



## Plibrico Company LLC

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## Technical Bulletin

TB-IG11-AT/AS

# Installation Guidelines

## Plicast Al-Tuff® - Plicast® Al-Shield Series Specialized Castables

These guidelines are relevant for advanced, aluminum resistant castable types of the Plicast Al-Tuff and Plicast Al-Shield series. For conventional castable and insulating castable types in the Plicast Al-Tuff series (such as Plicast Al-Tuff 27C, 36, 40 and Plicast Al-Tuff LWI 20, LWI 24, LWI 28) please refer to the installation guideline for Plicast and Plicast LWI castables (TB-IG11-PC). Plicast Al-Tuff and Plicast Al-Shield series specialized castables may be placed at various consistencies and by various methods from small batch casting to pump casting, however for optimum properties and performance they should be mixed as close as possible with to the recommended water printed on the package and /or data sheet.

### Storage

Plicast Al-Tuff and Plicast Al-Shield series castables are packaged in moisture resistant bags and super sacks. Even so, castable package should be kept dry since moisture can reduce the castables placement characteristics, water demand, ultimate strength and even cause hardening in the package. 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 Al-Tuff or Al-Shield 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, particularly by portland cement, 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. Hand mixing (i.e. mortar box) is not recommended.

### Mixing

1. The ideal mixing and placement temperature (castable, water, & ambient conditions) should be 60°F (16°C) to 90°F (32°C). If ambient conditions after placement are below 45°F (7°C), setting may be delayed. High ambient and material temperatures, >90°F (32°C), may cause reduced working / setting times or flash setting.

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# Plicast AI-Tuff® & Plicast® AI-Shield Series Specialized Castables

## Installation Guidelines

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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.
4. For the first batch add 90% of the mixing water as specified on the package or data sheet.
5. Allow the batch to mix to “wet down” before adding additional water for the desired consistency. Plicast AI-Tuff and AI-Shield specialized castables require mixing times of between 3 to 6 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**

After casting, the exposed castable surface should be treated with a moisture retention membrane such as curing compound\* or covered with plastic film for moist curing. The castables should be left undisturbed for at least 12hrs though a 24hr moist cure is preferred. If cured in ambient conditions less than 45°F (7°C), additional time and / or supplemental form heating may be required. Castables should be protected from freezing during the moist curing period.

After curing Plicast AI-Tuff and AI-Shield series specialized castables may either be left to air dry or heated as soon as required. Please refer to the appropriate bake out schedule referenced below.

\*Water based curing compound conforming to ASTM C309 Type I Class A&B recommended.

### **Technical References**

#### **Technical Questions**

Plibrico Technical Department 312 337-9000  
Plibrico Engineering Department 312 337-9000

### **Heat Up Schedules**

Field Cast Plibrico Schedule:  
**AT-AS, AT-AS Lin or ATM-I**  
Pre Cast Plibrico Schedule : **PS-I**



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