

Stucco on Concrete: Pre-cast, Poured-in-Place and Tilt-Up

Placing Portland Cement Plaster on concrete structures is a simple process and successful application provided a few preliminary steps are taken to ensure bond.

When concrete is poured into a form material that will be removed after curing, an amino acid-based Form Release Agent (FRA) is applied to the forms so that the concrete will not stick and can be easily removed from that form without destroying it. Form Release Agents are acid-based and therefore work by destroying the cement matrix produced during the cement hydration (curing) process.

Form Release Agents require only a very light coating on the form to work properly. However, in an effort to “be sure,” most forms are over-coated, often to the point of puddling. This extra FRA is then absorbed into the surface of the concrete structure being produced. This is the most often where trouble begins.

In their essence, stucco and concrete are virtually the same material with different sized aggregates and a few admixtures. Therefore, if the FRA will dissolve the cement matrix in the concrete, it will also destroy the matrix in the stucco. For this reason, all formed concrete products must be washed prior to application of stucco.

The application of stucco is governed by the Florida Building Code which references as its’ standard ASTM C 926, “Standard Specification for Application of Portland Cement-Based Plaster (Stucco).” Section 6 of that standard addresses this issue very clearly.

6.2 Surfaces of solid bases to receive plaster, such as masonry, stone, cast-in-place or precast concrete shall be straight and true within 1/4 in. in 10 ft. (2.1 mm/m) **and shall be free of form oil or other elements**, which would interfere with bonding. Conditions where the surfaces are out of tolerance shall be corrected prior to the application of the plaster. Ferrous-containing form ties or other obstructions shall be removed or receded a minimum of 1/8 inch (3mm) below the surface of the solid base and treated with a corrosion-resistant coating. Non-ferrous protuberances shall be permitted to be trimmed back even with the surface of the solid base.

6.2.1 Solid surfaces shall have the suction (ability to absorb water) or surface roughness, or both, to provide the bond required for the plaster.

6.2.2 Smooth or nonabsorbent solid surfaces, such as cast-in-place or precast concrete, shall be prepared to receive Portland cement plaster by one of the following methods:

6.2.2.1 Sandblasting, wire brushing, acid etching, or chipping or a combination thereof,

6.2.2.2 Application of a dash-bond coat applied forcefully against the surface, left untroweled, undisturbed, and moist cured for at least 24 h, or

6.2.2.3 Application of a bonding compound suitable for exterior or interior exposure solid surfaces in accordance with the manufacturer's written directions.

6.2.3 Where bond cannot be obtained by one or more of the methods in 6.2.2, a furred or self-furring plaster base shall be installed in accordance with Specification C1063 or C1787 as appropriate. Where plaster base is used in areas where bond cannot be obtained by one or more of the methods in 6.2.2, accessories shall be installed in accordance with Specification C1063 or C1787 as appropriate.

The question then becomes, "How do I clean this FRA from my concrete?" It is actually easily done. Simply wet the concrete and then apply a light dish detergent solution. Allow it to soak in for a minute and then rinse it clean. Some applications may require brushing the detergent in and some may require pressure washing instead of merely rinsing. This will depend upon the amount of FRA used and the depth into which it was absorbed. **Never use an acid-based cleaner!**

FRAs are not the only contaminate that must be addressed. Often, there may be dirt, dust, gypsum or other forms of jobsite splatters that must be removed as well. For this reason, washing or brushing concrete prior to application of the stucco is paramount to a quality job.

There is another factor at play in achieving bond on concrete and that is the surface texture of the concrete. Concrete usually has a very smooth surface with no mechanical keying ability. However, stucco needs two types of bond to ensure a durable finish.



Figure 1 – Mechanical key bond

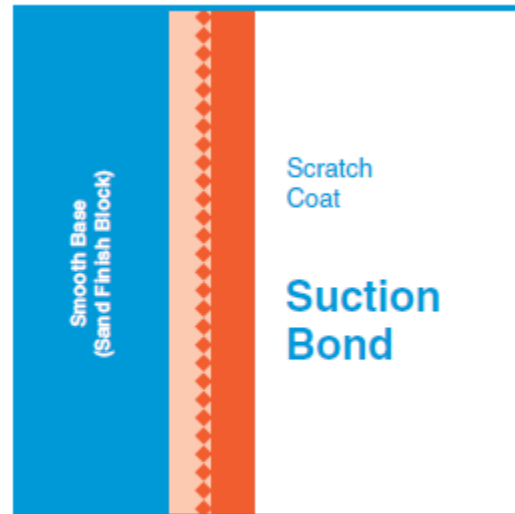


Figure 2 – Suction Bond

Approved procedures for creating a suitable surface upon which to plaster are outlined in Section 6.2.2 above.

For further information, contact In-Spex, LLC at www.in-spexllc.com or (407) 709-9001.