Color Mixing

Just like wall paints, glass frit can be mixed to create subtle shades. Use our method to create glass versions of "paint chips." From these chips you can choose the perfect frit blend for a particular project.

This project sheet describes how to create test tiles so you can easily choose the right combination of frit colors for your project. Test tiles are made sixteen at a time using Colour de Verre's Color Blender mold. First, reference tiles are made using frit directly from the container. Then the same frit is used to tint Water Clear or White Opal frit. The Water Clear mixtures result in a series of translucent tiles each of a different color intensity. The White Opal frit mixtures result in different saturations – pastel versions – of the original color.

While this project sheet explores color saturation and intensity, the same method can be used to test mixtures of multiple frit colors. For example, many people feel that a one-to-one mixture of fine Uroboros Ming Green and fine Citron produces the perfect leaf green. Using our method, the artist can create a range of greens and choose the shades that best suits his or her particular project.

Frit color and opacity aren't the only factors affecting results. Casting with different frit grades (powder, fine, medium, and coarse) also affects outcomes. For example, when a powdered frit melts and then re-solidifies, it catches small air bubbles. The result is a less saturated, less transparent piece of glass. On the other hand, larger frits trap less air bubbles than powdered frits, but don't mix as smoothly. Neither result is better than the other. However, one result might be better suited to a specific project. A common technique or compromise is to use *powder* frit to tint a clear or opal *fine* frit. This is what we will do in our example.

Before each firing, clean the Color Blender mold with a stiff nylon brush to remove any old kiln wash. (The step can be skipped if the mold is brand new.) Next, give the mold four to five thin, even coats of Hotline Primo Primer. While there are plenty of good shelf primers and kiln washes on the market, Colour de Verre *only* recommends Hotline Primo Primer for the Colour De Verre molds. It doesn't obscure the mold's fine detail, always releases, and is easy to remove after firing.

Apply the Primo Primer with a soft artist's brush and use a hair

Availability

Colour de Verre molds are available at fine glass retailers and many online merchants including our online store, www.colourdeverre.com.

Tools

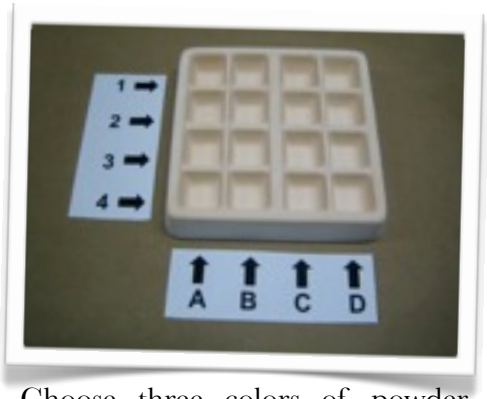
- ✓ Color Blender mold
- ✓ Small primer brush
- ✓ Small containers for mixing frit
- ✓ Digital scale

Supplies

- ✓ Hotline Primo Primer
- ✓ Colored powder frit
- ✓ Fine Water Clear and White Opal frit
- ✓ 12 Small, plastic bags

dryer to completely dry each coat before applying the next. The mold should be totally dry before filling.

Let's refer to the mold's rows – top to bottom – as rows 1, 2, 3 and 4. Let's refer to the mold's columns – left to right – as columns A, B, C, and D. That way, we can easily talk about rows, columns, and specific tiles.



Choose three colors of powder frit. Use a small spoon to fill tile A, in row 1 with first frit color. Next, fill tile B, row 1 with the second color. Tile C, row 1; the third color. These will be our reference tiles – how the frit looks coming straight out of the bottle.

Row 2 will be filled with mixtures made with the first colored frit. Row 3; with the third. And row 4; the fourth.

Each of the Color Blender's depressions hold about five grams. To make the math and the measuring easy, we will mix 10 grams for each test tile. The extra can be placed in a small, plastic bag and labeled for future use.

In row 2 and 3, we will make 50%, 20%, 10% and 5% mixtures of colored powdered frit and Water Clear fine frit.

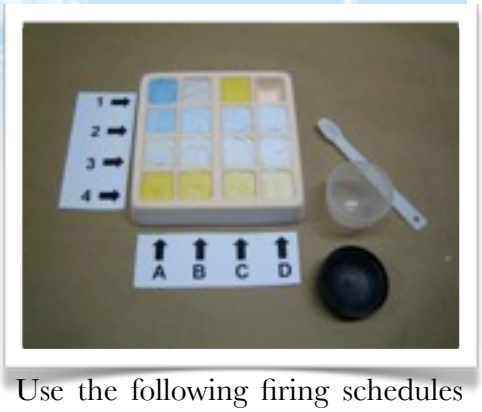
Measure out the frits according to the following table and mix each frit combination well by shaking in a small, capped container. Fill the appropriate tile cavity with the mixture and bag and label the remainder for future projects.

Tile	Mix	Colored Frit	Water Clear
A	50%	5 grams	5 grams
B	20%	2 grams	8 grams
C	10%	1 gram	9 grams
D	5%	0.5 gram	9.5 grams

Row 4 will be an experiment with color saturation. Mix the third colored powder frit with fine White Opal frit according to the following table.

Tile	Mix	Colored Frit Number 3	White Opal
A	50%	5 grams	5 grams
B	20%	2 grams	8 grams
C	10%	1 gram	9 grams
D	5%	0.5 gram	9.5 grams

Put these mixtures into the fourth row.



Use the following firing schedules – one for 96 COE and one for 90 COE – to fuse your test tiles. Remember that each kiln has its own "personality." You may have to adjust these schedules for your kiln.

COE 96 Casting Schedule

Seg 1	300°F/hour to 1420°F, Hold 10 minutes
Seg 2	AFAP (As Fast As Possible) to 960°F no venting
Seg 3	60°F/hour to 700°F
Seg 4	Off, cool kiln, no venting

COE 90 Casting Schedule

Seg 1	300°F/hour to 1440°F, Hold 10 minutes
Seg 2	AFAP (As Fast As Possible) to 960°F no venting
Seg 3	60°F/hour to 700°F
Seg 4	Off, cool kiln, no venting

Wait until the mold is completely cool and remove it from the kiln. The castings should fall out. If they are stubborn, turn mold face-down and tap it against a hard surface cushioned with several layers of newsprint.

Some people find it handy to glue these reference tiles directly to the frit bottle. Jayne Persico, in her book *Glass Kiln Casting with Colour de Verre* (Wardell Publications, Inc; 2007), expands on the above techniques and illustrates how the resulting tiles can be made into a color reference book that can serve as the ultimate reference in any artist or hobbyist's glass studio.