Example I:

Columbine Flowers

Inspired by the state flower of Colorado, the **LF265 Columbine Flowers** are delicately detailed and suited to a wide variety of applications from bouquets to bowls. This tutorial details two different methods for filling this mold- one with COE90 glass, one with COE96- and includes several project ideas and tips.

Before beginning any of the following projects, remember to treat the mold thoroughly with suitable glass separator. We recommend spray-on ZYP. **Always wear a mask when applying spray-on separator or using powder frit.**

General Materials:
- LF265 Columbine Flowers
- Suitable Glass Separator (ZYP Recommended)
- Frit Placement Tools

Filling the Flowers – COE90:

COE90 Glass (All Opal):
- Powder Grain Frits:
  - Canary Yellow
  - Dark Forest Green
- Fine Grain Frits:
  - Dense White
  - Gold Purple
  - Pea Pod

Image 1:

Begin by filling the center anthers of the flowers with Powder Canary Yellow Opal.

Image 2:

Fill the inner petals with a layer of Fine Dense White Opal.

Image 3:

Back the flowers with Fine Gold Purple Opal until each is filled with around 3/8" of frit.

Image 4:

Add a light layer of Powder Dark Forest Green to each leaf.

Image 5:

Add Fine Pea Pod Opal until each leaf is holding about 3/8" of frit.

Once filled, transfer to a level shelf in the kiln and fire using the suggested schedule in **Table I** on **Page 2** or your own preferred tack fire schedule. A tack fire works nicely when only powder and fine grain frits are used. If using larger grains of frit, a tack fire may result in textured or rough backs on the final castings.

Filling the Flowers – COE96:

COE96 Glass:
- F1 Powder Frits:
  - Marigold Opal
  - Light Purple Trans.
  - Dark Blue Opal
- F2 Fine Frits:
  - White Opal
  - Med. Blue Opal
  - Clear
  - Emerald Green Opal

Image 6:

Begin by adding F1 Marigold Opal into the center anthers of each flower.

Image 7:

Sift or sprinkle a bit of F1 Light Purple into the low areas of all the petals.

Image 8:

Back the central five petals with a layer of F2 White Opal.

Image 9:

Add a layer of F2 Medium Blue Opal to the outer five petals.

Image 10:

Back the flowers with F2 Clear until each is holding approximately 3/8" of frit.

Image 11:

Sift or sprinkle a small amount of F1 Dark Blue Opal into the low areas of each leaf.

Image 12:

Add a layer of F2 Emerald Green Opal To each leaf.

Image 13:

Add F2 Clear until each leaf is filled with about 3/8" of frit.

Move to a level shelf in the kiln and fire using the suggested schedule in **Table I** or your own tack fire schedule. A tack fire works well when only powder and fine grain frits are used. For larger grains, a tack fire may cause textured backs on the final castings.

Table I: Tack Fire

Seg.	Rate	Temp (°F)	Hold
1	300	1150	45
2	150	1300	20
3	400	1410	10
4	9999	950**	60

**If using COE90, adjust this to 900°F

*Before firing, it's important to know your kiln to see if you need to adjust suggested sched
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Image 14:

Filling Tips:

The castings created in this tutorial, as well as the castings for each project shown on this page, were made using powdered and fine frit taken to a tack fire. This creates thinner, lighter castings ideal for embellishing sheet glass or placing on stems. The frit was added to the mold until each cavity held enough to cover all of the texture in the cavity, approximately 3/8" inch deep. If thicker castings are desired, a full fuse and larger grains of frit can be used. The fill weights for full fuse castings can be found in the "**Fill Weights**" box below.

For transparent flowers like **Image 14**, follow the steps found on **Page 2**, but substitute F2 Light Blue Transparent for the F2 Medium Blue Opal in the flowers, and F2 Dark Green Transparent for both the F1 Dark Blue and F2 Emerald Green Opal in the leaves.

Full Fuse Fill Weights:

Lg Flower - 34 grams
Sm Flower - 20 grams
Large Leaf - 18 grams
Small Leaf - 14 grams

Example 1:

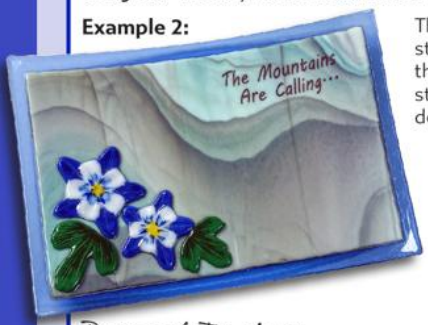
Project Ideas:

Bouquets:

The bouquet in **Example 1** used galvanized steel wire as stems for the flowers and leaves. As galvanized steel is not resistant to high temperatures and therefore cannot be used as inclusion wire and fired, the tips of each wire were coiled into a circle for increased surface area, then attached to the back of the castings with two-part epoxy. Clay was used to dam the epoxy around the coiled wire and hold it in place, as shown in **Image 15**. The clay was removed once the epoxy was set.

Image 15:

Example 2:



The flowers were placed on 14-gauge galvanized steel wire and the leaves on 12-gauge, which was then wrapped around the 14-gauge "stems." The stemmed flowers were then placed into a pail with decorative greenery for display.

Embellishing Sheet Glass:

Thinner, tack fired flowers and leaves are great for embellishing sheet glass as shown in **Example 2** and **Example 3**. Simply fill and tack fire the castings as desired, then tack fire onto the pre-fused project.

Personal Touches:

The writing in **Example 2** was done with photo transfer paper, while the writing in **Example 3** used liquid fired white gold.

For photo transfer paper, create the desired image or text digitally, then print directly onto the transfer paper using a laser printer with iron-oxide based toner. Once printed, closely cut out the image or text then submerge it in water until the decal begins to separate. Carefully transfer the decal from the paper backing onto the glass and smooth out any air bubbles. Allow it to dry, then fire according to the paper's instructions.

Liquid fired gold does require a second firing to mature fully, so keep that in mind when planning your project. For a similar look without an additional firing, use metallic paint pens.

Example 3:

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