



# BeadyBugs' Fusing Tutorial 1

How to fuse Bullseye glass pendants in a Paragon SC2 kiln

## Introduction

I use this schedule in my SC2 kiln (with a solid door) for full fusing small bullseye cabochons. Yours may vary slightly and run cooler especially if you have the bead door, and considerably cooler and more uneven if you have the window too. Please remember this is only intended as a rough guide to get you started. Different kilns, glass and environments will affect the final results, but hopefully this is a good starting point that you can customize to suit your needs.

I did a fusing course where you made the glass sandwiches, which were then magically toasted and

appeared the next week, so I naively thought it would just be a case of turning it on,

and shoving some glass in - oh what a dullard! There are many levels of fusing, from tack fusing to full fuse like the ones pictured above. Larger pieces may require a slower initial ramp, and a longer soak time to eliminate bubbles, but I'm still working on that bit.



## What you will need

1. **Kiln** that fires up to or above the maximum fusing temp of your glass.
2. **Plaster kiln shelf and posts.** Not the fibreboard one that may have come with your kiln.
3. **Thinfire shelf paper.** (You can use kiln wash to prepare your shelf, which is cheaper, but it's harder to use and messier.)
4. **Bullseye fusible glass** - cleaned thoroughly to remove dirt, grease and fingerprints. I tend to use 2-3 layers of 1.6mm glass for making small cabs, and I usually reserve the 3mm for larger pieces, but it's up to you. Many other types of glass are available, but the schedule below is designed for Bullseye. Don't mix your glass types either, as this will cause the finished pieces to crack.
5. **Glass cutter.** I prefer an oiled filled one.
6. **Mixture of half PVA and half water.** Special fusing glues are available, but this works fine for me.
7. **Paintbrush** (small), to apply glue in small amounts to your glass.
8. **Ruler and/or T square** for cutting straight lines.
9. **Spirit level** (small) to check the kiln shelf is level.
10. **Safety glasses** - those pesky bits of glass get everywhere.
11. **Optional items:** Glass breaking pliers, which help to snap the glass after you've used your glass cutter. Bullseye stringers, frit, and any other compatible materials you fancy.

## Getting your kiln ready

**IMPORTANT NOTE:** If you are using a new kiln for the first time, it's recommended you do your first firing with an empty kiln, so any residual impurities in the kiln walls get burnt off. I just ran one of the preprogrammed speed firings to heat the kiln up, then let it cool down.

### Things to remember:

1. Positioning of your kiln. Place it on a level, stable, fire proof surface at least 12 inches away from any other objects, as the outside of the kiln can get very hot.
2. Check the inside of the kiln is clean and dust free.
3. Make sure your plaster kiln shelf, when it's in the kiln, is level. This is because the glass becomes a thick liquid when it's fusing, and if the shelf isn't level, you'll end up with lop-sided pendants.

## Cutting glass

As a general guide, hold the cutter like a pen, and apply firm, even pressure as you cut. Cut towards you if cutting a straight line, and push away from you if cutting curves. To snap a straight cut use the breaking pliers if you have some, or carefully hold the glass either side of the cut and snap it if you haven't. And for curved cuts tap the back of the glass with the handle end of your glass cutter, along the score line, til it breaks. **And it goes without saying, please be very careful when handling cut glass.**

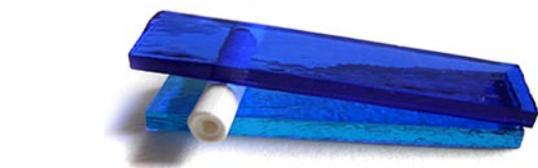
## Making your glass sandwiches

Now you've cut your bits of glass, you can start to assemble the pieces ready for the kiln. I put a piece of thinfire on to my shelf (smoother side up) and lay my pieces about 10mm apart on there as I finish them, as it saves moving them again later.

Make your designs with say 2-3 layers of glass - it's your choice. The more layers you use the more your design may spread, so allow extra space between pieces on the shelf accordingly. Glass wants to be 6mm thick when it melts, so thinner assembled pieces may bunch up slightly, and deeper ones may spread. I use these properties to make the round cabs shown in this tutorial - all of them started as slightly bigger squares in 2 layers of 1.6mm glass, placed in the hotter part of my kiln (the back). If

I want squarer cabs I position them nearer the front where it's cooler. In a kiln with a bead door though, you may only get a tack or partial fuse nearer the door as it's a lot cooler. I'd recommend doing some test pieces first and see what happens.

Apply small amounts of the PVA mix to stick your glass together as you build it. It helps to stop them falling apart when you move them, and whilst placing the shelf in the kiln. Also - the door on the SC2 needs a bit of a shove to close it, and this can dislodge some of your design too. **Make sure the glue is thoroughly dry before firing, as residual moisture can make the pieces pop apart as they fire.**



If you want to make a slide pendant, use a small, very tightly rolled up piece of thinfire paper glued together, and insert it into the sandwich, with a longer cap of glass, so there's enough to flop over as the glass melts.

## Firing your glass

Now your glassy creations are made, and the glue has dried thoroughly, place them on the plaster shelf that's been lined with thinfire paper (smooth side up). That's if you haven't already done this as you were working. And we are ready to get melting!

**DON'T FORGET TO MAKE SURE YOUR SHELF IS LEVEL.**



1. Stick the plaster cone bung in the hole in the top of the SC2 if you have one.
2. Then put the 4 shelf posts in the bottom of the kiln and lay your full shelf centrally on top of them, away from the kiln walls to allow air circulation and a more even fuse.
3. Shut the door carefully and you are ready to go!
4. Flip power switch to ON (it'll beep very loudly then flash 'idle')
5. Press START/STOP and then press UP til you get to Pr01 (or pick another 'Pr' if this is already programmed and in use))
6. Then press START again and enter the following numbers:

Ramp1 222C  
Temp1 677C  
Hold1 30 mins

Ramp4 83C  
Temp4 371C  
Hold4 0000

Ramp2 333C  
Temp2 816C  
Hold2 10 mins

Ramp5 FULL  
Temp5 80C  
Hold5 0000

Ramp3 FULL  
Temp3 516C  
Hold3 30 mins

Ramp6 0000

7. Press START again and 'Strt' will show on the screen, then press START once more to actually begin the schedule. There will then be a lot of loud clicking, but this is absolutely normal.

The schedule takes several hours, but that is standard and necessary to let the glass heat, and cool gradually so it doesn't stress and crack. It is suitable for fusing slightly larger pieces too, just make sure you try to avoid creating possible air pockets in the glass sandwich when you build it, as this will create air bubbles in the final piece.



If you start the kiln in the evening and let it run over night, it should be down to room temp sometime the next morning (the temp will flash on the screen as it cools, but basically Ramp 5 is just letting the kiln cool naturally anyway). It's not advisable to open the door before it's cooled fully as you may shock the glass and cause it to crack.

This program will then be held in whichever 'Pr' you stored it in and can be modified if needed. And hopefully you'll end up with a lovely set of fused glass.

**Remember** - if you've got the bead door and/or window, you will probably find you'll have a fuller fuse towards the back and sides of the kiln where the elements are, and a lesser fuse nearer the door. You'll have to have a play – it may require a longer hold at the maximum temp, or even need you to raise the Temp2 setting of 816°C up by a few degrees.

Similarly, if you have the solid door, you may want to lower the temp if your glass is rounding too much. I vary my fusing Temp 2 setting between 816°C and 805°C depending on the effect I am after.

Good luck with your fusing projects and have fun experimenting!

For further reading and more technical info, there are many good courses, books, websites and forums out there. I thoroughly enjoyed my course and if you get the opportunity to go on one, I can't recommend it highly enough. And please remember this is just a starting point, it may require a few goes and tweaking to get it right for your kiln.

The Bullseye Technotes (No. 4 - Heat and Glass, in particular), and their website, provide great reference material should you wish to develop your own schedule and research the subject further:  
<http://www.bullseyeglass.com/education/>

