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Accelerators and Retarders for Portland Cement-Based Plasters

Admixtures for the acceleration or retardation of stucco set and curing times should only be used after laboratory testing under conditions that closely approximate the jobsite conditions for the time and location of the project. In general, it is not a good practice to modify the cement for convenience or without a specific need. However, there are times and conditions that may require some sort of modification.

Accelerators:

The winter months, in particular, can create a need for the acceleration of the initial set time of the plaster. Accelerators can shorten the period between rodding and floating or finish texturing. The most common accelerator used in concrete construction is Calcium chloride. It has the added benefit of increasing the rate of strength development. Unfortunately, Calcium chloride increases the rate of degradation of even galvanized steel reinforcement such as lath, joints and beads.

If necessary to shorten the initial set period, try adding some Type 111 Portland Cement to your mix as outlined in Table 3 of ASTM C 926. Type 111 Portland is specifically ground to achieve high-early strengths. It is used primarily for pre-cast products to enable the producer to remove his forms as soon as possible. This characteristic can work to your advantage in situations that may arise that would require acceleration. As you can see from the table, you may use 1 part (by volume) of Plastic Cement (Titan Stucco Cement meets this classification) and 1 part of Portland Cement with the appropriate **volume** of sand for the 1st coat (2¼-4 parts) and 2nd coat (3-5 parts) to achieve an approved stucco mortar. Mix times remain 3-5 minutes after the addition of the last ingredients. You may not accelerate finish coat plasters. While the Standard does not prohibit the addition of Portland Cement to either Type S or M Masonry Cements, it does specifically state that it is not required.

Another way to accelerate your mix is to heat the water and/or sand. We've all seen the result of using hot water from a black hose in August in Florida. Even warm water will increase to rate of the rise of the heat of hydration, the chemical process which causes cement to harden. You must have control of the water temperature and you should always run a test batch before plaster application.

Retarders:

Retarders for plaster should be avoided. While they slow the hydration process, they **do not** insure the retention of the mix water. Therefore, you may slow down your initial set but still wind up with an only partially hydrated mix which results in low strengths or even dusting. Retarders cannot alter weather conditions such as high temperature, wind or low humidity, all of which greatly affect plaster performance.