Firing Glass: FAQ's

Do I need a special kiln for firing glass?

You don't have to purchase a separate kiln for firing glass. The benefit of most glass kilns is they have elements in the lid so the heat is going down onto the top of the glass more evenly, rather than coming in from the sides like you have with a traditional ceramic kiln. Some glass kilns also have side elements often set up so the heat is very evenly distributed throughout the kiln. These kilns are best for firing glass especially when fusing multiple layers.

Ceramic kilns can be used but generally need to be fired slower in the beginning. Heating too quickly in a ceramic kiln with only side elements could cause the glass to heat unevenly and crack.

Can I fire multiple layers of glass in a kiln?

Firing multiple layers can be down but is often avoided by many inexperienced artists. Most kilns will fire hotter toward the top or the chamber and cooler near the bottom. Because of this, it's difficult to control how glass fuses. The top layer may be fully fused while the bottom is only tack fused. If this is the result you want then its fine. But if you are trying to create all all-fused items it may be more of a challenge.

If you want to try firing multiple layers it may require a little creativity with the heat controls. If your kiln has switches you might be able to turn the top elements down or off while the lower elements are heating. This technique can require more babysitting and extend the overall length of firing time. Many artists find it is easier to just fire one layer at a time

Some new electronic kilns can control each "zone" in the kiln. These controllers will automatically sense the temperature in the top, middle and bottom of the kiln and auto adjust the heating to keep each section within a few degrees of the others.

Do I need a special coating on my kiln shelves when firing glass?

Glass can be fired right on a shelf coated with basic kiln wash. The glass will have a slightly bumpy texture on the back after firing as a result of the grainy kiln wash.

Special papers are available for firing glass. These papers will give a nice smooth surface by the paper can only be used one time.

Fabrics specially designed for firing glass can be used to create unique textures on glass. These fabrics can be placed right between the shelf and the glass when firing.

Does glass give off dangerous fumes when firing?

For the most part, glass will not give off any dangerous fumes. But it's always best to check with the specific manufacturer or supplier to see if there are any health concerns when firing.

How hot do I fire glass?

The final result desired will help determine the ideal firing temperature. Every kiln will fire differently so please use these numbers as a general guide and get to know your own kiln

Full fusing is when the glass is heated to the point where you cannot feel where layers or pieces of glass are attached. The final result is a nice, smooth uniform surface after being fired to around 1 475 degrees Fahrenheit.

Tack fuse is when you take two or more layers of glass and fuse them to the point where the edges of each piece are rounded where they melted together. You can still feel the dimension of the layers but you don't have sharp edges after being fired to around 1 300 to 1450 degrees Fahrenheit. If you go much hotter, you will reach the full-fuse temperatures.

Slumping glass is where you take a piece of glass or glass layers that have previously been fused and place them over a special glass mold and heat it enough so it conforms to that shape. Most glass will begin to soften and conform to the mold around 1 225 degrees Fahrenheit.

Do I just put the glass in thee kiln and set it for the desired temperature or are there more steps?

Glass does require a little more attention and a few extra steps in firing. Digital and electronic kilns can make these steps easier. Most digital kilns have a feature where the temperature can be programmed in ramps. With this feature, you can program the kiln to go up to a certain temperature by a certain amount of degrees per hour. Once the kiln reaches the given temperature, it can be set to go up to another temperature by a specified number of degrees per hour or it can be programmed to hold for a certain period of time.

How quickly you reach these temperatures and how long you place the items in a hold is determined by the result you are trying to achieve, the size and thickness of the glass, and how your kiln heats.

Once the kiln reaches the desired temperature, the kiln needs to be cooled rapidly to a stage called annealing. Annealing is a process where the stress in the glass is relieved and the molecules of the glass are allowed to cool and arrange themselves into a solid stable form. This generally happens between 900- and 1 000-degrees Fahrenheit.

This usually means you have to rapidly cool the kiln by opening the lid and fanning it until the temperature in the chamber reaches the ideal annealing temperature for the glass being used. Then the kiln can be cooled to room temperature before the items are removed.

Because of different variables in each kind of glass, kiln variables and the desired results for the artist it is difficult to put any of these firing procedures in definite written form. These numbers are intended for a guide and experimentation is suggested. Many of the glass manufacturers have written literature outlining suggested firing practices for their products.

How do I get glass items to the kiln without having layers move and shift?

When designing pieces with the multiple layers you can attach the parts with glue designed for glass fusing. Many artists also build their items right on the kiln shelf and transfer the entire shelf to the kiln so special handling of the glass is not required. Just make sure you lower the kiln shelf into the kiln chamber carefully so nothing shifts.

Can you over-fire or under-fire glass?

Glass that has been over-fired will turn to a liquid and run in the kiln. Under-fired glass will not be fused together (when layers are applied) and the edges will be sharp. The look and feel of tack-fused glass would be a good example if your goal was to reach the full-fused look and feel.

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