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Technical Bulletin

TB-IG11-SB

Installation Guidelines

Plicast® Si-Bond Series Castables

Plicast Si-Bond castables are cementless castables that cast and place similar to cement bonded castables but have different curing and dry out requirements.

Storage

Plicast Si-Bond castables are packaged in moisture resistant bags and super sacks. Even so, Plicast Si-Bond packages should be kept dry since moisture can reduce the castables ultimate strength and even cause hardening. Castable packages should be stored indoors in a dry, warm, location. If the material must be stored outdoors, it should be covered by tarpaulins and stored in a well drained location where standing water will not accumulate under the pallets. Do not store in direct sunlight, especially in hot climates.

Preparation

1. The site where the Plicast Si-Bond castable will be installed must be clean to minimize the chance of contaminating the castable.
2. Mixers, tools, vibrators, and conveying equipment must also be clean. NOTE: Contamination by portland cement, calcium aluminate cement and/or sodium silicate can effect setting, working time and final properties.
3. The back-up wall or insulation material against which the castables will be poured must be smooth and free from wide gaps or cracks. This surface, if not waterproof, must be coated with a curing compound or plastic film. If plastic film is used it must be securely attached or it may float or wrinkle during pouring.
4. All forms / molds used should be moisture resistant or made moisture resistant with the use of curing compound / moisture proofer. The forms should be coated with a parting compound / mold release agent.
5. Mechanical mixing equipment should be used. Paddle, pan, and other high intensity mixers are preferred. Other types of mixing equipment (i.e. tumblers / cement trucks) may increase mixing time and water demand.

Mixing

1. The ideal mixing and placement temperature (castable, water, & ambient conditions) for Plicast Si-Bond castables should be 60°F (16°C) to 90°F (32°C). Casting and placing at lower ambient conditions, to 45°F (7°C), will result in delayed setting and increased time for mold / form removal. If ambient conditions after placement are below 45°F (7°C), setting may not occur. In this case supplemental heating is required.
2. Mixing water should be clean and potable (i.e. drinking quality).
3. Start the mixer and empty the entire contents of one or more packages (bags or super sacks) into the mixer.

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4. For the first batch add 90% of the mixing water as specified on the package data sheet.
5. Allow the batch to mix to “wet down” before adding additional water for the desired consistency. Plicast Si-Bond castables require mixing times of between 3 to 8 minutes (depending on the mixer type and mixing action) to dissolve and disperse the casting additives and achieve “wet down”. The final water amount required for the desired consistency can be used as the starting point for subsequent batches. Slight water adjustments may be needed from time to time during the casting process to maintain the desired consistency.

Placement

1. Castable placement should begin as soon as the mixing process is complete. The total time interval from the addition of water until the castable batch is in place should not exceed 20 minutes.
2. Place the castable taking care to fill in any undercuts or profiles. Vibrate using a wand or external (form) vibrator as needed to remove entrapped air pockets, to consolidate and knit the pour layers and level the castable.
3. Do not over vibrate the castable. This will result in material segregation and surface skinning.
4. Do not over trowel or finish the cast surface to a very smooth or “slick” texture. This will inhibit moisture loss and setting. Use of a wood screed or broom is preferred for finishing the cast surface.
5. Once casting begins, it should continue uninterrupted until the form is complete. Do not allow castable to set more than 20 minutes between casting layers.

Curing and Bake Out

Unlike cement bonded castables, Plicast Si-Bond castables do not require the use of a moisture retention membrane on exposed surfaces such as curing compound or plastic film. In fact, use of moisture retention membrane will inhibit or delay castable setting. Plicast Si-Bond castables should be left undisturbed for at least 16 hrs for cross sections of 12” (300 mm) and for 24-36 hrs for larger cross sections. If cured in ambient conditions less than 60°F (16°C), additional time and / or supplemental form heating may be required.

After setting Plicast Si-Bond castables may either be left to air dry undisturbed for 24 hrs (preferred for precast shapes to increase green strength for handling) or heated as soon as required. Please refer to the appropriate bake out schedule referenced below.

Technical References

Technical Questions

Plibrico Technical Department
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Heat Up Schedules

Field Cast	Plibrico Schedule E
Pre Cast	Plibrico Schedule PS-SB



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