

## Fixing a Leaking Aquarium

**Aquariums that won't hold water, and the people who own them.**

*By Leighton A. Irwin*

If you've been in the hobby for a few years you probably have acquired several tanks. And sometimes, just sometimes, you will either have a leaker or crack a pane of glass. It happens.

Most aquarium manufacturers offer a guarantee of some sort, ranging — amazingly enough — from 30 days to 10 years. The most common is a 90-day warranty. And, of course, the terms and conditions of the warranties can and do vary.

I know of one company that offers the guarantee from the date of manufacture! If the tank sits at a wholesaler for a few weeks and then at a retailers for a few more, by the time you get it home much of the warranty will be gone.

To be honest, leakers are a bit of a rarity these days. However, if you buy used tanks or end up moving tanks, they do become more prone to problems.

Repairing the average leak is not that difficult. It is time consuming, can be messy and can try your patience, but it is a lot cheaper than buying a new tank. There are a few models that can be difficult to repair because the glass is set into a groove in the trim rather than on top of the bottom pane. The bottom of the tank is then placed into the frame. These are almost impossible to get apart. It can be done, but unless it holds 50 gallons or more, it's not worthwhile.

### What You Will Need

There are a some tools you will need if you plan on doing your own repairs, and a few others that will just make the job a bit easier. You will obviously need silicone sealant, which is readily available at local hardware stores, and often at a much better price than at other types of retail outlets.

A word of caution though — be sure you buy aquarium-safe sealant. Only the clear silicone sealant is safe, and even then you must check the label. Most packages will note if the sealant is safe for aquariums. Many sealants contain chemicals to inhibit the formation of mildew, and these are toxic to fish. You may want to purchase a large tube that will fit a caulking gun for ease of use.

You will also need something to cut away the old silicone. I prefer single-edged razor blades, which can be purchased at paint supply or hardware stores, and some drug stores. You can also buy a blade holder that is useful, but I find that in the corners it's necessary to use just a blade. Disposable razor knives work, but they seem to be rather prone to breaking when working in corners.

You will need a supply of paper towels or clean rags. Other items that are handy are masking tape, a small flat head screwdriver, needlenose pliers and assorted dental-type picks. For the last item see your automotive supply store.

### Fixing The Leak

First, you have to find the actual leak. Drain and dry the tank. If it is a vertical seam that is leaking you probably already know where the leak is. If it is a bottom seam (and most are) finding the exact location of the leak can be tricky.

You will find it a little easier if you remove the bottom trim — unless your tank has the glass set into the trim, as noted above. Otherwise, the leaking water will travel along the trim, and may even appear on a different side from the actual leak! The trim is just that. It does not add any strength to the aquarium.

Place your tank on some newspaper on a dry flat surface and start filling it. When you see a damp spot appear on the paper, mark the tank. If you don't mark the spot I'll almost guarantee you will lose the leak location when you're ready to repair it. Look inside the tank and carefully search the area where the leak is. You might notice a slight difference in the way the silicone looks, or even spot water under it.

Drain the tank and dry it thoroughly. Run you finger along the silicone where you marked the leak. If the leak is just a pinhole you might be able to fix it with just a dab of silicone over the hole. Wet your finger and smooth out the dab. Silicone will not stick to your wet finger. Unfortunately, it does not stick very well to old silicone either. So, this type of repair often does not work. It is worth a try on minor leaks, though. When the sealant has completely cured (about 48

hours), refill the tank and leave it for several days to see if the repair holds.

(The most common tank to develop a leak seems to be the standard 35-gallon job. Either the front or rear panel will start to pull away from the bottom at about mid point. A 35-gallon tank is at the maximum size for the thickness of glass used. If you were to put a yardstick along the front top of a full 35-gallon you would be amazed. I'll bet you didn't think glass could bend that much.)

Assuming you have discovered that the leak site is larger than a pinhole, or the pinhole repair didn't work, take a razor blade and start cutting away the old sealant and remove it for several inches on either side of the leak. You will have to cut the old sealant away on both surfaces. If you notice any moisture at the end of your planned cut, keep going.

Usually I cut the old sealant away almost to the corners on a 35-gallon tank. This is more work, but there is less chance of having problems getting a leak-proof seam. Now make a cut at right angles to the seam at both ends. Take a firm grip on one end and just peel the old silicone off. Maybe. Usually you have to go back and cut away the remaining sealant until, with time and effort, it's all removed.

Run the razor blade between the two pieces of glass, pressing out on the vertical panel with steady pressure at the bottom. Use dental-type picks, small screwdrivers or whatever to remove as much silicone as you can. Take your time, and persevere. On larger tanks, you may wish to remove the panel. More on that later.

If the leak is in or near a corner, you will find removing the old sealant a little tricky. Be sure of your grip on the blade because it can twist out of your hand and inflict a nasty cut. A pair of good needlenose pliers is invaluable here. You can grab a piece of silicone with the pliers and pull it away. This will enable you to see where to cut next. A lot less chance of cutting yourself, too.

After you have removed all of the silicone, wipe down the area to be repaired with acetone or vinegar to clean the glass. Do not use Varsol or similar solvents as they will leave a toxic residue!

If it is warm enough, work outside and up-wind to avoid the fumes from the acetone and later the raw silicone. This is easier said than done because you will most likely have your head buried in the tank. Do not smoke! Acetone is volatile. However, it will evaporate rapidly in warm weather.

Now comes the messy part. Run an even bead of silicone along the area to be repaired, overlapping the old at both ends. Although silicone does not adhere to old silicone, it will stick sufficiently on non-stressed areas. If it is a corner repair, be sure the silicone gets right into the corner. On a bottom repair push out the side of the tank as much as you can and run your bead. This is easier said than done, but it is possible.

Now wrap your finger with masking tape and wet it with water (or just wet your finger) and run your finger along the bead to smooth it out. The repaired area should now look like the rest of the tank, but don't worry if you slopped a bit. It is easy to remove with your trusty razor blade once the silicone is dry. If you try to do it while the silicone is fresh you will make a mess!

If you are using masking tape on your finger, wet your other hand and remove and discard the tape. From personal experience I can tell you that you'll probably find silicone somewhere on your arms or hands and have no idea how it ever got there.

Vinegar is not very effective in this case, but acetone will work nicely. Nail polish remover is basically acetone, so you might use it to clean your hands. I wouldn't recommend polish remover on the tank because of the other additives. It's also pricey. You might wish to use a hand cream to put moisture back into your skin because the acetone will really dry it out. Allow at least 48 hours for the silicone to dry and then test the tank to ensure you actually did fix the leak.

#### Repairing Cracks

For repairing cracks you will need glass (in most cases) and probably a glass cutter. The majority of cracks will be on the bottom of the tank, unless they were caused by a blow (falling rockwork).

An aquarium stand that has a high spot or is not steady may cause the aquarium to twist, and the bottom panel to crack. My stands and racks are wooden, and I use a sheet of styrofoam between each stand and tank. This helps alleviate any high spots and some of the twisting.

If the crack is a small one near a corner it will probably be an easy fix. Drain, clean and dry the tank, getting all the

moisture out of the crack. A hair dryer is good for this. A heat paint stripper would work, but the high heat could damage the trim or even cause further cracking of the tank. You will probably want to remove the trim anyway. It's only held on by silicone. As discussed earlier, if you have one of those tanks with the outer panel set down into a groove on the bottom trim instead of on the bottom panel, it is almost impossible to remove the trim.

To repair the crack, just run a bead of silicone along the crack on both sides. In most cases this will work, but it is not pretty. A long crack can normally be fixed using a band-aid method. Again, the result is not pretty, but if the crack is on the bottom or the back, it can be hidden.

The best method for repairing a crack is to use two pieces of glass that are a little longer than the crack, placed so they overlap both ends of the crack or as close to the edges of the tank as you can get. You can often get away with one piece on the inside if you find it difficult to use a piece on the outside bottom. Sometimes the bottom trim is such that the tank would end up sitting on the band-aid glass. The result would be a completely broken bottom!

Cutting glass is not difficult, but it gets easier with practice. Use a straight edge as a guide for the glass cutter. Place the straight edge along the intended cut line, ensuring that the cutting tip is exactly where you want it. Unlike wood, you cannot cut just a little more away. Hold the straight edge firmly and run the cutter the full length of the glass in one stroke. Overlapping lines will almost always result in a broken piece of glass. Do not press too hard, but use enough pressure to ensure a clear etch. Many of the pros dip their cutters in a mixture of kerosene and oil, but not too many of us hobbyists have that kind of stuff sitting around.

Put the glass over the edge of a table or a piece of wood and press down sharply at the scribe mark. If done correctly, the glass will snap right along the mark. You may wish to practice first on scrap glass. Remember, cutting really narrow strips is almost impossible for an amateur, and difficult even for the professional. It would be wise to wear eye protection and heavy gloves.

A tip here: buy a top-quality glass cutter. The cheap hardware store ones just will not cut it (bad pun intended).

You might want to get your local glass company or hardware store to do the cutting for you. They will charge, but if you can watch you will get the idea. This is one place where seeing it done is far better than the written word.

If the glass is thicker than 3/8-inch you may have to do a bit of searching to find someone to cut it. This is thicker glass than hardware stores and many window stores are prepared to cut.

Clean all new glass with white vinegar or acetone. New glass is shipped with an oil coating to protect it. The silicone will not adhere to the glass properly if this film is not removed.

Old or salvage glass tends to be brittle, and if scratched will often break at the scratch rather than along your mark. Salvage glass often has a buildup of dirt or chemicals that requires cleaning before you can properly scribe it. Again, acetone is the cleaner of choice.

Back to the repair. Run a bead of silicone along the crack. Then run a bead near the edges of the band aid glass and criss-cross along the length. Place the glass patch over the crack and press into place. Make sure you have a seal on all sides by running a bead along all edges of the band-aid. Repeat on the other side. This is not pretty, but it works.

#### Blown Panels

The term "blown" panel refers to when a side of the aquarium is coming out of its seams. This is usually caused when an aquarium is not level or when the assembly is inferior. If you do not notice it in time, the whole panel goes plop on the floor and the result is most regrettable.

More often, you will notice the problem before it becomes this extreme, although the floor will probably still be damp. Most seams will start to leak a little bit, giving you a chance to spot things before the entire contents of the aquarium is on your floor.

If you need a new panel and you are working with a large tank, you may have a problem. Thick glass is hard to cut. Your local pet store might be able to get you a new panel from their tank supplier. However, many manufacturers will insist on doing the repair themselves.

As with previous repairs, drain the tank, taking out all the equipment and fish first, and clean the tank. Remove the trim. This time you will need to remove all of it. At this point you might want to try just a seam repair. Normally this will not

work, but you might be lucky. Otherwise, you will have to remove the entire panel and reseal. This is hard work. The silicone will have to be cut away on all seams. Start with a new razor blade and be prepared to use two or three blades. The thicker the glass, the tougher it is to cut through the silicone. With enough time and patience, you will get all the way through the seam. Just keep thinking how much a new tank would cost.

Once you have the silicone cut away, remove the panel. Push or pull on it with an even pressure — do not jerk or twist it. Yes, you think you have all the silicone cut away, but you are almost certain to find a section you missed.

It is tough going. I once put a 12-year-old, in stocking feet, in a 125-gallon tank and had him push on the end panel. It worked. The thick glass is pretty strong, but it can still break if it is twisted, so be careful.

Once the panel is removed, clean all the old sealant off all surfaces — acetone time. Now run a bead of silicone on all surfaces in the tank where the glass will touch. Carefully replace the panel. Use masking tape on the outside to hold it in place. Run a bead on the inside and smooth out, as described earlier. I have used a ratchet tie-down to pull the sides together, but that really is overkill.

Once the silicone is dry (at least 48 hours, but longer is better), test the repair. If all is okay, cut away any excess silicone and replace the trim. A couple of dabs of silicone will hold it in place. Congratulations! You have just saved yourself the cost of a new tank.

Please be very careful. Glass and razors are sharp (no kidding!). Picks can put a real neat hole in you, and acetone is extremely volatile. The fumes can also do a real number on you. Good luck!