



PELI GLASS PRODUCTS B.V.

## Glass Painting - An Introduction

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Glass is a unique medium – alive with color, form and transparency – and glass painting can add a new dimension to your work, as you add lines, create textures and shading. Glass painting is applied in layers and fired in a kiln, and each layer may require a different temperatures, so plan your approach before beginning.

### RECOMMENDED TOOLS

For mixing:

- Glass slab, 20 x 20 cm
- Glass muller or palette knife (paints may cause palette knives to corrode)
- Water jar
- Respirator or dust mask, disposable
- Gloves, latex
- Gum arabic, powder or liquid
- Water-friendly medium

Brushes:

- All sizes, all shapes can be used. Soft brushes to apply the paint, stiffer brushes to create shadow effects. Consider make-up brushes for soft effects.
- Badger brush – size 3-4 inches

### GETTING STARTED

Almost all glass paints are sold in powder form, made up of powdered glass (frit), metal oxides and binders that fuse to the glass when the painted pieces are fired to the proper temperatures in a kiln. Many of the glass paints contain lead and/or cadmium so observe appropriate safety precautions.

### INGREDIENTS

Powdered glass paints can be combined with water, white vinegar, spiritus and a binding agent such as gum arabic, a water friendly medium for spreadability, oils, and combinations thereof. The choice and proportions of mixing agents depends on the painting technique and individual preferences.

- Water blends nicely, dries quickly, recommended for shading.
- White vinegar is slower drying than water, recommended for contour lines or for layering of paints. If vinegar is used and allowed to dry to a hard finish overnight, one may apply matting using water

without damaging the vinegar-based work.

- Spiritus is quick drying, aids in spreadability, recommended for even shading tones.
- Gum arabic allows the paint to grip the glass, recommended especially for contour lines and some applications of shading. Recommended when mixing with water.
- Water-friendly medium is a glycerin-based product that aids in spreadability.
- Various oils are used for screen printing, and oils and water-friendly mediums allow for wet-on-wet work.

### MIXING

1. Place some of the powder paint on the glass slab.
2. Add a pinch of gum arabic, if desired. If powder arabic gum is used, use the palette knife to mix it within the paint.
3. Add a drop or so of water-friendly medium, if desired.
4. Add water or white vinegar. Be careful – at the moment that the liquid is added; a poof of paint powder may come off the paint. Do not inhale the paint powder.
5. Add spiritus, or various oils, if desired.
6. Use the palette knife or glass muller to mix thoroughly. For contour lines, the final consistency should be similar to toothpaste. For shading, much thinner.

For colors and enamels, try mixing just with water.

## **PAINTING AND FIRING**

Glass should be clean. If the wet paint pulls in on itself even after cleaning the glass, try rubbing the glass with a small amount of wet paint, then rubbing clean.

Contour / shading colors can be mixed to create interesting mélange colors. Test when mixing to avoid unwanted surprises. Contour lines and shading are normally painted on the smoothest glass side.

**Contour lines** - firm, opaque tracing lines – are usually the first step in painting on glass. A good flow of the paint is essential for contour lines. Firing after this step may be a good idea, depending on your technique. Can be fired paint side up or down.

**Shading** - paint is mixed with water and perhaps some spiritus or alcohol, and maybe some gum arabic. Apply paint to desired density and as evenly as possible. Use the badger brush in different directions to create a totally smooth effect. The paint can be stippled wet or dry, spattered with water, and rubbed with your fingers, or worked with a damp cloth, if desired. Once dry, the paint can be further worked. Can be fired up or down – up is recommended to avoid scratching paint.

**Enamels and Transparents** - normally fired at a lower temperature, so must be done as a later/last step(s) and fired separately. Apply paint to desired density and as evenly as possible. Use the badger brush in different directions to create a smooth effect. The paint can be stippled wet or dry, spattered with water, and rubbed with your fingers, or worked with a damp cloth, if desired. Once dry, the paint can be further worked. Colors must always be fired up. Previously-fired contour/shading can be fired down, and the enamels / transparents applied to the other side of the glass and fired up.

**Silver Stains** - can be blended with each other but not with other types of paint. These paints are very aggressive on metals and paintbrushes, use separate equipment. Protect whatever the silver stain comes in contact with during firing. Use water or vinegar to prepare. There is already a binder in silver stain, so adding gum arabic is unnecessary. Silver stain is traditionally applied to the back of the glass and fired at approximately 630°C (1160°F) with the silver stain side down, but it may be fired up. If applying on float glass, use the non-tin side for the silver stain. After firing, remove the ochre residue. Silver stains normally turn darker with higher temperature.

Firing is dependent on the oven type and geometry, the requirements of the specific paint, the size and thickness of the glass. That said, some broad guidelines:

Generally, 3 mm thick glass pieces with a surface area smaller than 400 cm<sup>2</sup> (62 in<sup>2</sup>) can be fired as fast as possible to temperature, held at temperature 5 minutes, then oven off and allowed to cool. For a gas oven, allow it to cool to 150°C (300°F) then crack the oven open 2 cm. Open oven fully below 100°C (212°F). For an electric oven, can open peepholes below 600°C (1110°F), crack oven open 5 cm at 200°C (390°F) and open oven fully below 100°C (212°F).

Pieces larger than approximately 400 cm<sup>2</sup> should be warmed more slowly and during the cooling should be allowed to anneal 5-10 minutes at a temperature 515-550°C (1004-1022°F) depending on the type of glass.

When firing red/purple/orange paints in an electric oven, leave the peepholes open so that the firing has sufficient oxygen.

When firing paints with significant amounts of gum arabic, oils or anything other than water or vinegar, these alien substances must be burned off for good firing. Increase oven temperature slowly to 450°C (840°F), hold at 450°C for 30-60 minutes, and then fire normally.

So experiment! You must find for yourself what works best for you.

## **REFERENCES**

Discussions / website Reusche & Co.  
Discussions with Hans van der Valk.