Kilns

SELECTING A KILN

IF you ask kiln owners, “What size kiln should I get?” most will answer, “The biggest one you can afford”.
I disagree. Although it’s common for people to economize and buy a kiln that ends up being too small for their needs, it’s just as common for beginners to start off with a kiln that’s too big for their needs. If you have a big kiln, you’ll want to fill it whenever you fire it. That creates an incentive to put together mixed loads that often shouldn’t have been mixed but instead fired separately. If you want to make big pieces, you’ll need a kiln big enough to fire them, but if you plan to make small pieces, it’s better to have a kiln just large enough to fire those small pieces. The idea that a large kiln will allow you to fire a lot of small pieces each time is more theory than reality. Large kilns take longer to fire and you’ll not get more than one firing each day. Smaller kilns heat and cool quicker so can often fire twice each day. Firing twice as often means you can put twice as much stuff through the kiln. If you buy a small kiln and later decide it’s inadequate, you can buy a larger one, but you’ll likely keep using the small one just as often as you do the bigger one. There will always be times when you want to fire something that doesn’t justify using the larger kiln. The other consideration is that larger kilns usually require 240 volt power supply. If you don’t already have a 240 volt plug available, it can be expensive wiring one for you kiln. I suggest that the size of kiln you chose should be determined by the largest piece you expect to make. I believe the most versatile kiln to start off with is the largest one you can get that runs on 120 volts.

SOME FEATURES TO LOOK FOR

Both top & side elements -
Ceramic kilns usually have side elements only. These can be used for glass but don’t work as well as kilns with top elements. Some glass kilns have top elements only. These work well for fusing, but for don’t distribute the heat as evenly as side elements will. The best kilns are those with both top and side elements.

Controller –
Although a kiln will work as well with only a pyrometer and switch as it will with a digital controller, working without a controller makes it likely you’ll have a lot of failures. A controller is the best possible investment for a glass kiln. It allows you to program the firing schedule, then leave the kiln unattended knowing it will perform the firing schedule you programmed into it. A simple 3 key controller will perform just as well as an elaborate more expensive one. A more expensive controllers is just easier to use and can store more schedules in memory.

Adjustable top elements -
If you want to “stack” loads on multiple levels in your kiln, a kiln with top elements will be hotter on the top level than the bottom level. Because they have only side elements, ceramic kilns are usually better for firing multiple levels. Some glass kilns have top elements that can be adjusted to reduce the amount of top heat provided so your kiln relies mostly on side element heat.

Add on ring -
Fusing and slumping shallow forms work best with a shallow kiln that will ensure even heat distribution, but there might be times when you want to fire something that requires a deeper kiln. You can start by buying a deeper kiln, but an alternative is to select a shallow kiln that has a blank ring that can be added to make your kiln deeper.

LOCATING YOUR KILN

In selecting where to put your kiln, the most important thing is to place it far enough away from anything combustible the heat from the kiln doesn’t start a fire. Kilns are extremely efficient at holding heat (often more efficient than many users would like) but are still a potential fire hazard if not safely located. Pretty much all kilns now come with metal stands that hold them far enough up there’s no concern about what you stand it on. Many users put their kiln up on wood tables. Although a kiln will dissipate heat through the sides, placing it at least 12” away from walls is sufficient. What’s above the kiln is more important because to much heat rises from it. Nothing should be between the kiln and the ceiling. Do NOT place shelving or hang anything above the kiln.

Kilns can be placed in garages or even outdoors. Many users place them in outbuildings or covered porches. Just be sure it has some kind of covering to keep the rain off. The greatest possible worry is if you place your kiln in a room with an open flame natural gas or propane device. If you do, be CERTAIN you have a device to turn off the fuel if the flame goes out. You might not like what happens if you have a gas leak while your kiln has heated up to 1400 degrees.

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KILN SHELVES

You can fire on the floor of your kiln, but it's better to use a kiln shelf. First, because the texture of the bricks will transfer to anything you place on the kiln floor, and second because if you have an accident and hot glass gets to the floor bricks, it can do serious damage. You might end up having to replace or repair your kiln floor. Kiln shelves are relatively inexpensive and make a good surface for fusing. You can either kiln wash the shelf or cover it with kiln paper. Shelves work best if stood up on 1" kiln posts instead of being set flat on the kiln floor. Many kiln users like to have 2 shelves so when one needs to be scrapped and re-kiln washed, they have another ready to use immediate.

LEVELLING THE KILN SHELF

It's important to make sure your kiln shelf is level. If it's not level, many of your projects will come out distorted. You're not likely to notice it much on fused projects or shallow slumps, but on deep slumps, drop rings, and drapes, it'll be noticeable enough to ruin your work. If the shelf is lower at one point, the glass will drop first to that point and produce a noticeable distortion to the finished shape. Check to see the shelf is level in all directions. You can check with any level, but the best way to check is with a "Bullseye" level. This is like a little glass dome with a bubble in the middle. Place it in the middle of your kiln shelf (in the kiln). If the shelf is perfectly level, the bubble will be perfectly centered. Wherever the bubble is off center, you'll know where you have to shim your kiln to make it perfectly level.

You can use fibreboard for a kiln shelf, but because fibreboard tends to break if too much weight is placed on it, it's a good idea to place it on a bed of sand.

CLEANING THE KILN

Kiln bricks are soft and crumble easily. Small bits of brick will frequently come loose. You should routinely vacuum out your kiln - especially in the groves where the lid elements are installed. You don't want to have even a small bit of brick drop down onto your glass. If it drops while you're at fusing temperature, it'll end up in the glass. When vacuuming you kiln, take care to not touch the kiln thermocouple with the vacuum cleaner - to avoid causing a power surge which can fry your digital controller.

TESTING YOUR KILN

Every kiln fires a little differently. You'll find it a lot easier to understand what happens at different temperatures if you start by firing small tiles at different temperatures and making a record of exactly what happened at each temperature. I suggest you start at 1300 and do tests at 50 deg increments up to 1500.

KILN TEMPERATURE VARIANCE

Don't assume the temperature shown on your kiln gauge is the same as the temperature of the glass in the kiln. The kiln thermocouple reads the temperature of the air in the kiln, not the temperature of the glass. It's possible for the air temperature to be more than 100° above or below the glass temperature. It's always wise to allow for some difference to be safe.

KILN HOT SPOTS

Some kilns have spots that are hotter than other spots. Square kilns often are cooler in the corner than the middle. That's why round kiln are so popular. They're efficient. If your kiln has hot spots, it's important that you discover them so you can look for ways to compensate for them. A simple way to test is to take a number of small strips (about 1/2" wide x 3" long) of all the same glass propped up on each end with either kiln posts or other pieces of glass. Cover the entire kiln shelf with these and fire the kiln to slump temperature with only a 1 minute hold. If they all slumped uniformly, you have no hot spots. If some slumped more than others you can see where the kiln is hottest.