

Etch It Out

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Copper etching produces a design or pattern in the metal that has a lot of ornamental potential. The pieces themselves are interesting, and etching could be used, for example around the brim of a copper bowl or vessel. Copper-etched pieces could also be worked into larger forged works. Any steel piece with a relatively flat surface can have thin copper plate riveted to it as an accent.

Here's how:

There are a number of different techniques for etching copper, but I think this one is particularly safe and easy. As with all etching techniques, you need an acid and a resist, which is applied to the copper and prevents the acid from affecting the metal. The acid I used was Ferric Nitrate which sold as PCB at Radio Shack. A 10 oz. bottle is about \$5 and it can be used to etch several pieces before becoming exhausted. You can tell the acid is losing its potency when it looks black and sluggish and takes long to get the desired etch. As a resist – and this is the incredibly easy part – you can use Sharpie permanent markers or even better, Sharpie paint pens, which are available in the pen section in your favorite discount store. You can also use tape as a resist. I had interesting results using torn pieces of masking tape and adhesive hole-reinforcers for notebook paper. To start the process, clean your piece of copper thoroughly with a degreasing soap.

I wipe the metal down with denatured alcohol. If desired, tape the back of the piece so it doesn't etch. Or you can sign the back, and your signature will etch, although usually lighter than the front.

Draw your design on the front. With clean metal and fresh acid, you can use fairly detailed designs. Try not to get your fingerprints on the copper as you work. At this point, put on safety glasses and plastic gloves. PCB is not the worst stuff in the world, but a little caution is a good idea. Try not to inhale it, touch, or splash it around. Pour the PCB into a plastic bin

(deep Styrofoam meat trays work). The etching works best when the acid is slightly warm (temper it by placing the bottle in warm water) and if it is agitated while the etching is taking place. I use an old fish tank aerator taped to the bottom of the bin to agitate the acid. It also works fine just tilting the tray back and forth every ten minutes or so. Place your copper piece into the acid **FACE DOWN**. I use the little glass beads you can buy to put in the bottom of flower vases to rest my work on. That allows the acid to get under the piece. It is important to try to get rid of air bubbles once your copper is in the acid. Reach under your copper with a feather and rub it once or twice or gently tap the bin and agitate it to release any bubbles that might cling to the copper. Using tongs, check your work after about an hour. Pieces can remain in the acid until the desired etch is achieved. If a piece stays in too long, the edge of the copper will start to disintegrate. When the etch is complete, stop the acid by soaking the copper in a bowl of ammonia for about 10 minutes. (Watch fumes here!) Rinse thoroughly. The etch can be enhanced by making the metal have more contrast. If you dab the copper with liver of sulfur or another darkening agent, it will turn dark brown. Then, take a fine grade sandpaper or steel wool to bring out the high points. A flat clear-coat will prevent the copper from oxidizing.



Editor's Note: similar information can be found at <http://www.princetonol.com/groups/iad/lessons/middle/Linda-jewelry.htm>