Old time refractory mix for crucible or cupola furnace.

Make up a mixture of grog, using slag free old broken firebricks, 50% Pea size & 50 % Walnut size.

1. Place the grog mix in a large bucket or drum, and fill with water until covered, leave until there is no sign of air bubbles.
The following steps are by volume & not weight!

2. Take three volumes of the wet 50/50-grog mix and add 2 volumes of good fire clay. (Measuring volumes can be anything from a small tin to a large bucket, depending on the quantity you need)

3. Mix thoroughly and temper it like moulding sand with a water glass mix of 50% water glass & 50% water.

4.The final mix should have about 6% moisture, it should easily form into a ball in your hands, if it's crumbly, it is too dry, add more water. But don't let it become mud.

5. Finally put your mix under plastic and let it sweat & age for about 72 hours.

6. With the inner former in place, the mix can now be placed around the furnace wall cavity and gently rammed into place until the lining is complete. Smooth it of on top and then leave to air dry for a day or so.

7. Before you start ramming the mixture, drill a series of ¼" holes through the outer shell to help vent moisture when it is drying out.

8. After a couple of days, you can light a small fire in the furnace and start to slowly dry the furnace refractory out. (Ditto for the bought stuff as well).

9. IF YOU DRY THE LINING OUT TOO FAST, IT WILL CRACK & SPALL.

10. When you notice that no further steam is issuing from the holes, build a bigger fire and build it up to where the melting bed or zone is. (10" to 14" from the bottom, cupola Furnace) Turn the blower on, this will increase the heat and vitrify or glaze the rammed mix into a solid lining.

11. Do not use Borax while glazing the lining, borax is a flux and will have the effect of dissolving the lining.

12. This furnace lining you have made and installed in your furnace should never need replacing, except for the area around where the melting zone takes place. (Cupola) In which you may have to replace a small ring after every melt session is complete. (If you don't repair the lining, the charges of charcoal and scrap metal will hang during melting)

13. An extremely good lining finish (¾" to 1" thick) facing, can be made up from the following mix, this is done before the main lining has dried, (Still Green).

14. Make up 80 Parts of grade 60 mesh silicon carbide plus 20 parts of fire clay and about 6% water & a touch of water glass. This facing will have to be carefully trowel led on, so the consistency of this needs to be wetter than the outer lining.

15. Follow the steps re the drying procedure. I.e. Slow & low heat to cure the lining.

This old time Refractory recipe is one of the many topics to be found in **the 3-volume hobby foundry ebook.**
http://www.myhomefoundry.com

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