

## Review week 3 (Firing the gas kiln)

Firing the kiln.

The kiln was loaded the previous day and the pilots on overnight. The pilots dry out cone packs and also heat up the kiln to get a faster start on the firing.

If preheating the kiln overnight is not possible, have the burners on low a little longer - about 1/2 hour.

There are 3 ways to control the kiln:



Blowers (controls primary air)

Damper (controls secondary air)

Gas

Primary air is the air that comes in through the blowers and mixes with the fuel before it ignites.



Secondary air comes in through the burner ports and mixes with the burning flame. A reduction flame using more primary air will be a shorter, bushier flame. This type of flame is good for a normal reduction firing but for shinos you want a longer smokier flame that travels through the kiln and for that you use the damper that controls the secondary air.

Shinos like an early heavy reduction, I start a heavy reduction at cone 012 - this puts carbon on the pots that gets trapped in the glaze melt. (Some start reduction at cone 014) If it's too heavy in reduction, you will not get a rise in temperature.



Flame from the peeps. When the kiln is in very heavy reduction, you may see no flame at the peeps but it will be "hazy" in the kiln. There is a point as you pull out the damper where you will get a large flame out of the peeps - be cautious about standing in front of them. As the damper is pulled out more the flame will shorten.

Turn on burners. I turn the knob from "pilot" to "on", this brings gas to the burner. On my kiln, if I turn the burners on very slowly, they have a tendency to back burn. To prevent this, I turn the burners on a little faster, and then back the gas off to where I want it.

The gas gauge measures in water column inches, when I refer to numbers when turning the gas up, it is the numbers on the gauge that measures in water column inches.

## Firing Details

Turn burners on 1/2, damper at 2 inches, blowers at 1/16 inch.

Wait 1 hour (If not preheating, 1 1/2 hours): Turn burners to 1 1/2, damper at 2 1/4 inches, blowers at 1/8 inch.

Wait 1 hour: Turn burners up to 2, damper and blowers stay the same.

Check kiln about every 10-15 minutes to catch cone 012 starting to go down, I put the kiln in heavy reduction, damper at 1 1/2, gas and blowers stay the same. Starting out, the top is always hotter and cone 012 will not be moving yet but I still put the kiln in reduction.

Leave in heavy reduction 45 minutes. Open damper to 2.

Cone 012 is usually down on top and at 1:00 bottom.

At this point I check the kiln about every 30 minutes, pulling the damper out 1/4 to 1/2 each time to lighten the reduction. The most I have the damper out at the end of the firing is 4 inches.

There is a point during my firing where the bottom starts to go faster than the top and I have to make sure to pull the damper a little more to even the temp.

When checking the cones, use protective eyewear - the lightest welding glasses work.

Make sure you do not stand directly in front of the peep when pulling it out to check cones, see how far the flame comes out before standing in front of it.



Sometimes the bottom cone is a cone ahead of the top cone. I make sure the top cone 10 is at 3:00 before shutting off the kiln. The shinos seem to be ok going to cone 11 on the bottom.

Turning off the kiln:

Turn off gas line

Turn off blowers

Turn knobs that controls gas to pilots and burners to off.

Turn burners off

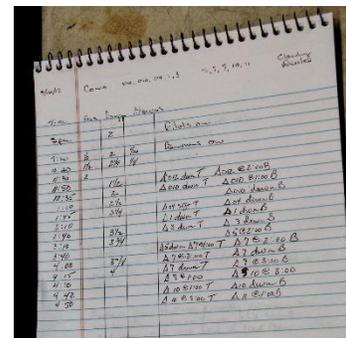
Push in damper

Lay a piece of fiber between burner and burner port to keep heat in and cool slower.

There is an image of my kiln log attached that shows the details of gas, damper and blower setting for the entire firing.

Keep a kiln log of the firing. I have logs of every firing in my kiln, also noting if it was sunny, windy, cloudy, rainy, etc.

These conditions can affect the firing. This gives you sort of a map you can follow for firings and a reference if you are having difficulties and what you did before to solve the problem.



Every kiln is different, the settings I use on my kiln may or may not work for you but it gives you a starting point. Also, you may have a different safety system on your kiln and the way you turn your kiln on and off may be different.

Cooling the kiln - I unload the kiln 2 days after the firing.