

Making Fake Wax Cylinders for a Fake Cylinder Phonograph

By Jim Scott - September 2014

Phonographic cylinders were made of wax, usually black wax, and later of an early hard plastic known as celluloid. The standard size was 4" long and 2.25" in diameter.



A reasonable facsimile of a wax cylinder can be made for use as a prop in a play.

Here's the basic method. The ugly details will be described later.

First you need a mold, starting with a cylinder with a diameter of 2.25". I used a Pam spray can with the top cut off, leaving a height of 4.5". (A soda can is too wide, and its metal is too thin.) Before cutting the empty Pam spray can, wrap it in a towel, and hammer a sharp

point such as an ice pick into the can, near the top, to let any remaining compressed gas out. Then use a hacksaw to cut the can to a height of 4.5". Use a rounded file to remove any burrs from the cut edge.



That's the outside of the mold. For the inside, a standard toilet paper tube is just right.

There's one more piece. The completed wax cylinder won't slide out of the can on its own. I used a sheet of hobbyist styrene, 0.010" thick, about 4.5" high, and long enough to overlap itself and form a plastic tube snug against the inside of the can. Put these elements together, and you have the mold.

For wax, I used 12 oz. packets of Country Lane Candle Supplies black granulated wax, \$3.99 each. Four packets made 18 cylinders. Other alternatives might be to use uncolored wax plus black wax dye, or just melt a large black candle - but make sure it's black all the way through, not just at the surface.

To melt the wax, you can make an ad hoc pot using a metal can and a pair of locking pliers. Fill the can with wax granules and put the can into a shallow pot of water over a stovetop burner. Turn the heat to high initially, and then turn it to low when the water is almost hot enough to boil. It takes about 20-25 minutes for all the wax in the can to melt completely.





I don't know whether it was necessary, but after the wax was melted, I took the can out of the water and let it cool for five minutes before pouring. After about 15 minutes, the wax starts to harden again.

Pour the melted black wax between the plastic tube and the cardboard tube, until it reaches the height of the cardboard tube. Wait for several hours until it's completely cool and hard, then

slide the plastic tube and everything inside it out of the can. Peel away the plastic by unrolling it, and there you are. Use a knife to bevel the top end of the wax cylinder. The cardboard tube can be left in place, or it can be removed with some effort.

Now comes the ugly part. First, even after cooling five minutes, the wax is very fluid, and it will not stay where you want it, between the plastic tube and the cardboard tube. It will fill the inside of the cardboard tube, and even rise between the inside surface of the can and the outside surface of the plastic tube. In addition, the shape of the Pam can is such that some of the wax will settle into the bottom of the can, below the cardboard tube.



To deal with these issues, I made use of a supply of clay that I had on hand. First, put clay in the bottom of the Pam can to make it a flat surface. Then cut a circle of the styrene material, and put it on top of the clay to make a floor for the mold.

Just before making a wax cylinder, put another thin layer of clay on top of this floor, making sure it's flat and covers the entire area. Then prepare the plastic tube by using Scotch tape to make it the maximum diameter that will fit into the can. Use more tape to seal the vertical seams of the plastic tube, both inside and outside. This is to prevent melted wax from getting between the layers of plastic.

Slide the plastic tube into the can and press it slightly into the clay. This is to prevent melted wax from coming up between the plastic tube and the inside of the can.

Examine the cardboard tube, and use tape as necessary to seal up any holes in it. Insert the cardboard tube into the can, **making sure that it's centered at the bottom as well as at the top.** (If the cardboard tube is significantly off-center, the resulting wax cylinder will be too thick on one side, and too thin on the other side - maybe so thin that the cylinder breaks easily.) Put more clay into the cardboard tube, enough to form a thick layer at the bottom, and press it

down (with a thick dowel) to make a plug, sealed against the inside of the cardboard tube. This is to prevent melted wax from rising inside the cardboard tube.

Finally, use tape to seal the top edge of the can against the plastic tube. This is to prevent melted wax that accidentally goes outside the can from getting between the can and the plastic tube.

At this point the mold is ready. Place it on top of a flat-bottomed metal tray, near the stove where the wax is melting. When pouring the wax into the mold, you're likely to have a little of it drip on the outside. Let it harden on the tray, then scrape it up later for reuse. (Note that the black dye can permanently spot some surfaces.)

You'll probably also find that a little of the wax drips inside the cardboard tube. Try not to worry about it.

As the hot wax cylinder cools in the first few minutes, the top surface will settle a little lower. You might want to add some more melted wax to bring it back up to the top edge of the cardboard tube.

Hours later, when everything is cool, start by using a knife to cut the tape that seals the top edge of the can to the plastic tube. If no wax has gotten into the wrong places, the plastic tube and its contents should slide fairly easily out of the can, perhaps with a little twisting. Be careful not to crack the wax cylinder.

Now cut the tape that holds the plastic tube together, and unwrap the plastic tube from the wax cylinder.

Remove the clay plug from the bottom end of the cardboard tube. Use a dull knife to scrape out any clay or wax on the inside of the cardboard tube.

As mentioned above, use a knife to bevel the top edge of the wax cylinder. If you have serious imperfections at the top edge of the wax cylinder, you might be able to patch them the next time around by dipping the tip of a spatula into the pot of melted wax, and then slathering soft wax onto the trouble spots. After this new wax cools, trim it to shape.

If the wax cylinder cracks in such a way that a large chunk is in danger of falling out, use black plastic tape to hold it together at that point. The tape will be barely visible next to the wax.

At best, the outside surface of the wax cylinder will not be perfect and shiny. If you want to improve it, the simplest way is simply to spray-paint the cylinder with black paint. Amazingly, paint seems to adhere to wax.