

DARLEY REFRACTORIES AUSTRALIA PTY. LTD.

A.C.N. 104 582 023 A.B.N. 85 104 582 023



P.O. Box 291
58 Grey Street
Bacchus Marsh Vic. 3340

Telephone: (03) 5367 2300
Facsimile: (03) 5367 2991
Email: darley@darleyrefractories.com.au
Web: www.darleyrefractories.com.au

THE CURING AND FIRING OF REFRACTORY CASTABLES

DENSECRETES AND LITECRETES

Installed refractory linings and castings containing calcium aluminate cement binders should be cured prior to drying. This applies to both cast and gun placed material. Curing is necessary to prevent moisture loss during the setting of the material. If the moisture loss is allowed to occur, the refractory material will be weaker due to an incomplete hydration process of the cement binders.

Curing time should be at least 24 hours and maybe undertaken by several methods:-

- a) Covering the refractory concrete with wet Hessian bags which must be kept wet
- b) Covering with plastic sheeting
- c) Spray the surface with a curing compound
- d) Spray the surface with a fine water spray

DRYING OF DENSECRETES AND LITECRETES

After curing the lining should be air dried for up to 24 hours. If the lining is greater than 250mm, curing should be 24 hours. If Q.T. fibre is present in the refractory concrete, this step may be reduced to 8 to 12 hours for linings greater than 100 mm.

FIRING OF DENSECRETES AND LITECRETES

Raise the temperature of the lining to 100 to 150 deg C at a rate of 15 to 25 deg C per hour and hold for 8 to 12 hours depending upon the lining thickness. Ensure steaming ceases before heating the lining further.

Increase the temperature to 500 to 600 deg C at a rate of 25 to 50 deg C per hour and hold for 1 hour per 25mm of lining thickness; and

Increase the temperature to the final working temperature plus 25 deg C if possible at a rate of 50 to 100 deg C per hour and hold for 1hour. Never exceed the maximum service temperature of the refractory castable.

REMARKS

- 1/ The holding time is dependent upon the lining thickness. For each 25mm thickness above 200mm an extra holding time of one hour per step is recommended.
- 2/ Preheating should be carried out as slowly as possible and with a good control over temperature. Refractory castables usually have a dense structure which does not allow the water to escape easily. A too rapidly increased temperature may create steam formation in the structure of the castable, thus causing spalling of the layers from the surface and/or cracks. During preheating sufficient ventilation should be provided so that the water vapour can escape.
- 3/ Temperatures are the lining temperatures measured on the surface of the lining.
- 4/ **It is of critical importance to execute a uniform and graduated drying out procedure with professional standards and practice. This schedule is accordingly made available without warranty of any kind. The firm or person executing the drying out procedure is solely responsible for any damages resulting to the refractories or other items for which Darley Refractories Australia Pty Ltd disclaims all liability.**