



# Fusing with Spectrum Glass

Spectrum Glass can be a great choice for fusing. We have a wide variety of colors that, for the most part, don't change when fired. The uniform flatness of the sheets facilitates stacking without trapping air. And, Spectrum is quite reasonably priced.

We do not, at this time, sell a "factory-tested" line of products for fusing, so compatibility testing is your responsibility. However, we think you'll be pleasantly surprised at how many of our products are consistently compatible with each other. To simplify your testing, we have established a clear smooth cathedral, stock #100SFS, as a consistent standard that you can dependably test against. #100SFS has also been specially formulated to resist devitrification, even after multiple firings, so it makes a great clear "cap" for your projects. *Our coefficient of expansion is 96.*

## Kiln Shelf Preparation

We get good results using Hot Line Shelf Primer. If you mix your own, try a mixture of 40% Kaolin and 60% Alumina Hydrate by weight. Fiber papers also work fine.

## Overglaze Instructions

Most Spectrum products (except reds, oranges and #100SFS) benefit from an overglaze when heated above 1300°F (704°C). "Super Spray," from Fusion Headquarters (503-538-5281), produces excellent results. "Spray A" works well, too. Hints:

- CLEAN GLASS THOROUGHLY with warm water. Remove oil or grease spots with ethyl alcohol. Spray or brush an even coating of spray to the tops and edges of all glass pieces that will be exposed during firing. Pay extra attention to coating the edges that may be exposed. THICK spray trapped between glass layers will not fire clear.
- "Super Spray" needs a slightly heavier coating than does "Spray A."
- Spray black glass heavier than you do other glass colors.

## Using Iridescent Glass

At bending and slumping temperatures, Spectrum Iridescent produce very interesting effects. However, the coating can withstand temperatures only up to about 1400°F (760°C), and then, the results vary. Maximize your Iridescent effects at high temperatures by fusing with the Iridescent surface against the kiln shelf, and minimizing time spent above 1400°F.

Our friends at Uroboros have Spectrum-compatible Iridescent glass available that will not burn off, even at full-fuse temperatures. Ask your glass supplier or contact Uroboros at (503) 284 4900.

## Firing & Annealing Guidelines

The firing and annealing steps outlined on the reverse side are those we've found most successful for projects two or three layers thick (about 1/4 to 3/8 inch). We've included both fusing and slumping guidelines for small (4 inches), medium (12 inches) and larger (20 inches) projects. *These are only guidelines, not strict rules.* You'll need to adjust your times and temperatures based on the characteristics of your equipment, the actual size and thickness of your project, and the aesthetic effects you wish to achieve.

**Free Advice:** Be sure to clean all sides of your glass pieces thoroughly before stacking. If you're using a thick ceramic mold for slumping, increase annealing and cooling times. In general, acquire great patience; vast amounts of work have been lost due to removing glass from the kiln too early.

## Definitions:

**RAMP TIME:** The time required for kiln temperature increase or decrease. Use the amount of time stated in each step for your kiln to transition from its current temperature to the next stated *set point*, in consistent degrees per minute.

**SET POINT:** The goal kiln temperature in any given step.

**SOAK TIME:** The length of time to maintain the current *set point* before executing the next step.

**FLASH VENT:** A quick-cooling step to be executed when the fuse or slump reaches **visual maturity**. Use at your discretion: the step may reduce some devit growth, and it will shorten your cycle time.

## Instructions:

Turn off kiln. Open kiln (8 seconds for fusing, 3 seconds for slumping) then close. Keep door closed for a couple of minutes then flash again. Repeat until 1050°F is reached. Close kiln and anneal.



Spectrum Glass



# Firing and Annealing charts

(See reverse side for instructions and definitions)

For **FUSING** a piece that is two or three glass layers thick and no more than **4** inches across:

Action	Ramp Time	Set Point	Soak Time
1. Heating (from room temp)	90 min.	1450° (788°C)	10 min. (or desired effect)
2. Flash vent (discretionary)	n/a	above 1000° (538°C)	n/a
3. ANNEAL SOAK	n/a	950° (510°C)	15 minutes
4. Cooling (to room temp)	6 or more hours	90° (32°C)	

For **FUSING** a piece that is two or three glass layers thick and no more than **12** inches across:

Action	Ramp Time	Set Point	Soak Time
1. Heating (from room temp)	120 min.	1450° (788°C)	10 min. (or desired effect)
2. Flash vent (discretionary)	n/a	above 1000° (538°C)	n/a
3. ANNEAL SOAK	n/a	950° (510°C)	45 minutes
4. Cooling (to room temp)	8 or more hours	90° (32°C)	

For **FUSING** a piece that is two or three glass layers thick and no more than **20** inches across:

Action	Ramp Time	Set Point	Soak Time
1. Heating (from room temp)	180 min.	1000° (538°C)	n/a
2. Heating from 1000°	no time limit	1450° (788°C)	10 min. (or desired effect)
3. Flash vent (discretionary)	n/a	above 1000° (538°C)	n/a
4. ANNEAL SOAK	n/a	950° (510°C)	90 minutes
5. Cooling step 1	4 or more hours	750° (398°C)	n/a
6. Cooling step 2	8 or more hours	90° (32°C)	n/a

For **SLUMPING** a piece that is two or three glass layers thick and no more than **4** inches across:

Action	Ramp Time	Set Point	Soak Time
1. Heating (from room temp)	120 min.	1300° (705°C)	10 min. (or desired effect)
2. Flash vent (discretionary)	n/a	above 1000° (538°C)	n/a
3. ANNEAL SOAK	n/a	950° (510°C)	15 minutes
4. Cooling (to room temp)	6 or more hours	90° (32°C)	

For **SLUMPING** a piece that is two or three glass layers thick and no more than **12** inches across:

Action	Ramp Time	Set Point	Soak Time
1. Heating (from room temp)	150 min.	1000° (538°C)	n/a
2. Heating from 1000°	no time limit	1300° (705°C)	10 min. (or desired effect)
3. Flash vent (discretionary)	n/a	above 1000° (538°C)	n/a
4. ANNEAL SOAK	n/a	950° (510°C)	45 minutes
5. Cooling (to room temp)	8 or more hours	90° (32°C)	n/a

For **SLUMPING** a piece that is two or three glass layers thick and no more than **20** inches across:

Action	Ramp Time	Set Point	Soak Time
1. Heating (from room temp)	30 min.	200° (94°C)	10 min.
2. Heating from 200°	30 min.	400° (205°C)	10 min.
3. Heating from 400°	60 min.	1000° (538°C)	n/a
4. Heating from 1000°	no time limit	1300° (705°C)	90 minutes
5. Flash vent (discretionary)	n/a	above 1000° (538°C)	n/a
6. ANNEAL SOAK	n/a	950° (510°C)	90 minutes
7. Cooling step 1	4 or more hours	750° (398°C)	n/a
8. Cooling Step 2	8 or more hours	90° (32°C)	n/a

FUSING GUIDELINES

SLUMPING GUIDELINES