

LEAF PIN by Carol Webb, etched, copper-clad, fine silver, 22K bimetal center. 3.5" x 3.5". Photo Ralph Gabriner



FOUR SQUARE PIN by Carol Webb, etched, copper-clad, fine silver, 18K wires. 2.5" x 2.5".



Acids and resists help you make a permanent mark

etching metal

for jewelry

BY SHARON ELAINE THOMPSON

Etching is one of those words that almost sounds like what it is:

the etching or eating away of metal. In printmaking, this may be accomplished with sharp tools, but more often, the technique uses acids. It results in depressed and raised areas on a sheet of metal and is used to create texture on, transfer images to, or even pierce metal. The resulting etched metal plate can be oxidized, filled with enamel, or inlaid with stone, wood, or other metal. You can choose either to etch away your pattern, leaving it recessed in the metal to create intaglio, or etch away the background, leaving your pattern raised.

This is not a fly-by-the-seat-of-your-pants technique. It is a multi-step process that takes preparation, care, and caution, *particularly when handling acids*. But it gives metal artists enormous opportunities for patterning metal. “Long before Precious Metal Clay, etching was the way to get a kind of relief and embossing on metal,” says Massachusetts jewelry artist and tool designer Karen Christians (www.cleverwerx.com). “I can do things with etching that would be impossible to do otherwise,” she says, such as embellish a surface using photographic source material, or etch wording over an image so that the letters are raised above the surface.

Vermont metalsmith Karen Krieger has selected a group of patterns she has etched into silver sheets from which she then carefully chooses patterned areas to suit her design concept. She uses the frames for each section of her design as a template, moving the opening around on the patterned sheet until she finds the etched area that best suits the piece. Then she saws the section out and fits it to the frame. “The

interesting thing about etching is that you can have a whole variety of tones, from dark to light, depending on the size and the density of the patterning,” says Krieger. This tonal variation can occur in a single sheet, depending on what section she uses and which

direction the pattern runs. “At any given time,” she says, “I’m not using more than 10 patterns, but it looks like I’m using more.”

Carol Webb, a metalsmith from northern California, uses etching to get a level of pattern detail in metal she cannot get by other means. “And the crispness of the image is better with etching,” she adds. Webb uses ferric chloride to etch the copper layer of a copper/fine silver bimetal sheet. Using a variety of patinas, she produces a range of colors in the copper that contrast with the very white fine silver exposed by the etching. Webb also etch-pierces metal, a process that gives the metal edges an organic, softer appearance than those produced by piercing with a saw. Lastly, by etching hard nickel silver, Webb makes her own roller printing plates which are then put through the rolling mill with softer copper or silver. She has also been experimenting with ways to etch multiple layers of metal.

These are just some of the ways you can use etching to create unique patterns on jewelry metal. The etching process can vary in the combinations of metal, acid and resist used. But, basically there are just three parts to etching.

METAL, ACID, RESIST

The first component for etching is the **metal** into which you want to cut your design. You can etch a variety of metals: bronze, brass, copper, and silver. Krieger also uses aluminum. (It is possible to etch gold, but it takes a solution of Aqua Regia — a highly corrosive and dangerous combination of nitric and hydrochloric acids — to do it. *Not recommended for studio use.* If you ever want to try this, work with an experienced etching company.)

The second etching component is the **acid**, also called an etchant or mordant, that does the work of etching or eating away the metal. A variety of acids can be used for etching. Some work better on certain metals than other; some must be used in combination. Some are safer than others, but all must be used carefully and with constant awareness. (Ferric chloride, used for copper, bronze, and brass, and ferric nitrate, used for silver, are technically chemical salts, but they

WINDING HOLE

BROOCH

by Karen Kreiger. Fabricated sterling silver frame inlaid with etched sterling pattern sheet, oxidized with a brushed and sanded finish. 1.25 x 1.25



RIGHT, COPPER
VESSEL WITH
AIRDY PATINA by
Carol Webb, 16
gauge copper.
12" x 7".



act like acids in this context so, for the sake of convenience, we'll continue to refer to them as acids.)

All of these chemicals **MUST** be kept away from children and pets. (See caveats sidebar.) Always get the Material Safety and Data Sheet (MSDS) for the acid and follow instructions and all safety precautions. Because of the health risks associated with using acids incorrectly, some artists, such as Krieger, prefer to send their etching out to a company equipped to do the work. "Because I use so much material, and it requires a fair volume of acid, I have it done for me," says Krieger.

The third component of the process is the **resist**, which blocks the acid's action, leaving part of the metal raised when the etching is finished. A resist can be anything that prevents the action of the acids: Sharpie pens (Christians says the Staedtler red marker has proven most reliable for her), tape, nail polish, asphaltum, model airplane enamel, or laser-printer toner. Traditionally, the metal is completely covered with a resist such as asphaltum, then a sharp tool is used to cut away the resist wherever the artist wants the acid to etch the metal.

The technique used by many metalworkers today, however, actually employs a *photocopy transfer process* to apply the resist to the metal. Although the most correct and descriptive name of the process is photocopy transfer etching, because it involves "photographs" or "photocopying," it has become known as "photo" etching. However, correctly, photoetching involves using a resist of light-sensitive chemicals and photographic processes.

PHOTOCOPY TRANSFER ETCHING GUIDELINES

There are variations in the etching process and everyone develops their own set of steps, but in general, this is what you need to know about photocopy transfer etching. See the demo Phototransfer Copper Etching, page 54 for specific steps.

- 1) **High contrast.** Use only high contrast, black-and-white images. Mid-tone grays do not etch clearly using this technique. Draw your own designs or use commercially available, copyright-free designs, like those in the Dover book series or on clip-art disks. For photographs or images with mid-tones, make a preliminary paper photocopy, darken the gray areas with a pen such as a Sharpie, then rephotocopy onto overhead transparency film or onto PnP (Press and Peel) film. When photocopying your image, use the photocopier's highest contrast setting.
- 2) **Toner, not ink jet.** Work only with laser printer copiers, which use toner, not ink-jet technology, which employs water soluble inks.
- 3) **Clean the metal thoroughly** under running water with fine abrasives or abrasive pads to remove all oily surface contaminants. Metal is clean when water sheets off without a break. Dry the clean metal with a clean paper towel or lint-free cloth, then don't touch the surface with your fingers — the resist will not adhere to your fingerprints. Use gloves if necessary.
- 4) **Warm the metal.** Be sure you have a hot surface on which to warm the metal. (Christians recommends a griddle. Webb uses a drymount press. Others use an iron turned upside down and clamped in a vise.) Place a sheet of paper towel on the hot surface, and place your metal on that. Place the design transfer sheet on the top of the metal. Be sure the toner side of the film is against the metal. Lay another piece of paper towel over that.
- 5) **Iron the image onto the metal** with a hot iron. (The wool or cotton setting works best. Test your process first.) Check carefully to see that the image is transferring. After the image has transferred to the metal, the process differs depending on which transfer medium you're using. If you're using PnP, set the metal and transfer sheet aside on a heat-resistant surface to cool. If you're using overhead transparency film, remove the film while it is still warm. Otherwise,



TRY IT YOURSELF *Southwest Spirit Etched Pendant*

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