of product.

Mixing Procedures and Application Instructions

1. Remove the top from a five gallon (19 liter) pail
2. Install mud paddle onto heavy duty ½ inch (1.3cm) variable speed electric drill with handles.
3. If necessary, push the mud paddle through the top crust repeatedly, changing angles of the paddle to break up the crust. Push the paddle down into the liquid at the bottom of the bucket and pull up through the crust until the mixture is semi-blended.

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4. Once semi blended, insert the paddle though all of the solids and into the liquid. Activate the drill and slowly start to rotate the paddle. Be sure to hold the sides of the pail with feet and knees to prevent it from spilling
5. Mix slowly, until the TC ceramic is the consistency of marshmallow cream, or thick pudding. Never use high speeds. Do not exceed 300rpm.
6. Place a strainer on top of a clean five gallon (19liter) bucket.
7. Pour the mixed product through a strainer, using a small roller if needed, to speed up the passage of TC Ceramic through the strainer. This removes the lumps that may plug the sprayer.
8. Remove all screens from the sprayer feed tube and remove the filters in the gun and in the sprayer. Filters do not help in the use of TC Ceramic.
9. Prime the sprayer using a bucket of clean water. With the pump running, and the spray gun spraying water, switch the feed pipe on the sprayer from the water to the TC Ceramic feed bucket. Running water through the spray gun during this transition will keep the water from backing up into the TC Ceramic feed bucket.
10. When all of the water has been expelled through the spray gun, the pump will sound noticeably different and TC ceramic will begin to flow.

Tips and Techniques

1. Make smooth, overlapping passes over the same area, using a steady uniform motion.
2. Two or three passes with the spray gun, depending on the power, will generally give you about a 15 mil (15/1000 inch) (0.4mm) coating. It is okay to have slight holidays, or to see lightly covered metal through the product.
3. If the spray gun stops up, rotate the Revers-A-Clean tip and spray into a spare bucket. Rotate the tip back into position and resume spraying.
4. Keep a spare tip with you, and if one stops up, exchange for a clean one. Soak the stopped up tip in water and clean out.
5. On hot surfaces (hot pipes and valves over 200F/93C) apply one misting coat. This can be done by standing farther from the substrate, and allow to cure completely to avoid moisture bubbles. If moisture bubbles appear, scrape the bubble off with a putty knife and re-mist. On the next coat, come a little closer and use the same technique. The substrate should reduce in temperature with each coat.

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6. If applying TC to a cold surface, surface, and ambient air must be warm enough to cure (60F/16C or warmer.) Each coat must be allowed to cure 24 hours or longer with as much air flow and heat as possible. If the substrate can be brought up to 65C/150F, let it operate at that temperature for several hours, then bring it back down to ambient. Once you have attained ambient temperature, lower the temperature of the substrate to 2C/35F for several hours. Reduce the temperature again to -2C/28F for several hours. At this point you can drop the temperature 10 degrees at a time for several hours until the operational temperature of the substrate is reached.
7. Let each coat cure completely. While normal dry time is 24 hours per coat, ambient conditions can affect this time. Humidity or cold weather can increase dry time, while good air flow and higher heat can speed up curing of the product.
8. When coating a surface at ambient temperatures that will be brought up to temperatures over 150F, unit should be brought up to 150F/65C for a period of several hours prior to elevating to the actual operating temperature. This will cause the remaining moisture to cure out of the product. Without the slow increase in temperature, there is a good chance that moisture bubbles will be trapped, which in turn will create blisters or bubbles.
9. Cleanup and care of the equipment is vital both during and after the application. Always keep a pail of water near the gun at all times. If there is a need to stop spraying for even a moment or two, place the gun inside the pail of water. This will insure the gun will be kept cool and that no product cures inside the tip or the gun. If leaving the equipment unused or unattended for more than 10 minutes, follow the cleanup techniques listed in number 9.

Cleanup

Cleanup is easy but is vital to the care of the equipment being used. When done with application, immediately cover all buckets with unused product still in them. Remove pump from the product bucket and move back to the water bucket. Run water through the pump until all product is out of the hose. Clean the gun and tip with water. Run paint thinner through the pump and leave some in the pump until the next use.