

## Modified in 2013

From my books, *Richard La Londe: Fused Glass Art and Technique an Technique* and *Richard La Londe & Friends: Book II*. I have added using a decorating bag in addition to the squirt bottle originally described. It is easier to use.

# liquid glass line - Richard La Londe

In 1993 I developed this technique in order to create an outline that could be filled in with colored frit. Many years later, I realized that this is similar to the wire and enamel technique used for cloisonné.

### Make the Liquid Glass Goop

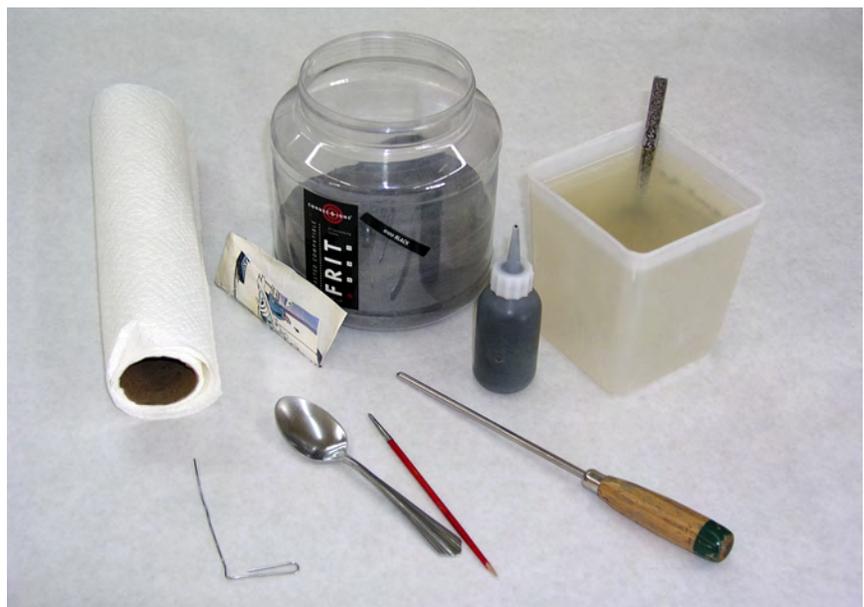
To get started, go to a ceramic supply place, such as Seattle Pottery Supply, and purchase a one-pound bag of CMC (carboxy methyl cellulose). This product is used for ceramics and also as a food additive (check the ingredients list for tortillas).

Boil water and then pour one pint of the hot water into a heat proof container. Add five heaping tablespoons of powdered CMC and stir for about thirty seconds. You will have to experiment with the amount of CMC because it differs between manufacturers and comes as either granules or flakes. Mash the lumps, but don't worry about those chunks that don't seem to want to break down. After the mixture cools and sits, say overnight, it will be a clear gel; the chunks should have dissolved. As with a good cup of coffee, I prefer to make it thicker rather than thinner. You can always thin it with water, but you can't make it thicker; if it's too thin, start over.

To create the "liquid glass," I mix a ratio of about  $\frac{1}{3}$  CMC goop to  $\frac{2}{3}$  glass powder (I use 08 Bullseye powder) in a squeeze bottle. Experiment with this ratio to get the right proportions until you can lay a nice even round line onto a piece of glass. A mixture that is too thin will flow and spread out. A mixture too thick will be too hard to squeeze through the nozzle. You can achieve some nice effects by spreading this mixture with a pallet knife or smearing it with a paintbrush. Fusing the line to stick will produce a dimensional line, and, of course, full fuse will make it flat. Either way, the CMC burns off clean.

### Liquid Glass Line Tool Kit

- (1) **squeeze bottle** - a bottle over 3" is too hard to squeeze.
- (2) **stir rod with handle** - use a round shaft Phillips screwdriver.
- (3) **small paint brush** - sharpen the end and use it to push the line around.
- (4) **flat bottomed spoon** - used for tamping the frit down.
- (5) **straightened paper clip** - use to clean out the nozzle.
- (6) **folded card** - tape one end closed and use for applying frit.
- (7) **razor blade** - use to cut and remove the liquid glass line.
- (8) **ultra fine Sharpie marker** - use for drawing on the glass, it burns off in the firing.
- (9) **paper towels** - use for cleaning the liquid glass off of the stir rod.
- (10) **CMC goop** - for mixing with fine glass powder.
- (11) **glass powder** - I use size 08 or finer.





(1) Drizzle about  $\frac{1}{3}$  CMC goop to  $\frac{2}{3}$  glass powder (size 08) into the squirt bottle and mix with a stir rod. Wrap a piece of paper towel around the bottle neck and withdraw the rod. This keeps the liquid glass in the squirt bottle. Some people premix in a jar and then put it into the bottle or a small pastry bag. You will have to restir occasionally as the powder will separate with time.



(2) Working in reverse, place  $\frac{1}{4}$  in. (6 mm) glass on your drawing that has been flipped over. Squeeze and touch the liquid glass to the clear sheet, lift up  $\frac{1}{2}$  in. and let the glass line drop into place. It should flow easily but not expand sideways. If this occurs, add more glass powder and restir. The clear glass is  $\frac{1}{4}$  in. (6 mm) thick to prevent the huge bubbles discussed in the volume control section.

### The Decorating Bag Alternative

When I originally developed the liquid glass technique in 1993 I tried using an oil-cloth pastry bag and the goop and powdered glass got all over my hands, table, clothes, and everything - so I gave up. I found that the squirt bottle worked great and with less mess. When I wrote my books in 2006 and 2009 I was using the squirt bottle which could lay down a stiff line that stood on the glass like a piece of wet spaghetti. This was what I wanted so that I could fill the areas in with powdered glass.

In 2011 when I was teaching a workshop in Austin, Texas, one of the participants had arthritis and it was very hard to squeeze the bottle. It was suggested that I try a Wilton Decorating Bag and when I was shown the new type of plastic bag I readily adopted it. This device is much easier to squeeze and load. If I need a stiffer line I reluctantly go back to the bottle. I hope that this makes things easier for you too.



(3) Here is a Wilton plastic decorating bag, plastic coupling and metal tip. You can find these at hobby supply and cooking stores. I use a #2 tip and sometimes the slightly larger #3 tip.



(4) Push the threaded part of the plastic coupler at the tapered end of the inside of the bag. Trim the plastic bag with a razor blade, leaving the threads inside the bag. Put the metal tip over the plastic coupler and screw the ring over the plastic part of the bag and onto the threads.



(5) Mix the powdered glass (I use 08 size Bullseye Glass frit) with the goop in a plastic container. I describe how to make the CMC goop on the first page. Wear a dust mask (NIOSH 90) that can handle silica dust.



(6) I place the decorating bag with the tip down, into a wide mouth quart jar and fold the bag over the edge. I then easily spoon the glass goop mixture into the bag.



(7) You need to put a decent amount of mixture into the bag to get it to work properly. Here I fold over the end a few times.



(8) After the end has been folded a few times, then I also fold over the edges and put a large binder clip onto the end to hold it. You can keep the mixture in the bag for a couple of weeks - just put a push pin into the tip to plug the hole. If the goop separates from the glass powder you might be able to massage it in the bag and get it to work, or put it back into the bowl, mix, and the reload or put into a new bag.



(9) You just barely need to squeeze the bag to get it to flow out. If it is too thin and the line spreads out on the glass, then you need to squeeze the mixture back into the mixing bowl and add more glass powder. If it is too stiff, add more goop. If you line spreads you can also quickly set it with a hair dryer. Clean the tip with water and a metal wire if it plugs up.



(10) I mix 50/50 size 01 fine frit with 08 powder which makes a mixture that flows easily from the tapper. I take a folded piece of postcard about 1 1/2 in. (4 cm) high x 4 in. (10 cm) long and tape one end closed. I place the frit mix into it with a spoon and tap with my finger allowing a controlled and steady flow of glass powder. Wear a dust mask (NIOSH 90) that can handle silica dust.



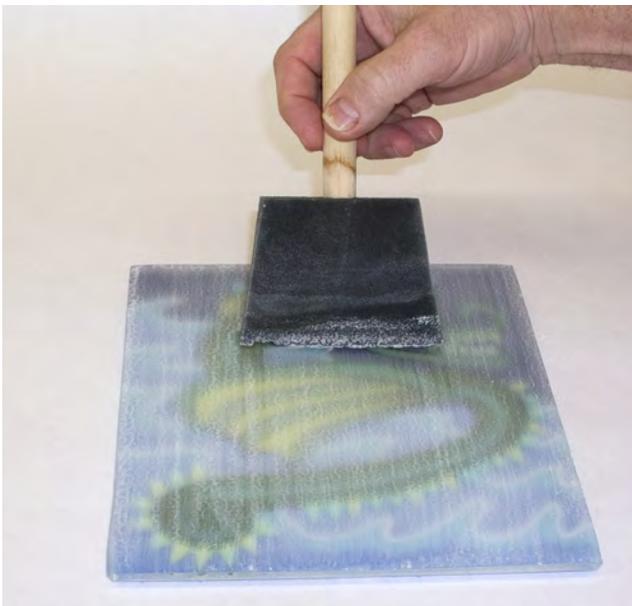
(11) I clean up the spillover with a vacuum pen. I describe how to make this in the equipment section.



(12) I tap the frit down with the back of a spoon. You must apply at least  $\frac{1}{8}$  in. (3 mm) of frit (as it is about 50% air and fluffed up), so that after it full fuses it is about  $\frac{1}{16}$  in. (1.5 mm) thick. Crushed glass frit is much less dense in color than glass enamels and it takes more volume to cover an area. Place the light and transparent colors last.



(13) I cover all of the previously applied frit with a 50/50 mix (size 01 & 08) of white frit for a wall piece or clear for a bowl. This layer keeps all the different colors from pulling up and leaving exposed areas as I discussed in the section about volume control. Tap it all down flat with the back of a spoon. I fuse the frit so it sticks to the glass but does not full fuse, about  $1310^{\circ}$  F to  $1380^{\circ}$  F, depending on your kiln.



(14) After the first firing I take the piece out of the kiln, flip it over, and clean the surface with glass cleaner and a rag. In the past I sandblasted this surface, but now I just apply a very thin layer of "Spray A" with a foam brush, which takes care of any extraneous junk picked from the first firing. The "Spray A" should be applied thin enough to see through. Put the piece back into the kiln and full fuse the glass to  $1500^{\circ}$  F -  $1550^{\circ}$  F.



(15) The finished tile after firing to a full fuse. Firing schedules are located in the back of the book. There will probably be a clear line around the tile because the volume is a bit thicker than the magic  $\frac{1}{4}$  in. (6 mm). This can be prevented by placing a dam made from a sawed mullite kiln shelf around the tile and then grinding and polishing the edge.