

## TPE

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### TPE Handouts & Schedules

TPE takes the basic technique of powder migration to another level! First, what is powder migration? I find the best way to describe it is to put it like this...if you covered a piece of base glass with a layer of powder, it would simply fuse into the glass and become part of its surface. Now, cover a piece of base glass with a layer of even powder and place chunks of glass (coarse frit for best results) directly on top of that powder and full fuse all at once. The heavy "chunks" of glass (your frit) will push that layer of powder out of the way as the frit melts into the glass. Imagine this in your mind now.

When the frit pushes the powder away and fully melts into the base glass reaching its final size (a nice round dot,) the pushed powder will have accumulated around the edges of each piece of frit leaving a ring of color. Makes sense right? This produces a nice effect and will often give a mosaic or cobblestone look. I find it best to use contrasting colors of frit to powder when doing this technique. Then, there is the wonderful world of reactive glass utilizing this technique as well.

Each project in the video (and all others you will do on your own) will always start with the same basic actions for powder migration:

- 1.) Even coverage of powder. No more than two complete passes of powder over your base tile.
- 2.) Cover your entire base tile with powder.
- 3.) Cover powder neatly and tightly (there may be exceptions to this) with coarse frit and fire all at once.

Let's break each one of these steps down:

1. An even coverage of powder is necessary so you do not cause blotchiness or uneven color in your finished piece. For example, if you have very heavy areas of powder in some areas of your piece, the finished result will end up darker in some areas since the powder is thicker. When you hold the piece up, you will clearly see light and dark variations in color of the powder which will result in a blotchy look. Use a medium to large red enamel sifter to sift powder. Do not use a tea infuser until you have had much practice sifting down powder. The tea infuser will put out too much powder too fast and you will not have control if you are not used to using it. Usually with the tea infuser, I just lay down one complete pass because the mesh holes are larger and more powder will come through.
2. This is pretty simple. Cover your entire base tile with powder or it will not work in areas with no powder!
3. When laying your frit down, use the frit scooper tweezers. If I am laying the frit down on a small area - anything under 4"- I lay the coarse frit down very neatly, one by one. If I am doing a larger panel, I will use the scoop method shown in the video and then use the tweezers end to fill in the gaps. If you lay the frit down very tightly so each piece is right up next to each other, you will come out with a mosaic look. If you space them apart, you will come out with a pebble look. There are other times you will want to space the frit apart a little bit. That is when you are using reactive glasses combined with metals of silver or copper (or both) and the chemical reactions can cause fuming. This will be explained later.

We are going to also combined reactive glasses with powder migration. This is where the magic begins. Oh, ok, let's add some pure silver foil and copper leaf into the mix as well, this is where it gets complicated. This can be a complete disaster or complete heaven! It's recipes really. Recipes discovered after hundreds of firings. Most, did nothing spectacular but the 10% of the recipes that did work, they were nothing short of spectacular. So, make LOTS of 2"x2" samples. Write everything down and don't be afraid to fail. What people do not realize as after repeated failures with the glass, they are learning more about glass

than they would from successes!

What is reactive glass? In Bullseye's words:

When certain Bullseye glasses are combined in the kiln, glasses containing sulfur, copper & lead, their chemistries may react with each other to produce special effects. The reactions will take place at the interface (where the glasses are touching), and may be considered a design feature or nuisance depending on your intention. Get the reaction you want (or avoid the reaction you don't want) by downloading the "**Reactive Potential of Bullseye Glass**" chart attached in your e-mail. It's your key to understanding and predicting the reactive potential of the full line of Bullseye sheet glass, rods, stringers, frit, powder and billets.

Using silver foil and copper leaf in your work can be fun on their own but there is only so far you can go. Using them as part of our master recipe with reactive glasses, can take you to places you have never seen in glass! You must work with at least 98% pure silver foil when working with these techniques. We import our pure silver from Italy and it is 99.9% pure and it gives off the best fuming that we have discovered to date. We have used every silver from every manufacturer in the world it seems and nothing compares to the pure silver from Italy! You cannot use silver leaf. It turns black and/or burns out with no reactive. Pure silver reacts best with sulfur based Bullseye & System 96 glasses.

Because uncapped metal foil reactions can spread out and travel, they may contaminate the kiln shelf and affect future firings, even if the shelf is properly scraped and reprimed. Shelf contamination may or may not be visible and can even occur through ThinFire or fiber paper. Contamination is not permanent, but several firings may be needed to adequately burn it out. Consider designating a shelf specifically for firing metal foils.

The very first thing I did in my studio with the silver foil and copper leaf is to make samples with each. I placed a piece of foil and copper leaf (separately) on each of the glasses containing lead, copper, sulfur, reactive cloud & reactive ice and full fused them.

The silver always gives off the best fuming. What is fuming? Glad you asked.

Simply put, fuming is the result of the gases that burn from the metals while leaving a colored halo across the glass. Fuming is best when the metals are left uncapped and burned on the surface. When firing metals, leave peepholes open on the kiln and replace after 1000 degrees. Fire your kiln in a ventilated area and do not be in the room during the firing cycle.

#### Some Silver Foil Working Notes:

You cannot fuse silver foil to uncapped Iridized glass. The metal surfaces will not bond. Same with dichroic.

Use a designated kiln shelf for silver foil firing. Once the silver foil has "fumed" you may fire the pieces with silver foil onto a regular kiln shelf if you are doing multiple firings with the silver.

Silver foil fired between reactive glasses will cause a reaction at the interface. If fired on top, with sulfur based glasses, the reaction cannot be contained and will cause fuming across the glass resulting in color halos. Capping silver glasses with clear with help contain the reaction and lessen contamination on your shelf but it will not completely prevent it. Silver foil is the most sensitive to hear work. When handling silver foil, be sure to have DRY hands. Any moisture will cause the foil to stick to your finger tips and it will be hard to handle. Use Glastac as an adhesive with the foil. Do not use hairspray. It is too sticky and uncontrollable and may dry to quickly.

#### Some Copper Leaf Working Notes:

Copper leaf fired between glass, will result in a pretty turquoise color but will have a larger bubble population due to oxidation. Copper will turn a deep red wine color with Reactive Ice.

#### Full Fuse Schedules

##### Basic Powder Migration – Single Side 4" tiles

350 DPH – 1100- hold 30min.

100 DPH- 1245 – hold 45 min.

600 DPH – 1325 – hold 45 min. (the purpose of this hold is to allow all the powder to migrate and leave a crisp outline.

500 DPH – 1515 – HOLD 10 min. (or til glass is flat)

Full – 900- 90 min.

100-800 – 30 min.

OFF

Basic Powder Migration – Double Sided 4” tiles

200 DPH – 1000- hold 30min.

75 DPH- 1245 – hold 45 min.

600 DPH – 1325 – hold 45 min.

500 DPH – 1515 – HOLD 10 min. (or til glass is flat)

Full – 900- 120 min.

50-800 – 30 min.

OFF

Vanity Bowl Slump

200-800-30

200-1000-15

200-1220-20

Full-930-120 minutes

80-800-30

60-700-0

3-2-1 Pyramid Patties & Casting Ring Patty & Strip Puddles

250DPH – 1130-H60

84 DPH – 1255-H70

500 DPH – 1500-H12-15min

Full – 900-H2.5 hours

80-800 – H30

50-700-H0

Awesome Firing Polishing Schedule For Jewelry

300-1000-30

300-1280-30-35min.

Full-900-Hold 90

100-800-Hold 30

Full Fuse for 1/2" Strip Pebble Tower (must be dammed) 14"H

200-800-30

200-1050-30

100-1245-60

500-1500-10

Full-900-2.5 hours

80-800-30

40-700-0

Slump of Pebble Tower In Simple Curve Mold

150-800-30

150-1000-30

200-1170-20

Full-900-3hrs.

80-800-30

42-700-0

Custom Powder Color Mix Recipes:

<b>Bullseye Custom Powder Color Mixes</b>					
Even number of passes of top and bottom or mix 50/50.					
<b>Powder 1</b>	<b>Powder 2</b>				
1834	1824				

1834	1824				<b><u>Legend</u></b>
1137	1824			112	Mint Green
1417	1416			125	Orange
1417	1824			164	Egyptian Blue
1417	1437			216	Lt Cyan
1417	1429			1137	Medium Amber
1414	1416			1320	Marigold Yellow
1414	1824			1414	Lt Sky Blue
1414	1437			1416	Lt Turquoise
1414	1429			1417	Emerald Green
1419	1824			1419	Tan
1419	1416			1429	Lt Silver Gray
1449	1824			1437	Lt Amber
125	1437			1449	Oregon Gray
112	1416			1823	Burnt Scarlet Tint
112	1437			1824	Ruby Red Tint
216	1437			1834	Coral Orange Tint
216	1429				
164	1437				
1320	1823				

<b><u>Bullseye Recipes For Webinar Project</u></b>	<b><u>Base Glass/ Reactive Element</u></b>	<b><u>Type of Foil/Leaf Used</u></b>	<b><u>Powder Color Used &amp; Reactive Element</u></b>	<b><u>Coarse Frit Used &amp; Reactive Element</u></b>	<b><u>Additional Coarse Frit Used &amp; Reactive Element</u></b>	<b><u>Working Notes</u></b>
4" Vanity Bowl	1808/Copper	Pure Silver Foil	1417/Copper	1009-R-ICE		Space Reactive Cloud further apart to prevent over-fuming
4" Bowl w/silver cut outs	1841/None	Pure Silver Foil	1009-Reactive	1416-Copper		Place frit on half of foil / foil turns deep red wine color
Pyramid Patty 1	Tekta/none	Pure Silver Foil	1009/R-ICE	1408-Copper	1116-Copper	Alternate coarse frit colors when placing or create a pattern
Pyramid Patty 2	Tekta/None	Pure Silver Foil	1009/R-ICE	1408-Copper	116-Copper	The 116 gives a Raku Look reaction after firing
Pyramid Patty 3	Tekta/None	Pure Silver Foil	137-Sulfur	1408-Copper	1116-Copper	Alternate coarse frit colors when placing or

Pyramid Patty 4	Tekta/none	None	136-None	1408-Copper		create a pattern Use this Patty towards the top of your pyramid. Very transparent.
Pebble Tower (Shown)	Tekta/None	None	116-Copper	1009/R-ICE		Use cut strips on their sides to create "ribbons" of pebbles
Tree Plate (Shown)	137/Sulfur	Pure Silver Foil	1234-Lead	313-Lead		Place large tree decal (Branches & Birds) In center
Dble Coated Jewelry  (demonstrated) & Purple Plate (shown)	137/Sulfure	*Use both Silver Foil & Copper Leaf	1009-R-Ice	1334 or 334/Lead	164/Copper	TWO Sided Tile. Requires 2 firings. Tanya placed rows of alternating coarse frits on top of powder. Each column had 3 rows of each color of frit. Cut 1/2" strips from fused patty and reconstruct strips on their sides. Cut foil and leaf into strips and place on tile. Leave about 3/4" of base glass showing (Fr. Vanilla) in between.
				<b><u>Bullseye Glass Legend</u></b>		
				116	Turquoise Blue	
				136	Deco Gray	
				137	French Vanilla	
				164	Egyptian Blue	
				313	Dense White	
				334	Gold Purple	
				1009	Reactive Ice	
				1234	Violet	

				1334	Gold Purple	
				1408	Lt Aquamarine Blue	
				1416	Lt Turquoise	
				1417	Emerald Green	
				1808	Aqua Blue Tint	
				1841	Spruce Green Tint	

If you are a System 96 user, the reactive elements are the same. Substitute colors from the Bullseye recipes to match the System 96 colors. What is important is that the reactive elements are the same in the recipe. For example: 0116 in Bullseye is Turquoise Blue and has Copper in it for the reaction. Find a similar color in the 96 chart and make sure it has the Copper in it. This is easily identified in the System 96 reactive chart which can be downloaded at the following link:

<http://www.system96.com/pages/System96ReactiveGlasses.html>

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