

**TAKING THE  
FEAR OUT OF  
FIRING**

# Taking for the Fear Out of Firing

This article was written in hopes that some, if not all of your questions about firing will be answered. There are many makes and models of kilns, however this article has been written following the recommendations of Evenheat Kiln. You will be given instructions that are specific to the 1822-S, TnB 1822, RM II 1822 and 1827A kilns. These instructions can be adapted to most makes and models of kilns.

## **BEFORE PURCHASING A KILN**

Before purchasing a kiln, it is important that you know what type of ware you're planning to fire in your kiln. This is important because not all kilns reach the same temperature, and you will need a kiln that will fire the ware you intend on firing.

Secondly, it is very important that you take into consideration the electrical requirements that the kiln will need and what is available to you. Voltage, Breaker requirements, Amperage allowances and Cord configuration are all things that need to be addressed.

Thirdly, be sure that the kiln is not too large to fit into the area you are allowing for the kiln (be sure the kiln will fit through all the doorways it needs to travel through). The kiln installation requires it be located at least 10" -12" from any wall or structure. There should be no shelves above the kiln, as well as curtains or other combustible or flammable materials. The surface under the kiln should not be of a combustible material such as carpeting. (See Owners Manual for more installation instructions)

Note that when the kiln is firing there are gases created by the product you are firing, these gases will escape from the kiln. The gases given off can cause discolorations on walls, windows, copper piping and items that are near the kiln. Keep this in mind when selecting a location for your kiln.

If a kiln is going to find its new home in a garage or out building where heat is going to be a factor, note that the kiln should not be fired in temperatures less than 40°F. Firing a kiln in temperatures less than 40°F may cause thermo-shock to your product because of the vast difference in temperatures.

## **GETTING READY TO FIRE FOR THE FIRST TIME**

Once you have your kiln, be sure that you read the owners manual. This will give you the needed information for installing, firing, and maintenance of your kiln. Manufacturer's recommendations should always be followed.

### **Adjusting Kiln Sitter**

After your kiln is installed, if you have a kiln with a kiln sitter, you will need to check the adjustment of the kiln sitter. The kiln sitter is adjusted at the factory before it leaves but because of bumping and shifting during shipping these kiln sitters can become out of

adjustment. This procedure should continue to be done or checked after approximately every 30 firings.

### **Kiln Wash**

Kiln wash can be used to prevent your cones from sticking to the cone supports during a firing and causing an overfire. To do this you will need to mix a small amount of kiln wash with water in a small container. Apply a thin layer of the kiln wash to the cone supports and sensing rod. Allow the kiln wash to dry thoroughly. This layer must be a thin layer with no thick bumps.

Kiln wash will also have to be applied in a thin coat to one side of your shelves. This is done to prevent glazes or slip from adhering to your shelves. If glaze does get on your kiln washed shelves you now should be able to pop the glaze off easily. Before using the shelf again you will then have to reapply a thin layer of kiln wash to the shelves. If your kiln wash starts to become flakey, you will need to take a piece of grit cloth or sand paper and sand off the flakes and reapply a fresh coat.

### **What Cone to Test Fire To**

Now you are ready to fire your kiln for the first time. It is best to do a test fire in your kiln before you fire any of your ware. By doing this you will be able to determine if the kiln is firing properly. You will have to determine which cone to use for your test fire. I recommend that you do your test fire to the cone firing that you will be doing most of your firings to, such as your 03 bisque or 06 glaze fire. However you may have received test fire cones with your kiln, if that is the case feel free to use them. The advantage of doing your test fire to the cone you will be using most is that you would then know that the kiln will fire well to that temperature and this will give you a closer idea of how long your firing will actually take. This will help in determining what you should set your kiln sitter limit timer to (if you have one) on your next firing.

### **Putting Cone into Kiln Sitter**

Before each firing, it is important to check that your sensing rod moves freely. If you feel that there is any type of resistance, refer to your Kiln Sitter owner's manual for replacement instructions.

Turn all the kiln switches to the off position. Raise the kiln sitter weight (on the outside of kiln) up against the guide plate. Press down on the claw until it holds the trigger up. Place the cone onto the cone supports. (Be sure the cone is positioned correctly).

### **Placing Shelves into Kiln**

For the test fire place your kiln washed shelves into the kiln as if you were actually placing ware on the shelves. It is suggested that you use ½" or 1" posts on the bottom of the kiln. You should use 3 posts per shelf evenly staggered under the shelf. (Do not put ware directly on the bottom of the kiln floor at any time.) Be sure when placing shelves in the kiln you do not put the shelves too close to the tube assembly or thermocouple. Sufficient air circulation is needed in order for both the thermocouple or kiln sitter to read the temperature accurately. The same is true when adding your next shelf; you do not want to have your shelf too close to

the tallest ware. We suggest that you place your next shelf 1" – 2" above the tallest pieces. If you have a solid shelf of 1" pieces of ware, use at least a 3" post for your next shelf. If you only use a 2" post you are not allowing enough air circulation into the kiln. If you have one piece of ware that is 2 ½" tall and the rest are 1" tall pieces, using a 3" post would be sufficient. When placing your shelf near the top of the kiln, you will need to make sure that there is an element above the last shelf. It is best when loading a kiln to place like size pieces of ware on the same shelf starting with the shortest pieces near the bottom and the tallest pieces toward the top of the kiln.

### **How to Use Witness Cones**

Witness Cones should be used during your test fire and periodically during your firings. Witness cones are used to test the actual temperatures that your kiln fired to. Generally when firing with witness cones you will use 3 witness cones per shelf of different cone sizes. For example – if you are trying to fire to a cone 03. You will want to place a cone 04, 03 & 02 on the shelf. This will determine if the kiln is firing hotter or cooler than is intended. A perfect cone 03 firing will have a witness cone 04 overfired and melted, witness cone 03 will be bent to a 3:00 – 4:00 position and witness cone 02 may start to bend to a 1:00 position.

### **What if My Witness Cones Did Not Bend Correctly**

If the witness cones are either underfired or overfired you will need to check your kiln sitter to see if it is in proper adjustment. If you find that the kiln sitter is properly adjusted then you will need to place a cone hotter or cooler in the kiln sitter. In the case of a computerized kiln will need to adjust the final temperature up or down by 5, 10, or 15 degrees. It may be that it takes more than one test firing to get this firing the way you would like it.

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 times are accumulative. If a kiln is overfiring or underfiring with a cone 03 in the kiln sitter or a cone 03 programmed into the computer, you can shorten or lengthen the fire time, respectively. On a computerized kiln, lengthen the firing time by lowering the degrees per hour that the kiln will advance or add a 5 minute hold time to the end of the firing. If the kiln sitter style kiln is underfiring, then lengthen the firing time by adding more time to the firing. This can be achieved different ways on each style kiln. The Classic Style kiln will need more firing time allowed before the kiln switch is turned up. On the TnB you can do this by setting your second dial or # 2 switch to a higher number. On the Frymatic or A kiln you would have to set the number you turn your dial back to a higher number such as 5 instead of 4. If the kiln is over firing you will have to reverse this process.

### **My Original Kiln does not Fire the same way My New Kiln Fires**

Remember that each kiln, though they may be the same identical kiln, may not fire the same. We have seen this over and over; if you are purchasing a second kiln and are wondering why they do not work the same this is not uncommon. Many things can affect the way a kiln fires. Elements, thermocouples, voltage and amperage are usually big factors.

## **PUTTING WARE INTO THE KILN**

### **Greenware**

Greenware for the most part is fairly easy to load into your kiln. Remember what was mentioned earlier in the section about placing shelves into the kiln. Greenware can be placed directly onto the kiln washed shelves. Greenware that has no glaze on it can be placed into the kiln actually touching each other. Note: Packing the ware too tightly will decrease the needed air flow in the kiln which could result in underfired pieces. It is suggested that you do not place ware too close to the tube assembly or the thermocouple. Avoiding this area will allow the thermocouple or the kiln sitter to read a more accurate temperature in the kiln. This will also avoid any chance of things falling onto the tube or thermocouple resulting in an overfire. Placing ware under the thermocouple or tube may result in small pieces of metal falling into your ware. Keep in mind that it is best to place the same size item on the same shelf starting with the shortest pieces first. By placing the shorter pieces on the bottom and the taller pieces on the top you may eliminate the need of taller posts.

### **Glazed Ware**

Be sure when firing glazed ware that you have a coat of kiln wash on your shelves. It is not uncommon to have glaze drip off of a piece and fall onto the shelf.

Glazed pieces of ware (unless your piece is dry footed) will require you to use stilts to place your ware onto; they cannot be set directly on a shelf. Pieces of glazed ware cannot touch each other; if pieces are allowed to touch they will adhere to each other. It is suggested that you place your ware at least 1" apart to allow for sufficient air flow. If you are using crystal glazes that actually pop when firing, you will need to place these pieces further apart to avoid glaze splattering onto another piece. When using crystal glazes it is suggest that you also keep them away from the sides of the kiln to avoid any glaze getting on the kiln elements and causing your elements to burn out.

### **Overglazed Ware & Decals**

These pieces of ware can be placed directly on the shelves. If you do put your over glaze on the bottom of a piece then you may wish to put your ware on a stilt to give it more air circulation. It is very important when firing overglaze ware to give your piece plenty of air circulation. Do not put shelves too close leave about 2" of room between the tallest pieces and the next shelf.

## **FIRING YOUR KILN**

When starting your kiln you will need to have the lid closed if it is recommended that you need to have the lid propped then you will do this at this time. You will also want to open the peepholes if your firing recommends you need to have them open.

## **How to Set Your Kiln Sitter/ Limit Timer**

You should already have your cone into you kiln sitter and all the switches should be in the off position. If you have a Limit timer you will need to set this. When setting the timer you will have to have a general idea of the time it takes to fire your kiln to the desired cone. To have the Limit timer work effectively you will want to set this dial to run for 15 – 30 minutes longer then the fire should take. (During your test fire set this timer high, maybe at about 10 hours. When the firing has completed you will need to check to see how much time is left on the timer, this will give you a general idea of how long it will take to fire the kiln. Remember that a full kiln will take longer then an empty kiln; take that into consideration when you set the timer for the first firing with ware in the kiln.) The Limit timer is intended to shut the kiln off when your kiln sitter cone does not shut off within the allotted time frame. This is done to avoid major overfires.

To engage the kiln sitter you will need to insert your finger into the hole in the weight and push firmly in on the plunger until the plunger locks into place.

## **Programming or Setting your Kiln**

The following information will get into the specifics of how to set up or program your style of kiln. There will be 3 different firing profiles listed for each series of kilns. Remember the instructions are specific to the 1822-S, TnB 1822, 1827A, RMII 1822. The instructions for each style kiln can be adapted to your model kiln if you do not have one of these specific kilns.

## **1822-S**

The infinite switch controls on this kiln control the temperature by adjusting the amount of power given to the elements. This type of switch allows you to have a power setting between 22% when on Low and 100% when on high.

\*\* Be sure Kiln sitter is already engaged.

### **Bisque Fire**

Cone 03 - if you plan to glaze your ware

Cone 04 – if you plan to stain your ware.

Top Peephole should be open and lower lid onto the lower lid prop notch.

Turn all infinite switches to the LOW position for one hour.

At the end of the first hour turn switches to MED for approximately one hour.

At the end of the second hour, turn switches to HI and close the Lid and the peepholes.

Kiln sitter should shut the kiln off.

### **Glaze Fire**

Follow the cone recommendations that will be written on the jar of glaze. Generally this will be either a Cone 06 or Cone 05.

Top Peephole should be open and lower lid onto the lower lid prop notch.

Turn all infinite switches to the LOW position for one hour.

At the end of the first hour turn switches to MED for approximately one hour.

At the end of the second hour, turn switches to HI and close the Lid and the peepholes.

Kiln sitter should shut the kiln off.

### **Overglazes & Decals**

Overglazes – Cone 019 & Cone 018 - follow recommendations on paint jar

Decals – Cone 022 – Cone 018 – follow manufacturer's recommendation on decal sheet

Top Peephole should be open and lower lid onto the lower lid prop notch.

Turn all infinite switches to the LOW position for half an hour.

At the end of the first hour turn switches to MED for approximately a half hour.

At the end of the second hour, turn switches to HI and close the Lid and the peepholes.

Kiln sitter should shut the kiln off.

## **TnB 1822**

The infinite control switch (#1) controls the power to half of the elements (the second, fourth, sixth and eighth elements), by regulating what percentage of time these elements receive power. An indicated position of ONE will give 25% of full power to this half of the elements. Position #3 will give approximately 50% power to this half of the elements. MAXIMUM will give 100% power to this half of the elements (2<sup>nd</sup>, 4<sup>th</sup>, 6<sup>th</sup>, 8<sup>th</sup>). THE INFINITE CONTROLS WORK DIFFERENTLY FOR THE TnB 1210, & TnB 1413

The integrated timer switch #2 controls the elements by giving them full power when the timer runs down. While the timer is running, the kiln is firing on the elements controlled by the infinite switch only. When the timer runs down, the other portion of elements will begin to glow bright red and receive full power.

\*\* Be sure Kiln sitter is already engaged.

### **Bisque Fire**

Cone 03 - if you plan to glaze your ware  
Cone 04 – if you plan to stain your ware.

Top Peephole should be open and lower lid onto the lower lid prop notch.

Turn the #1 Switch to Max  
Turn the #2 Switch to 3

Kiln sitter should shut the kiln off.

### **Glaze Fire**

Follow the cone recommendations that will be written on the jar of glaze. Generally this will be either a Cone 06 or Cone 05.

Top Peephole should be open and lower lid onto the lower lid prop notch.

Turn the #1 Switch to #6  
Turn the #2 Switch to 2

Kiln sitter should shut the kiln off.

### **Overglazes & Decals**

Overglazes – Cone 019 & Cone 018 - follow recommendations on paint jar  
Decals – Cone 022 – Cone 018 – follow manufacturer's recommendation on decal sheet

Top Peephole should be open and lower lid onto the lower lid prop notch.

Turn the #1 Switch to #3  
Turn the #2 Switch to 3

Kiln sitter should shut the kiln off.

## **1827- A (Fyrematic)**

The FireRight Automatic Kiln Switch is an electronic time-proportioning heat capacity controller for ceramic kilns. It automatically controls the kiln's heat-up rate according to the schedule set by the user at the beginning of the firing. It eliminates the inconvenience of manual switch schedules and the thermal stress which can result from irregular, widely spaced, turn-up steps.



The FireRight Switch has a single 4- function control knob and a red LED – type “heating” indicator light.

Off: Turns the control (and the kiln) on and off.

Hold: Stops the automatic turn-up operation and holds at the present setting indefinitely.

Set: To turn the kiln up automatically, turn the knob to the set position and observe the HEATING indicator light. Each flash of the indicator light represents a 10% increase in power, (e.g. to start the kiln at 30% power, let the light blink three times.) Next, turn the knob to turn-up hours desired.

1-9: The numbers on the dial represent the turn-up time in approximate hours. For Example, when the dial is set at “5”, the power goes from 0% to 100% in approximately 5 hours. In 5 hours the kiln will be at 100% power. The kiln could fire less then the five hours or longer then the 5 hours, depending on the cone temperature desired.

NOTE: The heat indicator light will go “on” and “off” during the entire firing. As the power increases, the light will be “on” for a longer period of time. At 100% power, the light will remain “on”.

\*\* Be sure Kiln sitter is already engaged

### **Bisque Fire**

Cone 03 - if you plan to glaze your ware  
Cone 04 – if you plan to stain your ware.

All peepholes should be closed.

Turn the FireRight Switch to the SET position. Let the light blink 3 times.  
Turn the FireRight Switch counter-clockwise back to #4.

Kiln sitter should shut the kiln off.

### **Glaze Fire**

Follow the cone recommendations that will be written on the jar of glaze. Generally this will be either a Cone 06 or Cone 05.

Top Peephole should be open and lower lid onto the lower lid prop notch.

Turn the FireRight Switch to the SET position. Let the light blink 3 times.  
Turn the FireRight Switch counter-clockwise back to #4.

Kiln sitter should shut the kiln off.

### Overglazes & Decals

Overglazes – Cone 019 & Cone 018 - follow recommendations on paint jar

Decals – Cone 022 – Cone 018 – follow manufacturer’s recommendation on decal sheet

Top Peephole should be open and lower lid onto the lower lid prop notch.

Turn the FireRight Switch to the SET position. Let the light blink 2 times.

Turn the FireRight Switch counter-clockwise back to #6.

Kiln sitter should shut the kiln off.

## RAMPMASTER II

### Cone Fire Mode

This method is used to fire ceramics, porcelain, & pottery to a specific cone number using different firing times. Total firing times may vary depending on cone number selected. (The words Slow Bisque, Slow Glaze, Fast Bisque, & Fast Glaze on the Rampmaster controller are only recommendations for types of firing. For your desired firing you may choose the firing time you wish to fire in, rather than the type that is recommended on the controller.)



13 hours to reach 04 Cone



7 hours to reach 04 Cone









10 hours to reach 04 Cone



4 hours to reach 04 Cone

**Example:** Simple 7 hour firing:

1. Turn Power Switch On (If “ErrP” is in the display press the  button to clear)
2. Press the  Button
3. Press the  Button
4. Press the number keys for the Cone Number you wish to fire
  - ◆ Such as   for an 04 Cone
5. Press the  Button

6. Press the number keys for the amount of Hold time desired

◆ Such as  for 15 minutes

7. Press the  Button

**After the CPL is no longer in the display**

Press the  Button

If this article did not answer your particular question you can take a look at our web site [www.evenheat-kiln.com](http://www.evenheat-kiln.com) where we have more information on the firing kilns. If your question is not answered there you can call your distributor for more information or call us at 989-856-2281.