



Make your own ETCHING UNIT

This chapter will describe how to make your own super-delux etching unit with air pump and temperature controlled heater.

Required materials

- ① an aquarium heater with built in thermostat. Approx (100watts should do it)
- ① an aquarium air pump with some tubing and a bubbler (you might opt for two ore more bubblers)
- ① glass or Acryl (plexiglass)plates
 1. Two times 40 cm x 50 cm (20 inch x16 inch) approx 3mm (1/8 inch)thick
 2. Two times 40 cm x 5 cm (16 inch x 2 inch) approx 3mm (1/8 inch)thick
 3. One 10 cm x 50 cm (20 inch x 4 inch) approx 3mm (1/8 inch)thick
 4. a scrap piece of PLEXI or Acryl material approx 10 by 10 cm (4 inch by 4 inch)
NO GLASS FOR THIS ONE !

If you use Plexiglass (acryl) plates then they should be at least 5mm (1/4 inch) thick.

- ① Silicone glue (the kind used in bathrooms or for securing windows in their frame) , or an acrylic glue if you use the plexiglass.
- ① Fine sanding paper (one sheet medium and on sheet of the finest you can get
- ① Polishing cream and a soft cloth. (not car or shoe polish ! The stuff they use to make glasswork shine .)
- ① Strong working gloves (in case you use glass get some kevlar enforced gloves)
- ① Some pieces of plywood (an empty milk carton or milk-brick will do the trick too)
- ① Holding clamps (the kind carpenters use)
- ① Alcohol (IPA or rubbing alcohol)

Note : Do not cut the glass yourself unless you are skilled in this . Glass is a dangerous material. It can produce razor sharp edges and you can easily cut yourself very badly.

You can obtain glass plates from a hardware store , or do-it- yourself store. They should be able to cut it for you. Sometimes people specialized in aquariums can help you too. Acryl or Plexiglass is easier to obtain andcan easily be processed yourself:

Preparation of the materials

You need to make sure that the edges are smooth and clean of the plates. Yo do this using first the sanding paper (medium) and then the fine sanding paper. As a final touch you can use a cloth with some polishing cream .

Clean the plates using the alcohol. This is to remove any grease that may be left on them. Make sure that after cleaning no fingerprints are left. The grease in your fingerprints will prevent a perfect glueing

of the materials. This will make the box leaky . And that's exactly what we DONT want..

Assembling the main structure

Put one of the 40 by 50 sheets on a working surface (table , workbench). Clean the surface which is facing you using a soft cloth and IPA.

Take one of the long small strips (40 by 5) and clean one of the long edges. Apply an even strip of silicone or acryl glue (in case you use acryl or plexiglass) to this edge.

Put the strip on top of the plate on the workbench.Repeat the same procedure for the other strip.

You should now have a U shaped construction in front of you.

Clean the two top edges (both left and right) . and apply Silicone or Glue on these two edges.

Finally take ths second large piece, clean it and put it on the edges.

You should now have a box with two open edges.

Now you can put the holding clamps over the ends and lock it down. (put some plywood or milk carton paper between the plates and the locking clamp so you don't damage the plates).

Let it dry for some time . The actual drying time depends on the sort of glue you used.

Assembling the tank

When the construction of above has hardened out you take the sheet of 10 by 50 cm and put it the worktop.

Take the construction you already made and put glue or silicone on the edges of one side .

Now put it down in the middle of the plate . You can put a couple of phonebooks or a brick on top of it to keep it pressed down. Again let it dry thoroughly.

You should end up with a construction as shown below.

Installing the air vent and heater

Now the base unit is ready. Due to the large base it will not easily tip over.

Out of the 10 by 10 sheet you now cut a piece of material that fits over the top opening. (see picture below)

In this piece drill a hole just big enough so you can put the heater trough. Now glue this piece down to one of the edges of the box.

Last , but not least , cut a second piece of material where you drill two holes to put tubing trough.

Connect pieces of tubing to the bubblers.

Put some silicone on the back of the bubblers and let them down in the tank. Using a large screwdriver or piece of wood you push them down and let dry.

Put the tubing through the two holes in the sheet you cut and then glue it down on the other edge of the tank.