

This standard provides general drying and firing instructions for ARTECH ACTCHEM[®] Castables including:

ACTCHEM[®] 45; ACTCHEM[®] 75; ACTCHEM[®] 85; ACTCHEM[®] 85 RST; ACTCHEM[®] 85 AB; ACTCHEM FS

These instructions do not apply to ACTCHEM[®] VC Castables.

CURING

ACTCHEM[®] differs from conventional castables in that when ACTCHEM[®] obtains a complete set it is considered to be “cured.” Typically, the easiest way to determine the set of ACTCHEM[®] is as follows:

1. When installing, form and set aside balls of ACTCHEM[®].
2. Keep or store the balls of ACTCHEM[®] in the same environment as the actual lining.
3. When these balls can be bounced off of a rigid surface (concrete floor), the ACTCHEM[®] has set, and drying and firing can begin.

Please note that the time required for ACTCHEM[®] to completely set is a temperature dependent. The recommended temperature range for curing/setting is 60-100°F (15-40°C). ACTCHEM[®] Castables will set in approximately 24 hours at 75°F (25°C). ACTCHEM[®] will set faster at temperature greater than 75°F (25°C) and more slowly at temperatures below 75°F (25°C). ACTCHEM[®] RST will set in 12-18 hours.

DRYING AND FIRING

The abrasion resistance properties for ACTCHEM[®] are nearly optimized when dried to 250°F (120°C). For applications where high strengths are not critical and operating temperatures are at or below 250°F (120°C), drying can be concluded with step 2.

During drying and firing, over half of the water is removed by 250°F (120°C). The remaining water is removed as the ACTCHEM[®] is heated from 250-800°F (120-425°C). At 800°F (425°C), all water is removed from ACTCHEM.

Drying and firing to temperature greater than 800°F (425°C) will result in an increase in the strengths of the ACTCHEM[®], with the highest strengths being achieved near 1700°F (925°C).

DRYING AND FIRING SCHEDULE – LESS THAN 2” THICK

| Step | Duration | Procedure |
|------|----------|---|
| 1 | Variable | Ramp from ambient to operating temperature at the rate of 100°F (55°C) per hour |
| 2 | Optional | Cool at a rate not to exceed 100°F (55°C) per hour |



ARTECH TECHNOLOGIES INC
Superior Abrasion Resistant Materials

ACTCHEM[®] Castables

General Drying and Firing Instructions

DRYING AND FIRING SCHEDULE – GREATER THAN 2” THICK

| Step | Duration | Procedure |
|------|---|--|
| 1 | 4 Hours | Ramp from ambient to 250°F (120°C) at the rate 100°F (55°C) per hour |
| 2 | 1 Hour/1” (25mm) Thickness ¹ | Hold temperature at 250°F (120°C) |
| 3 | 19 Hours | Ramp to 1200°F (650°C) at the rate of 50°F (30°C) per hour |
| 4 | 1 Hour/1” (25mm) Thickness | Hold temperature at 1200°F (650°C) |
| 5 | Variable | Ramp to operating temperature at the rate of 100°F (55°C) per hour |
| 6 | Optional | Cool at a rate not to exceed 100°F (55°C) per hour |

¹Minimum hold: 2 hours

NOTES

1. Extreme temperature during the setting and curing period can adversely affect the physical properties of ACTCHEM[®]. When the temperature falls below 60°F (15°C) or exceeds 90°F (30°C), corrective action is necessary.

ACTCHEM[®] must be protected from freezing from the time of placement until the full thickness has been dried to a minimum 250°F (120°C). Depending on the extent of setting, ACTCHEM[®] that freezes prior to the removal of moisture can crack.

2. Once begun, the drying and firing schedule should be followed without interruption except when the refractory surface begins to steam. If the ACTCHEM[®] surface begins to steam, hold temperature constant until steaming stops.

3. Do not fire the ACTCHEM[®] Castable to temperatures above the maximum recommended service temperature.

4. For units having two or more hot face refractories, use the schedule with the slowest ramping rate.

5. All hold periods should be calculated using the total lining thickness of all components. Insulating board and blanket should not be included in this calculation.

6. Always control the schedule according to the hottest part of the unit. ACTCHEM[®] may be heated at a slower rate than recommended.

7. Good airflow is essential during all stages of the drying and firing schedule.

8. Flame impingement must be avoided at all times.

9. If you have questions concerning these instructions, please contact Artech Technologies.

DISCLAIMER

Artech Technologies, Inc. assumes no liability for the use of this data and provides no warranty expressed or otherwise for its accuracy. Guidelines provided herein are given and accepted at Buyer’s own risk.