

METAL ETCHING 101

#68-007-16

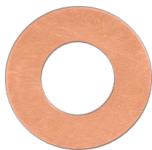
Etching is a method of using chemicals to cut a design or pattern into a metal surface. Etching your own designs into metal is easier than it may sound, and it can be a fun and rewarding way to make your own jewelry! Learn the basics of how to choose your metals, choose your etchants, create or transfer your images with resists, and complete the etching process. Discover how to make a float boat for suspending your designs in etchant — plus find basic etching safety precautions, design considerations, and project ideas.



Rubber-stamp designs etched into sheet metal.

WHAT METALS CAN BE ETCHED?

Because chemical etching actually cuts into the surface of the metal, you want to make sure your metal is thick enough to hold an etched design well. **We recommend using 22-gauge or thicker metal** sheet and pre-cut metal blanks.



22-Gauge Copper Blanks



20-Gauge Sheet (Copper, Brass & Nickel Silver)



18-Gauge Copper Blanks

24-gauge sheet and 24-gauge pre-cut blanks will also work — just be sure to leave 24-gauge items in the chemical bath for less time than you would a thicker metal.

CHOOSING THE RIGHT ETCHANT

Etchant is the chemical (or mixture of chemicals) that you'll use to cut into unprotected parts of your metal and create the finished etched design. It's important to match your metal with an appropriate etchant, because the same metal will react differently to different chemicals (and vice versa).

- Copper, brass and nickel silver can be etched with ferric chloride.
- .999 fine silver & .925 sterling silver can be etched using a ferric nitrate solution or nitric acid. Both these etchants are more dangerous to use than ferric chloride.
- Aluminum etchants include hydrofluoric acid, Kellers etch, and homemade solutions made with copper sulfate and sodium bisulfate.



1 quart
#86-280-01



1 gallon
#86-280-04



#45-210-001



TYPES OF RESISTS

A resist is what you use to protect certain parts of your metal from the etchant. Resists are typically inks (and tapes). You will apply a design or pattern to the metal with your resist. Then, when you dip your metal into the chemical bath, the covered areas will "resist" being eaten away. Those covered areas will be the high points of your design once the etching process is complete.

Different artisans use different resists, and different resists work better with different aesthetic styles and methods — for example using rubber stamps, making a photo transfer, drawing by hand, etc. With practice and experimentation you'll figure out which mediums and methods you prefer, too.

Resists that work on copper, brass, and nickel silver include:



StazOn® & Perfect Medium™ Ink Pads



Press-n-Peel Transfer Film



- StazOn® & Perfect Medium™ Ink Pads work great to add rubber stamp designs to metal. StazOn Cleaner allows you to remove smudged impressions and start over till the image comes out to your satisfaction.



- Press-n-Peel Transfer Film provides an easy way to create detailed photo etched designs. Use a laser printer or copier to print onto the paper, then transfer the image to metal with an iron.

- Sharpie® Permanent Markers are a great resist for hand-drawn designs. Just keep in mind that etchants can undercut designs a little. Don't draw with too fine a line, or details could be lost.

Cities in Bloom Bracelet
by Polly Nobbs-LaRue
Polly used a permanent marker to draw the etched designs on the bracelet finding. Because the lines were too thin, the tufts of grass at the bottom turned into something more like skyscrapers.





BASIC RULES

The basic rules for working with chemicals are simple, but worth revisiting:

- Keep pets and children out of the area.
- Don't get it on your skin or in your eyes. Wash any splashes off immediately.
- Be careful about heating any chemical – there is a potential for toxic gases to form. Ferric chloride works faster when it is slightly warmed. You can accomplish this by putting the bottle in a warm water bath or a heat-plate set on low. Don't try to heat it up on a stove top or in a microwave.
- Get plenty of fresh air.
- Don't breathe in fumes or dust. It is best to clean the etched metal under water to avoid distributing particles into the air.
- Use disposable scrubbies or steel wool to clean your etched metal to avoid contaminating your good brushes, for example, with chemical residues.
- Soak up any spills with baking soda and/or kitty litter.

SAFETY FOR CHEMICALS

Using chemicals doesn't have to be dangerous, so long as you take basic steps to set up your work area to avoid problems. For chemical etching, you need:

1. Rubber gloves (latex or nitrile).
2. Safety goggles. The etching solution might splash, and you don't want that in your eyes.
3. Apron. The etchant will stain your clothes and anything else it touches.
4. Good ventilation (open a window if possible or run an exhaust fan). Never etch in a small enclosed space. Chemical fumes and gases that aren't noticeable in the proper setup can build to dangerous levels in a small space. Outdoors is a great place to etch, weather permitting.
5. Plastic or glass containers for the etchant "bath." We like using the clear plastic tubs from spinach or salad mixes.
6. Baking soda to neutralize the acid.
7. Secure screw-top plastic container to dispose of used etchant.

MORE ON CHEMICAL SAFETY

The chemicals used to etch metals are called mordants. By nature they are caustic – they eat through metal. Yet, for whatever reason, some people are extremely casual about their usage. Some examples:

- Not using proper ventilation
- Sticking their bare hands into a chemical bath
- Not bothering with safety glasses
- Pouring the chemicals into their gardens ...

It's up to each individual to determine the level of risk he or she is ok with. Some chemicals – such as the ferric chloride we use for etching copper and brass – are relatively safe, but they are still chemicals and need to be treated with care.

Ferric chloride is safer than ferric nitrate and nitric acid, two mordants which are used to etch silver. While you don't want to get it on you, ferric chloride will not eat through your skin (muriatic/hydrochloric acid, which is used in some etching recipes, will).

In liquid form (the way Rings & Things sells it), ferric chloride is much safer than dry ferric chloride. It can also be used more than once before being discarded. After it stops etching, finish neutralizing ferric chloride with baking soda and follow the hazardous waste guidelines for where you live.

Please be responsible and ***do not pour chemicals down the drain or on the ground.*** (Note: all used etchants, even "chemical-free" etchants, contain bits of metal and must be disposed of properly.)

METAL ETCHING DESIGN CONSIDERATIONS

Creating attractive etched metal pieces for jewelry requires masking portions of the metal to prevent the etchant from etching those areas. The unetched areas will be the high points on the metal.

Lines need to be at least as wide as the etch will be deep. Lines should be a little wider than how you'd like them to be when the etching is done to allow for the fact that the etchant will typically undercut your design lines a bit.

If you're doing a deep etch, use lines that are at least 1/32" wide. Finer details might be lost.

If you mess up your design, use Stazon cleaner (#86-169-02) to remove the ink and try again. The etchant will eat through faint, blurry or thin ink, so make sure your lines are dark and crisp.



Crystal Vision Necklace
by Sondra Barrington
Sondra used a rubber stamp and ink pad to created this etched design.

STEP-BY-STEP

Steps for etching metal with ferric chloride:

1. Choose your metal(s). Ferric chloride works on copper, brass and nickel silver. It will NOT work on actual silver (fine or sterling). Do NOT use ferric chloride on aluminum. Metal as thin as 24-gauge can be etched – just leave it in for less time than you would for thicker metal. If you want to etch both sides or etch really deeply, use 20-gauge metal or thicker.

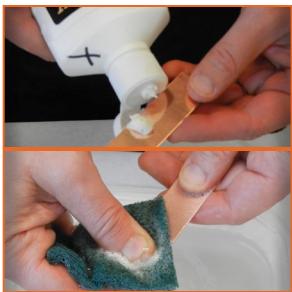
2. Cut to size.

3. File away sharp and pointy edges.

4. Clean metal with **Penny Brite®** (our favorite) or an abrasive cleaner and scrubbie. The metal must be very clean. Water will sheet off (not bead up) on the surface when it is truly clean.

5. Apply resist. Stazon ink, Perfect Medium ink, Sharpies, toner transfers – there are many options! (See pages 1-2 for more information.)

6. Cover all areas that should not be etched with ink or durable tape. This includes the back, sides and inside any holes.



7. Make a float “boat” out of styrofoam and duct tape. Use a styrofoam block large enough to support the metal to be etched.



8. Wrap the duct tape around the styrofoam block with the sticky side out.



9. Seal the tape together to make a handle for your float boat.



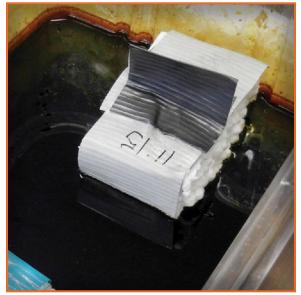
10. Pour 3/4 – 1” of etchant into a non-reactive container (glass or plastic). If you are etching more than one type of metal, use a separate container for each. If desired, add a teaspoon of citric acid to “boost” the etching action.



11. Attach metal to the float boat. Suspending the metal into the bath with tape is another option. Just make sure the metal is submerged yet not touching the bottom of the container.



12. Allow to float for 30-90 minutes, depending on depth of etch desired. Nickel silver tends to take longer than copper or brass because it contains just 65% copper (the rest is nickel and zinc).



13. Remove the float boat from the etchant.



14. Scrub metal clean in a sink or tub of water. Use baking soda to neutralize the acid if desired. Some people use a weak ammonia bath to really make sure the acid is removed.



Cleaning all the etchant off is important, as it will stain.



15. Patina the metal with an oxidizing agent to really bring out the definition in your design. Polish with steel wool or a wire brush. If you're doing a large batch of items, or you hate the task of polishing, use a tumbler.



FEATURED PRODUCTS

Rings & Things' Exclusive Metal Etching Kit # 45-210-001



ShineBrite™ # 69-355-08



Barrel Tumbler #69-281



Earth and Sky Necklace

by Mollie Valente

Molly used a rubber stamp to etch this flourish design.



Pleasant Dream Etched Barrette
by Rita Hutchinson

Check out our full Education Station online!
www.rings-things.com/resources