



Going for Gold, while thinking green

- working with recycled silicone -

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Every two years, the World Pastry Team Championship brings together chefs from around the world to reach for the gold medal. While the chefs work on their showpieces, the audience watches with tense excitement to see the results of their artistry and innovations. As spectacular as the chefs' five-foot tall chocolate and sugar sculptures are, there is another—equally compelling—story behind their creation. That story consists of the second team. It's made up of sponsors, coaches, alternate chefs, assistants, managers, creative contributors, vendors and, most importantly, family members who stretch far beyond the usual emotional tolerances to support the team members in their quest for victory.

As a mold maker, I am often asked to help develop ideas and tools that can shave valuable minutes off the clock. Investing time wisely in advance to create exceptional tools can make a big difference in the kitchen. On the following pages, our goal is to show one method of making a large seven-inch sphere mold. With some companies listing similar silicone molds for \$800, following these subsequent steps can help keep most of that cash in your pocket. While this process will demand your time and patience, these guidelines should put this mold well within your reach.



Sugar showpiece created by Team South Korea for the Amoretti 2006 the World Pastry Team Championship.



1. Primary materials needed.

Firm silicone, recycled silicone, silicone thinner, two 7" half domes, three 8" x 3" cake rings, acetate, oil-based clay, painter's masking tape, thirteen 1/4" acorn nuts, eight 8" x 1/4" dowel rods.



2. Trace the inside of the cake ring.

Using an unwarped, 8" x 3" cake ring, trace the interior onto a sheet of paper.



3. Center and trace the dome.

Remove the cake ring and position the dome in the center of first circle. Make sure the space between the dome and the ring is equal on all sides.



4. Tape acetate on top of the paper.

Use removable masking tape to secure the acetate sheet on top of the paper. (The acetate will prevent the silicone from sticking to the sheetpan.)



5. Add weight to the dome.

One pound of oil-based clay (Klean Klay) is pressed inside the dome. The weight of clay will help anchor the dome onto the acetate. Afterward, clean any oily fingerprints off the dome surface.



6. Center the dome on acetate.

Reposition the dome onto its outline. Make sure the dome is sitting flat on the acetate. If there are gaps, it's likely the sheetpan is warped and should not be used for this project.



7. Prepare the registration keys.

Fill the centers of thirteen 1/4" acorn nuts (from hardware store) with the oil clay. *Not shown:* Use a small knife to scrape the clay flush with the bottom edge of the acorn nut.



8. Glue the registration keys in place.

Put a drop of Elmer's craft glue on the bottom (clay filled) side of the acorn nut. Dab the glue-drop with your fingertip (to remove excess) and place next to the dome. Put keys at the North, South, East and West positions.



9. Glue remaining keys in place.

Visualize the dome perimeter as a clock face and put keys at each hour point. Put the thirteenth key right next to another key. The double key will help you register the finished mold together in step 42.



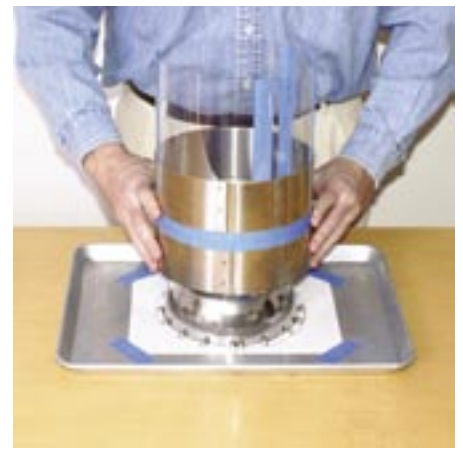
10. Prepare the acetate liner.

Tape four acetate sheets together along the vertical (long) edge of the acetate. Using any less than four sheets will not provide enough 'slip' to release the ring in step 25.



11. Tape the liner in the cake ring.

Tape two cakes rings together and unroll the acetate liner flat inside of the ring. While expanding acetate tight against the ring, tape where acetate overlaps. DO NOT tape it to the metal ring at any place.



12. Position the ring over the dome.

First, verify the acetate is held tight (by friction) against the inside walls of the ring. Next, place the ring over the dome and be careful not to bump the registration keys.



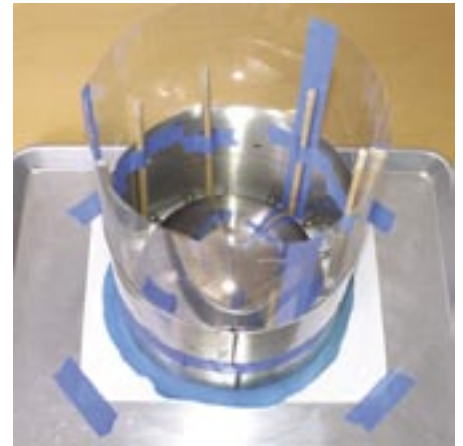
13. Prepare the dowel braces.

Cut eight 8-inch sections of 1/4" dowel rod. A sharp pair of wire cutters will work if you do not have a saw. The dowels will provide exterior support for the finished mold (step 43).



14. Position the dowel braces.

This step is tricky. Put short strips of tape near the top of the dowel rods and carefully tape them inside the cake ring in between the acorn keys at the bottom. Press the dowels flush against the inside wall of the ring.



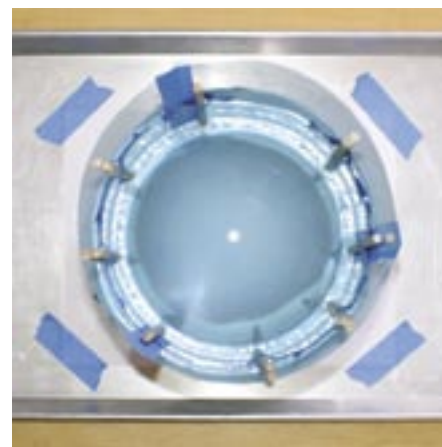
15. Overview.

The dome is centered in the cake ring. The acorn keys are glued in place. The dowel rods are taped to the inside walls. *Not shown:* Before the dowels were inserted in step 14, a coil of (blue) clay was sealed around the base of the cake ring.



16. Apply a glaze coat of silicone.

200 grams of GeoPress™ base and 20 grams of catalyst are mixed together until a uniform blue color is achieved. Pour in a thin stream to force air bubbles to stretch and burst before entering the mold box. Pour in a circular motion to cover the dome.



17. Allow the glaze coat to cure.

Allow the silicone to cure for 24 hours before proceeding. When cured, the glaze layer will secure the dome onto the acetate, preventing it from moving or floating when additional silicone is poured over it in step 24.



18. Working with recycled silicone.

1000 grams of GeoPress base are weighed out. Recycled silicone will bond perfectly to virgin material as long as certain ratios are followed. *Note:* The recycled silicone material used in this demonstration was shredded by an industrial machine.



19. Add the silicone thinner.
150 grams (15%) of thinner is added to the base. Silicone thinner is an ingredient that already exists in the silicone base. It is a clear 'watery' oil that will make the silicone softer.



20. Mix the base and thinner:
Mix the thinner until it is absorbed into the base. If more than 15% thinner is added, the mold will be weak and have an oily surface. *Important note:* This formula should only be used for making displays, not for casting food for consumption.



21. Add the catalyst.
100 grams of catalyst (10% of base weight) is added. *Reminder:* When working with liquid silicone, gloves and safety glasses should be worn. Don't mix or use liquid silicone where food is prepared. Set aside a special area for your mold-making projects.



22. Mix the catalyst.
Mix the materials together until a uniform blue color is achieved. Be sure to scrape the side walls and bottom of the mixing bucket to ensure that all the material gets catalyzed.



23. Add the recycled silicone.
400 grams of shredded silicone (regrind) is added. Mix thoroughly so that all of the recycled material is coated with liquid silicone.



24. Pour the silicone.
The silicone will look and pour like lumpy oatmeal. This is the normal consistency, given the high volume of 'regrind' in the batch. Pour silicone 1/4" above the top of the dome and allow to cure for 24 hours.



25. Remove the top cake ring.
After 24 hours cure time, use a screwdriver to pry the top ring apart. *Note:* If the silicone still feels tacky after 24 hours, allow it to cure longer. (Cool environments will slow the cure of silicone, warm ones will accelerate it.)



26. Remove the bottom cake ring.
If the bottom ring is difficult to remove, place a large metal can beneath the dome and push the ring down. If it feels stuck, slide a butter knife between the ring and acetate to help release the suction.



27. Remove the dowels.
First, remove the acetate sheet and save for re-use. Next, cut a slit above each dowel and remove. Save them for re-use. *Not shown:* A scissor tip was used to gently lift the acorn keys out of the silicone mold.



28. Put release agent on the mold.
Before making the second pour, a thin (non-gloppy) layer of Vaseline is brushed onto all exposed silicone surfaces. Without it, the second pour will bond to the first. Use a Q-tip to put release agent in the keys. (DO NOT remove the dome.)



29. Add a clay gasket inside the dome.
A one-inch coil of clay is applied along the rim of the dome. Do not cover the top metal edge with clay. It must be visible so the second dome can be centered on top of it. (The clay gasket will prevent liquid silicone from leaking into the dome.)



30. Attach a pouring gate to the dome.
A plastic bottle cap is filled with clay and pressed onto the center point of the dome. The cap will leave a negative space in the silicone and create a pouring hole in the finished mold (step 41).



31. Align and set the second dome.
Not shown: To help stabilize the second dome, it was partially filled with clay. It is critical to align the dome halves directly on top of each other. If they are off-center, the finished mold will have a large seam line.



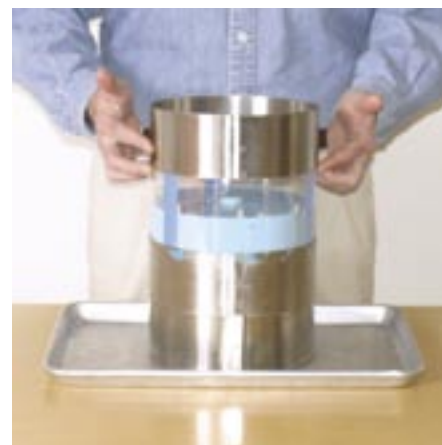
32. Reassemble the mold box.
First, re-insert the dowel rods into their tracks. Second, wrap the acetate sheet around the silicone mold, making sure the acetate is not wrinkled or kinked. Next, set all three cake rings around the acetate.



33. Apply a glaze coat of silicone.
200 grams of GeoPress base and 20 grams of catalyst are mixed together. Pour in a thin stream (needling) while covering the dome in a circular motion. Allow the silicone to cure for 24 hours.



34. Mix the recycled silicone.
Use the same formula as before: 1000 grams base, 150 grams thinner, 100 grams catalyst, 400 grams recycled silicone. Pour the batch into the mold box and allow it to cure for 24-48 hours.



35. Disassemble the mold box.
Once the silicone has cured (no longer tacky to the touch) remove all of the rings.



36. Remove the acetate sheet.
Acetate provides a physical space (1 millimeter) between the ring and the silicone, allowing easy release. Vaseline alone will not provide enough 'slip' to release the silicone from the rings.



37. Remove the dowel braces.
As before, the dowel braces are removed. Keep them for re-use.



38. Separate the mold halves.
If the release agent was properly applied, the mold will split apart with little effort. If the mold sticks, salvage by using a razor knife to cut bonded areas apart. (Notice how the acorn keys have been translated into silicone.)



39. Unmold the metal domes.
Although the silicone is flexible, it will require force to push the rigid dome out of the mold. Pulling the silicone from the top edge of the dome will help release the vacuum between the silicone and the metal.



40. Trim excess silicone off the mold.
Use manicure scissors to remove excess silicone (flash) from the outer perimeter of the mold. **DO NOT** trim any silicone from the inside dome area. It will create flaws on the detail surface of your mold.



41. Overview of the finished mold.
Notice the pouring hole left when the bottle cap was removed. Before using the mold, wash it in warm soapy water (no scouring pads) and bake in an oven at 300°F for 3 hours to complete the cure.



42. Put the mold halves together.
Using the double acorn key (created in step 9) as reference, align the two mold halves on top of each other. *Not shown:* The dowel 'tracks' were trimmed slightly to make the dowels easier to reinsert.



43. Insert the dowel braces.
Slide the dowels down into their tracks. They will provide external support and help prevent the mold from distorting when filled with hot sugar.



44. Wrap the mold with plastic.
Filling a large mold with boiling hot sugar can be dangerous if the mold comes apart unexpectedly. To avoid this, wrap several layers of plastic around the mold. This will help hold it together and keep the outside surface clean.



45. The finished mold is ready to use.
Even though this mold weighs eight pounds, thirty percent of it is recycled material. That is a great savings to you and a help to our planet. To learn more about mold making, visit **Tips & Tools** at www.ChicagoMoldSchool.com.