



Perfect Antler Reproductions

Using A Reverse Molding Method

Accurately reproducing antlers is one of taxidermy's tougher challenges. Tony Breedlove of **Wildlife Art Creations** (Melrose, FL.) has chronicled his innovative "Reverse Molding Method" that yields **perfect antler castings everytime**. This molding method is more time consuming than the conventional "cradle" technique, but once a rubber mold is made, it is much easier to work with.



SUPPLIES NEEDED

Silicone Rubber: **MOLD MAX 30**
Liquid Plastic: **SMOOTHCAST 320**
Release Agent: **MANN EASE RELEASE 200**
Krylon Clear Acrylic Spray (Matte Finish)
Bondo Or Other Epoxy
Aluminum Foil & Masking Tape
Chavant Sulphur Free Modeling Clay - 10 lbs.
Poster Paper or Print Sheets

Johnson's Paste Wax
Molding Resin & Fiberglass supplies
Rolling Pin 2" or 2" PVC Pipe
1/4" x 1 1/4" Bolts, Washers, and Wing Nuts
5/16" x 2" Bolts, Washers, and Wing Nuts
3/4" Plywood 2 pieces 12" x 12"
2-3/8" Dowel
Paint & Finishing Supplies

1. Preparation of Antlers: Begin by centering the antlers on a base of 3/4" plywood (12"x12") so that the tallest tines are pointing straight up and balanced. **Next, adhere the skull plate of the antlers to the 3/4" plywood** with bondo or epoxy. After the bondo has fully cured, make adjustments as needed to give the antlers and skull plate a natural appearance. Now the antlers and plywood base should be properly sealed.

Proper "sealing" of the antlers is necessary to prevent them from being stained by wax, solvents, clay or silicone. **A liberal coat of clear acrylic spray should be applied to all surfaces** and allowed to dry thoroughly. A second coat should then be applied and allowed to dry.



2. Protecting Antlers: Wrap the antlers with aluminum foil. Use masking tape on tine tips and burrs to secure the foil in loose areas.

3. Creating Space For Silicone Rubber: Next, apply a layer of clay (3/8" thick) over the aluminum foil. **Tip:** To attain a uniform thickness for the clay, a jig was constructed to roll out the clay. This jig was created by fastening two 3/8" dowels (18" long) onto a piece of plywood with screws. The distance between the dowels should be just less than the width of a rolling pin. Next, lay waxed paper on the plywood between the dowels so that the clay does not stick to any surfaces. Heating clay in an oven on warm setting for 5 - 10minutes will soften it and make it more "workable". Place clay between the dowels and use the rolling pin and roll to 3/8". Slice clay into 1.5" wide strips and apply over foil. Smooth all overlapping joints of clay to create a uniform surface, making certain that the aluminum foil is completely covered. Lastly, attach clay funnels to the top of the tallest tines on the antlers (these will act as your pour spout and vent sprues to minimize air entrapment in the rubber).

4. Preparing Sections Of The Mother Mold: Build cardboard dams to separate the mother mold pieces. You can also use very stiff poster paper or metal print steets. **Study the antlers carefully** to determine where to put the cardboard dams and estimate how many cardboard pieces will be needed. The goal is to be able to remove the antlers from the mother mold easily. Lightly score the clay where the parting lines will be located. Place cardboard pieces along score lines and secure to each other with a glue gun (hot melt glue).

Next, trim cardboard dams to 1.5" all the way around. Use a tongue depressor or other flat edge to make sure that the clay is smooth and tight to the cardboard. A clean, crisp edge will ensure that the various sections of the mother mold will fit together snugly when completed. **Make sure that there are no severe undercuts** that will prevent the mother mold from being removed. Install "clay keys" onto cardboard dams so that mother mold pieces will lock together. Randomly press 1/4" deep key-ways into the clay on the antlers with the eraser end of a pencil. This will aid in aligning the mother mold and the rubber mold everytime.



5. Building The Mother Mold: Apply **paste wax** to the cardboard dams, skull plate and the mounting board. Apply tooling gel-coat to the first piece to be molded. **Allow a tooling gel-coat and allow to cure.** Mix a filler such as **Cab-O-Sil** or glass micro-balloons with fiberglass resin until a paste consistency is attained. Now add the catalyst and thoroughly apply mixture over all surfaces including keyways, sharp corners where the clay meets cardboard dams and any depressions. **Immediately apply a layer of 1-1/2 oz. fiberglass mat** to the areas covered with the resin. Brush catalyzed resin over the fiberglass mat, being sure that all air bubbles are removed. **Now apply a layer of fiberglass cloth - 7oz. to 10 oz.** Wet with resin, pressing it in with a brush to remove any air and to make a tight union with the clay and dams. **Finish by applying 1-1/2 oz. mat** and wet completely with resin.

After the resin gels, **trim any excess away** from the outer edges of the cardboard dams being careful not to pull away from clay or dam (close is good enough for now). When molding areas that meet the base, **be sure to form a flange** by laying fiberglass onto the plywood 3 to 4 inches wide. Allow each portion to set completely before continuing. When ready to start the next section, remove the cardboard from the flange previously glassed. Wax each new surface. The next section will lay fiberglass to fiberglass.

Repeat Step 5 for each section of the mother mold. Let all sections fully cure.

Before taking the various completed sections apart, trim the edges with a jigsaw or sand edges until smooth. Drill 1/4" holes in all flanges about every three inches. This will allow you to tightly bolt all pieces together when reassembled. Also drill two 1/4" holes in each flange section around the base of the skull plate where it meets the plywood.

6. Removing The Mother Mold:

Do not remove antlers from plywood base. You will need to exactly realign the mother mold over the antlers before pouring the silicone. Gently insert small screwdrivers between the flanges, and separate the pieces.

Carefully remove clay and aluminum foil from the antlers and mother mold. Large portions of clay can be removed from mother mold pieces with a spoon. Clean clay residue out of mother mold pieces with mineral spirits. Drill an 1/8" hole in the mother mold at the top of each tine to allow air to escape when pouring silicone. The volume of clay removed from the mold represents the amount of silicone to use.





7. Applying Mold Max 30 Rubber:

Mix Mold Max silicone rubber as directed by the technical bulletin. Using a paint brush, **apply a thin coat** to the antlers with dabbing strokes. This will help minimize bubbles.

Allow rubber to partially cure and **apply a second coat**. Allow rubber to cure 4 - 6 hours. Trim any strings that hang and trim any dripped excess from plywood base.

8. Reassemble Mother Mold

Wax all interior surfaces of mother mold pieces. Re-assemble around silicone coated antlers. Secure with 1.25x1/4 bolts with washers on both sides.

Tighten with wing nuts. Once assembled, look down the funnels at the tine tips to check the alignment of the antlers in the mold.

9. Pouring Silicone Rubber:

Drill a 3/8" hole in the bottom corner of a 1/2 gallon bucket and position it in a stand 18" to 24" above the mold. **Make sure that the hole in the bucket is aligned** with the funnel on the tallest tine. In a separate container, properly mix silicone 16 oz. at a time and pour into the dispensing bucket.

The thin stream of silicone that falls from the bucket will eliminate any air bubbles. Continue mixing and dispensing silicone until it begins to seep out of the 1/8" holes in the tine tips. Plug holes with clay after all air has escaped. Watch for leakage around flange and plug with clay if necessary. Using a fresh dispensing bucket, repeat the above process to pour the second half of the mold. **Frequently check the mold** to be certain that there are no leaks. **Allow rubber to cure at least 24 hours** before disassembling.



10. Demold - Removing Antlers From Silicone:

After rubber is fully cured, remove the mother mold. You will need to make cuts in the rubber to remove the antlers. Use a marker to draw seam lines on silicone in areas that need to be cut. Do not align the silicone seams with the mother mold seams. **Stagger any silicone mold seams at least 1 inch from mother mold seams.** This will make for better registration.

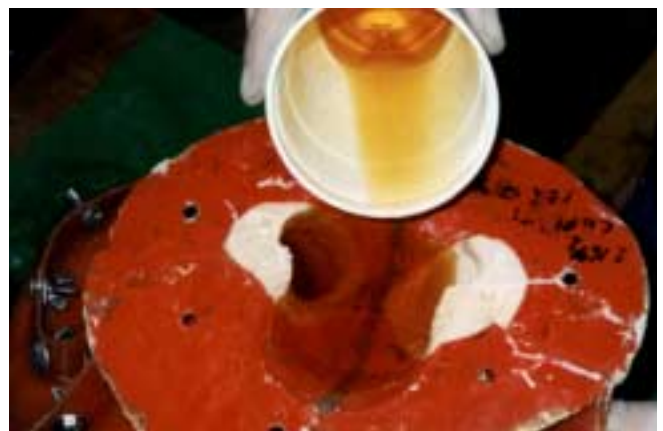
Rubber covering small tips or kickers will not have to be cut.; they will slip out of the mold. Some tines do not need to be cut all the way to the tips, in fact a few inches from the beam may be enough to release the antlers from the mold. Using a sharp scalpel to cut the silicone, gently pull the seam open from both sides as the cut is made. Completely remove rubber mold from antlers.

Although not necessary, post curing any rubber mold will enhance physical and performance properties. Place mold in oven at 150°F for 4 - 6 hours and let cool.



11. Casting A Reproduction: It is now time to mix and pour Smooth-Cast 320 liquid plastic into the finished mold. **Apply Ease Release 200 Release Agent** to the inside of the rubber mold, the inside of the mother mold and **all surfaces that will come in contact with the liquid plastic**. Reassemble the rubber mold into the mother mold and loosely affix bolts. Do not tighten bolts yet.

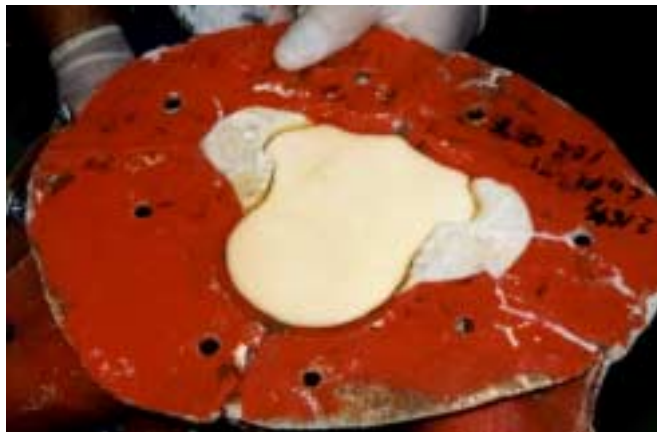
Position the mold apparatus (rubber mold inside mother mold) upside down with the tines pointing down. You will be pouring the SC 320 plastic through the skull cap opening and into each side where the antler burrs are located.



Measure and mix SC 320 plastic (as directed by the product technical bulletin) and pour plastic into one side of the antlers, up to the burr. Gently roll mold to ensure that the mold tips (tines) are thoroughly coated with plastic. Repeat on other side. Once both sides are poured, bolt the mother mold together securely at the center and pour the skull plate.

Smooth-Cast 320 is a fast-setting urethane resin that takes only a few minutes to cure so you must work quickly to ensure that the different pours bond to one another. SC 320 will bond well to itself if pours are made within 15 minutes of each other. After pouring the skull plate, allow the resin to fully cure; 45 - 60 minutes.

Demold: Carefully disassemble the mother mold and remove the casting from the silicone mold. Once the casting has been removed from the mold, be sure to reassemble various mold sections properly for next casting. When not in use, **store rubber mold securely inside mother mold to maintain shape.**



12. Finishing and Painting: Remove mold release from casting with acetone. For best results, it is recommended that the surface be cleaned twice using a clean cloth each time. (Contact Smooth-On for a powder coating technique that will yield dry castings out of the mold and minimize the affects of release agent.)

Fill any small holes or imperfections with black or brown furniture pencil. Now your reproduction antlers are ready to be painted. Polytranspar and Lifetone paints were both used to create the natural anter colors. Begin with "black umber" on the burrs and lower beams, following with "raw sienna". Wipe off the top layer with thinner on a rag, leaving color in the crevices. Darken with rich brown and lightly mist with bright yellow. Buff with steel wool to lighten the tine tips. Blend with plack umber to preference. When dry, spray with Krylon Matte Finish # 1311.

How-To Seminars - Learn how to mold and cast reptiles, fish, antlers and other wildlife at Wildlife Art Creations in Melrose, FL. Two day seminars will teach you how to do it yourself!

Contact Smooth-On for details!



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