



Molding & Casting An Alligator Snapping Turtle

The Alligator Snapping Turtle is one of nature's rarest and most elusive animals. An opportunity to reproduce a 250 year old specimen is as rare as the animal itself. Tony & Leslie Breedlove of **Wildlife Art Creations** (Melrose, FL.) were fortunate enough to acquire a 150 lb. (68 kg.) Alligator Snapper, and have chronicled their mold making and casting processes used to make exact duplicates of this dinosaur.



Supplies Needed

Smooth-On Materials:

Silicone Rubber:	MOLD MAX 30
Thixotropic Additive:	THI-VEX
Silicone Accelerator:	FASTCAT 30 [Dramatically Reduces Pot Life]
Liquid Plastic:	SMOOTH-CAST 320
Rigid Foam:	FOAM-IT 5
Mold Release:	MANN EASE RELEASE 200

Other Materials:

Paint & Finishing Supplies
Paste Wax & Petroleum Jelly
Fiberglass Matt 1 ½ oz
Cloth 10 oz
Resin & Tooling
Poster Paper or Print sheets



Step 1: Positioning The Specimen - Position the specimen on a piece of plywood large enough to provide ample working room around the edges. Place specimen in freezer, checking and adjusting frequently until desired position is achieved. Freeze solid. It is essential that the specimen be frozen solid so that the chances of it thawing and distorting are reduced.

Mold Making Challenge - Molding A Frozen Specimen.

In addition to being a complicated model to mold, the alligator snapper was frozen solid. Most RTV (Room Temperature Vulcanizing) rubber compounds are designed to work best at room temperature and will not set up at all on a frozen model. The **MOLD MAX 30** silicone rubber will cure on a frozen model with the help of **FASTCAT 30** used in place of regular MM30 Part B. **THI-VEX** thickener allows you to attain any consistency ranging from honey to bread dough and was added to make the rubber brushable (for vertical surface application). **Read the technical bulletin for Mold Max 30 carefully before using. Also note that using FastCat 30 as Part B of the silicone rubber will shorten pot life dramatically.**

Step 2: Mix And Apply Rubber -The first coat is the “detail coat” and is applied as a thin layer. Mix rubber at the mix ratio of 100A:10 FastCat 30 Part B carefully as directed by the product technical bulletin.



Apply to the bottom and all undercuts of the specimen. Be certain that the rubber fills all cracks and depressions completely. You can use light air pressure to blow silicone into all the detail. Wait 5-10 minutes to allow silicone to settle into the detail and air bubbles to dissipate. Immediately apply a second coat, mix ratio (100A:10B), painting on a little thicker than the first coat and allow to flow for about 5 minutes. Do not put any silicone into the mouth of the turtle at this time. Making a mold for the mouth will be covered later in this overview.

The third coat will be applied before the first and second coats have started to cure. When applying this coat you will use FASTCAT 30 as the Part B in a mix ratio of **100:20**. Work quickly, as your pot life will be only 5 minutes. Mix thoroughly and apply over first and second coats. As this coat begins to kick off, turn specimen over and repeat the three-coat process on the topside until the entire specimen is covered. When skin coat has cured, trim drippings from side. Save these trimmed pieces, as you will use them for filler later.



Step 3: Add to Thickness of Mold

To build a suitable wall thickness on the mold, a final "thickened" coat should be applied over the other three prior coats. This coat should be thickened by mixing **THI-VEX** (10grams) into the silicone rubber (100 grams Part A). Mix well before adding 20 grams of FastCat 30. After mixing thoroughly, apply with paint stick or spatula, being careful not to disturb previous coats. Build ¼ - ½" thickness until specimen is completely covered. Mix the cut trimmings from earlier coats with thickened silicone to fill voids around bottom of shell and under body.

Step 4: Creating An Open Mouth Insert

If you've ever made molds of wildlife before, you know that making the mold of the mouth of any animal can be complicated. On this specimen, the inside of the mouth is larger than the mouth opening. To address this, a collapsible rubber plug will be created.

In order for a mouth plug to be removed once the silicone has cured, there must be a void in the center, which allows the plug to collapse. The void will be created by using a simple 2" x 4" piece of wood.

First, trim any excess silicone at the lip line so nothing hangs over. Thin petroleum jelly with mineral spirits and apply two very thin coats to the inside of the mouth and on all silicone surfaces within four inches of mouth.





Next, mix silicone (100A:10B) and apply two separate skin coats to the interior of the mouth. For the third coat, use **FAST-CAT as Part B (100:20)**. Allow to partially cure. Slightly taper a 2" x 4" to take up as much space in the mouth as possible, allowing a 1/2" cavity around the wooden insert. Wax the 2" x 4" well! Mix THI-VEX and FASTCAT to silicone for a fast cure and fill the mouth and throat about 1/2 way with rubber. Immediately insert wooden peg through mouth to bottom of throat and into the silicone. Hold wooden insert in place until the silicone has cured to the point where it can support the wooden plug. Fill the rest of mouth with rubber (**100A:20 FastCat**) and overlap existing lip line about 2 1/2" - 3". This overlap should be about 1/4" thick. This will provide a seal when casting into the finished mold to make a reproduction.

Step 5: Making The Mother Mold - Before applying mother mold, allow silicone mold to cure 24 hours at room temperature. If you are concerned about the specimen, the mold can be refrigerated (add 24 hours to cure time) or frozen (add 48 hours to cure time). The mother mold (also known as the "support shell") will support the finished rubber mold and prevent it from distorting when casting into it. The mother mold is applied in sections that are easily assembled for casting. Consult Smooth-On's "**How To Make Molds & Castings**" booklet for more information on making brush-on molds & mother molds. Polyester resin and fiberglass matte were used to make this mother mold.



Use adequate ventilation, as fumes can be hazardous. **Note:** Smooth-On has introduced an **odorless**, easy to use brush-on plastic called "**Plasti-Paste**" which yields mother molds that are lightweight and very strong. Determine the location of parting lines and build dam walls areas to separate the mother mold sections. Use stiff poster board or metal print sheets (cut to 3 inches) for dams and hot glue in place. It may be necessary to support underneath with clay.



To prevent the resin & fiberglass from adhering to the silicone, apply two liberal coats of **Mann Ease Release 200** on all surfaces of the rubber. Before applying fiberglass to dam walls: apply paste wax followed by coating of Ease Release 200. **Put the first layer of 1-1/2 oz matte** on the original. Wet with heavily catalyzed resin and press in with brush to remove air bubbles. **Apply 10 ounce cloth** and wet well with resin. **Finally, put the last layer of 1-1/2 oz matte** in place and wet completely, making certain to eliminate any entrapped air. Allow the resin to cure before trimming edges and removing dams. The fiberglass shell for the head portion will be molded around the wooden wedge to support the mouth plug. Repeat above fiberglass process for this section.



Step 7: Demolding the Original - After the mother mold has completely cured, carefully begin to remove the fiberglass mother mold sections. Next, slowly remove the mouth plug and then begin to peel the rubber mold away from the specimen body. After demolding, reassemble the silicone rubber molds into the fiberglass jacket and post cure the silicone rubber mold at 150 degrees Fahrenheit for four to six hours. This will eliminate residual moisture and alcohol byproducts from the mold from the condensation reaction. The mold is now ready to pour the first reproduction.

Step 8: Making A Casting - Liberally apply a coat of Ease Release 200 release agent into the mold cavity. Brush the release agent into all detail of the mold and allow to dry for 15 minutes. Once dry, apply another liberal coat of the release agent onto the mold.

This reproduction was cast with Smooth Cast 320 (available from Smooth-On, Inc.). SC 320 has a one-to-one by volume mix ratio and cures in about 10 minutes. If you wish to pour a solid casting, mix and pour about one gallon of SC-320 at a time. Filling the entire mold at once would generate excessive heat that could damage the mold.



To make a lightweight casting and reduce the amount of casting material used in the reproduction, thoroughly mix about two quarts of SC-320 at a time. Pour first batch into the mold and rotate the liquid resin around inside the mold to build a thin-walled "shell" coating. Repeat until a uniform casting thickness of 3/4" to 1" is attained. Fill the remaining cavity void with Smooth-On's **Foam-iT! rigid urethane foam**. Allow the entire casting to cool completely before removing from mold.



Step 9: Demolding The Reproduction - Carefully remove the casting from the mold by disassembling the fiberglass shell and then the silicone rubber mold. Once the casting has been removed from the mold, be sure to reassemble various mold sections properly for next casting. **Remove mold release** from the reproduction with acetone. For best results, it is recommended that the surface be cleaned twice using a clean cloth each time. Lastly, you may need to fill any small holes or imperfections with black or brown furniture pencil. - **Ready For Painting!**

Tony & Leslie Breedlove are professional moldmakers, casters & taxidermists. They own Wildlife Art Creations and offer training on mold making and casting for taxidermists at their facility in Melrose, FL.

