

Choosing a Kiln...

a guide to features and flexibility




kat kramer



Wubbers[®]
...made to make jewelry!

Getting Started



So you've decided it's time to purchase a kiln! It's a very exciting step in your development as an artist, but it can be a little overwhelming. What types of things do you want to do? What is your budget? Kilns come in a variety of sizes, with prices ranging from a couple hundred dollars to thousands of dollars, depending on what you want to do. It can feel like a big decision.

As a glass artist, the first thing I hear from people who want to try glass is "my Aunt Edna used to do ceramics...I'm going to use HER kiln." In my opinion, this can be a big mistake. Usually those kilns are quite old, require re-wiring your house, and are missing all of the great advances from the past thirty years. The majority of glass kilns have heating elements in the top; ceramic kilns have them in the sides. Your best bet is to make the investment to get a kiln that will allow you to do what you want, and has the features to make it easier. With the right equipment, you'll grow in your art.

The first kiln I owned was a very small "trinket" kiln for enameling that I received as a gift when I was eleven; the second was a small burnout kiln that came with a vacuum metalcasting kit. I realized that I could also fire enamels in that kiln. Or was my first "kiln" the Easy-Bake Oven that I melted plastic beads in to make suncatchers? (Note—don't do this!)

As the years went on, I took up lampworking, was faced with making a choice...there was a small "kiln" available called a Chili Pepper that would allow me to anneal (strengthen) my lampworked beads. But if I stepped up to the 9" AIM kiln with a computer controller and bead door, I could anneal beads, enamel, and potentially fuse glass. Fortunately, the kiln dealer helped me understand that spending a little more would give me room to grow. I spent about \$650 on the AIM 84BD kiln, but thirteen years later, it's one of six kilns that I still use frequently. That choice gave me the flexibility to get started with fused glass, and became an essential tool in the start of my glass jewelry business.

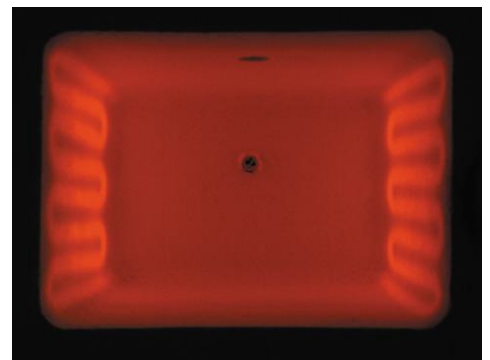
So What do You Want to Do?

First of all, what is a kiln, and why do you want one? A kiln is an oven that gets really, really hot. It lets you melt glass and enamels. It allows you flexibility in firing metal clay. It opens up a new world of possibilities.

When purchasing a kiln, think about everything that might interest you. Do you want to try metal clay...if so, what type? Fusing glass? Enameling? Lampworking? Keum Boo? Granulation? Kilns are used for many creative things, but some kilns are specialized. As an artist, you might want to explore some of those techniques. If you get bored easily, you'll want to try them all!

So let's take a look at some of the things you can do with a kiln, so we can figure out which type is right for you. This next section describes what you can do with a kiln, and specific kiln recommendations follow.

There's also a handy chart that compares types of kilns with features and relative prices. Let's get started.



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Types of Kiln-Fired Media

Metal Clay: Particles of metal mixed with a clay binder can be shaped, dried, and fired, resulting in pure metal pieces when the clay binder burns off. Fine silver clay can be torch fired or even fired on a gas stove, but all variations of the clay are made stronger by firing in a kiln. You can also “low-fire” some stones and glass in metal clay in a kiln, which cannot be done with a torch because the stones or glass will thermoshock. Variations of clay include sterling, gold, bronze, copper, and steel. (These adorable little owls from <http://www.beadinggum.com/2012/04/metal-clay-and-concrete-jewelry-by-lulu.html>.)



Fused Glass: Fused glass is also a lot of fun, and there are many different techniques, including casting, painting with frit (crushed glass), and layering. Common objects include glass jewelry, platters, nightlights, and bowls. Glass expands when it's heated, and contracts when it's cooled, so it's important to be able to control that process—glass is prone to thermoshock when heated or cooled too quickly. Special glass of the same “COE,” or coefficient of expansion, can be fused together. Objects such as bottles can be “slumped” into molds or onto a shelf to flatten them. Different techniques require specific heat levels and firing schedules. (Layered glass piece by Kat Kramer, www.katkramer.com.)

Enameling: Enameling is the process of fusing glass powders to a metal surface. The metal can be pre-cut shapes, sheet silver or copper, or even over fired metal clay. There are many different techniques, from sifted opaque enamels to brilliant cloisonné with transparent enamels as shown here. Plique-à-jour looks like tiny stained glass, and can be fired on a small trinket kiln on a sheet of mica. Enamels can also be torch fired, but having a kiln allows more control of the process. (This amazing piece from www.baileysartjewelry.com.)



Lost Wax Casting: The traditional method of creating precious metal jewelry is by lost wax casting. If you're interested in casting jewelry, designs are carved in wax, then the wax model is placed in a plaster-type material called “investment.” A kiln is used to “burn out” the wax from the mold, then the cavity is filled with molten metal. Lost wax casting can be less expensive than metal clay, but there is usually more of an investment up front in equipment...however, I just bought a book on lost wax casting with steam that looks interesting and less expensive!





Lampwork: Lampwork is the process of creating beads and other glass objects from glass rods, sheet, and frit (crushed glass) with a torch. The kiln is not actually used to form the beads, but instead used to strengthen them. The beads are first created on a "mandrel" (metal rod), then placed into the kiln and held at a certain "annealing" temperature (around 968°F) for an hour or so. The kiln temperature is then lowered slowly, resulting in beads that are stronger and less prone to breaking. Some beads that have been annealed can even withstand being dropped on the floor! If you are selling your beads, a kiln is a must, and "annealed beads" are considered higher quality. (This beautiful lampworked bead courtesy of Ginny Hampton at www.ginnovations.com.)

Porcelain or Ceramic: If you're interested in creating jewelry from porcelain or ceramic, a heavier-duty kiln that can reach higher temperatures is required. Porcelain and ceramic are traditionally fired using "cones" as a temperature indicator. For example, to fire porcelain or stoneware to a "cone 4," the kiln is heated to approximately 2157°F[†], whereas a "cone 6" is approximately 2232°F[†]. In comparison, a "full fuse" in glass is accomplished at a much lower temperature, about 1475°F. Kilns with computer controllers generally have pre-programmed cone settings, however, many pottery artists still use the traditional cones as a reliable heat indicator. A cone holder with cones is shown here. (These beautiful earrings from www.henningporcelain.com; cone photo from Wikipedia.)



Granulation: Granulation is an ancient technique of creating small beads of metal, then fusing them onto a backplate in decorative patterns. A small enclosed kiln can be used to create the beads by placing small pieces of metal in powdered graphite and heating to a very high temperature. A trinket kiln can be used to pre-heat the backplate, as a torch is used to fuse the granules from above.

[†] not to be confused with a "cone 04," which is 1940°F or a "cone 06," which is 1830°F. The zero makes a difference!



Keum Boo: Keum Boo is an ancient Korean gilding technique where thin sheets of 24K gold are applied to silver with heat and pressure. Although a kiln is not required for this technique, some of the smaller trinket kilns have plates that allow them to be used with Keum Boo. (This bracelet courtesy of Debora Mauser.)



Types of Kilns & Considerations

Now that we've talked about the types of techniques, let's look at some considerations. Kilns range in size, price, features, and the type of electrical connections required. Many people believe that you must rewire your garage in order to have a kiln. The truth is that many kilns require a regular plug, and can be run safely in your kitchen when precautions are taken with good ventilation and fire-proof surfaces.

Temperature: The kiln must be hot enough for what you are firing. According to Paragon, a company that's been making kilns since 1948, there are three main kiln ratings. 1400-1700° for glass fusing and enameling, 2000°-2300° for "low-fire ceramics," and 2350°F for porcelain and stoneware. Paragon recommends buying a kiln that gets a little hotter than you need it to...but the important thing to know that kilns may be limited to a certain temperature, and that will impact the type of art you want to do.

Budget: Ahhhh....the budget. A large part of the decision will come down to how much you want to spend. Generally, budget will affect two different decisions—the size of the kiln and the features. If you have a very limited budget, you might consider looking for a used kiln...I saw a nice AIM kiln this morning on eBay for \$300, but with that decision also comes a little risk. Is the seller being truthful about the condition? Why are they selling? You might have friends or a local studio that can refer you to a used kiln as people are upgrading to larger kilns. If it's in your budget, I actually recommend purchasing from a local dealer if possible...you might pay a little more, but they will be there to answer your questions if you run into problems...I purchased one of my kilns from Helios Glass in Austin, and the owners became a valued resource and trusted friends! I always recommend supporting local business if possible, and their prices may surprise you. There are also reputable online sellers, such as Cool Tools, Delphi Glass, and others.

Another suggestion is before you make an investment in a kiln, see if your local studio fires pieces for a fee. What if you primarily want to make glass jewelry, but only occasionally want to make a platter? You might purchase a smaller kiln that's great for making jewelry, and pay the local studio to fire larger pieces for you.

So what can you expect to pay? Here's a sampling of kilns and prices. Paragon makes a small kiln called a "Quickfire 6" that is a no-frills kiln under \$300 that gets up to 2000°F. It is great for small fused glass jewelry items, PMC, and china painting. There's a small Ultra Lite Beehive kiln that works well for basic enameling, PMC, Keum Boo, and granulation that's under \$200. A Paragon SC2 with a door and computer controller that works well for fused glass jewelry, PMC, and enameling starts under \$700, and even comes in designer colors! An Evenheat Hot Shot kiln with a 14.5" interior, 3-button controller, and stand is under \$1,000. Paragon's CS-16D is a nice 16" clamshell kiln available online for around \$1,100. A large Jen Ken JK2 kiln...24" square with a ten-button controller at Delphi is about \$2,200. **Always compare costs that INCLUDE shipping.**

And I hate to mention the microwave kiln...but there is a small microwave kiln for around \$100-160.





It doesn't have a lot of control, but it can be kinda fun! It's great for entertaining pesky kids at family events, and I use it to create small round nuggets quickly or test color reactions, firing only in about five minutes. There's even a YouTube video of someone firing a small ceramic piece, then using a tin can of newspaper to create a small Raku piece. I consider this to be a "complement" to my larger kilns. I would not recommend it as your primary kiln. (A Jen-Ken version shown here.)

Kiln Size: The size comes into play in several ways...how much space do you have to store a kiln? What size items will you be firing? Also, larger kilns may require additional wiring at additional cost. If you just want to do small jewelry items, or if you're on a tight budget, a smaller kiln may be the way to go. If fusing glass, do you think you might want to do platters? My first kiln, a 9" AIM brand kiln, allowed me to create 8" fused glass platters, and would accommodate an 8" slumping mold (shapes the fused glass into a curved shape). I could also make four nightlights in one firing, and maybe 30 pendants. I used this kiln for several years for hobby purposes, but later when I started selling my jewelry, it became my go-to kiln for firing small batches of jewelry quickly and with consistent results.

Some jewelry artists I know opted for a 16" kiln, which can plug into a regular outlet. They can produce larger platters and large batches of jewelry. A deeper and larger kiln can be used for casting or slumping glass sinks. However, these larger kilns are not optimal for enameling because of heat loss when loading and unloading. Plus you'll probably singe the hair off your arms. So focus on what you want to do, then choose accordingly.

Computer Controller or Not? Many first-time kiln buyers will be tempted to save a few bucks by choosing a "pyrometer" instead of a computer controller. The computer controller seems like an expensive option if you don't know what it can do for you. The main reason that you would want one is to have ultimate control in how your kiln heats up and cools down. Whether it shuts off automatically, or you have to shut it off manually. How much time to you want to spend tinkering with it?

It's probably more important if you're doing anything with glass, especially lampworked beads and fused glass. With fused glass, you want to ramp up the temperature slowly...for example, a "firing schedule" might tell you to "increase the temperature 300°F per hour, then hold for an hour in a bubble squeeze, then increase 'as fast as possible' to the final fusing temperature." If you were doing this manually, you'd have to babysit the kiln, doing calculations and turning up the kiln every so many minutes to achieve that ramp. Some of my firing schedules are 20 hours or more...some techniques fire for several days...so doing this without a controller would be a big hassle. With the computer controller, you set it and forget it (kind of like the Ron Popeil Showtime Rotisserie oven...).



Another thing to note...smaller kilns generally have a 3-button controller, and larger kilns generally use a 12-button controller. The controllers are made by only a few manufacturers, such as Orton and Bartlett, so kilns from different manufacturers may have the same controller. If you're having an issue, you'll sometimes be referred to the manufacturer of the controller instead of the kiln manufacturer.

Anyway, a controlled ramp up keeps your glass from cracking, and a controlled ramp down makes your glass pieces or lampworked beads stronger, producing better quality work.



Modular/Extendable Kilns: There is one other thing to consider...some kilns have options that allow you to change functionality as you explore new mediums. For example, I purchased a plain Paragon SC2 with a bead door for lampwork, but later realized I needed a viewing window. Cool Tools sells the doors separately!



The Paragon Caldera-S and AIM BD84 have stacking "collars" with optional features such as bead doors, enameling doors, and also optional lids with viewports. You can mix and match to get the kiln that's perfect for your needs. If you're likely to change your mind, find a kiln with that kind of flexibility.

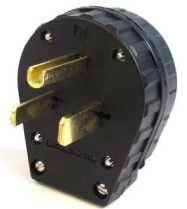
Electrical: This is one of the biggest concerns with anyone looking for a kiln, "having to rewire the house." The nice thing about the smaller kilns is that they will use a standard 120 volt electrical outlet, like the one shown here. However, the outlet needs to be able to support the draw of power on the kiln. Here's your quick and dirty electrical lesson...have you ever looked at your appliances? The current of your appliance is measured in "amps" ...it's kind of like the amount of water flowing through a pipe. For example, a CD player may pull "1 amp" of current. Your blender may pull 5-6 amps of current. Your toaster may pull 7-10 amps. See a pattern? Now guess how much your kiln pulls? Would it be more like a blender, or a toaster? You guessed it...your kiln is a lot like a big toaster. My small Paragon SC2 is rated at 12 amps (12A). A little more than a toaster. And the outlets in the kitchen are 120v, rated as 15 amp or 20 amp outlets. Your outlets and



breaker are usually sized a little larger than the amp rating of the kiln...for example, a 12 amp kiln needs at least a 15 amp outlet and 15 amp breaker.



However, when you look at my larger kiln, a Jen Ken JK2 24" kiln, it's rated at 36 amps and requires a 240 volt outlet and 50 amp breaker. This means that this larger kiln, with a much larger plug, must be wired in by a professional electrician. Just in case you're dreaming about a big kiln...this is an extra expense. I've paid for an electrician to install the plug in two different homes...one cost about \$400, and the other was \$275 (it was right next to the main electrical panel, and the cost of the wiring was less). But in this kiln I could fire 400 pendants at once...for my needs, it was well worth the investment.



Now one more thing to know...if you plug your kiln into a kitchen or other outlet, and it trips the breaker, something's NOT RIGHT, and you **NEED TO CALL AN ELECTRICIAN**. You know how when you are running the toaster, the coffeemaker, and you turn on the microwave and trip the breaker? This means that the combination of appliances are drawing too much power

(current!) and the breaker cannot handle it. It's a safety warning NOT to be ignored. You could try turning off other appliances, but it may be an indicator of a bigger problem. I learned this the hard way once...my larger kiln kept tripping the breaker, and I kept resetting it and turning the kiln back on. When I finally called an electrician, the main breaker was BURNED and I was at risk of burning down the house. The kiln was draining more power (current!) than it should have. **Lesson learned...do NOT ignore a tripped breaker.** Don't be afraid—kilns are generally safe. But pay attention to these signs that something might be wrong. One other thing to note...if your home is older, and possibly has aluminum wiring, consult an electrician BEFORE running a kiln. Aluminum wiring cannot handle the load, and may be a dangerous fire hazard.



Specific Kiln Features for Different Media

So let's talk about specific kiln feature recommendations for different media.

Metal Clay: You can use almost any kiln for metal clay...the process of "sintering" burns out the organic clay binder, and condenses the metal particles into a solid mass of metal.

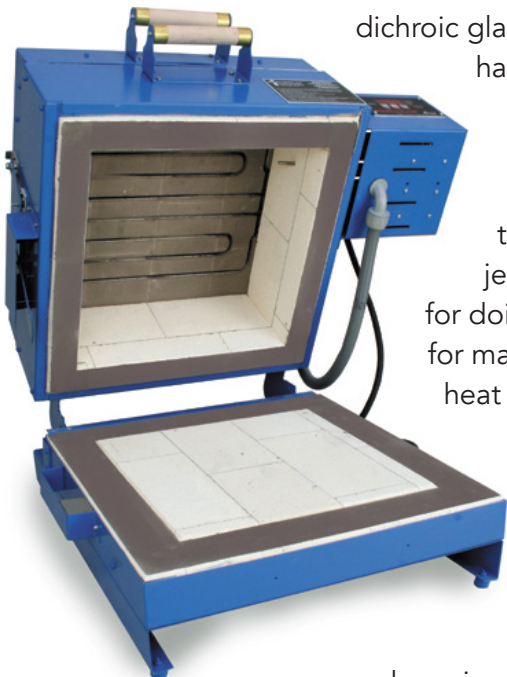
Silver Clay: Silver clay can be fired in almost any kiln, but a controller is helpful. Firing temperatures range from 1100°F to 1650°F. PMC Pro, a high-strength version of Mitsubishi's Precious Metal Clay, needs to be fired in activated carbon, and would require a pan or ceramic vessel.

COPPRclay or BRONZclay: COPPRclay and BRONZclay must be fired in activated carbon to reduce oxidation, so pans or ceramic vessels are used to fire the pieces and the kiln will need to accommodate. COPPRclay must be fired in a coconut shell-based carbon, and may not sinter properly if fired in coal-based carbon. BRONZclay can be fired in either coconut shell-based carbon, or the coal-based carbon, which produces colorful patinas. Firing times can be anywhere from two to nine hours, with ramps (increases or decreases in temperature) over the firing. Firing temperatures for variations of PMC can be as low as 1100°F, but COPPRclay can fire as high as 1750°F. A great resource is the Welcome Guide to BRONZclay and COPPRclay at copprclay.com. http://copprclay.com/images/welcome_guide.pdf



For maximum flexibility in metal clay, look for a kiln like Paragon's SC2 or SC3, Paragon Caldera, or Evenheat Studio Pro 8. The least expensive option for doing silver clay only would be the trinket kiln. The least expensive option for COPPRclay/BRONZclay would be something like the Paragon QuickFire 6...pay attention to the temperature ratings and interior size if looking at other kilns.

Fused Glass: If you're creating jewelry pieces, you have some flexibility with your kiln choice. A small kiln will work fine, but a microwave kiln provides very little control, and can result in your dichroic glass overheating and turning to a gray scum. Also, glass kilns generally have elements in the lid for even heating, and are made of fire brick.



Jewelry: If you're just wanting to try making fused glass jewelry, the QuickFire 6, Paragon Caldera, Evenheat Studio Pro 8, or Skutt Firebox would be a smaller kiln to start with. I like the "clamshell" feature of the QuickFire 6 or Studio Pro 8, which makes it easier to arrange stacked jewelry pieces on the shelf. I like the extendability of the Paragon Caldera for doing other things like enameling or lampworking. I have used the SC2 for making small jewelry pieces, but I find that there are inconsistencies in the heat because the elements are only on two sides in a soft material, making some pieces fire a little unevenly. This can be addressed by slowing down the ramp so the kiln heats more evenly. You can create jewelry without a computer controller, but I would recommend one highly.

Platters & Jewelry: If you want a larger kiln to make platters and jewelry, take a look at the Evenheat Studio Pro 14, Skutt Firebox 14, Paragon Fusion 14 or 16. A clamshell feature is handy for loading and precise placement. If you'd like to be able to do advanced techniques such as "combing," "pot drops," or even some casting, look for a kiln that has a little more



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height, and again, the clamshell feature is nice for these techniques as well. A computer controller is a MUST. You'll want control over the process in order to prevent bubbles and thermoshocking of the glass. Some manufacturers also recommend "ramping up" no faster than 300°F per hour to protect the kiln, so the computer controller is a good investment. Check out http://www.paragonweb.com/Glass_Kilns.cfm

Enameling: When choosing an enameling kiln, opt for a kiln that has either a front door or a special enameling "collar" insert. A bead door is not really high enough to accommodate the trivet that holds the enameled piece, so if you are looking to do enameling *and* lampwork, opt for the kiln that has the larger opening, like the enameling collar on the Paragon Caldera-S. Most enameling artists use a kiln that has a front door that opens either like a refrigerator, lifts up and away, or down like this Amaco 67-EFC enameling kiln. A window is also helpful...some experienced enamellists use the color of the hot trivet to know when the enamel is completely fused, instead of using a timer...but be sure to wear protective eyewear.



Also, a trinket/beehive kiln can be used for simple enameling on thick copper or silver...BUT...in the majority of techniques of enameling you'll want to "counter-enamel" the back of the piece to prevent the enamel on the front from cracking. Since the piece sits right on the heating element on a trinket kiln, it's almost impossible to counter enamel because the enamel will sit directly on the element. A very small trivet could be fashioned from steel wire, and I've heard of people firing on mica sheet, but if I'm enameling a complex piece, I still use my small general-purpose kiln, a Paragon SC2 with a window.



Lost Wax Burnout: When creating a lost wax piece, you'll place your casting investment and wax model in a metal flask, which is then burned out, leaving a cavity for the metal. The kiln needs to be large enough to accommodate the flask, and does not require a computer controller. Since you'll take the flask out with tongs, make sure there's a little extra room to maneuver. Closed elements would be nice, but if your kiln doesn't have closed elements, be sure to shut it off before removing the flask. You'll need plenty of ventilation when burning out the flask. I burn out flasks in an old used kiln that I got for \$50. Some artists use homemade kilns, plans are online. (Here's a great tutorial on the process: <http://www.instructables.com/id/Lost-Wax-Casting/>)

Lampwork: You'll need a kiln with a bead door and a way to prop up the beads, keeping them off of the floor of the kiln. You also want to make sure that the elements are not easily touched by the metal bead mandrels, which can cause electrical shock. If you're only doing lampwork, a kiln like the Paragon Bluebird (shown) is wider to accommodate more beads...but at a maximum temperature of 1200°F, it is limited to annealing lampwork or very low-fire PMC3 (in very limited applications). The three-button controller controls the ramp down to strengthen (anneal) the beads. The comparably-priced Jen-Ken AF3P Chili Pepper kiln is similar in size and lightweight, but have a soft fiber lining...if you accidentally touch a bead that's hot and still soft, the fiber can stick to the bead. For that reason, some bead artists prefer a regular kiln, but the Chili Pepper is lightweight and a good option for artists who travel.

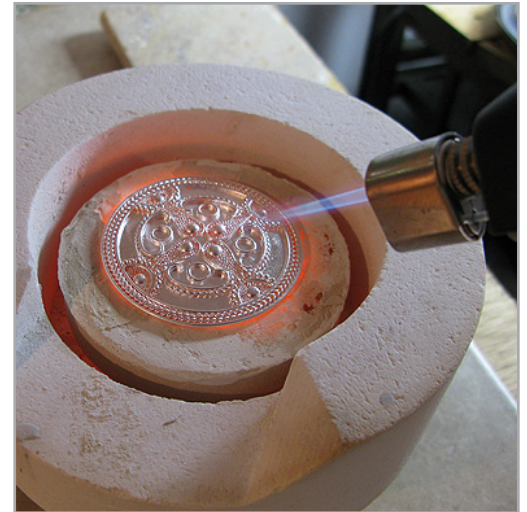




Clay or Porcelain: Look for kilns that get hotter...at least 2250-2300°F. Many of the kilns in the comparison table can do “low-fire” ceramics, but some glazes and clays require higher temperatures. If you think you’d like to try ceramics, opt for a hotter kiln up front.

A computer controller is a nice feature, but not a necessity. Most kilns for ceramics do not have elements in the lid. There are combo glass/ceramic kilns, like the Paragon Caldera-S or the Olympic Dual Media kilns, which offer the maximum flexibility—some controllers will allow the elements in the lid to be turned off. Ceramic kilns come in a variety of shapes and sizes, and can fit in most budgets. The majority of ceramic kilns are round or octagon in shape, and larger kilns will require a special 240v connection. The smaller kilns for jewelry artists are available at a reasonable cost. For example, the Paragon Q11A (listed in the chart) is around \$450.

Granulation: You can use almost any of the kilns to create the granules...placing small pieces of metal in graphite powder and firing. However, granules can also be made in other ways. A small trinket/beehive kiln can bring the piece up to the correct firing temperature, and a torch used to complete the fusing. If choosing one kiln that would be the most valuable for granulation, a trinket kiln is the best option. Check out Lillian Jones’ blog for great information at <http://ganoksin.com/blog/lillianjones/>.



Keum Boo: Bringing the piece up to the correct temperature works well on a trinket kiln with the Keum Boo red brass covers, which are an extra \$40 or so upgrade. I’d suggest the extra temperature controller, since Keum Boo uses a much lower temperature than the usual firing temperature of the trinket kiln, although I have seen Keum Boo done without the controller. Keum Boo covers can be found at retailers like Rio Grande or Cool Tools (www.riogrande.com or www.cooltools.us).

Conclusion

Your decision on which kiln to purchase will depend on a lot of factors, and there may not be a “perfect” solution. But understanding your needs and the features available will help you to make an educated decision and purchase a kiln that will help you make the most of your creativity!



Safety Precautions

READ ALL MANUFACTURER'S RECOMMENDATIONS BEFORE CONNECTING OR FIRING YOUR KILN.

1. It's always a good idea to have a licensed electrician check your electrical connection and make sure that it's safe to run a kiln from the outlet that you're wanting to use. I HIGHLY recommend this.
2. I recommend NEVER running a kiln on an extension cord...ever. Kilns draw a certain amount of power that might initially work with an extension cord, but the resistance that will occur as the electricity travels along the cord can cause it to overheat and catch on fire. If you MUST fire with an extension cord, there are super heavy duty cords that can handle the power draw of a small kiln, but consult with a professional before doing this. It would be safer to have a professional wire an outlet near your workbench, and not as expensive as you might think. NEVER fire a small kiln on a utility extension cord.
3. As recommended by kiln manufacturers, NEVER leave your kiln unattended, especially when you're sleeping.
4. Minimum spacing between your kiln and nearby walls is 12". Keep flammable items away from the kiln. Avoid small, enclosed spaces such as closets or small utility rooms. The room must be large enough to avoid heat buildup around the kiln. Concrete or tile floors are best...avoid wood floors, and under no circumstances should you ever place your kiln on carpet. If placing on linoleum floors, place fireproof material over the linoleum (3' x 5' tile backerboard from a home improvement store works well).
5. Never touch the heating elements with your fingers, or anything metal.
6. Always operate your kiln in an area with good ventilation.

There are other precautions that will be detailed in your kiln instructions. Please read them carefully, and follow all safety guidelines.








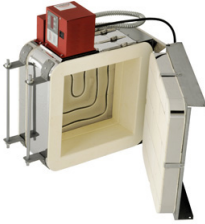

So What Kind of Kiln for Me?

So now that you've decided to give up art and become a licensed electrician...oh wait...nevermind!! Check out the feature grid to find a kiln that works for you!

Prices provided for comparison only...pulled March 2014. Check local dealers & online. Shipping not included unless designated.




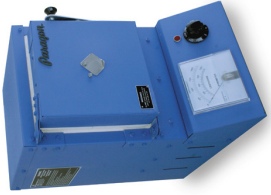
	Metal Clay	Fused Glass Jewelry	Fused Glass Platters	Enamel	Lampwork	Low-Fire Ceramics	Hi-Fire Ceramics	Granulation	Keum Boo	Control	Max Temp	Interior Size	Price* March 2014
 Microwave Kiln	● no control	● no control				● no control						Varies, different sizes available	\$110 Delphi
 Trinket Kiln with dial controller				●				● + torch	● \$40 extra	dial option	1550°F	3" diameter	\$179 Cool Tools
 Paragon QuickFire 6	●	●		●		● limited				pyro, dial option	2000°F cone 03 7 amp	6" x 6" x 6" high	\$350 with dial Clay-King
 Jen-Ken Chili Pepper Bead Annealer					● soft fiber interior					comp	1100°F 8 amp	16" x 6.5" x 4" high	\$725 Jen-Ken
 Paragon Bluebird Annealer					●					comp	1200°F 8 amp	20" x 5" x 5" high	\$625 Clay-King

● can do it ● can do it, but maybe better option available ● can do it with extra cost/option

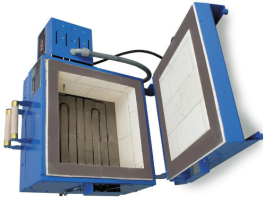

	Metal Clay	Fused Glass Jewelry	Fused Glass Platters	Enamel	Lampwork	Low-Fire Ceramics	Hi-Fire Ceramics	Granulation	Keum Boo	Control	Max Temp	Interior Size	Price* March 2014
 Skutt KM Firebox 8x6 LT	●	●				●	●			comp	2250°F cone 6 15 amp	8" x 8" x 6" deep	\$588 Clay- King
 Evenheat Studio Pro 8	●	●	●	●		● limited	●		●	comp	1800°F cone 07 12 amp	8" x 8" x 4.5" deep	\$525 with window Clay- King
 Evenheat Studio Pro 14	●	●	●	●		● limited	●		●	comp	1650°F cone 011 15 amp	14.5" x 14.5" x 6.5" deep	\$850 + \$149 shipping Clay- King
 Paragon Caldera-S with Pyrometer	●	● comp better option	● comp better option	● \$175 extra	● \$124 extra	●	●			pyro	2350°F cone 9 15 amp	8" x 8" x 6.75" deep	\$555 + shipping Paragon





	Metal Clay	Fused Glass Jewelry	Fused Glass Platters	Enamel	Lampwork	Low-Fire Ceramics	Hi-Fire Ceramics	Granulation	Keum Boo	Control	Max Temp	Interior Size	Price* March 2014
 <p>Paragon Caldera with Controller</p>	●	●	●	● \$175 extra	● \$124 extra	●	●			comp	2350°F cone 9 15 amp	8" x 8" x 6.75" deep	\$656 + shipping Cool Tools
 <p>Paragon SC2 with Controller</p>	●	●		●		●				comp	2000°F cone 03 12 amp	8" x 7.75" x 5.75" high	\$668 + shipping Cool Tools (colors extra)
 <p>Paragon SC2 with Controller, Bead Door, & Window</p>	●	●		●	●	●				comp	2000°F cone 03 12 amp	8" x 7.75" x 5.75" high	\$723 + shipping Cool Tools (colors extra)
 <p>Paragon Q11A with Pyrometer</p>	●	●		●		●	●			pyro	2300°F Cone 8 12 amp	6" x 6" x 6.25" high	\$434 + shipping Clay- King

● can do it ● can do it, but maybe better option available ● can do it with extra cost/option

	Metal Clay	Fused Glass Jewelry	Fused Glass Platters	Enamel	Lampwork	Low-Fire Ceramics	Hi-Fire Ceramics	Granulation	Keum Boo	Control	Max Temp	Interior Size	Price* March 2014
 Paragon CS-16D	●	●	●			●						16" x 16" x 6.5" high	\$1004 shipped Clay-King (options extra)
 Jen-Ken JK2	●	●	●			●				●	1700°F 36 amp	27" x 27" x 11" high (15" option, \$200)	\$1795 shipped Kiln-Frog



Kat Kramer is a jewelry artist and Wubbers' Technical Coordinator of eLearning. She has extensive experience with fused glass techniques, and a long history with melting things in general. As the owner of six kilns of varying sizes, she enjoys helping others evaluate the features of different kilns to help them choose a kiln that will meet their needs.

This guide should not serve as an endorsement of any particular brand or kiln, and should not replace your own research. It is simply to help the reader understand the different types, range of features, and approximate price. However, the information provided can serve as guidelines for helping you choose an appropriate kiln.

Remember to always READ and FOLLOW the manufacturer's instructions before using your new kiln, and it is highly recommended that you consult with a professional electrician before using your kiln. Wubbers is not responsible for any damage arising from your choice or use of a kiln.

Kat's collection of kilns includes a Paragon SC2 (both bead door and window doors), a Jen-Ken JK2, AIM 84BD 9" kiln, small burnout kiln (unknown manufacturer), trinket kiln, and microwave kiln.

- can do it
- can do it, but maybe better option available
- can do it with extra cost/option

