Always start by priming your molds. There are two products you can use: Hotline Primo Primer™ and MR-97 Boron Nitride Spray.

With either product, clean the mold with a stiff nylon brush to remove any old kiln wash or boron nitride. (This step can be skipped if the mold is brand new.)

If you are using Hotline Primo Primer, mix the product according to directions. Apply the Primo Primer™ with a soft artist’s brush and use a hair dryer to completely dry the coat. Give the mold four to five thin, even coats drying each coat with a hair dryer before applying the next. Make sure to keep the Primo well stirred as it settles quickly. The mold should be totally dry before filling. The is no reason to pre-fire the mold.

While there are plenty of good shelf primers and kiln washes on the market, the only one Colour de Verre recommends for our molds is Hotline Primo Primer™. It doesn’t obscure the mold’s fine detail, always releases, and is easy to remove after firing.

If you prefer to use MR-97 (old packaging still might say ZYP Lubricote) rather than a traditional primer, again clean the mold and make sure there is no old kiln wash or boron nitride on the surface.

The first time MR-97 is used on a mold, it is necessary to apply two coats of the product. Hold the can 8 to 10 inches from the mold. Apply the first, light coat using a one to two-second burst of spray in a sweeping pattern across all the mold’s cavities. Do not saturate the surface. Set the mold aside for five minutes so it can dry. Once dry, apply a second coat using another one to two-second burst of spray. Let the mold dry for ten to fifteen minutes. The mold is ready to fill. See our website’s Project Ideas section for more detailed instruction about priming Colour de Verre molds with boron nitride.

## Filling the Sea Horse and Starfish Mold

Each sea horse cavity holds 7 to 9 grams of frit. The starfish cavity holds 12 to 18 grams. We refer to these measurements as fill weights.

Before filling the mold, one can highlight the design’s details by “dusting” the mold surfaces with a little Black powder using a fine-screen sifter. The powder collects in the crevasses and highlights the detail. (It is always best to wear a dusk mask when working with frits and aerosols.)

### Availability

 Colour de Verre molds are available at fine glass retailers and many online merchants including our online store, [www.colourdeverre.com](http://www.colourdeverre.com).

### Tools

- Colour de Verre molds
- Small primer brush
- Digital scale
- Sifter
- Assorted measuring spoons

### Supplies

- Hotline Primo Primer™ or MR-97 Boron Nitride
- Assorted powder and fine frits
If only one color is being used to fill each cavity, the frit can be weighed and poured into the cavity. However, most people will want to use combinations of fine frit. This is where a scale’s tare function can be very handy.

**Fill Weights**

<table>
<thead>
<tr>
<th>Design</th>
<th>Fill Weights</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sea Horse and Starfish</td>
<td>Sea horses, 7 to 9 grams each; starfish 12 to 18 grams</td>
</tr>
<tr>
<td>Tropical Fish</td>
<td>Large fish, 32 to 36 grams; small fish 12 to 15 grams each</td>
</tr>
<tr>
<td>Beach Shell-Small</td>
<td>Starfish, 8 grams; scallop, 18 grams; clam, 10 grams; whelk, 7 grams</td>
</tr>
<tr>
<td>Beach Shell-Medium</td>
<td>Conch, 18 grams; spiral whelk, 10 grams; scallop, 32 grams</td>
</tr>
</tbody>
</table>

Place the primed mold on the scale. Press the tare button to zero the scale. Place frit mixtures into the mold until scale displays the fill weight.

Some interesting frit mixtures with which to experiment are:

- Fine Tangerine+Fine Clear
- Fine Light Orange+Fine Clear
- Fine Persimmon Opal+Fine Clear
- Fine Flame Opal+Fine Clear
- Fine Marigold Opal+Fine Clear
- Fine Almond Opal+Fine Clear
- Fine Yellow+Fine Clear
- Fine Ming Green+Fine Clear

(The above colors are Uroboros/Spectrum/System 96 colors. Similar colors can be found in Bullseye’s and other companies’ products lines.)

Gently layer in the frit mixtures until the scale reads the fill weight of each design. Use an art brush or finger tip to level the frit.

Fire the mold according to the Firing Schedule. The low temperatures of this schedule will preserve the designs’ delicate edge detail and keep the glass from “balling up” due to surface tension.

**Filling the Tropical Fish**

The Tropical Fish design makes four fish with each firing: One large fish and three smaller ones. The larger fish holds 32 to 36 grams of frit. The smaller fish each hold 12 to 15 grams.

Like before, use a small sifter to dust the fish’s heads, tails, and fins with a very small amount of Black powder frit. This will highlight the designs’ details.

**Firing Schedule**

<table>
<thead>
<tr>
<th>Segment</th>
<th>Ramp</th>
<th>Temperature</th>
<th>Hold</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>300°F/165°C</td>
<td>1290-1310°F/700-710°C</td>
<td>20 to 30 minutes</td>
</tr>
<tr>
<td>2</td>
<td>AFAP</td>
<td>960°F/515°C</td>
<td>30 minutes. Off. No venting</td>
</tr>
</tbody>
</table>

*Schedule for COE 96. For COE 90, increase casting temperature by 25°F/15°C. AFAP means “As Fast As Possible”, no venting.
Fill each fish to the individual fill weights using one or more of the above frit combinations (or a combination of your own.) It is necessary to either zero (tare) the scale between filling each fish, or to weigh the frit before adding to the mold.

Use an art brush or finger tip to level the frit. Fire the mold according to the Firing Schedule.

**Making Beach Shells**

Colour de Verre produces two molds with the title “Beach Shells.” The Beach Shells-Medium mold casts three medium size shells: A conch, a spiral whelk, and a scallop. Beach Shells-Small casts four smaller sea life forms including a tiny scallop and diminutive starfish.

These shells can be used alone, but wonderfully complex designs can be created when these small castings are used with castings from the Sea Horse and Starfish and Tropical Fish molds.

For the Beach Shells-Medium and Beach Shells-Small, follow the same priming instructions, filling instructions, and firing schedules above. Again, dusting the mold with a dark powder before filling accentuates the castings details.
This piece is impressive but creating it isn’t at all overwhelming – even for a person new to glass casting. The project is easily broken down into four manageable steps, each culminating with a firing:

• Create a collection of sea life castings. (Make more than you expect to use so that you can experiment with various layouts.)

• Fuse two pieces of sheet glass together to create the panel. In the same firing, create some frit balls to help “tie together” the design.

• Tack the fish, clams, conchs, sea horses, frit balls, etc. to the panel.

• Slump the panel using a shallow form.

Cast the Sea Life Forms

Before each firing, clean your molds with a stiff nylon brush to remove any old kiln wash. (This can be skipped if the molds are brand new.)

Hotline Primo™ primer is the only conventional primer we recommend because it doesn’t obscure the mold’s fine detail and is easy to remove after firing.

Give each mold cavity four thin, even coats of Hotline Primo Primer. Use a soft brush to apply the primer and a hair dryer to completely dry each coat before applying the next. The mold should be completely dry before filling.

If you prefer, you can use boron nitride aerosol primer. (We used this for our project) We recommend MR-97 exclusively. You can read more about this in Advanced Priming with Boron Nitride Aerosol which can be found in our website’s Project Ideas section.

The sea life is cast from fine Ming Green frit. Before adding frit to the molds, use a small sifter to dust the molds with a very small amount of Black powder frit. The powder will highlight the designs’ details. Whenever working with frit, especially powders and fine, it is advisable to wear a dust mask.

Tools

✓ Sea Horse and Starfish, Tropical Fish, Beach Shells-Medium, and/or Beach Shells-Small
✓ Small and Large artist’s brush
✓ Small containers for mixing frit
✓ Digital scale
✓ Shallow slumping form

Supplies

✓ Hotline Primo Primer or MR-97
✓ Fine Ming Green frit
✓ Clear sheet glass and thin, iridized Ming Green sheet glass
✓ Powder Black frit
✓ Coarse Ming Green frit
Fill Weights

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<td>Beach Shell- Medium</td>
<td>Conch, 18 grams; spiral whelk, 10 grams; scallop, 32 grams</td>
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Using the fill weights from the table above, evenly fill each cavity. Lightly tap the mold to level the frit and transfer the mold to the kiln. Fire the molds according the Component Casting Schedule.

The unusually low temperature is to produce thin, delicate castings. If the castings “ball up,” decrease either the hold time or target temperature. Given the differences between individual kilns, it may take one or two test firings to get perfect results in your particular kiln.

After removing pieces from the kiln it is important to wash them thoroughly to remove all Primo primer or MR-97.

Creating the Panel

Cut a 12x12” (30x30cm) square from Clear sheet glass. Cut a 11.5x11.5” (30x30cm) square from thin, iridize Ming Green sheet. If you wish, the squares’ corners can be rounded with a power grinder. Protect the kiln shelf with primer or a piece of ThinFire™ shelf paper. Stack the Clear glass on top of the thin, iridize Ming Green glass making sure (1) the iridize surface is “sandwiched” between the two sheets and (2) the Clear sheet’s edges extend equal distances beyond the Ming Green sheet’s edge. Place the stack in the kiln. To make the frit balls, use course Ming Green frit or snipped Ming Green rods. Arrange the pieces on a second sheet of ThinFire in one layer with half an inch (1cm) between each piece. Fire the two sheets and the small rod or frit pieces according to the Sheet Glass Fusing Schedule below. For more information about making frit balls, visit the Project Ideas section of our website.

Attaching the Elements

Remove the fused panel from the kiln and place on the workbench. Create a pleasing arrangement of sea life castings and frit balls on the fused panel. Use small dabs of white glue to temporarily hold the components in place.

When dry, move the panel to a kiln shelf that has been protected with primer or a piece of ThinFire shelf paper. Fire the piece according to the Tack Fuse Schedule.

Component Casting Schedule*

<table>
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<tbody>
<tr>
<td>1</td>
<td>300°F/165°C</td>
<td>1290-1310°F/700-710°C</td>
<td>20 to 30 minutes</td>
</tr>
<tr>
<td>2</td>
<td>AFAP</td>
<td>960°F/515°C</td>
<td>30 minutes. Off. No venting</td>
</tr>
</tbody>
</table>

*Schedule for COE 96. For COE 90, increase casting temperature by 25°F/15°C. AFAP means “As Fast As Possible,” no venting.

Sheet Glass Fusing Schedule*

<table>
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<tr>
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<th>Ramp</th>
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</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>250°F/135°C</td>
<td>1200°F/650°C</td>
<td>30 minutes</td>
</tr>
<tr>
<td>2</td>
<td>250°F/135°C</td>
<td>1400-1420°F/760-770°C</td>
<td>10 minutes</td>
</tr>
<tr>
<td>3</td>
<td>AFAP</td>
<td>960°F/515°C</td>
<td>60 minutes</td>
</tr>
<tr>
<td>4</td>
<td>100°F/60°C</td>
<td>700°F/370°C</td>
<td>Off. No venting</td>
</tr>
</tbody>
</table>

*Schedule for COE 96. For COE 90, increase casting temperature by 25°F/15°C. AFAP means “As Fast As Possible,” no venting.
Slumping the Panel

Place the panel into a primed slump mold. Slowly fire the piece according to the Slumping Schedule. It is important not to rush the firing as there is quite a bit of thickness variation.

Variations

Consider a different color palette and a shape other than square. For example, cast pieces from a 20% mixture of fine Sky Blue and 80% fine Clear. Follow the above instructions to create a rectangular panel from thin, tropical blue, iridized glass and standard thickness of Clear glass. Include “waves” made using Colour de Verre’s Serpentine Former. See our publication “Serpentine Basics.”

<table>
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<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>200°F/120°C</td>
<td>1200°F/650°C</td>
<td>30 minutes</td>
</tr>
<tr>
<td>2</td>
<td>200°F/120°C</td>
<td>1250-1265°F/675-685°C</td>
<td>5-10 minutes</td>
</tr>
<tr>
<td>3</td>
<td>AFAP</td>
<td>960°F/515°C</td>
<td>60 minutes</td>
</tr>
<tr>
<td>4</td>
<td>50°F/30°C</td>
<td>800°F/425°C</td>
<td>None</td>
</tr>
<tr>
<td>5</td>
<td>100°F/60°C</td>
<td>600°F/315°C</td>
<td>Off. No venting</td>
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<tr>
<td>1</td>
<td>100°F/60°C</td>
<td>200°F/95°C</td>
<td>15 minutes</td>
</tr>
<tr>
<td>2</td>
<td>100°F/60°C</td>
<td>400°F/205°C</td>
<td>10 minutes</td>
</tr>
<tr>
<td>3</td>
<td>150°F/85°C</td>
<td>1220-1240°F/660-670°C</td>
<td>5-10 minutes</td>
</tr>
<tr>
<td>3</td>
<td>AFAP</td>
<td>960°F/515°C</td>
<td>60 minutes</td>
</tr>
<tr>
<td>4</td>
<td>50°F/30°C</td>
<td>800°F/425°C</td>
<td>None</td>
</tr>
<tr>
<td>5</td>
<td>100°F/60°C</td>
<td>600°F/315°C</td>
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</table>

*Schedule for COE 96. For COE 90, increase casting temperature by 25°F/15°C. AFAP means “As Fast As Possible,” no venting.
Use Hotline Primo Primer. We tested many kiln washes and primers from a number manufactures. Only Hotline Primo Primer offered us the three properties that we required: thin, even coats that don’t obscure the design; consistent release; and fired primer can easily be removed with a stiff brush.

Mix the powder with water according to the label instructions. Apply four to five thin coats to the mold’s inside surface. Let each coat dry before applying the next. A hair dryer can be used to accelerate the drying between coats. Keep the primer well stirred. The primer’s fine particles – the active components – settle out of the mixture rapidly. If the primer settles, the particles will start to cake on the container’s bottom. Use a stiff brush to stir the compacted particles off the bottom of the container and back into solution. It is not necessary to pre-fire the mold as long as the primer is dry.

After firing the mold, use any nylon kitchen brush or a toothbrush to remove all traces of the primer from the mold. We strongly recommend wearing a dusk mask.

Always follow the firing schedule recommended on our website and packaging. Colour de Verre molds are made from a specialized ceramic material. Like glass, this ceramic will crack or shatter if it is heated or cooled too fast.

Finished pieces will have much smoother edges if you use a small brush to move the frit away from the top edge of the mold. This “trough” only has to be 1/8-inch wide and deep.

Use only crushed art glass or frits in Colour de Verre molds. The molds are not designed for Pyrex glass, float glass, or crushed bottles. We don’t recommend firing Colour de Verre molds above 1500°F (815°C). At higher temperatures, the primer will start to fuse and becomes more difficult to remove.

If the finished piece doesn’t fall out of the mold, don’t panic. Turn mold face-down and tap it against a hard surface cushioned with several layers of newsprint. If the piece still doesn’t fall out, the mold probably wasn’t properly primed.

Occasionally, a few glass spurs might be on edges of the finished pieces. These are easily removed with a wet diamond block or grinder. Following hint #4 will minimize these.

Butterflies, dragonflies, flowers, and leaves can be given more life with a second, slump firing. Some of our designs have a specially designed slumping surface on the reverse side.

A “sugar fire” yields wonderful results with Colour de Verre snowflakes. Fill the mold to half of the recommended fill weight with fine frit. Fire to a “partial fuse” – about 1300°F (705°C). This technique can be used with any of our molds.

Don’t be afraid to experiment. Add CMC solution to your glass powders to make a pâte de verre paste. Mixed crush dichroic with your frits. Tack fuse finished pieces to slumped plates and platters. Mix shredded copper, silver, or gold foil into your frits. Embed smaller forms inside of larger, clear forms. The possibilities are endless.

Availability
Colour de Verre molds are available at fine glass retailers and many online merchants including our online store, www.colourdeverre.com.