

How to Choose an Electric Kiln

Over the years, the selection of kilns has grown steadily. To help you sort through the confusion of choosing from so many different types, we have narrowed the selection criteria to eight.

1) Temperature

The kiln you choose must be rated hot enough for the ware that you will fire:

2350°F: Porcelain and stoneware

2300° - 2000°F: Low-fire ceramics

1400°-1700°F: China painting, glass fusing, glass slumping, enameling, bead annealing

It is a good idea to buy a kiln that will fire hotter than you need it to. If you are firing glass to 1500°F, buy a kiln rated to 1700°F. If you fire ceramics to cone 6, buy a cone 10 kiln. As heating elements age, they draw less and less power. Generally, the higher the kiln's maximum temperature rating, the longer the elements last. This is because even after the elements begin to wear, they still draw enough amperage to fire the ware.

Another advantage to higher temperature capacity is that during periods of low voltage, your kiln will still likely reach the temperature you need.

2) Size

In general, the larger the kiln, the lower the cost per cubic foot of interior space. Divide a kiln price by its cubic feet, and you'll see what I mean. (This principle also applies to houses. I learned this when I built a house years ago.)

Will you want to fire many small loads or a few large ones? Some people prefer to fire frequent small loads to see how special effects turn out before spending time on other projects. Others prefer firing fewer large loads. This may be another factor in choosing kiln size.

Choose a kiln that will fire the largest ware that you produce, and decide how often you want to fire the kiln. Figure how long it will take you to make enough ware to fill a kiln of a given size. Do you think your needs will expand later? Kiln owners will typically tell you to buy more capacity than you currently need, because you'll probably outgrow your kiln later.

Before purchasing a 10- or 12-sided top-loading kiln, visit a studio that has one. Reach down inside the kiln to be sure you are tall enough to load it. This is important. I know people who cannot touch the floor of their kiln, so they leave a shelf supported by posts in the bottom. If you have difficulty loading a studio kiln, consider the short and wide 12-sided, 22" deep kilns.

If you fire ware of a particular size such as tiles or bowls, plan the kiln load on paper. Draw diagrams of different sized kiln shelves and determine how many pieces of ware will fit onto each shelf. You may find that the ware fires most efficiently in a particular size kiln. For instance, the 10- and 12-sided kilns can both fire 10 in. bowls. But since both kilns fire four bowls per shelf, the bowls fire more efficiently in the 10-sided kiln than in the 12-sided.

The 10-sided kiln is also a good choice for those who need short firing cycles. Since 10-sided kilns are smaller than 12-sided, they can heat and cool faster. In addition, kiln shelves for 10-sided kilns are lighter than those for 12-sided kilns and are easier to lift.

3) Electrical

Will you need a new circuit installed for your kiln? This may affect your choice of kilns. Only a licensed electrician should install a new circuit. Use copper wiring, not aluminum.

Homes in the U.S. and Canada usually receive 120/240 volts. If your studio is in a business district, strip mall, or school, it is likely that your voltage is 208, not 240. It is important that you know your voltage before ordering the kiln. 208 volt and 240 volt circuits use the same wall outlets, so you can't visually tell them apart.

Call your power company or electrician if you are not sure about your voltage or phase. If you fire a 240 volt kiln on a 208 volt circuit, the kiln will fire slowly and may never reach maximum temperature. This is an expensive mistake, because you will need to order new elements of the correct voltage and possibly have the switch box rewired.

Contrary to logic, 240 volt kilns do not necessarily fire hotter or faster than 120 volt kilns. Some 120 volt kilns can reach 1000° F. in five minutes!

4) Round or Square

On a per-cubic-foot basis, the "round" kilns (6-, 7-, 8-, 10- and 12-sided) are less expensive than the square because they are easier to build. Ceramists usually buy the round models while schools and potters sometimes buy the large square kilns, because they are especially durable and slow cooling.

5) Top- or Front-loading

Front-loading kilns are preferred for enameling, where pieces are removed from the kiln at 1450° F. This would be difficult with a top-loading kiln since the heat rises when you open the lid. Ceramists typically use the small front loaders for glaze testing and small pieces. Large front-loading studio kilns are easier to load than top-loading models because you don't have to bend down into the kiln.

6) Firebrick or Ceramic Fiber

Though ceramic fiber heats and cools faster, insulated firebrick (used in most kilns) outlasts ceramic fiber. So each material has its advantages.

In addition, heating elements are easy to replace in a firebrick kiln, because they are exposed in firebrick grooves. Most ceramic fiber kilns use elements embedded into the ceramic fiber. Therefore, these elements cannot be replaced. Instead, the ceramic fiber firing chamber and elements are replaced as a single unit.

7) Insulating Firebrick Wall Thickness

Most ceramic kiln walls are either 2½" or 3" thick. Kilns with 3" walls and lid take slightly less energy to fire due to the extra insulation. However, their main advantage is that they reach a higher temperature than their 2½" counterparts. They also cool more slowly, which is important when firing heavy pieces prone to cracking and for special glaze effects. To fire stoneware or porcelain, buy a kiln with walls at least 3" thick.

8) Manual or Automatic

Most manual-fire kilns operate with infinite control switches, the type used on electric ranges. They contain a bi-metallic timer that cycles on and off. As you turn the switch clockwise, the heating elements stay on longer and longer. On High, the elements stay on continuously.

Manual-fire kilns are gradually being replaced by automatic models. If you are planning on a manual-fire because that is what you are accustomed to, at least consider an automatic kiln. Once you understand them, automatic kilns are easier to use than manual kilns. Before making your final decision, ask your dealer to demonstrate an automatic kiln for you.

Automatic kilns are of two general types: mechanical and digital. Mechanical automatics use timers to advance the switch settings and the Dawson Kiln Sitter to turn the kiln off. Digital kilns use an electronic controller.

Some people think mechanical kilns are more reliable than digital kilns. It is true that the wiring of a digital kiln is more complicated than that of most manual-fire kilns. Digital kilns use a transformer and relays, which are often not needed in a mechanical kiln. However, digital kilns are reliable if designed properly. Ceramists have been

firing them successfully for over two decades.

Digital kilns are also easier to repair than some people think. The heart of the system is a small circuit board that, in a well-designed kiln, can be removed in minutes and repaired or replaced.

The biggest mistake kiln operators make is assuming that an automatic kiln will shut off as it should every time. Every automatic kiln needs human monitoring, especially near the shut-off time. So even though the kiln you are buying is automatic, plan to be near it at the end of firing. If the kiln takes longer than expected, look through the peephole at the pyrometric cones on the shelf. The cones will warn you if the kiln has fired to maturity and should be shut off manually.

Once you begin to understand the reasons for so many different types of kilns, choosing the best one for you will be easy.