

HOW TO SILVER 3-D GLASS OBJECTS

These instructions tell you how to mirror small, non-flat 3-D glass objects with silver. The metal layer that produces a mirrored surface is formed by molecular attraction rather than gravity. You can mirror any shape so long as the glass is clean and it is in contact with the right chemicals for the right amount of time.

The mirroring process is the same for all metals. Once you have learned how to create a silver mirror, you can use the same process to create 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

STEP 1 – MASK THE GLASS



Mask the side of the glass you want to stay clear with adhesive vinyl paint mask.

After the mask is rubbed down, put on your rubber gloves.

STEP 2 – CLEAN THE GLASS



1. Scrub the glass with hot tap water and powdered glass cleaner using a dedicated sponge.
2. Rinse the glass under a running tap.
3. Rinse it again with distilled water to remove the tap water.

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.

Use fresh tin for each object you mirror. Diluted tin has a shelf life of 6- 8 hours. **Mix fresh daily.**

STEP 4 - MEASURE THE SILVER



1. Measure out 10 ml each of Silver Solution, Silver Activator and Silver Reducer.
2. Use a separate plastic dosage cup for each solution.
3. Do **not** mix the three solutions together until you are ready to pour the silver on the object.

STEP 5 – TIN THE GLASS



1. Place the glass, mask side down, in the Tin tub.
2. Pour on the Tin and note the time.
3. Rock the tub gently so that the glass is completely covered with tinning solution for **30 seconds**.
4. Lift it out by its edges, taking care not to touch the tinned surface

STEP 6 – RINSE THE GLASS



1. Hold the glass, tinned side up, over the Rinse tub
4. Spray it very thoroughly with distilled water.
5. Place it mask side down in the Silver tub.

STEP 7 – MIX THE SILVER SOLUTIONS



1. Get two new paper cups.
2. Pour the three silver solutions into one cup.
3. Pour this mix into the other cup to mix them.
4. Pour the mix onto the glass.
5. Note the time.

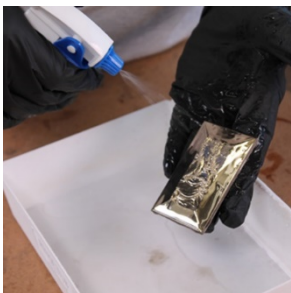
The solutions should be clear (very pale yellow is okay).

STEP 8 – SILVER THE GLASS



1. Rock the tub gently so that the silver flows continuously over the glass.
2. As the silver deposits, the glass turns brown and then gray. The solution also turns brown – this is normal.
3. Continue to rock the tub for **5 minutes**.

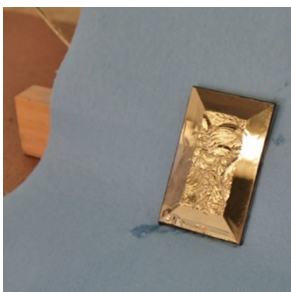
STEP 9 – RINSE THE MIRROR



1. After 5 minutes, the glass should be covered in bright silver.
2. Lift the glass carefully out of the tub.
3. Spray it thoroughly with distilled water.

If you want to add a 2nd layer, you can put the glass back in the Silver tub and repeat Steps 4, 7 and 8.

STEP 10 – DRY THE MIRROR



Set the mirror, silver side out, on edge to dry.

If you let it dry flat, water spots could show up in the finished mirror.

A heated fan or hair drier speeds up the process. Wet silver looks very pale gold. Dry silver looks bright silver.

STEP 11 – PAINT THE MIRROR



1. When the glass is completely dry on both sides, place it silver side up on scrap paper to protect your bench.
2. Paint the silver with backing paint.
3. Allow the paint to dry overnight.

STEP 12 – CLEAN THE MIRROR FACE



1. When the paint is completely dry, remove the mask.
2. Use a paste of Silver Remover and pumice on a cotton ball or swab to clean off any silver or paint that has crept onto the mirror face.
3. Use a little dry pumice on a clean cotton ball to polish off the remover.

STAND BACK AND ADMIRE YOUR HANDIWORK



When you are the mirror maker, you control the process.

Any color, any texture and any shape of glass can be mirrored in four different metals to explore the creative potential of reflected light.

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