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Technical Bulletin

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Installation Guidelines

Pligun^{®*} & Pligun LWI[®] Series Gun Mixes

** including Pligun HyREZIST Series*

This guideline is relevant for Pligun series dense conventional gun mixes, Pligun LWI series insulating gun mixes, and Pligun HyREZIST series gun mixes.

Storage

Pligun, Pligun LWI, and Pligun HyREZIST gun mixes are packaged in moisture resistant bags and super sacks. Even so, Pligun packages should be kept dry since moisture can reduce the gun mix's ultimate strength and even cause hardening. Pligun 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 gun mix will be installed must be clean to minimize the chance of contaminating the gun mix.
2. Mixers, and pneumatic gunning equipment must also be clean. NOTE: Contamination, particularly by Portland cement, can effect setting causing laminations and reducing final properties.

Equipment

1. Gunning Equipment: batch type, double chamber, and rotary guns may be used though required air pressure and volume will vary with gun type and size.
2. Predampener (recommended): paddle type or auger mixer.
3. Water Booster Pump (recommended): air or electric driven pump capable of supplying a minimum of 5 gallons per minute of water to the nozzle at a minimum pressure of 65 psi.
4. Gunning Nozzle: Hamm or double bubble type are acceptable. If a predampener is not used a "Hydromix" nozzle assembly is recommended for better hydration and to reduce dusting.

Placing

1. The ideal placement temperature (gun mix, water, & ambient conditions) for Pligun gun mixes 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.
2. Predampening and gunning water should be clean and potable (i.e. drinking quality).
3. Predampen the dry gun mix and mix (if using a paddle mixer) for 60-90 seconds. Predampening water will vary between products but will generally be between 2-5%. The correct amount of predampening water will reduce dusting but still yield a granular powder. Too much predampening water will produce lumps and will cause clogging in the gun and hose.
4. If using steel fibers as an addition, they should slowly be added to prevent clumping in the correct ratio to the gun mix during the predampening process.

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Pligun* & Pligun LWI Series Gun Mixes

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5. Install the predampened gunning mix within 10 minutes of finishing the predampening procedure.
6. Recommended starting gun chamber pressures for Pligun gunning mixes are:

Pligun (conventional, dense):	35-50 psi
Pligun LWI (insulating, lightweight):	15-25 psi

These pressures are valid for up to 100 ft of gun hose. Pressure should be increase ~5 psi for every additional 50 ft. of hose. Note: insufficient or excessive air pressure can lead to:
 - a) increased rebound and b) less than ideal material properties.
7. Once the pressures have been adjusted the following gunning installation techniques are recommended:
 - Distance from nozzle to working surface - 2-4ft
 - The nozzle should be kept moving continuously in a curricular motion – 1-2 ft dia.
 - Build vertical refractory surfaces from the bottom up at a 45° angle
 - Gun working area^a (panel) to full thickness before continuing on
 - Build up lining thickness, coating gradually over the working area^a (panel)
 - Do not gun on a surface that has “set” more than 10 min.

^a A working area will vary between specific applications and refractory lining thicknesses but will be a surface that can be gunned to full thickness within 10 minutes
8. Do not gun over rebound. Rebound cannot not be recycled.
9. Trim refractory surface to desired thickness and cut expansion joints (if required) within 10 minutes of achieving full lining thickness. Do not smooth trowel the surface.
10. If gunning against old or previously installed refractory, it is recommended that the refractory surface be moistened with a water spray immediately prior to applying the Pligun gun mix. This will minimize moisture loss of the Pligun into the old refractory and increase adhesion.

Curing and Bake Out

After installation, the exposed gun mix surface should be treated with a moisture retention membrane such as curing compound* or covered with plastic film for moist curing. Pligun gun mixes 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. Gun mixes should be protected from freezing during the moist curing period.

After curing Pligun gun mixes may either be left to air dry or heated as soon as required. Please refer to the appropriate bake out schedule referenced below.

Technical References

Technical Questions

Plibrico Technical Department
Plibrico Engineering Department
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Heat Up Schedule

Plibrico Schedule **B**



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