



## How to Etch on .999 and Sterling Silver

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See more information: [www.sherrihaab.com/etch](http://www.sherrihaab.com/etch)

For general etching instructions, see our E3 Etch PDF. This document is solely regarding the electrolytes used to etch fine and sterling silver.

The E3 Etch controller can be used to etch on silver in the same fashion as etching on copper and brass. The difference being that you need to use a different electrolyte solution instead of copper sulfate which is used for brass, bronze and copper.

With electrical etching, Silver Nitrate is the best electrolyte for fine silver. Silver etches 3-4 times faster than copper does. Silver nitrate is mixed in distilled water as a 2% solution which is similar in concentration to burn creams or the antibiotic solution previously used in baby's eyes at birth. Air born silver nitrate dust is harmful to breath and grains can stain skin. A dust mask and rubber gloves should be worn while measuring dry powder.

Silver nitrate can be used over and over for fine silver. With sterling silver the solution eventually turns into copper nitrate over time as the copper is extracted from the sterling. If the sterling is made with copper, the solution holds up fairly well with repeated etchings. However, sterling made with other metals can contaminate the solution and it will cease to etch. If you want to keep using the same batch, stick to fine silver. It does an excellent job of etching on silver metal clay as well. Strain the solution through a coffee filter after each use and reclaim the silver residue to use for other purposes.

In regard to sterling silver, we have found that the alloy of the metal makes a big difference. If the sterling simply contains copper, then silver nitrate works great and by simply straining the solution after each etch (you will see quite a bit of material that looks like "silver cotton" floating around). But if the silver contains other metals then you may have a limited number of uses before it is contaminated regardless of the solution. Copper Nitrate offers a promising substitute for silver nitrate in regard to etching sterling. It works very well and is cheaper than silver nitrate. It will also etch copper. With a very strong solution (1 oz copper nitrate mixed with 12 oz distilled water) you will be able to etch sterling in a speedy manner. The solution must still be filtered (through a coffee filter) and then can be re-used. It still may become contaminated over time but expense wise might be worth the effort for sterling (especially if you don't know what metals your sterling is composed of). Follow safety precautions for copper nitrate as it can be very hazardous if inhaled or ingested.

### Silver Nitrate

Silver nitrate is a chemical compound available in powder form or in a pre-mixed solution. You will only need a small amount to etch with. After each use it can be filtered and re-used for future etching projects. Silver nitrate is light and air sensitive, so keep the mixed solution in a closed container in a dark cupboard. Use a dedicated pan for silver nitrate; see our authorized resellers for where to order more stainless pans.

A few words of caution: It will stain your skin in dry form, and so it is mandatory to wear gloves and to be careful about handling the powder. Even a small crystal will stain your fingers. Avoid contact with skin and eyes, wear rubber gloves and eye and respiratory protection, as it can be an irritant. Mark the solution well as it is poisonous to ingest. Follow all of the safety guidelines - MSDS listed on: [www.sherrihaab.com/etch](http://www.sherrihaab.com/etch), make sure to keep out of reach from children and pets.

Silver etches about 3-4 times faster than copper. As sterling etches you will see a small amount of dark residue form during the etching process. This is the copper extracted from the sterling. These small amounts of copper dissolve into the solution and over time you may notice the solution turning blue in color. After each etching session, filter the solution through a coffee filter and store in a marked bottle for storage. The

solution can be used over and over, but in the event you need to dispose of it, you can flush it away by diluting with lots of water. Do not flush into septic systems however, as silver nitrate is an anti-microbial.

### **Mixing the silver nitrate solution (for fine silver or sterling with copper alloy)**

To mix your own solution, add with ½ liter of distilled water to 10gr. silver nitrate. Our bottle is made with a plastic that will not react with silver nitrate, so it's easy to mix without having to touch the powder. You may also use glass. Remember to wear gloves and follow safety precautions. The etching will take 30 minutes to 2 hours or more depending on how deep you want the finished relief pattern to be.

### **Copper Nitrate**

Copper nitrate is used for many applications including textile dyeing, printing, colorant for ceramics, wood preservative and as a fungicide or herbicide. Like other dry chemicals, protection for skin, eyes and respiratory system is needed when mixing the powder with water as well as other consideration for safety as directed by the manufacturer. Copper nitrate is a strong oxidizer and must not be used with or stored near combustible materials. It can be disposed of similarly to other electrolytes if flushed away with water. Copper nitrate will etch sterling silver and also copper.

### **Mixing the copper nitrate solution (for any type of sterling silver or copper)**

Mix one ounce of copper nitrate with 12 ounces distilled water. Remember to wear gloves, dust mask and eye protection while mixing. As the piece etches you will notice quite a bit of residue forming as the piece etches and you may need to strain frequently between etching sessions. During etching, move the debris with a plastic spoon to keep the metal from being blocked. Strain after use with a coffee filter and store in bottle.

### **Prepare your silver piece for etching**

Follow the same steps as for preparing copper pieces for etching. You can etch on sheet metal or fired metal clay. Use an oil based paint pen to apply designs on beads or irregular surfaces. Heat set the paint with a rubberstamp embossing heat tool or hot hair dryer for best results. For perfect results on sheet silver try using our UV 30 film, this is by far the most durable and predictable resist we know of. It does not flake or wear off during etching.

### **Technique for etching on a tube or bead shape**

To etch on a bead, suspend the bead from a bent aluminum wire so that it holds the piece level with the etching surface face down. You can suspend the wire between wooden chopsticks as shown instead of using foam spacers. Make sure the bead is placed in the solution at a level to etch only where you want to remove silver. Remember to keep the piece close to the bottom of the pan but not touching!

Hint: remember to make soft bends in your electrode wire (wire taped to piece) as sharp bends may erode during the etching process.



### **Finishing**

Rinse off the metal and etching wire under water, remembering to wear gloves. Finish the silver as desired.