Instructions for a Slow Bisque Firing and/ or Once Fire Schedule

Segment 1 50 degrees F per hour to 200 degrees F and HOLD

The length of the HOLD is based on the size, thickness, and moisture content of the load.

Holding here allows all the physical moisture in the clay to evaporate and dry. Water boils at 212 degrees F. If the kiln goes past 212 with physical moisture still in the clay, it will cause a buildup of steam and explode. This will destroy your work and potentially damage the kiln.

To ensure all physical moisture has been removed, pull the top peep plug and place a small jar or mirror over the top peep. Any remaining moisture will cause a fog of condensation in the jar or on the mirror. This indicates that you should continue to HOLD at 200 degrees until all physical moisture is gone before proceeding to segment 2.

Segment 2 80 degrees F per hour up to 800 degrees F

This allows time for the naturally occurring organics and gases in the clay to begin burning and or vapor out of the kiln. All clays contain organics and if not allowed adequate time to burn out, can get trapped and cause bloating of the clay or out gassing in later stages of firing that will show up in the form of pin holing in your glaze. In addition, this allows chemically combined water (on molecular level) found in all clay particulates, to dissipate/ dehydrate from the clay.

Segment 3 100 degrees F per hour up to 1300 degrees F

This allows safe passage through the quartz inversion process. This is one of the vital stages of the firing, both on the way up in heating and on the way down in cooling. During this time free silica found in all clays will expand by 1% while remaining particulates are shrinking; silica process reverse on the cooling cycle. You can imagine the contraction that is happening amongst all those clay particles. It is very stressful on the clay and going through this phase to quickly can cause damage in the form of cracks.

Segment 4 150 degrees F per hour up to 1940 degrees F

Once you are past 1940 degrees F then most of the damage that can be done to clay has passed. Your clay is now considered “bisque” and has changed from clay to ceramic.

If your goal was to slow bisque your work, then your firing is now complete. If you wish to once fire your work to its vitreous point, you may now proceed through the remainder of the firing at a more rapid pace.

To once fire your work, continue with the segments listed below.

(*Exceptions are made for aesthetic processes or glaze with specific firing requirements.)*

Segment 5 250 degrees F per hour until desired firing temperature is reached.

You may proceed quickly after the quartz inversion phase of the firing to your desired temperature for maturation of the clay and glaze. Again, special consideration may be necessary to meet certain requirements for the aesthetics related to the glaze.

When firing is complete, shut down the kiln ensuring to seal it up the best you can to deter air drafting into the kiln. This includes turning off any vent system you may have. Allow the kiln to cool naturally. It takes the kiln approximately the same amount of time to cool as it did to bring it up to temperature. If your firing takes 21 hours to complete you can expect the cooling to take 21 hours.

It is of importance to proceed slowly through cristobalite portion of the cooling. Cristobalite happens during cooling around 400 degrees F. During this time the silica that expanded earlier in the firing now suddenly shrinks. Fast cooling at this temp can cause cracking.

Note: Some clay bodies are more susceptible to this process than others. It is always best to err on the side of caution.