

## Getting Started With Your New Kiln

### Fear not

Many first time kiln owners are a bit nervous about using something that can produce enough heat to melt glass. No need to worry. If you just follow a few simple precautions, everything will be fine. An electric kiln is a pretty simple device. It's really nothing more than a toaster on steroids. No more dangerous than your kitchen stove.

### Pick a good spot for your kiln

Install your kiln at least 12 inches away from any wall or any combustible furniture. Try to locate it close enough to an electrical outlet to avoid using an extension cord but if you do have to use an extension cord be certain it is heavy enough to handle the electrical load. The higher the amperage of your kiln, the heavier the cord must be. An undersized cord can short circuit and cause a fire.

### Stay safe

You can place molds or kiln shelves on your kiln lid to let the heat of the kiln speed up drying kiln wash but take care to not place anything combustible on the lid of your kiln when the kiln is hot. You should keep the kiln lid closed when not using the kiln but storing heavy objects on your kiln lid can produce enough stress to crack the kiln lid.

Many different glues are used to temporarily hold glass in place until it fuses but be careful that you don't use something that produces noxious fumes or won't burn off clean in the firing. You should be especially careful about what chemicals or metals you fire in your kiln. Many (like galvanized metal) can produce fumes that will absorb into the kiln bricks and contaminate future projects. If you're in a hurry and can't resist taking a piece of hot glass, a hot mold, or a hot shelf out of your kiln, take the time

to use heat pads or gloves. It's a good idea to keep a pair of oven mitts near your kiln.

Always wear eye protection when cutting or grinding glass. ALWAYS! Take special care to avoid inhaling glass dust from grinding. It's as harmful to your lungs as asbestos dust. Either keep the glass wet to hold the dust down or wear a mask.

Dust from kiln wash or kiln paper isn't as dangerous as glass dust but is still a nuisance. A simple disposable paper dust mask will save you inhaling glass dust or residue produced when you sand or scrape kiln wash.

### Level your kiln carefully

Make your kiln as level as you can in all directions. An off level kiln will produce glass that is thicker in some areas than others. A "bullseye" level is especially good for checking level in all directions and is available at most building supply outlets or hardware stores.

### Kiln wash the floor of your kiln

Mix kiln wash 1 part kiln wash to 5 or 6 parts water. Apply 4 or 5 coats of this to the kiln shelves and to the kiln floor. Allow the kiln wash to thoroughly dry between each coat. It's important to kiln wash the kiln floor. Molten glass is corrosive and will dissolve kiln bricks. If there is an accident of any kind that causes molten glass to come off the shelf onto the floor, it will eat holes into the brick. A good coating of kiln wash on the floor protects the kiln bricks. Do NOT kiln wash the walls of your kiln.

A convenient way to measure the kiln wash powder/water mix is to use a large mouth drink bottle like the one shown in the photo. Apply tape or make a mark 1/5<sup>th</sup> of the way up from the bottom of the bottle. Spoon in dry kiln wash up to that level - then fill the bottle with water.

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Tightly apply the lid and shake to mix the kiln wash and water then pour some of the mixture into a container from which you can brush it onto your shelf or mold. The mix will settle and separate when left sitting. No problem. Just shake it up and you're good to go.

Kiln wash made for firing glass is much different than that used for pottery. Do NOT use pottery kiln wash on kiln shelves or molds to fire glass. Most glass kiln wash has vegetable dye added that burns off in the first kiln firing. If your shelf or mold is colored, it hasn't ever been fired. If it's white, it has been fired at least once.



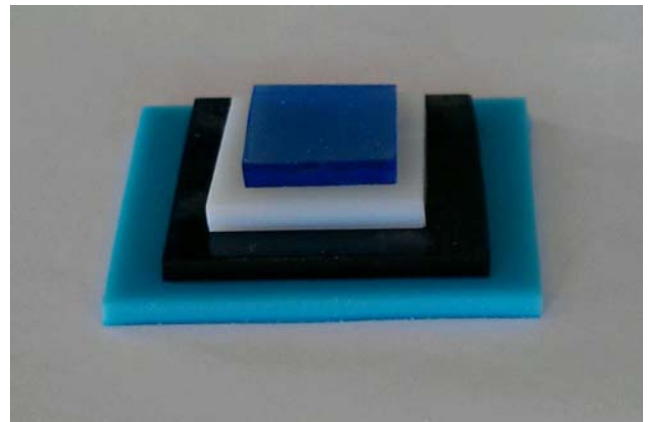
### Prefire to clean out your kiln

Fire to 1000° F (550° C) or higher to bake in the kiln wash on the floor and to burn off any residual binders in the mortar.

### Test fire to temperature check your kiln

Stack some pieces of fusible glass in a little pyramid like the photo below. Fire to 1350° F (735° C). Check to see how much the glass melted. If the temperature gauge is reading accurately, the glass should have fused together

but the edges remained square with the razor edge gone but not rounded off. If the edge is still sharp, your kiln did not reach 1350. If the edges started to round off, your kiln exceeded 1350. If your digital programmer can be adjusted to compensate, do that, and test fire again. If you can not adjust your programmer, adjust all firing schedules to allow for the error factor in your temperature readings.



*Temperature Test Project*

### Prepare your molds

Prepare all your molds the same way as kiln shelves - with 5 coats of kiln wash before using them. If you handle your molds carefully and don't fire them above 1300° F (700° C) you will be able to use them dozens of times without having to recoat with kiln wash.

### Using your digital programmer

Experiment with installing a few firing schedules. A good work practice that will help ensure you don't make mistakes is to make a routine habit of always doing this in 3 stages:

1. *Write out the firing schedule you want programmed in to your kiln.*
2. *Program in the firing schedule.*
3. *Review to check that you have programmed*

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*in the right schedule.*

If you spend some time learning how your programmer works, you'll very soon be able to change and install programs quickly.

### Lid Firing Separate

Some kilns can fire only the lid or side elements and switch between them. The photo below shows such a kiln with the kiln turned on and set to fire the side (body) elements only. It's a good practice to use lid element firings for fusing and side elements for casting, draping, and slumping.



Most kilns have an "infinite switch" that allows the lid elements to be fired at reduced setting.

### Keep a kiln log

Start a kiln log to record the results of each project. This will allow you to refer back to previous firings to confirm what firing schedules

produced what results and help you learn how to alter firing schedules to produce desired effects.

Your log should include the following for each project:

- *Date*
- *What kiln used*
- *Firing schedule used*
- *Glass used*
- *Your comments on results*
- *Your suggestions for improvements*

### Keep your kiln clean

Your kiln will last longer and perform better if you keep it clean of debris and dust. Take special care to vacuum out any dust in the element grooves. Avoid hitting the thermocouple (the little metal rod sticking into your kiln that reads the temperature) when taking anything in or out of your kiln. If you bend or damage the thermocouple, it will no longer read the temperature accurately.

### Keep your kiln lid closed when not firing

It isn't a problem with fairly small kilns, but you should keep the lid closed on large kilns when the kiln isn't being used. Leaving the lid left up puts constant strain on the middle of the lid which can cause it to crack. Cracked kiln lids are very difficult to repair and usually require expensive replacement.

### Do not crash cool glass kilns

Firing schedules call for dropping temperature as fast as possible from the top performance temperature down to anneal temperature. Your kiln will shed heat fast enough with you opening the kiln lid. Potters frequently crash cool to drop temperature but pottery kilns have a smooth lid. Glass kilns have elements grooved

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into the kiln lid. Cold room temperature air striking super hot kiln bricks can cause kiln bricks to start crumbling along the edges of the element grooves resulting in bits of kiln brick dropping into molten glass.

### When elements start to sag

Kiln elements expand when they're heated then contract when they cool. After many firings, they stop contracting back to their original size and start coming out of the element grooves. No problem, just push them back in. If they don't stay back in, you can get "J" or "U"-shaped element pins to hold them back in the groove.



### REPAIRS – Thermocouple

The thermocouple reads the temperature inside the kiln. These do fail but not often. Fortunately, they're relatively inexpensive (under \$50) and take only a few minutes to replace.



### REPAIRS – Relay

Kilns have only two settings – off and on. The relay switches the kiln off and on as directed by the controller. After about 10,000 switches, the relay will stop working. No problem. A new relay costs about \$50 and can be easily replaced in about 10 minutes.

### REPAIRS – Bricks

Kiln bricks are very soft and damage easily. Replacement kiln bricks cost about \$10 each and small packets of kiln mortar are available from most kiln manufacturers or pottery supply retailers. You can either remove a damaged brick and mortar in a replacement, or just fill in any chips or cracks with kiln mortar.