Article

Hearing Aid Repair & Modification Using UV Materials

Part Three: Repairing Cracks in the Hearing Aid Shell

Have you ever worked in a fast paced environment that demanded you get things done quickly? I once worked in a repair lab where my numbers were looked at every day, and if I didn't get at least a certain number of hearing aids repaired, I heard about it. That type of mentality just wasn't conducive to my work ethic, but it made me want to take shortcuts sometimes, which I felt sold the customer short. "Hey, they sent it in to have the volume control replaced – what are you doing fixing the crack in the shell?"
Oh, I can understand the question. This is a business and the more repairs we can flush through the more time we have to work on more hearing aids.
After all, they weren't complaining about the crack in the shell, and I think for the most part they don't. A crack doesn't impact the sound quality, and it was probably caused by being dropped or partially stepped or sat on, so most customers feel it is their fault anyway. But still, if it can be repaired quickly and easily what a testimony to the service they received. I'll give you my own testimony about this in a moment.

A definition is a good place to start
First of all, a cracked shell can mean a variety of things. It can exist by itself as a single line appearing in the shell, or it can be as complex as a spidering behemoth emitting from a hole or puncture. But whatever the shape or form, a crack is tiny separation of the shell material resulting in a visible line in the shell cause by some physical stress.

The common "new guy" mistake
The first time I tried to fix a cracked shell I thought it was going to be a cakewalk. I thought, "I'll just slap some lacquer on this and be done with it". Well, it doesn't quite work that way. The reason the crack is visible is because there is actually a minute space where the shell is separated. I found out the hard way if you try to cover a crack with lacquer, you will end up with a nice shiny crack. If you try to cover up a crack with thicker gel or shell material you can cover the crack, but the hearing aid will probably not fit any more. To make the crack go away the space needs to be filled with something, not covered with something.

Choose your method
Let's go the easy route first. The first thing you need to figure out is if you can get any thin UV material, such as Fotoplast-Lacquer, to seep into the crack. If the crack is wide enough to do this then your job is just about done. Just a tiny bit on the tip of the application brush is all you need and if it migrates into the crack simply place the unit under the UV lamps and it will be done in a jiffy.

If you can't get the lacquer into the crack, then it is time to bring out the big artillery:

Sometimes you need to destroy something to make it better. No, this is not a political statement. If you can't get the lacquer to migrate into the crack, you are going to need to make the crack bigger so you can get some material in there. Using a dremel tool and small burr, carefully dig along the crack. You are probably not going to dig all the way through the shell as you may damage some internal components. Just go deep enough where you are almost going through the shell. Now, the slot you end up with is probably going to be too wide to fill with lacquer so you will need to patch this with shell material, such as Fotoplast-S/IO, or Fotoplast-Gel. And you already know how I feel about matching the color, especially in this situation. If you are going to use clear on a colored shell you may as well leave the original crack alone – it will look better. Once the crack is filled, place the unit under the UV lamps and let it cure for a minute. Wipe any oxidizing layer with an alcohol wipe and buff smooth.

What About That Spidering Behemoth?
If you have a shell with a puncture or hole with spidering cracks you are going to need a little patience. Your gut instinct is going to be to go after that hole first, and that may work if the hole is small. In fact, if it is small enough you can drill it out – including the cracks if they don't go out very far – and patch it like we

discussed in the September 03 Newsletter. But more than likely the cracks reach further then that so you will need to deal with them first.

Work from the extremities in is the motto here. Using the same techniques as above try to seep some lacquer into the far end of the cracks. After the cracks are filled and cured, then tackle the hole as we discussed in our September Newsletter.

If you need to do some other internal work on the hearing aid anyway, by all means cut the hearing aid open first before trying to fix the shell. It will make things a lot easier.

Oh Yeah, That Testimony
So is this all worth it? I mean come on, fixing that small crack in the shell when you didn't really need to? Our company received a hand written letter once from a woman who had sent in one of her hearing aids because it wasn't working. She was so thankful to get it back, but that wasn't why she was writing. She was certain there had been some mistake. She thought she had received a brand new hearing aid because the one she sent in had a crack in it. She didn't know she was talking to me, but I remembered her name and remembered fixing her hearing aid.

It was worth it to me, and to her.

About the Author
Chris Perkins is the owner of Lightning Enterprises, and facilitates the Lightning Enterprises newsletter. He has worked in the hearing aid industry since 1991 in hearing aid manufacturing and product development, as well as equipment and process consulting.