



128A. Slurry Application (Replaces TB 128)

The use of slurry applications is **frequently used** by most applicators. It allows for a fast installation time, delivers a flatter floor with few, if any, surface imperfections and gives almost a perfect quarter inch application.

Compared to a hand trowelled floor, where a five man crew normally lays between 2500 and 3500 SF in a day, a slurry system can be applied at three times that rate. Of course, most slurry systems require a top coat the next day, but the overall labor savings is usually quite substantial, particularly in large open areas. For working around equipment in existing plants, the hand trowelled systems are generally preferable, particularly during short 2 or 3 day down times.

Compared to power trowelled systems, where comparable outputs to a slurry system are achievable, the slurry system offers the major advantage of providing the customer with a resin-rich, more impervious floor that will far out perform a drier, top coated floor, particularly in wet process environments.

The slurry system is still a resin rich system. It is even slightly more resin rich (**about 2.5:1 compared to 3.3:1 by volume for our Guard 51 hand trowel mixes**) due to the use of the finer sands. Looking at the cross section of a sample of our slurry it is readily visible as a very dense material. The physical properties of the troweled system versus the slurry system are very similar. The properties of impact resistance, thermal shock and compressive strength are little changed.

While there are several ways of arriving at what is used and how it is installed there are a few basic guidelines that should be followed and a few precautions. Knowing the final surface finish desired by the customer can be the deciding factor in how you install the slurry. If a very aggressive finish with highly anti-slip properties is the deciding factor for the customer, the top coat can be eliminated, leaving a very aggressive finish with its related difficulty in cleaning. Top coating will make the surface easier to clean and the surface will be moderately aggressive. A more aggressive profile can be produced by a light broadcast of sand into the top coat or, use aluminum oxide at approximately 4 ounces per square foot. Normally a 35 grit is the median size aggregate used.

The mix that is recommended as a starting amount is a 1:1 mix, by volume. This can be changed to compensate for cold temperature by decreasing the sand quantity, or by adding more sand to body up the mix for surfaces having more slope, or, to suit personal preference. Some contractors use 25% of a 50 lb bag of sand which would be 12.5 lbs or .825 gallons per gallon of resin. Note that this is not a self leveling mix per se, but has to be trowel applied, followed by spiny rolling or loop rolling.

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Note the difference in the sand in comparison to the usual ICO Fill Hand Trowel mix. We recommend one grade of sand (normally a **35-40** mesh sieve size) as opposed to the blend of **four** grades of sands in the usual hand trowel mix for 1/4" applications.

Obviously, the surface preparation and detail work is going to be the same as with other overlayment techniques. It is important that all surface imperfections are pretreated first. While one would think a very wet mix would flow into and fill pits, holes and cracks, this can be a problem with a slurry application. When the sand is broadcast into the wet slurry mix it would displace the wet mix in any deeper areas and cause the surface "to pile up". This is why the slurry mix application thickness must be fairly uniform before the broadcast is done. Any thick areas will take on more sand giving a high spot in the surface. In Item 9 note the smoothing done with a trowel and/or porcupine roller. It is important to work out all marks or ridges before proceeding with the sand application. Another way to assure a smooth application is to apply two thinner slurry coats rather than one thick coat.

Any surface defect such as holes, significant chips or divots, cracks that have been routed out and control joints that are to be filled should be filled first with ICO Gel, or any of our Milamar Patch products. ICO Patch or 3300 FS would be used where there are deep fills. Some contractors make a fill mix from ICO Primer and 36 mesh silica sand. It is a good practice to use fast cure materials (unless the working area temperatures are above 75°F) for such patches.

The slope of the floor to be covered should be checked to be certain there is no more than 1/8" per foot slope. If so it will be necessary to add more sand to the initial slurry mix to prevent creeping of the slurry on the slope. The ratio of sand to liquid can be increased to 2:1 or 3:1 depending on the degree of slope. If the slope is more than 1/8" per foot it would be wise to try a sample application on the slope to check it. Be sure to watch the sample for a few hours as it may take a while for the material to creep. If there are sumps around the floor drains where the slope increases dramatically for the last two or three feet around the drain, it will be necessary to add more sand to the mix used in those areas. Another method is to hand trowel those areas using a mix of sand and resin. A ratio of 3:1 by volume will be satisfactory for that purpose. Using the slurry sand, which is all the same mesh size, will be a drier mix than the conventional hand trowel mix.

The floor should first be primed with one of Primers at a coverage of about 160-200 SF/gallon and seeded with a 20-40 mesh silica sand. This assists in preventing the slurry mix from creeping in sloped areas.

Gauging the thickness of the initial slurry mix application is important. The principal of a slurry is the application of a 1:1 mix **by volume of epoxy liquid to sand** at approximately 1/8" so that when the balance of the sand is broadcast it will "swell" the thickness to approximately 1/4" by doubling the volume of material on the floor. If this is going to take place it is important to make sure the slurry is applied at the 1/8" in a uniform fashion. Note in Paragraph 8 the stated mix volume should be spread at a rate of about **17** SF per one gallon of resin and catalyst plus equal **volume** of sand. Using a quarter inch notched squeegee or trowel will spread the desired amount. Using a good gauge rake will also do it correctly. But, using the proper tools plus checking how far each batch should cover is a backup method of being certain the correct amount is being applied.

In seeding to excess, use the same size silica sand at a coverage rate of about one pound per SF. Using blowers or a sand blast pot to broadcast the sand is acceptable. The hoppers for spraying acoustical ceiling mixes can also be used. Be sure all of the customer equipment is protected by draping and covering. Also watch for excessive airborne dust which can be caused by dirty sand containing too many fines or loam in the bag. If mechanical blowers are not used, the sand can be hand thrown in a chicken feeding fashion. It is important to throw the sand up and let it settle down onto the surface.

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Using a blower should be done somewhat in the same manner. Don't aim the stream of sand directly at the surface, aim out and away and let it settle down.

Always check the sand to make sure the sand is uniform in size and free from clumps. Usually, it should have a sieve analysis graded in a very close range, with no large particles. The sand can be checked for loam or dirt by putting sand into a glass jar to about the half full mark then filling the rest with water. Shake the jar and let it settle. This will bring all the fine loam to the surface and if there is more than a trace of loam on the surface of the sand the sand should either be rejected or do not use blowers. Excessive loam should be cause for rejecting the sand because this is a sign the sand was not washed properly. If there are clumps of sand they should all be broken up before broadcasting. This can be done by hand or by pouring the sand into a bucket before pouring into the hopper.

When the fast cure versions are being used or when Super Guard resin is being used it is important to work quickly to get the sand applied closely behind the spreaders of the slurry mix. This is critical when you have temperatures above 70°F. Waiting too long may allow the mix to start to gel and the sand will not settle into the mix. This would produce a finished thickness only half of what is desired and would be very splotchy in appearance.

Always vacuum the loose sand from the cured slurry as it is impossible to remove all of the loose sand from the surface by sweeping. Occasionally the customer will want the dry look of the uncoated surface, but be sure this is agreed upon before selling the application.

This will be a very aggressive profile and will be very difficult to clean. A top coated slurry application is usually the preferred finish.

Before top coating, the surface should be lightly sanded or ground with stones. This is best done with floor buffers with stones or with terrazzo or planetary grinders. This removes all of the projecting pieces of sand and other imperfections. The object is a light pass to remove only the high spots. This is done very quickly, without holding the machine in one spot. Be sure to grind the surface in as uniform fashion as possible. Do not get it too smooth in one area as opposed to others. It is important to vacuum the surface thoroughly when the grinding is completed.

The application of the top coat should be a uniform **80 SF** per gallon. This is usually done by pouring out a ribbon of the coating, spreading with a flat squeegee and back rolling with a 1/4" nap roller. If there is a variation in the texture of the surface a light broadcast can be used to blend in the areas. Be absolutely sure the same exact sand is used for this as was used in the original broadcast. Remember to apply sand very sparingly- it is easy to apply more, but once applied you cannot take it back.

The finished floor should be a very uniform surface with no trowel marks or other ridges and marks.