

Taking the Fear Out of Firing

By Connie Zink

At Land of Oz Dolls, we have been making dolls and firing kilns for over 35 years. Instruction manuals that come with new kilns are basically wrote for ceramics. They sometimes leave the porcelain doll-maker feeling overwhelmed. I've known people who have bought a new kiln and it has taken them several years before they get enough courage to plug it in. I would like to give you some of the basic steps for firing porcelain in three types of Evenheat kilns: Classic Manual, TNB Series, and Rampmaster. I personally own all three of these types of kilns and use them regularly. I would like to help you take the fear out of firing.

These directions are written for the 1413 size kiln. For other sizes the directions will vary.

After unpacking your Classic Manual or your TNB Series kiln, the first thing you will need to do is adjust your sensing rod in the kiln sitter. Follow the directions in your kiln manual.

You will have received a bag of kiln wash with your kiln. Mix a small amount in a plastic cup with a little water, using a small brush, paint the cone supports and the sensing rod with the kiln wash. This will prevent the cones from sticking during firing, causing an over fire. If you are planning on firing ceramic glazes you will need to apply a thin coat of kiln wash to your kiln shelves. NO kiln wash is necessary for porcelain firings.

Next, you will need to know how to properly load your kiln. The 1413 size is large enough to be able to use up to two full shelves in the kiln, depending on the size of your pieces. Start with the short ½" to 1" posts and place three or four of these on the bottom of your kiln floor. DO NOT FIRE DIRECTLY ON THE BOTTOM OF YOUR KILN. Now place a shelf on top of these posts. If your pieces are not too large you may place three or four more posts on top of the first shelf, then place your 2nd shelf in. You will need ½" to 1" clearance from your tallest pieces to the kiln lid.

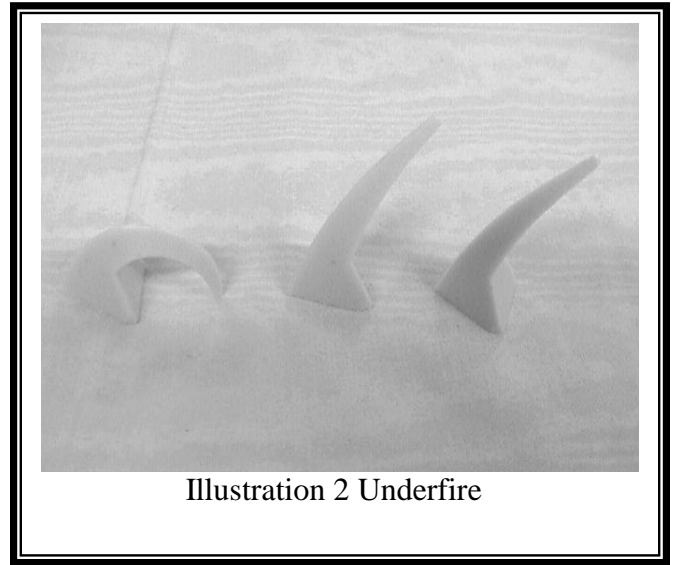
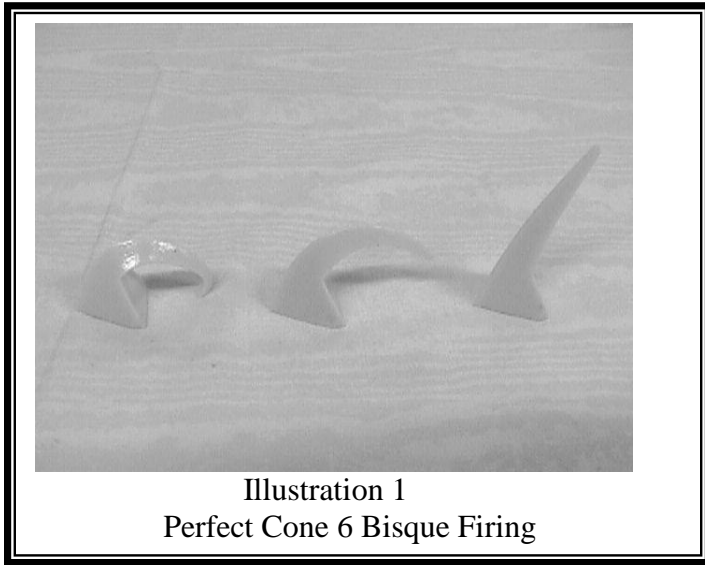
If you are firing soft-fire greenware or china paint, no silica sand is wanted on the shelves. For firing greenware or soft-fire greenware to bisque you must have a layer of silica sand on the shelves to support your pieces. When porcelain is fired to bisque, the porcelain shrinks and the grains of sand will work like rollers to allow the pieces to shrink without warpage or cracking. When firing greenware to soft-fire greenware, the pieces are laid on the bare kiln shelves. They may even be stacked a little if you are short on space and time. The same applies to wet china paint. However, when firing to bisque, more careful steps need to be taken. Place a layer of sand about ¼" to ½" deep on your self. Pieces of ware should be nestled in the sand with the best possible means of support. Push sand around the edges of the pieces so they are supported well. Otherwise, distortion and cracking may occur.

Witness Cones

To test the actual temperature that the inside of your kiln is reaching you need to use self-supporting witness cones. Both Seeley's and Bell Porcelain reach maturity at a true cone 6. Depending on environmental conditions and your kiln, (all kilns are not the same), you may need to set the temperature differently.

Manual kilns with kiln sitters, using junior cones, do not all fire alike. You may need to use a junior cone 6 or a cone 7 in some cases, in order to produce a true cone 6. The only way to tell is by the use of witness cones. Place a junior cone 6 in the kiln sitter. Put a witness cone 5, 6, & 7 on the shelf. Fire the kiln according to manufacturer's directions. Once firing is complete and cool check your witness cones. A perfect cone 6 firing will reveal cone 5, over fired and melted, cone 6 will be bent from 3:00 – 4:00 and cone 7 will have just

started to bend at 1:00. If the witness cones are either under fired or overfired you will need to place a cone 5 which is cooler or a cone 7 which is hotter in the kiln sitter. In the case of a computerized kiln you will need to adjust the final temperature up or down by 5, 10, or 15 degrees.



The length of time a kiln fires also affects the finished results. The longer the length of time that a kiln fires will result in a more mature ending. Firing time is accumulative. If a kiln is over firing with a cone 6 in the kiln sitter or a cone 6 programmed into the computer, you can shorten the length of the firing time. On a computerized kiln you can increase the rate of degrees per hour to shorten the firing time or on a Classic Manual or TNB Series you can go from low to medium to high faster. If the Classic Manual or TNB Series is under firing, then lengthen the firing time with the knobs. On a computerized kiln, lengthen the firing time by lowering the degrees per hour that the kiln will advance.

Classic Manual 1413 Kiln

018 CHINA PAINT FIRING: Place china painted bisque on the bare kiln shelves. (No sand necessary.) Place a 018 junior cone in the kiln sitter. China paint may need to be fired fast in a seminar situation. Turn the knob on the front of your kiln to high. If your kiln has switches turn all switches on to fire at high temperature until it shuts off. Leave the peephole on the side open for ventilation so the gases may escape. If you are not pressured for time, it is desirable to lengthen the firing time. For a kiln with a knob turn to low for 15 minutes. After 15 minutes, turn to medium. After another 15 minutes turn to high and allow shutting off.

019 SOFT-FIRE GREEN WARE: Place greenware on bare shelves. (No sand necessary.) Leave peepholes open for ventilation. Place a 019 junior cone in the kiln sitter. Soft-fire greenware needs to be taken up to temperature much slower than china paint in order for all the moisture and gases to escape. For kilns with a knob start with the knob turned to low for 1 hour. Turn to 1 for another hour. Turn to 2 for 1 hour. Then turn to medium and allow to shut off. For a kiln with switches, turn on bottom switch for one hour, 2nd switch for an additional hour, 3rd switch for another hour and then turn on all switches.

BISQUE FIRING: Place soft-fired greenware on shelves with a ½” layer of sand. Nestle pieces in the sand where they are supported the best. Open peephole. Place a junior cone 6 or 7 in the kiln sitter. Start the kiln by turning the knob to medium for 4 hours. Then close the peephole and turn the knob to high and allow to shut off. For a kiln with switches, turn the bottom two switches on for four hours and then turn on all switches and close the peephole.

TNB 1413 Kiln

Your TNB Series kiln comes equipped with a kiln sitter and 2 switches on the front of your kiln. The top switch is called an Infinite switch and the bottom one is called a Mallory switch. The Infinite switch controls your rate of power. The Mallory switch controls the number of hours your kiln will fire at the rate set on the Infinite switch before automatically turning the kiln to maximum power.

018 CHINA PAINT FIRING: Load the kiln as directed in the Classic Manual directions. Leave peephole open. Set infinite switch on 3 and Mallory switch on 1. This means the kiln will fire at a power rate of 3 for 1 hour before automatically turning to maximum power. In a seminar situation where you need to fire as fast as possible, set infinite switch on max and Mallory switch on 1.

019 SOFT-FIRE GREENWARE: Load the kiln as directed in the Classic Manual directions. Leave peephole open. Turn the infinite switch to 2 and the Mallory switch to 4. This means the kiln will fire for 4 hours at a power rate of 2 before automatically turning itself to maximum power.

BISQUE FIRING: Load the kiln as directed in the Classic Manual directions. Leave peephole open for the first 3 hours then close the peephole. If kiln will be unattended after turning on, you may close the peephole at the beginning. DO NOT leave peephole open through the entire bisque firing because it will cause a cool spot in the kiln and some portions of your bisque will underfire. Turn the infinite switch to 5 and the Mallory switch to 3. This means the kiln will fire for 3 hours at a power rate of 5 before automatically turning itself to maximum power.

Rampmaster 1413 Kiln

Your Rampmaster Kiln is a fully automatic, programmable kiln. In your kiln manual you will receive with your purchase it will explain some of the pre-programmed firings. These will work well for you but I prefer to program in some of my own firings.

018 CHINA PAINT FIRING: Load kiln as directed before. Leave peephole open. If you are not in a hurry for your china paint firing, the best results can be achieved by using the Fast Glaze pre-set mode for cone 018. The kiln will take approximately three hours to fire. If you do need to speed the kiln up for a seminar situation then proceed as follows.

1. Press the start and stop button on the left hand side of the kiln panel. (It should display the temperature inside the kiln – alternating with Idle) (May need to press the start button twice to get to this display)
2. Enter program User 1 then 1 enter
3. Rate 1 9999 enter
4. Degrees Fahrenheit 1 1300 to 1335 enter (Find the temperature that works the best for you)
5. Hold 0000 enter
6. Alarm 9999 enter
7. Complete

8. Start
9. Enter

The settings for this program is firing your kiln on high at full power. Your kiln should reach an equivalent to a 018 china paint firing in approximately 35 to 40 minutes. Please remember to use an 018 or 019 witness cone inside your kiln to check results. The degrees Fahrenheit may be adjusted up or down as necessary.

019 SOFT-FIRE GREENWARE: Load kiln as directed before in the Classic Manual directions. Leave peephole open. Remember soft-fire greenware must be taken to temperature much slower than china paint. You may use the slow glaze feature on the right hand side of the kiln panel. Program in, cone 019 for soft-fire. Check your results with witness cones 018, 019, 020. If your kiln is firing hotter or cooler, change your cone firing to either 018 for hotter, or 020 for cooler. To program your own soft-fire program proceed as follows:

1. Press the start and stop button on the left hand side of the kiln panel. (It should display the temperature inside the kiln alternating with Idle.) (May need to press the start button twice to get to this display)
2. Enter Program User 2 - 2 enter
3. Rate 2 300 enter
4. Degree's Fahrenheit 2 1285 enter
5. Hold 0000 enter
6. Alarm 9999 enter
7. Complete
8. Start
9. Enter

Firing this program will take your kiln up slowly at 300 degrees an hour for approximately 4 ½ hours.

BISQUE FIRING: Load kiln as directed in Classic Manual directions. Leave peephole open if possible for the first few hours of firing. If it is not possible to be there to close it, then close peephole from the beginning. (Do not leave open for duration of firing.) You may use one of the pre-programmed settings on the right-hand side of the kiln panel for a bisque firing. Program in the Fast Glaze option to cone 6. Make sure you use witness cones 5,6, & 7 to check the results. Remember just because you have programmed in cone 6 does not mean this is what the end result will be. The witness cones will give you the actual results. To program in your own bisque firing, proceed as follows.

1. Press the start and stop button on the left hand side of the kiln panel. (It should display the temperature inside the kiln alternating with Idle.) (May require pressing start twice to get to this display)
2. Enter program – user 3 3 enter
3. Rate 3 500 enter
4. Degrees Fahrenheit 3 2175 enter
5. Hold 0000 enter
6. Alarm 9999 enter
7. Complete
8. Start
9. Enter

Bisque firing for me is running approximately 5 ½ hours at this setting. Remember to check the results with witness cones 5,6, & 7. You may adjust the kiln hotter or cooler by speeding or slowing the rate or raising or lowering the degrees fahrenheit. Once you have pre-programmed in your programs 1,2, & 3 for china paint, soft-fire, and bisque all you will need to do is press enter program user 1, 2, or 3 and start.

Please note: All kilns will fire differently depending on the conditions in your home. For the first few firings, until you are familiar with your kiln, please do not put any good pieces of greenware or bisque to test fire with. Use your kiln empty or use some cracked or reject pieces of ware.

Good luck!!!! I think you will thoroughly enjoy your new found freedom of owning your own kiln. (It's kind of like the feeling you had when you first got your driver's license.) Once you overcome your fear of firing, the adventures are endless.

Thanks,
Connie Zink