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Technical Bulletin

TB-H15-FT

Heat Up Schedules

Schedule FT

This is a schedule intended as a general guide applicable for field installation bake out of:

Plicast and Pligun *Fast-Track*

Instructions After the castable / gun mix is installed and has achieved a hard set (~2-6 hrs)*, heat up may begin after an additional 4 hr (minimum) moist cure. After curing, follow the heating rate shown below for the appropriate lining thickness. The cool down rate for the lining (both initial and subsequent) should not exceed 200°F (110°C) per hour to minimize thermal stress.

*Note: Setting is temperature dependent and may be delayed when material and/or ambient temperatures are below 50°F (10°C).

Total Lining Thickness: <i>(including backup insulation)</i>	<9" (225 mm)	9" (225 mm) to <12" (300 mm)	12" (300 mm) to <15" (380 mm)	>15" (380mm)
Ambient to Operating	100°F /hr (55°C/hr)	75°F /hr (42°C/hr)	50°F /hr (28°C/hr)	Contact the Plibrico Technical Dept.

Note: If the furnace/vessel will not be put into immediate operation but cooled for future use, hold the temperature at the bake out maximum for 1 hr for each 1" (25mm) of lining thickness.

CAUTION / WARNING

This schedule assumes that heating for bake out is regulated and is applied in a controlled, uniform manner under positive pressure. Note that the target control temperatures are to be measured by thermocouple placement on or within 1/2 in. (12 mm) of the **hot face surface** of the refractory and must be monitored at multiple locations/areas on the refractory within the furnace/vessel. Care should be taken to not exceed the heating rates or cause excessive thermal gradients (>50°F (28°C)) throughout the furnace/vessel during bake out. The refractory during bake out must not be exposed to flame impingement or spot (radiant) heating and there should be sufficient combustion air circulation within the furnace/vessel and exhaust air venting from the furnace/vessel. This schedule also assumes that there is a path for the moisture driven through the refractory to escape the furnace/vessel such as weep holes, wicking and/or venting. Moisture driven and entrapped in the back up insulation is dangerous and may lead to spalls/explosions at elevated furnace temperatures. This is of special concern in floors/hearths. If the bake out is interrupted due to burner/power failure, care should be taken not to shock the refractory. If/when combustion is restored, the temperature in the furnace/vessel should be stabilized at the current temperature before proceeding. Bake up should proceed from the point of the schedule corresponding to the current vessel temperature, not the temperature when interruption occurred. If excessive or high pressure steam is observed, at any time, hold the temperature until the steam / steam pressure subsides. Failure to take any of these parameters into account may result in lining damage or explosion. For questions, please consult your Plibrico representative or the Plibrico Technical or Engineering department.