# Gerry Newcomb System 96® Casting Plate Tutorial PART 1

Glass casting is a process in which objects are created by heating glass in (or pouring molten glass into) a mold. After annealing and cooling, the glass takes the mold's shape.

## Gerry Newcomb: Making the Casting Mold

While all glass casting relies on some type of mold to contain and shape the molten glass, there are a number of ways to create a mold. In this demonstration by premiere Glass Casting artist, Gerry Newcomb, the mold is made in a two-step process. A clay "positive" design is made first. Next, a wet plaster mix is poured over the finished clay design, creating a "negative" impression. The dried and cured plaster mold is then used to fire glass in. When finished, the surface of the glass casting is shaped exactly like the original clay. (Note: this process creates an open faced, plaster mold that is only used once. The plaster breaks away easily from the glass after firing, leaving a bright, glossy surface.)

Here are the steps Gerry takes to make one of his molds...

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## Basic Materials:

1" x 4" lengths of wood for frame
Water-based Clay (not plasticine)
"Gerry's Mold Mix"
Water

Gerry uses clay to create the "positive" design for his castings. When finished, the cast glass will be an exact replica of the original clay design.

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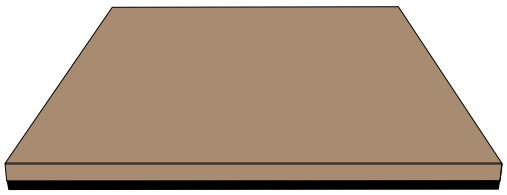

A slab of clay is rolled flat (about 3/4-inch thick). Gerry lays it on top of a rubber mat to give additional height to the mold walls (insuring that glass will not overflow). Additional clay thickness, or a 1/2-inch foam board from a hardware store can be used for the same heightening effect.

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A wood frame (built with 1" x 4" wood sections) surrounds the clay, leaving a 1/2 to 3/4-inch reservoir around the perimeter of the clay so the plaster can form the "walls" of the mold. The boards can be clamped, nailed, screwed, or strapped together.

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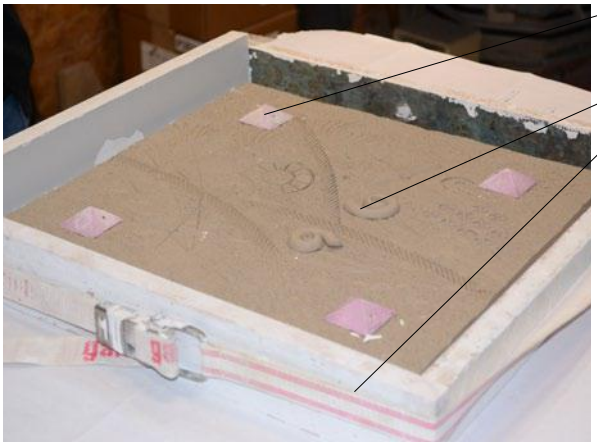

Gerry has created pyramid shapes that are made out of foam-board. A small finishing nail is used to “pin” them into the clay so they don’t float away in the wet plaster when it’s poured in.

Coil shapes are made from clay.

Gerry braces his frame with a canvas strap (sold in ceramic suppliers for this purpose).

Using custom-made and “found” objects, Gerry presses textures and designs into the prepared clay, or builds up areas from clay (as with the coils) or foam-board (pyramids) to create relief shapes. An advantage of using a clay mold is that the soft clay can easily be removed from undercut details, providing a richer surface than typically found in mold casting.

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Gerry wears latex-style gloves while working with the plaster.

When the design is finished, a plaster mix is poured over it. Plaster becomes a “negative” impression of the clay design and will become the actual mold the glass is cast in. Gerry developed a product that works especially well as a glass casting mold he calls “Gerry’s Mold Mix.” Simply add water to the mix and stir. (It should pour easily but not be soupy — similar to a pancake batter.) When all of the clay is covered, Gerry gives it a final mix with his hand and pats it down to settle the plaster, ensuring a flat bottom on the mold.

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Once the plaster is set (about half an hour), Gerry removes the wood frame and turns the mold over to remove the clay.

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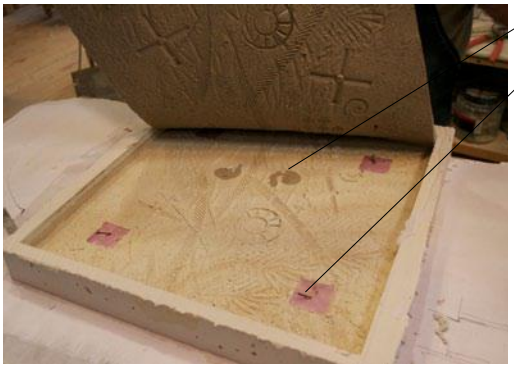


Gerry peels up the clay slab — which is still soft and, with proper storage, can be saved to reuse. Some clay remains trapped in recesses of the mold (the coils), and notice the nails that Gerry had inserted into the foam-board pyramid shapes to keep them pinned into the clay as the plaster pours over them.

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More substantial bits of clay are removed manually then the mold is rinsed quickly with water to wash away remaining residue. Gerry says that a Water Pic works well, if small. Also, a garden hose spraying through a 1⁄16th-inch pinhole. Note: the fresh plaster is not very hard yet; too much pressure or abrasion will erode details. Aim for a spray of water strong enough to loosen clay residue, but not abrade the mold.

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With the mold formed and cleaned, Gerry then places it vertically on a wire rack to air dry for several days with several fans set up to keep the air well circulated. Air drying time depends on the size of the mold and the humidity in the air. Larger molds naturally need more time and a bit more “finesse.” Be sure to handle a fresh mold carefully; the plaster is weakest when it first sets, and with time and drying, gets stronger and lighter.

The air/fan drying method is Gerry’s preferred approach, but when pressed for time, he will sometimes use a *well-vented* kiln to “speed dry” a mold using a schedule such as this:

| Segment | Ramp (ºF/hr) | Temp (ºF) | Hold (hr) |
|---|---|---|---|
| 1 | 65 | 200 | 0 |
| 2 | 4 | 225 | 0-8* |

Notes: The slow rise from 200º to 250º prevents steam pressure from blowing the mold apart — since the boiling point of water is 212ºF. It is important that air be freely circulating in the kiln while water is evaporating from the mold.

*Gerry says he will often just let the mold sit in the warm kiln overnight — or for a long time after shutting it off.

When *thoroughly dry,* the mold is ready to be filled with glass in a casting.

# Gerry Newcomb System 96® Casting Plate Tutorial PART 2

**Gerry Newcomb: Casting the Glass**
In this tutorial, premier glass caster Gerry Newcomb, demonstrates how he fills a prepared mold to create cast glass artwork.

Gerry Newcomb's beautiful salmon castings are in big demand in the Pacific Northwest. Gerry creates a new plaster mold for each piece — they cannot be reused.

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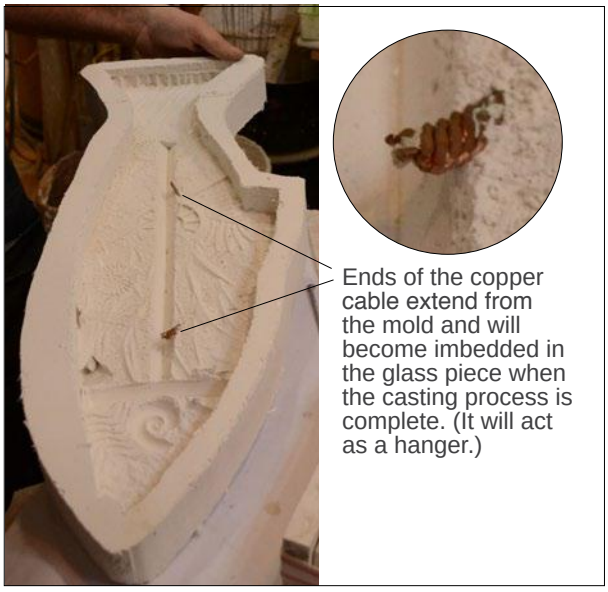


This fish-shaped mold that Gerry previously created for one of his salmon castings is dry and ready to be filled with glass. Notice that a length of sturdy copper cable extends from the plaster mold. The cable had originally been inserted in the clay version of the fish. The plaster captured it and now only the ends are showing, for the glass to bond to. During the casting process, the ends of the cable will become firmly imbedded into the glass and will be strong enough to hang the heavy fish.

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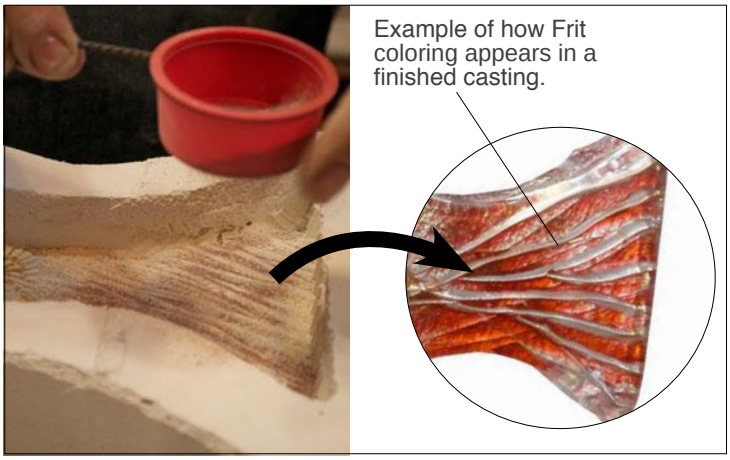


Gerry adds color, texture, and interest into design areas using different materials. Here, he sifts fine grade System 96® glass Frit into the tail section of the fish mold. Remember the area closest to the mold will be the surface of the finished glass piece, so these color accents will show well.

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As Gerry adds more color accents, he sweeps stray glass Frit into place inside the mold using a soft brush.

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Gerry lays a piece of hand-pulled cane into a trough he built into the mold.

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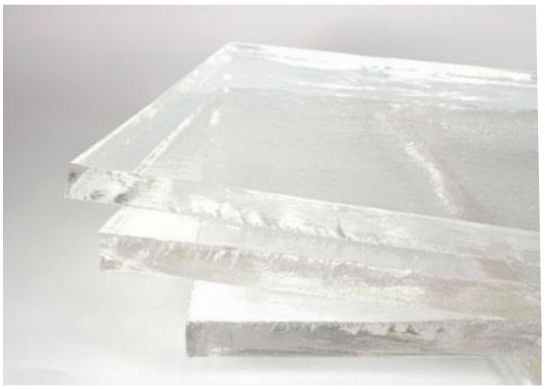

After Gerry finishes the color detail work, he fills the rest of the mold with thick slabs of System 96® ***Crystal Clear Casting Plates,*** carefully sized to fit into the mold and create the appropriate glass volume needed. According to Gerry, Casting Plates are nearly "bullet proof" for devit.

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Gerry's objective is to get a fairly even layer of Casting Plate glass pieces to line the bottom of the irregularly shaped mold. He uses a rough hand-drawn grid to gauge the approximate size of the chunks he needs to create from the plates. He scores the glass where he wants it to break.

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**(We strongly recommend wearing protective gloves and safety glasses for this process.)**

A tap of a ball peen hammer on top of the score...

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.... and the right size chunk falls away.

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The glass chunks help minimize bubbles (as opposed to larger unbroken pieces) and are distributed as evenly as possible on the bottom layer to avoid bubbles and keep the decorative elements from travelling too much when the glass starts melting and moving.

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Glass is strategically placed a bit more toward the center in the second layer

Gerry places less glass volume in the second layer...

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Glass in the third layer is placed well away from the edges of the mold which will cause glass to flow from the center outward.

... and less still in the third layer. By placing glass more toward the center in the second and third layers, glass will flow from the center outward when molten. By keeping the glass well away from the mold walls, it will first melt down into the mold detail, then spread and ‘roll’ up the mold wall, resulting in a nicely rounded smooth glossy edge to the casting. Even though the level of glass is actually higher than the rim of the mold, because it is stacked with decreasing volume on the second and third layers, the glass level evens out and does not overflow. (Note: many casters use weight to determine how much glass to use in a casting. A general rule of thumb for this method is to weigh the clay used, then multiply that by 1.25 to know the weight of glass that will be required.)

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When the mold is filled and ready to fire, Gerry uses the following schedule for his castings.

| Segment | Rate °/hour F | Temp F | Hold Hour |
|---|---|---|---|
| 1 | 175 | 1050 | 0 |
| 2 | 12 | 1100 | 0 |
| 3 | 375 | 1475 | 1/2- 6* |
| 4 | 9999 | 1000 | 2 |
| 5 | 8 | 940 | 2-4 |
| 6 | 16 | 850 | 0 |
| 7 | 35 | 700 | 0 |
| 8 | 70 | 400 | 0 |

*How long you spend at this temp depends on your kiln, the size and complexity of the mold, etc.

See the Firing Schedule Details (page 9) for Gerry's segment-by-segment discussion about this schedule.

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Fish seen from the back

A signature look of Gerry's is achieved by coating the underside of his fish with a metallic paint (after it's removed from the mold). The mirroring effect highlights the textures imparted by the mold and works with the more subtle Frit shading to create the rich, complex coloring when seen from the front.

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A plaster mold such as this is used only once. After the casting process, the mold has become soft, breaking away easily from the glass piece, and is discarded. Gerry explains that, while there are reusable mold mixes available, they require a mold release agent, which results in a corresponding loss of detail. Also, design undercuts are not possible as the glass will "lock" into the mold. The artist must choose the best materials for the artwork being created.

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# Gerry Newcomb Casting: Firing Schedule Details

| Segment | Rate °/hour F | Temp F | Hold Hour |
|---|---|---|---|
| 1 | 175 | 1050 | 0 |
| 2 | 12 | 1100 | 0 |
| 3 | 375 | 1475 | 1/2- 6 |
| 4 | 9999 | 1000 | 2 |
| 5 | 8 | 940 | 0 |
| 6 | 16 | 850 | 0 |
| 7 | 35 | 700 | 0 |
| 8 | 70 | 400 | 0 |

**Segment 1**: A slow heating of the glass and mold to the point where melting will begin.

**Segment 2:** This is a 'squeeze' that allows the glass to flow together and form a cohesive mass then slowly start dropping into the mold details. Going too fast here results in a greater risk of trapping air under the glass melt that will then want to travel up the melt. An even more likely result of going too fast is incomplete flow of glass to glass, trapping small air pockets which will be air bubbles in the glass— or worse, pimples and/or broken bubbles at the surface of the finished piece.

**Segment 3:** A quick rise to the melt temperature. How long you spend at the melt temp depends on your kiln, and the size, depth and complexity of the mold; it takes longer for the heat to penetrate into deeper molds. A hold can be anywhere from 30 mins to 6 hours.

**Segment 4:** The kiln cools to 1000º. (Gerry does not advise opening the kiln to vent heat — *ever*. Besides running the risk of introducing debris onto the glass surface from hoisting his very large kiln lids, he says the Casting Plates don't need the heat release.) Holding the glass at the upper end of the annealing range allows the entire work — the mold and all parts of the glass, deep and at the surface — to be at 1000º before starting down.

**Segments 5-8:** A very slow decline through the upper range of annealing (as opposed to sitting at one specific point), gradually increasing the rate as the piece cools.

Gerry says that this schedule would work well for the fish or small table top shown in this guide. Thicker work would require more time to insure that the internal temperatures were equal to the surface temps. Keep in mind that work that has narrow spots (like the fish tail) runs a risk of cracking if the schedule is too fast.