

# TIP SHEET 4

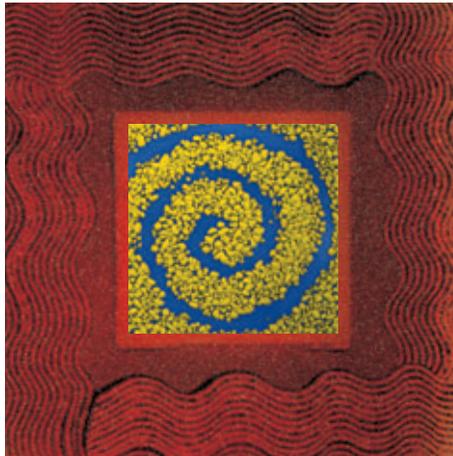
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## DESIGNING YOUR OWN ART GLASS AN INTRODUCTION TO PAINTING WITH LIGHT BY MARY KAY NITCHIE

Working with a palette of glass frits, powders and stringers, it is possible to create sheets of art glass with special effects that are limited only by the imagination. Sheets can be created that include the classic elements of design: lines, dots, shading, shape and pattern.

Using these materials and techniques, you are no longer dependent on the selection of glass offered by the dealer or the styles of glass produced by the manufacturer. Rather than searching the globe for a sheet of glass with perfect color transitions, you can create sheet glass to meet the exact requirements of your artwork.

This TipSheet introduces some simple ways to use frits, powders, stringers and sheet glass to make designed sheets to use in stained glass or fusing projects. These notes describe lay-ups for sample tiles. Use the same techniques on larger pieces of glass to make sheets that can be cut into parts for incorporation into larger projects. As you practice these few simple techniques, you will be flooded with new ideas for unique patterns, colors and textures.



After practicing some of these techniques, try combining them! Complex frit arrangements may require multiple firings.

### GLASS

The base glass for these tiles can be any Bullseye tested compatible sheet. We have specified style 1101-30F (3mm clear fusible double-rolled) for most of the tiles here, but other Bullseye clear sheet glass will work, especially:

- 1100-83F Tekta Clear 3mm
- 1100-86F Tekta Clear 4mm
- 1100-89F Tekta Clear 6mm
- 1101-60F 6mm Clear fusible

At Bullseye we call the smaller scale non-sheet forms of our glass "accessory glasses."

- Stringers are thin threads of colored glass.
- Frits are granules of crushed glass. Each color of frit is available in four different grain sizes:
  - Powder** is the finest size and is easy to sift.
  - Fine** is the size of sugar grains.
  - Medium** is the size of very coarse sand grains.
  - Coarse** is the size of the colored gravel that people put in the bottom of their fish tanks.
- Confetti is wafer-thin, coin-size shards of glass. Imagine a toy balloon made of glass, broken to bits.

### SKILL LEVEL

You will need basic kilnforming skills: familiarity with basic equipment, firing and annealing of glass. To learn more about basic kilnforming, we suggest taking a class through your local glass shop or community school; or contact the Bullseye Resource Center (telephone 888-220-3002) in Portland, Oregon to learn about our intensive workshops and to order books about basic kilnforming.

### KILNS AND TEMPERATURE CONTROL

The thickness of the base glass may determine which shelf separator you select. 1.5mm to 3mm glasses may require fiber paper or ThinFire on the kiln shelf to prevent large bubbles from forming beneath the sheet.

4mm to 6mm sheets can be fired on these papers or a shelf prepared with Bullseye Shelf Primer.

Each kiln has its own heating and cooling characteristics. The important thing is to keep records of the firing schedules you try and and to make adjustments based on your observations. One firing schedule may produce different results in different kilns. The firing schedule you choose will need to accommodate the thickness of the sheet glass you select.

The “process temperature” is the highest temperature, or peak of the fusing cycle. The hold time is the amount of time the kiln is kept at the process temperature. If the hold time is the same for each of your projects, the surface and texture of each piece can be manipulated by choosing a particular process temperature. The process temperatures typically used for the sample tile projects which follow range from approximately 1300°F to 1500°F. At about 1300°F, fine frits dusted on the sheet will have a matte texture. At about 1500°F those same fine frits will fire to a smooth glossy shine. Carefully observing and recording the behavior of glass at different temperatures will give you access to a wide range of surface effects.

This is an example of a firing schedule for these tiles:

Segment	Rate(°F/hr)	Temperature(°F)	Hold Time
1	400*	process temp.	10:00 min
2	AFAP*	960	60:00 min
3	100*	700	0:00 min
4	AFAP*	room temp.	0:00 min

\*AFAP means as fast as possible (without opening the kiln).

## SAFETY

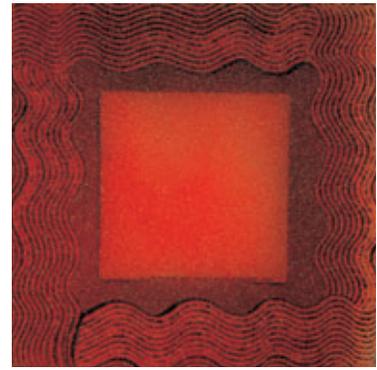
Good housekeeping and common sense go a long way to ensure safety in the glass forming studio.

To keep glass bits out of your eyes, always wear eyeglasses when using frits, powders, sheet glass and stringers. To keep glass dust from irritating your lungs, always use a respirator when using frits and powders. To keep your studio clean, use moist sponges, cloths or mops whenever possible for wiping up counters and floors. For any dry clean-up, use a vacuum with a HEPA filter.

See your local safety supply company for a selection of safety glasses and respirators. For more information, contact us for an information sheet entitled *Safety in the Kilnforming Studio* or see *The Artist's Complete Health and Safety Guide* by Monona Rossol (Allworth Press, New York 1990).

## SETTING UP

To minimize waste: a large clean piece of paper under the tile can be used to collect any spilled frit or powder. After the tile is removed, the paper can be lifted and used to pour the excess frits or powders back in the jar. To make the tile easy to carry to the kiln shelf: use inverted paper or plastic cups as posts under the corners of the tile. This makes it easier to lift the piece for transport (as well as allowing some light through, for a better view of what you are doing).



### RED SGRAFFITO SQUARE

#### Materials:

1122-98F Red powder  
0100-98F Black powder  
1101-30F Clear double-rolled sheet glass cut into an 8" tile

#### Tools:

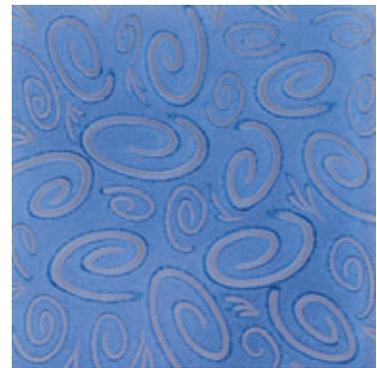
Tea strainer  
4" square template  
(cardboard or glass square)  
Rubber woodgraining tool

#### Lay-up:

Center the template on the tile. Sift a layer of black powder evenly over tile. Use woodgraining tool to make wavy lines. Remove template. Sift a thick layer of red-orange powder evenly over entire tile (including the black areas).

#### Firing:

Try a process temperature of 1315°F. Hold for 10 minutes.



### BLUE POWDER SPIRAL

#### Materials:

0147-98F Deep Cobalt Blue opal powder  
1101-30F Clear double-rolled sheet glass cut into an 8" tile

#### Tools:

Tea Strainer  
Pencil with an eraser

**Lay-up:**

Sift frit evenly on the tile. Using the eraser or the pencil point as a stylus, draw spirals (or other designs).

**Firing:**

Try a process temperature of 1325°F. Hold for 10 minutes.

**YELLOW FINE SPIRAL****Materials:**

0120-91F Yellow opal fine frit  
1101-30F Clear double-rolled sheet glass  
cut into an 8" tile

**Tools:**

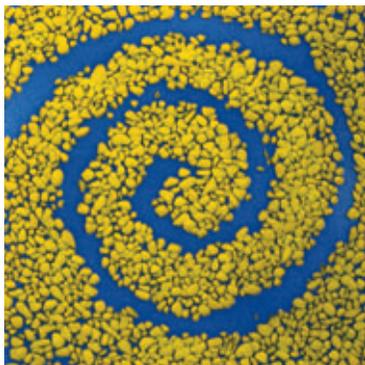
Paper cup  
Pencil with an eraser

**Lay-up:**

Pour frit evenly on the tile from the paper cup. Using the pencil eraser as a stylus, draw spirals and dots.

**Firing:**

Try a process temperature of 1350°F. Hold for 10 minutes.

**YELLOW AND BLUE COARSE SPIRAL****Materials:**

0120-93F Yellow opal coarse frit  
0147-98F Deep Cobalt Blue opal powder  
1101-30F Clear double-rolled sheet glass  
cut into an 8" tile

**Tools:**

Paper cup  
Tea strainer  
Pencil with an eraser  
Tweezers

**Lay-up:**

Pour the green frit evenly on the tile from the paper cup. Using the pencil eraser as a stylus, draw a big spiral. Use the tweezers to rearrange any stray frits. Sift a thick layer of blue powder evenly over the sheet.

**Firing:**

Try a process temperature of 1400°F. Hold for 10 minutes.

**PURPLE MEDIUM SPIRAL****Materials:**

0334-92F Gold Purple opal medium frit  
1101-30F Clear double-rolled sheet glass  
cut into an 8" tile

**Tools:**

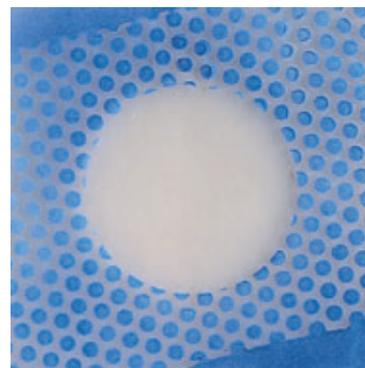
Paper cup  
Pencil with an eraser

**Lay-up:**

Pour frit evenly on the tile from the paper cup. Using the pencil eraser as a stylus, draw spirals and dots.

**Firing:**

Try a process temperature of 1350°F. Hold for 10 minutes.

**BLUE POWDER DOT TEMPLATE****Materials:**

0147-98F Deep Cobalt Blue powder  
1101-30F Clear double-rolled sheet glass  
cut into an 8" tile

**Tools:**

Tea strainer  
Paper or cardboard dot template  
Jar lid

**Lay-up:**

Place the dot template on the sheet. Use the jar lid as a circle template, placing that on top of the dot template. Sift a substantial layer of blue powder evenly over the tile. Carefully remove the circle template. Carefully remove the dot template.

**Firing:**

Try a process temperature of 1325°F. Hold for 10 minutes.

**BLUE POWDER AND STRINGER BITS****Materials:**

0147-98F Deep Cobalt Blue opal powder  
1101-07 Clear stringers  
0100-07 Black stringers  
1101-30F Clear double-rolled sheet glass  
cut into an 8" tile

**Tools:**

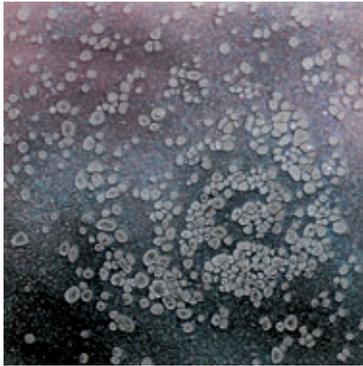
Tea strainer  
Tweezers

**Lay-up:**

Break stringers into 1"- 2" bits. Sprinkle stringer bits on the tile. Use tweezers to arrange any stray bits. Sift a substantial layer of blue powder evenly over the tile.

**Firing:**

Try a process temperature of 1350°F. Hold for 10 minutes.

**STARRY SKY****Materials:**

1118-98F Midnight Blue powder  
1311-98F Cranberry Pink powder  
0100-98F Black powder  
1401-93F Crystal Clear coarse frit  
1101-30F Clear double-rolled sheet glass cut into an 8" tile

**Tools:**

Tea strainer

**Prep:**

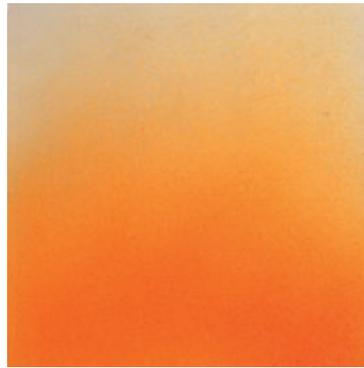
Create round clear frit balls: Sprinkle Crystal Clear coarse frit directly on a primed kiln shelf. Space the grains so that none touches another. Fire the frit grains as fast as your kiln will fire, up to about 1500°F. Turn off the kiln. Open the door/lid wide. The grains should have formed into little balls. Leave the door/lid open to allow the balls to cool as quickly as possible to room temperature. Remove the balls from the shelf, rinse and allow the balls to dry.

**Lay-up:**

Arrange clear frit balls on the tile. Sift pink powder on the top third of the tile, over the frit balls. Sift blue powder on the rest of the tile, fading into the pink field. Sift a thin fading layer of black powder over the color fields and frit balls.

**Firing:**

Try a process temperature of 1350°F. Hold for 10 minutes.

**ORANGE POWDER  
FADING COLOR FIELD****Materials:**

0125-98F Orange opal powder  
1101-30F Clear double-rolled sheet glass cut into an 8" tile

**Tools:**

Tea strainer  
Light box (optional)

**Lay-up:**

Sift a thin layer of orange powder evenly over the tile. Sift a second thin layer of orange powder evenly over 3/4 of the tile. Sift a third thin layer of orange powder evenly over half the tile. Sift a fourth thin layer over 1/4 of the tile. Repeat steps from the beginning until the powder blends evenly from a thin layer at one end of the tile to a thick layer at the other end. Check that the fade is even by viewing the tile over a light box before firing.

**Firing:**

Try a process temperature of 1325°F. Hold for 10 minutes.

**YELLOW COARSE FADING  
COLOR FIELD****Materials:**

0220-93F Sunflower Yellow opal coarse frit  
1101-30F Clear double-rolled sheet glass cut into an 8" tile

**Tools:**

Paper cup  
Tweezers

**Lay-up:**

Sprinkle frit in a single even layer across half the tile. Arrange the frit with tweezers to be densely fitted together at one end of the tile, gradually spacing out in the middle, and spaced sparsely at the other end.

**Firing:**

Try a process temperature of 1400°F. Hold for 10 minutes.

**BLACK REEDED TEXTURE****Materials:**

0100-98F Black powder  
1101-43F Clear reeded sheet glass cut into an 8" tile

**Tools:**

Tea strainer  
Light box (optional)

**Lay-up:**

Sift a substantial even layer of powder over the entire tile. Check that the layer is even by viewing the tile over a light box.

**Firing:**

Try a process temperature of 1325°F. Hold for 10 minutes.



BULLSEYE GLASS CO.

3722 SE 21st Avenue  
Portland OR 97202

T/503.232.8887 F/503.238.9963

e-mail: sales@bullseyeglass.com

www.bullseyeglass.com