BONDING AGENTS FOR PLASTER:

Stick to the Rules for the *Best Results*

By John Boland

The development of modern bonding agents for plastering some four decades ago has considerably changed the work of the plasterer for the better. Prior to their appearance, the question of a good bond between plaster and a smooth surface, such as concrete, was always a knotty problem. The recoating of a plaster or painted surface was another doubtful problem for the plastering craft.

When plastering on concrete, such a beams or columns, a special type of gypsum known as "bond" plaster was used. A small amount of this bond plaster would be made by the laborer insufficient quantity to apply a thick coat over the concrete surface, which would be immediately followed by another thin coat of the regular mortar to prevent dryouts. If this bond plaster had dried out before it was set, the bond would probably be lost.

Different Techniques

The most common method of securing bond on concrete for exterior portland cement plastering was a procedure known as a dash coat, which consisted of making a richer-than-usual bath of mortar. With a soft stucco brush or similar tool, this mixture would be whipped onto the wall or other surface with as much force as the applicator could muster. This coat would then be kept wet and allowed to set overnight. In most cases, the brown coat was applied the next day. The laborer would take pains not to overworkit because that could affect the bond. Also, the brown coat was kept thinner than what was considered normal.

The mixture would be whipped onto the wall with as much force as the applicator could muster.

Another solution to the problem of bonding to concrete and similar surfaces was to apply metal lath either to furring or directly to the concrete with stub nails. Furring required drilling, while direct attachment of metal lath required stub nailing. Stub nails are specially hardened steel and are only a half-inch long. Care had to be taken due to the tendency of concrete to spall when anything tried to penetrate the surface.

Since then the use of power driven fastening methods has radically changed this process, but that is a subject for a different article. In the case of free-standing columns, the usual process was to wrap the column with self-furring metal lath.

Modern plaster bonding agents have so changed this picture that today it is possible to plaster on glass or ceramic tile or any other clean, sound surface. In fact, the bond to glass is so excellent that the glass will shatter before there is any loss of bond. In addition, the bond is unaffected by either heat or cold, by the alkalinity of either lime or portland or by humidity or surface condensation. These factors make bonding agents the ideal method to use for applying a plaster finish to a concrete surface in modern high-rise build-

ings with particular emphasis on electric heating systems.

Today's Tools

There are three principal types of plaster bonding agents available today: a resinous emulsion, a mixture containing mostly latex, and anacrylic liquid. Since these materials differ in formulations, they perform their bonding work in different ways. It is quite important for industry personnel to understand just how these products perform their services, and with that understanding to follow the manufactureis instructions.

All of these different bonding agents have some similar requirements. They should never be used over water-soluble paints, casein, glue size, calcimine or wallpaper. When applied to a painted surface, be certain that the paint is well bonded to the base. Paint must be applied to a clean, solid substrate.

It's as if you were making a sandwich, and if any part of that combination should fail, the entire operation fails. How do you test for well-bonded paint? With a sharp knife, make several crosscuts in the paint about a quarter of an inch apart. Then place a piece of masking tape over the scored area and press it tightly into place. Peel off the tape. If any of the paint comes with it, the paint is not sufficiently bonded to the substrate.

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Probably the best-known bonding agent to plasterers is Plaster-Weld, made by the Larsen Products Corporation, Rockville, Md. This bonding agent can be applied in a manner similar to paint: in a thin film using a brush, a roller or a spray gun. This type of agent is different from others in that it is emulsible. When the wet plaster comes in contact with the surface, the surface softens, and with that action the plaster is bonded to the base.

Probably the best explanation of this phenomenon comes from Dan Goeke, executive vice president of the Larsen Products Corporation: "Our material is similar to the glue on a postage stamp. Once applied and dried, it simply waits until someone licks the stamp. This softens the gum so that when the stamp is applied to

an envelope, it remains bonded. However, just as that stamp can have all the gum removed with too much water, so too the bond can be altered with too much water." This is the reason that the first coat of a two-coat plaster operation on a bonded surface must be at least 3/8 inch and be reasonably dry. If the plaster is not dry enough, the bonding agent may flood with water and filter through a too-thin scratch coat. This is also the reason why a bonding agent should not be used where there is hydrostatic pressure.

Keep It Wet

Latex and acrylic binders work differently, however. These bonding agents should never be allowed to fully dry. The plaster material *must* be applied while the bonding agent is still wet and tacky. Twenty minutes should be a maximum time between the application of the bond and the plaster—even less in very hot weather. In fact, where acrylics are used, it is not recommended that the liquid be applied directly from the container. To make the mixing liquid to add to the mortar, a mixture of two parts water to one part acrylic is preferred; in extreme cases, the ratio can be one to one. If this mixture is to be used as a bonding agent, it should be properly thinned and applied to the surface with a brush immediately prior to the application of the plaster.

It is quite important for industry personnel to understand just how these products perform their services, and with that understanding to follow the manufacturer's instructions.

Let's use another illustration to demonstrate the importance of following the manufacturer's directions: Imagine the latex or acrylic material is to be a form of varnish. If a sheet of paper were stuck to a freshly varnished wall, it would be impossible to remove the paper intact. If you apply that same piece of paper to the same wall when the varnish is completely dry, however, the paper would simply slide off the wall. It is basically the same with latex and acrylic bind-

ers. If you wait too long, you might just as well have varnished the surface and then expect a fresh coat of plaster to bond to that slick surface.

An example of what can happen: An architect called for a consultation on an Olympic-sized swimming pool in which the plaster finish was coming off everywhere. The plastering contractor insisted there was something on the concrete and that he was not responsible for the plaster's delamination. But that same pool had lanes marked out with ceramic tiles that were firmly bonded to the same concrete on the bottom of the pool. When this was pointed out to the plastering contractor, he could not answer why.

When the plastering contractor was asked to carefully describe step by step the method that was used to plaster the pool, he began by stating that he had sent one of his trusted employees to the job along with the materials and with instructions for applying the bonding agent. The bonding was applied one day, and the plasterers applied the pool plaster the next day. Therefore, the paint was left to dry overnight, and the plaster wouldn't stick to the dry varnished surface. The only solution was to remove all the plaster and dot the whole job over again—an expensive way to have to learn to read directions.

Another example: An architect designed a two-story office building whose exterior was all floated white portland cement stucco. The design consisted of narrow pilasters from three feet abovegrade to the roof and five-foot-wide windows. This resulted in a wide sloping cement sill on the first floor. The complaint that the sills were badly delaminating came to the office some two months after the job was complete.

Investigation disclosed that the contractor had used a bonding agent as a special precaution against something going amiss with the sill areas. When the foreman was quizzed about the procedure in using the bonding material, he stated that he didn't want to let the workers apply it. Instead, he applied the bonding material right from the can. When asked what the interval was between applying the bonding agent and the finish coat of plaster, he replied, "two or three hours." He was told he was responsible for the delamination, but he wouldn't believe it. What he had done was varnish the sills, allow the bonding material to set and then wonder why the finish came off.

Modem bonding agents are different because of their formulas and the purpose for which they were developed. To assume that you know all there is about bonding agents just because you have used one material successfully can be a most costly mistake.

When in doubt, read directions. They are there for a purpose. Failing to read them may hurt both your wallet and your reputation.

About the Author

John Boland, a plasterer for more than 50 years, has been president of the Chicago plastering Institute for the past 21 years. He has also been a teacher and a union officer. ❑