Tag Coating 101

This is an *informal* protocol for coating your acoustic tags, with hints and suggestions so you can learn from our mistakes. If you need any further information please feel free to contact me.

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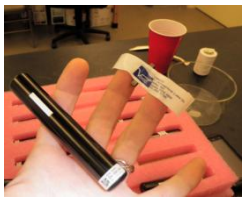
Required Materials:
VEMCO acoustic transmitters
- Tag options: http://www.vemco.com/products/transmitters/index.php

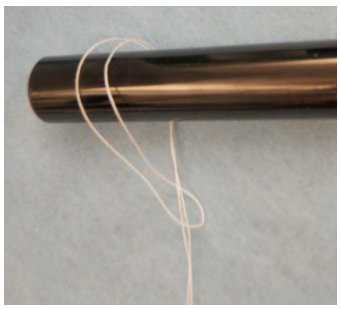
Platinum Silicone Elastomer (Factor II, Inc.)
- Ordering information: http://www.factor2.com/MDX4_4210_Replacement_p/a-103.htm
- Product information: http://www.glidewelldental.com/downloads/dentist/services/aveoTSD-product-information-dow-corning.pdf
- Note that the Elastomer requires an affidavit to be filed with Factor II. They keep it on files, so you only have to complete it once.

String for hanging tags
Racks for drying (drying oven optional)
Hooks to hang tags while drying (we use opened paper clips)
Scale
Mixing vessel (preferably glass)
Mixing tool (we use a stainless steel scoopula)
Lab wrap or newspaper for easy clean-up under the drying racks

Preparing the transmitters



To start, it is important to remove magnets from all tags and make sure they are operational by listening for the ping. You can do this either by holding it up to your ear (the ping is audible) or using a VR100 and checking the tag codes as well. If a VR100 is available, I suggest doing that so you can make sure your tag codes are showing up correctly. It is obviously better and easier to determine if the transmitter is working before you coat them, rather than after you have gone through the whole coating process.



I usually prepare the string and tie the transmitters up first so they are all ready to go prior to coating, depending on the number of tags, I may set all of this up the night before and just coat tags the following morning, as coating can get a bit messy.

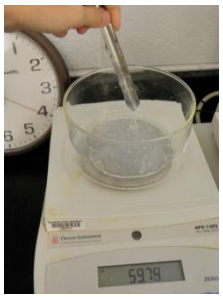
Normally, I make a loop and pull both ends of the string through it around the tag, pulling it tight (see picture). I have tried various knots, but because of the size of the string, it is hard to get it to tighten enough. This seems to work the best.

Then I just make a loop at the other end in order to hang the tags to dry. It is also useful to hook your bent paperclip or other hook on the hanging loop, so you are ready to go when you are coating the tags and you don't have to deal with trying to get the hook through the loop with elastomer on your hands.

Preparing the elastomer:

The silicone elastomer is a two part kit, with the silicone elastomer (large jar – Part A) and the crosslinker (small bottle – Part B). In order to get it to set correctly, you have to measure out a 10:1 ratio (A:B) ***by weight*** (not by volume *****if you measure by volume, it will take much longer to set, if it sets up at all*****).

The jar has 454 grams of silicone elastomer in it, and that is usually enough to coat all of our tags for the season. I have found that as you coat more tags, you get better at judging how much you will need and will start to use less. It is better to make extra and not run out, instead of having to mix up more half way through coating.

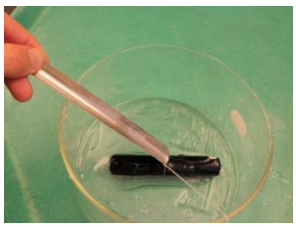


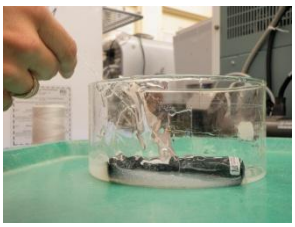
Measure out the silicone elastomer part first (Part A) in a glass container that is large enough to fit your tag fully for easy coating (I usually use a Petri dish). Usually 150 or 200 grams is enough to do one of our batches of V16 tags. I usually use a stainless steel scoopula to measure out the elastomer. Make sure to clean off any excess elastomer from the scoopula. Once that is done, tare the scale to measure the appropriate amount of crosslinker (15 or 20 grams respective to your elastomer). To measure out the crosslinker, I usually pour the initial amount slowly and then use a glass pipette or eye dropper to add the last milligrams to prevent adding too much. Once both parts are added, use the clean scoopula (or other tool) to stir the two components. You should be able to feel a change in the consistence of the elastomer as you mix (I usually mix for about 5 minutes). There will be air bubble visible in the elastomer, but they will dissipate once you coat the tags. You can use a vacuum to get rid of the bubbles, but we have never had issues.

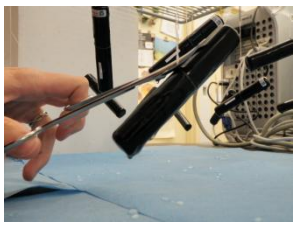
Coating the tags:

The elastomer is inert, so there is no chance of harm if it comes into contact with your skin. I do not suggest wearing any gloves when you are actually coating the tags. It may be messy, but ***any latex will cause the elastomer not to set correctly*** (we has learned this one from personal experience).

Take a tag that has a string looped on it and place it in the elastomer. Use the scoopula or other tool to coat the tag and scrape down excess elastomer (see images below).







Make sure you have a decent size area to allow your tags to dry as you do not want them touching eachother (that causes nothing but frustration). Depending you what is available to you and your time line, you can either let your tags air dry or use a drying oven. We tend to just let the tags air dry as it takes approximately 24 hours and there is no chance of damaging the tags from exposure to heat. When we have used a drying oven, the bottom was covered with aluminum foil to catch any drips and the oven was turned on to its lowest setting (I try not to go above 25°C) – basically to be room temperature but with dry air. We normally use oven racks or refrigerator racks creatively propped up to dry our tags and put newspaper or lab wrap on the counter to catch any drips. Give the tags at least 24 hours to dry if they are not in an oven, if there is higher humidity in the area you are drying them or the proportions were off slightly, it may take a little longer to dry. If you use a drying oven, they will set faster than 24 hours.

Once they are set, remove the tags from the hooks, cut the strings and any drips of elastomer that may have dried on the tag. They return the magnets to deactivate the tags until you are ready to deploy them.

As I mentioned it is pretty straight forward as long as you measure your proportions correctly, mix thoroughly, and do not use anything latex. If you have any issues or questions, please feel free to contact me.