



# Unique Glass Colors UGC Product Information Seminar

Presented by Instructors and Owners of UGC  
Margot Clark and Dr. SJ (Saulius Jankauskas)



We welcome you to the world of glass fusing using UGC Products.

You do not need any special equipment, a kiln that fires in the 1425 to 1550 range will work just fine. Margot uses both a digital, programmable ceramic kiln and a digital, programmable glass kiln and Dr. SJ uses a wide variety of kilns for firing, all digital and programmable. Margot started out her glass career using her old ceramic kiln that used cones and needed only 015 and 016 cones for most of her work. So, you do not need a special glass kiln to be able to do any of the techniques from the tutorial, however a digital, programmable kiln is so easy to use! When using a ceramic kiln fire on the middle shelf as this is the most "correct" reading for the kiln. Bottom will be cooler and top will be hotter.

Here at UGC we use float glass, Clear COE 90 and 96, broken tempered glass (from when someone breaks a table or shower door!) and we grind our own frit in a garbage disposal mounted on a workbench which we then color with our UGC colors. Note: Tempered glass is only used with float glass and when we make our own frits we are keeping the glasses compatible. UGC Colors can be used on float glass, clear art glass, porcelain,

ceramic, terra cotta, some colored stained glass (you must test for compatibility) old bottles, tiles from home improvement stores, pottery and the list goes on.

All the products we will be using in this tutorial are non-toxic. All are water based so clean-up is easy. We have listed all the different techniques so you can easily reference back to what was done in a certain area. We are teaching a “sampler” of techniques so you have all your samples in one place. This also makes it easy to show others what you are talking about when you need to present your ideas for classes or for students to explain a technique.

### But first, a bit about glass:

Glass is a product of fusion that has cooled to a rigid form without crystallizing. It is referred to as a liquid that flows at high temperatures and does not, at low temperatures. Glass can have thousands of chemical compositions. These different formulas change the mechanical, optical, electrical and thermal properties of the glass. Glass has the rigidity of crystals, but the random and disordered arrangement of molecules which characterizes liquids.

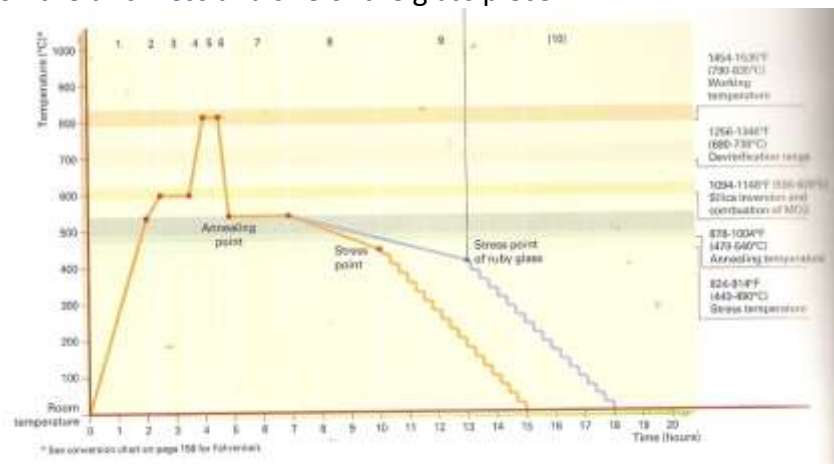
### COE: coefficient of expansion.

The chemical composition of the glass determines the rate it contracts on cooling. Differences between the glasses as they cool causes stress and eventual cracking of the piece.

Float glass has a COE range of 85 – 87. Other glasses have COE's – 90; 96, 100 and others. When working in hot glass it is important to stay in the same COE family. If however, you are going to work the glass cold (etching, stained glass coming or soldering) the COE does not matter.

### Firing Glass:

Fusing glass, or melting glass, needs to have controlled cooling and heating. Basically, there is 1). A heat up phase, 2) A top temperature phase, 3). A rapid cool to the annealing temperature, 4) a controlled decent in temperature (usually from 1000 F to 850 F), 5). A cool down to room temperature. These will vary depending on the thickness and size of the glass piece.



### Let's get started:

We are using two layers of 10" glass circles glass, one whole piece for the bottom layer and four pie shaped pieces for the top layer. Any of these techniques can easily be adapted for other sizes and shapes of glass.

**Fish and Coral with MUD and NT Colors: The use of frits, glass sand, NT Colors and MUD – Dr. SJ**

## FISH PANEL:

Place pie shape over pattern and trace both the coral and fish with the black marker.

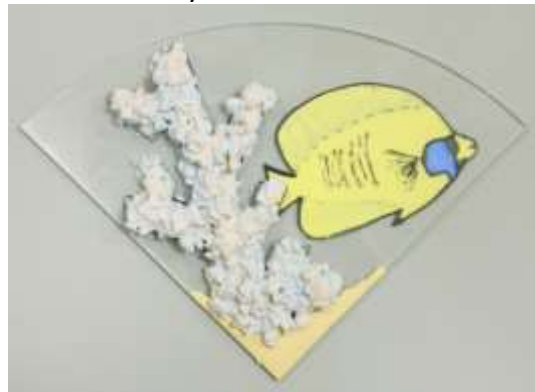
Turn the glass over (so that you are on the undersurface of the piece).

Use Outline Black to outline the fish, fill in the eye with the outline black. DO NOT outline the broken lines in the fish body which define the fins. – allow to dry.

Mix up the Tulip Yellow and the Dark Blue.

When the outline is dry – Puddle, Push, Pull for complete opaqueness – inside the broken lines – cover the outlined fin and the outlined gills. Allow for the edges to dry. “Paint” the area outside the main body of the fish with the Tulip Yellow – lightly.

Fill in the area near eye with Dark blue. – allow to dry.



Go to the solid circle. Using a crayon or candle – divide the circle into 4 pie shapes.

Place the circle over the pattern and using the black marker – mark the areas for the colors.

Mix the Baby Blue; stir the Dark Blue.

Place the circle on two Painter's Pyramids so that the part that we are working on is at the bottom.

Using some water – moisten the glass.

Start at the bottom and “muddle” Baby Blue to the pre-marked line. Before the top edge dries, start “muddling” the Dark Blue. Allow the Dark Blue to run into the Baby Blue. You may need to lift and turn the glass to get the colors to run in the areas you want. You may add more color to get a darker run; or water for a lighter run.

When happy with the appearance – place the piece flat and allow to dry.

Back to the top piece. Turn the piece over (so that the fish is now underneath) and place on three Painter's Pyramids to suspend the glass. Make sure that you don't scratch the fish.

Mix Glass Sand with the Tan and apply to the top area. Be sure to stay with a 60/40 ratio. You MUST always have more color than Glass Sand.

While this is drying – Place a small amount of White MUD into a cup. Add Coarse Float Frit and mix. The mixture should be dry enough to form but not so dry as they crumble.

Using the popsicle stick place globs of the mixture to form the staghorn coral. Allow to dry.

Mix up the Brite Pink and stir the Baby Blue.

While the coral is drying, we will form the Bubble Powder bubbles. On a plate place some Bubble Powder. Dribble some Baby Blue into the powder and mix – so you can form very small balls of the mixture. Place these on the circle piece near where the fish would put out bubbles.

When the coral has set up – in the cap of the Baby blue – add more Glass Medium to thin the color. Gently color the Coral. After a light coat of the Baby Blue, lightly add some Brite Pink.

Continue to dry on the painter's Pyramid.

We are done with this. Once dry place Top piece on the circle and when all panels are done – fire.

### **CORAL PANEL:**

Trace pattern on glass.

Using Outline White, trace the outside rim of the Fan Coral. – allow to dry.

Mix the MUD with the Fine Float Frit to a consistency that you can form “worms” in your hand. Dry enough to easily form, but not so dry as to crumble.

Form the spines of the Fan Coral – allow to dry.

Go to the circle and trace the areas where colors will go.

Place the circle on two Painter’s Pyramids, tilted, such that the part that we are working on is on the bottom.

Mix the Baby Blue, Royal Blue and Azure.

Moisten the glass with some water.

Starting at the bottom, start to “muddle” the Azure, up to the pre marked line. Start with the Royal Blue, before the edge of the Azure dries to allow the colors to run into each other. Do the same with the Baby Blue. You may need to tilt the glass more to control the running. Add more color if you want a darker run and add water if you want a lighter area. Once you are satisfied with the look – place the piece flat and allow to dry.

Go back to the top piece:

Using a short bristled brush – stipple the fan part of the coral using the MUD. Allow to dry

Mix the color Coral.

When the Coral is dry – take some of the color Coral and dilute with Glass Medium.

TINT the coral spines and stippled part with the color Coral.

For the sand – Apply a heavier amount of Tan to the area and then sprinkle Fine Float Frit.



Allow to dry. Place on the circle and when all panels are done – fire!

### **MUD Flowers: Using MUD in a pastry bag, using colored frit and NT Colors**

There is a whole section on creating MUD Flowers for reference included in your booklet, including how to load the pastry bag and storage

On this section of the project we will be creating MUD flowers on the top piece and solid color on the bottom area. The flowers will show three ways of finishing. One is to leave them white and allow the design to be the focal point. The second is to add NT color after the MUD dries, one as a tint and one as a strong color. The fourth technique is to outline with MUD and add colored frit on the petals.

Place the glass over the pattern. On the top middle just outline all the petals and the center. For the rest of the flowers we will create them by the “dribble, catch and pull” method. Refer to the color worksheet for how-to instructions. Allow flowers to dry and then add the leaves. Allow all to dry, preferably for 24 hours, before adding color. Set aside while we add the color to the bottom design.



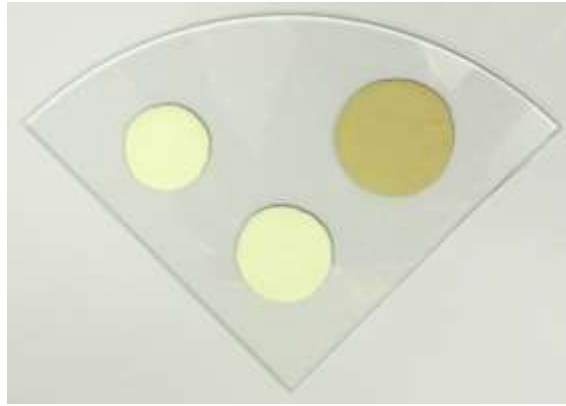
Fill the whole bottom pie section with Dark Blue and the 10/0 liner using the “puddle, push and pull” technique. Look at your application often from underneath to be sure you are getting solid coverage.

Back to the dried MUD flowers. The frit section will be done at home as it will be impossible to transport the piece to your home with the frit applied. The frit we are using is fine frit colored with Baby Blue. Use a tiny spoon to carefully add the frit inside the MUD lines on the top flower. On one of the flowers apply Baby Blue to each of the petals using the puddle, push, pull technique. On another flower apply Glass Medium to each petal, wipe brush, pick up a small amount of Baby Blue and place next to flower center. Wipe brush then coax color out towards the outer edge of the petal. Same techniques for any leaves you would like to have color. Dab Tulip Yellow onto the centers. Refer to photo for placement of color techniques. This piece gets placed over the solid Dark Blue area on the bottom glass.

### **Artisan Colors: Controlling Your Bubbles – Margot**

This section is to show you how the Artisan Colors work. There is a color chart and application sheet in your booklet that shows all the colors and the basic application. The Artisans do two things, create texture and create bubbles. If they are fired on the top piece of glass you will have texture if applied thick, some when applied lightly are translucent, if fired in-between layers of glass you will have bubbles. If applied solidly on the in-between layer you will have a whole bubbled area, if applied in lines or shapes, not allowing the lines or shapes to touch, you can control the bubbles. Each color, there are currently ten, will give a different texture and different sized bubbles.

For this section you are going to place the pie shaped glass over the pattern and using the 10/0 liner fill in the three circles with color of choice using the puddle, push, pull application. You have Royal Blue and Azure as your choices. Set this piece aside.



On one quarter of the bottom glass you will be creating free form lines that connect the circles. Use the 10/0 liner to apply your lines of color. I like to choose a color to start with and then connect the circles to one another and to the outer edge. Then place the second color on each side of the first lines of color. From there I see what I have created and then just keep adding lines and shapes until all I have left are small areas and these I add dots to complete the design. Remember to not allow your lines or shapes to touch one another or they will fire as large bubble patterns! Allow to dry and place the pie shaped piece with the three circles over the top.

## Assembly



Bottom piece of glass

Top pieces in place

## Firing Schedule

The sample was fired to 1500F in Margot's digital, programmable ceramic kiln using the following schedule. Vent for first ½ hour.

- 1) 750 degrees to 1500 degrees and hold for 10 min.
- 2) 9999 degrees to 1000 degrees and hold for 10 min.
- 3) 9999 degrees to 850 degrees and hold for 20 min.
- 4) 9999 degrees 300 degrees and hold for 0-1 minute

Open kiln when cold.

# Materials List for Projects

## UGC Colors

### NT Colors

Glass Medium  
1956 Dark Blue  
1961 Dark Green  
1963 Tulip Yellow  
1968 Tan  
1994 Baby Blue  
1999 Coral  
11005 Brite Pink

### Artisan Colors

Glass Medium  
600 Azure  
603 Royal Blue

## UGC Products

Outline Black in Decorator Bottle with Metal Tip  
Outline White in Decorator Bottle with Metal Tip  
White MUD  
Stainless Steel Writing Tip and Pastry Bag  
10/0 script liner brush  
Margot's Miracle Brush  
10" circles of float glass, one cut into 4 quarters  
Bubble Powder  
Glass Sand  
Painters Pyramid  
Coarse Float Frit  
Fine Float Frit

## Misc. Supplies

Candle or crayon  
Wooden craft sticks  
Short stipple brush

We hope this project has given you lots of ideas for your own projects and techniques.

Margot Clark  
Saulius Jankauskas

- 1). "Glass Notes - A Reference for tge Glass Artist" -Henry Halen  
(version 4.0) 2006 Franklin Mills Press.  
<http://www.glassnotes.com>
- 2). "Warm Glass - A Complete Guide to Kiln Forming Techniques" P.  
Beveridge; I. Domenech; E. Pasacal. Lark Books 2005. A Division of  
Sterling Publishing Company, Inc. New York.
- 3). "Glass Craft" Kay Kinney. 1962. Chilton Book Co. Radnor, Penn.