

# HOW TO SILVER SHEET GLASS

These instructions show you how to mirror flat sheet glass with silver. We have Add-On Kits with separate instructions for Angel Gilding (gold), Copper, Galena and Antique Silver mirrors.

## MIRRORING IS A CHEMICAL PROCESS. THESE PROCEDURES ARE IMPORTANT.

- **Cleanliness** - The glass must be absolutely clean, including the edges.
- **Gloves** - Wear gloves to keep your hands and the glass separate.
- **Careful measurements** - Be careful but not fanatical with measurements.
- **Distilled Water** - Always use steam distilled or de-ionized water. The minerals in tap water or any other type of bottled water will ruin the mirror.
- **Timing** - Use a clock or timer to time the tinning and silvering steps.
- **Concentration** - Arrange your time so you can work without interruption.

## SAFETY

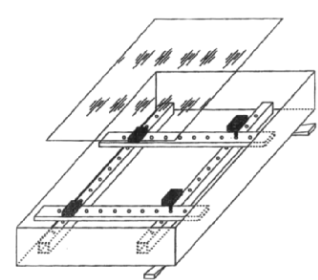
- **Storage** - Store the chemicals in a cool, dark place away from children and pets.
- **Staining** - The silver creates brown stains. Wear rubber gloves and cover your bench with several layers of newspaper. Silver Remover removes silver stains from skin and clothes.
- **Fumes** - Silver chemicals contain ammonia. We have respirators designed for ammonia and formaldehyde fumes.
- **Disposal** - These chemicals contain heavy metals. Follow the instructions in your Waste Treatment Kit to keep heavy metals out of the public sewer system.

## YOU SUPPLY

- The glass to be mirrored
- A few gallons of steam distilled water
- A clock or timer with a second hand
- 2 plastic buckets for Waste Treatment

*The inside dimensions of our blue mirroring tray are 16" x 24" To mirror larger sheets of glass, see [Building a Large Mirroring Bench](http://angelgilding.com/written-instructions/) at <http://angelgilding.com/written-instructions/>*

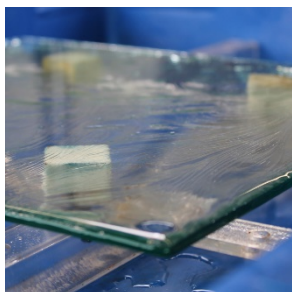
## STEP 1 - ASSEMBLE THE TRAY



1. Set the hollow bars lengthwise in the bottom of the blue tray.
2. Set the flat bars on top across the hollow bars.
3. Line up the holes and insert the felt-topped pins.
4. Set the glass on top.
5. Adjust the rack so that the glass extends beyond the felt pins.

*NOTE - The liquid on the glass will tell you if the glass is level. Insert the shims under the blue tray to level the glass.*

## STEP 2 - PRACTICE USING SURFACE TENSION



You do not need to dam the edges of the glass to keep the chemicals in place. Surface tension will do the job for you. *Surface tension is stronger on clean glass.*

1. Set the glass on the pins and pour water on top.
2. Hold the edges of the tray and tip it. Notice that you can get the water to go to the edges of the glass without spilling off.
3. Use this fact as you rock the silver on the glass.

## STEP 3 - MIX THE TIN FOR SILVER



1. Use the 10 ml cylinder to measure out 2 ml of concentrated Tin for Silver. Pour it into the 16 ounce measuring cup.
2. Add 2 fluid ounces of steam distilled water.
3. You will need about 2 fl oz per square foot.

Diluted tin has a shelf life of 6- 8 hours. **Mix fresh daily.**

## STEP 4 - MEASURE THE SILVER



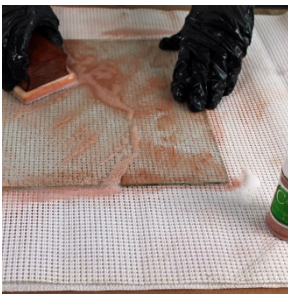
1. Pour the silver chemicals into the appropriate MEK dispenser bottles.
2. Squeeze up 15 ml each Silver Solution, Silver Activator and Silver Reducer for each square foot of glass to be mirrored.
3. Cap the bottles and set them aside for now.

## STEP 5 - CLEAN THE GLASS



1. Wear rubber gloves to keep your fingerprints off the glass.
2. Clean the glass well with a little concentrated powdered glass cleaner, hot tap water and your European sponge.
3. Clean the edges to remove cutting oil and fingerprints.
4. Rinse the glass with hot tap water.

## STEP 6 - POLISH THE GLASS



1. Place the glass back on the cleaning mat.
2. Polish it with a little cerium oxide, hot tap water and the Maple Felt Polisher.
3. Scrub in a circular motion. The slurry should be a thin liquid, not a paste.

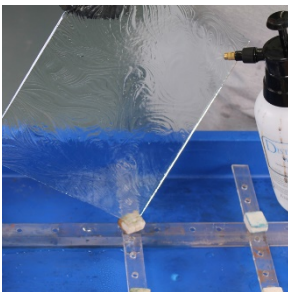
## STEP 7 - REMOVE THE CERIUM OXIDE



Remove the cerium oxide by rubbing the glass with the sponge and plenty of rinse water.

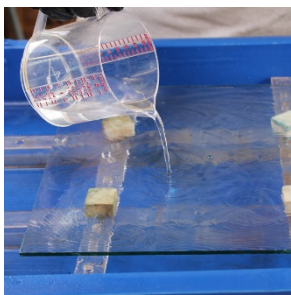
Cerium oxide sticks to the glass and *must be rubbed off*. Use your European sponge only for mirroring.

## STEP 8 - RINSE WITH DISTILLED WATER



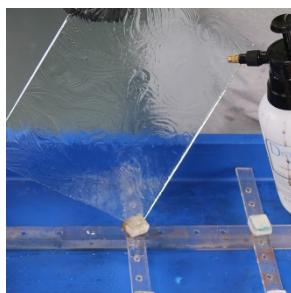
1. Remove all of the tap water by rinsing the glass with distilled water.
2. The water must sheet off the mirror side of the glass without beading.
3. Tip off the excess water.
4. Do not dry the glass.
5. Set the glass on the rack in the tray – clean (mirror) side up.

## STEP 9 - TIN THE GLASS



1. Pour on about 2 fl oz diluted Tin for Silver per square foot. It is better to use more Tin rather than less – the quantity does not have to be exact.
2. Set a timer for 30 seconds
3. Let the Tin sit on the glass for 30 to 40 seconds. The time does not have to be exact but letting it sit longer does not change anything.
4. Tip the Tin off into the tray.

## STEP 10 - RINSE THE GLASS



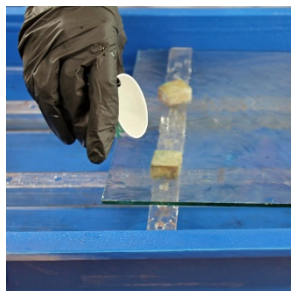
1. Rinse the glass thoroughly with distilled water from your spray bottle. Rinsing well is very important. Excess Tin left on the glass will harm the silver.
2. Tip off the rinse water and place the glass back on the rack – tinned side up.
3. Do not let the glass dry before you silver it.

## STEP 11 - MIX THE SILVER



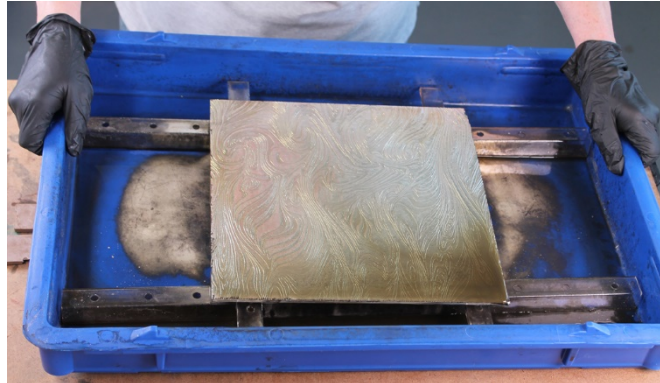
1. Take two new paper cups and pour the 3 measured silver chemicals into one cup.
2. Pour them into the other cup to mix them.
3. The chemicals should not change color in the cup - very pale yellow is ok.

## STEP 12 - POUR THE SILVER



1. Pour the mixed silver onto the glass. You do not need to hurry or go slow.
2. Start from the edges and work in.
3. Set your timer for 5 minutes.

### STEP 13 - SILVER THE GLASS



1. Using surface tension, rock the tray to distribute the silver evenly.
2. Adjust the shims to keep the glass level.
3. As you wait for the silver to deposit, rock the tray occasionally to make sure that it is depositing evenly.
4. After 5 minutes you should have a bright layer of silver covered with yellowish-brown chemicals.
5. Tip the used chemicals into the tray.
6. Rinse the silvered glass thoroughly with distilled water.

You can add a second layer of silver if you like. Measure, mix and pour on more silver. Do not re-tin the glass.

### STEP 15 – DRY THE MIRROR

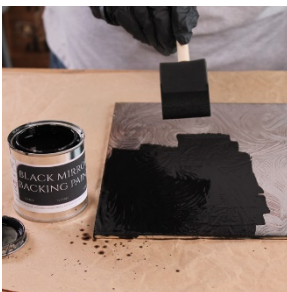


Set the mirrored glass on edge to dry.

If you dry it flat, you could get watermarks in the silver.

A heated fan or hair dryer speeds things up.

### STEP 16 - PAINT THE MIRROR



When the mirror is completely dry, paint the silver with backing paint using a brush or a roller.

You could also screen print it or paint it free-hand and remove the unprotected silver with Silver Remover.



## STEP 17 - CLEAN THE MIRROR FACE



When the backing paint is completely dry, clean the face of the mirror (the glass side) with Silver Remover and a little Pumice.

Use dry Pumice on a clean cotton ball to polish the glass.

## STAND BACK AND ADMIRE YOUR HANDIWORK!



Once you know how to silver glass, you can control the creative potential of reflected light.

Use one of our Add-On Kits to make Gold, Copper, Galena and Antique Silver mirrors.

We used Pilkington's Taffeta™ glass to make this piece.

**ANGEL GILDING**  
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