

PEACOCK LABORATORIES, INC.

SPRAYING INSTRUCTIONS Silvering New Glass and Resilvering

Many substrates may be silvered. We will deal with plain glass in this text for simplicity.

Deionized, demineralized, or distilled water is essential in the production of a long-lasting blemish-free mirror. The minimum acceptable limit of dissolved solids is 10ppm. Dissolved solids adversely affect the deposition of the silver, especially chlorides and sulfates. A brown silver deposit as a bright, metallic color is due to impurities in the water. A simple purity check of your water is to add one drop of concentrated silver solution to 15 mL (1/2 fluid ounce) of water and heat for twenty minutes. A cloudy or white precipitate indicates water impurities.

PREPARATION OF SOLUTIONS

The Peacock Laboratories method of silvering allows you to get the maximum use of the silvering chemicals. By diluting the Silver, Activator, and Reducer in three separate bottles, the diluted chemicals have a shelf life of over 30 days. Silvering can be done whenever you wish. You do not have to wait until there is a large quantity of mirrors to do before you can silver efficiently. **KEEP STOPPERED AND REFRIGERATED.**

1. Measure four fluid ounces (125 ml) of concentrated Silver Solution "A" into half a gallon of distilled or deionized water and mix. To this mixture add four fluid ounces (125 ml) of concentrated Activator Solution "B". Add sufficient deionized water to make one gallon. Let us call this the dilute AB solution.

NOTE: CONCENTRATED "A" AND "B" SHOULD NEVER BE MIXED TOGETHER!

2. Measure four fluid ounces of concentrated Reducer Solution into a separate container and dilute with water to one gallon.

The solutions prepared in steps 1 and 2 are fed to the two nozzles of the dual nozzle spray gun. We recommend that the dilute solution AB is fed to right hand nozzle (in the spray mode with the gun facing away from you). In Step 3, we will discuss the two options you have in feeding the solutions to the double nozzle spray gun.

4. Measure 4 fluid ounces of #93 Sensitizer or 1/16 Av. ounce of Stannous Chloride into a container and dilute to one gallon. This solution must be prepared fresh daily.

Silvering new glass? Skip to Step 1

Stripping the paint and silver from an old mirror

Most mirror backing may be removed with a short soak (15 minutes) in a 5-15% solution of sodium hydroxide and 10% alcohol (solox or isopropanol) or use our mirror backing paint stripper. Then dissolve the silver off the glass with Silver Strip by soaking or wiping the glass with Silver Strip. Rinse completely, front and back. When resilvering is not to be done for several hours or more the stripped glass should be thoroughly washed on both sides, and dried very shortly after being stripped. This will avoid possible water marking and/or staining. Exercise great care in handling acids, soda ash, caustic soda and paint remover. Wear rubber gloves, rubber apron or smock, and goggles or face shield to protect against chemical burns. The stripping area should be well ventilated.

Step 1 - Preparing the glass for silvering

Using a felt block or cellulose sponge and a paste made with Red or White Rouge, Cerium Oxide or other polishing agents and water, thoroughly scrub the glass surfaces to be silvered. A solution of #77 Cleaner can be added to the paste of polishing agent. #77 Cleaner is an excellent detergent and neutralizer for residual acid which may be on the glass. Following the surface scrubbing, thoroughly wash off the residual polishing paste using a separate sponge or bristle brush and running water. While still wet, carefully rinse with distilled or demineralized water.

For new glass, scrubbing with 4F Pumice or White Rouge and water is sufficient. For resilvering, block polishing with a Red Rouge or Cerium Oxide) is recommended.

Step 2 - Sensitizing (Tinning)

It is essential to thoroughly sensitize the surface to be silvered. Immediately following the distilled or demineralized

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water rinse stated above, spray the #93 sensitizing (tinning) Solution. A cross spray technique should be used: that is spraying horizontally from left to right and starting at the bottom of the glass and gradually going up vertically. There must be sufficient vertical overlap between horizontal sprays to ensure that every square inch of the glass is sensitized. Give special attention to the edges! Let the Sensitizer contact the glass for 10-20 seconds.

Rinse the object thoroughly with deionized water following the sensitizing step.

Note: Beginning with the final rinse under step #2 the surface being treated must always be wet. Avoid contacting the surface with anything except distilled or demineralized water or pertinent chemical solutions since the cleaned surface can be easily spoiled.

Step 3 - Silvering

Begin application of silvering solutions immediately following the final rinse under step #2. HE-300 is Peacock's latest development in the field of electroless silver deposition is a solution that has been demonstrated to be superior to other silver formulations. The efficiency, the amount of silver deposited versus the amount of silver solutions used, has been increased significantly. Adhesive of the silver to the substrate is tenacious. The reaction is sludgeless, providing a clean and an exceptionally bright reflective surface.

HE-300 is a three part concentrated solution consisting of the following:

- A- Concentrated Silver Solution
- B- Concentrated Activator Solution
- C- Concentrated Reducer Solution

The dilution ratios of the silvering solutions to water can be varied to suit the needs of individual applications. A more concentrated ratio will increase the speed of reaction and a more diluted solution will decrease the reaction rate. When adequate silver film has been deposited, rinse thoroughly to remove residual silvering chemicals. One pint of concentrated solutions will silver between 300 to 500 square feet of glass.

The Spraying Process:

A special silver spray gun is required for this step. The two solutions, prepared earlier are gravity fed to the two nozzles of the gun using 1/4 " tubing and appropriate fittings. Alternatively, you can use siphon bottles that fit directly to the spray guns to deliver the solutions. The dilute solution AB is fed to the right hand nozzle and the dilute C solution is fed to the other nozzle. The stainless steel parts of the gun resist reacting with the corrosive solutions that come in contact with it. Additionally, the solutions do not mix inside the gun but do so after coming out of the nozzles at a distance of about 6 inches from the gun. Compressed air at 40-60 PSI atomizes the solutions thus enhancing the mixing of the two fluid streams.

The suggested spray pattern is to begin at the bottom of the object and to move in a horizontal manner ascending to the top and then returning to the bottom. The initial silver film will appear as a dark blue color and then quickly develop the bright silver color. Repeat this process until you have the desired reflection and brightness. If spraying a vertical object, you will have to spray a few extra seconds at the top due to the fact that the solution will drain downward leaving the upper portion with a lighter silver layer. Following the silver solution application, the film should be thoroughly rinsed with deionized water. The water film should be removed by a forced air blast using clean, dry compressed air or a hair dryer.

Step 4 - Drying

Adequate drying of the deposited silver film is essential to the expected life of the mirror. We advocate the use of heat to insure removal of all moisture from the silver film before paint backing application. (Hair dryer works well for this).

Step 5 - Mirror Backing

A suitable Mirro-Bond Paint or protective coating is applied for the protection of the silver film. Use only prescribed mirror backing paints. A selection of mirror backing systems including brush on, air dry paints can be found in our catalog.

Note: Coat the edge for extra protection.

A copper film affords additional protection for the silver film. Copper acts as a barrier to any contamination that

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may break through the paint coating. For mirror shops that have little or no heat for baking the paint, we recommend Peacock's Non-Electrolytic Copper Backing.

ALL YOU NEED TO GET STARTED RESILVERING MIRRORS USING THE SPRAYING METHOD CHEMICALS:

(We prefer UPS ground for shipping your packages. For those who do not have an account with us, we can ship UPS COD (COD charge is an additional \$10.00). We also accept AMEX, Discover, VISA and MasterCard

HE-300 Concentrates. One pint unit including:

- 1 pint Silver Solution.
- 1 pint Activator Solution.
- 1 pint Reducer Solution.

#93 Sensitizing Solution: One pint (makes 4-6 gallons).

Silver Strip Powder: 5 pound jar.

#77 Cleaner: One gallon.

Red Rouge: 5 pound bag.

4F Pumice: 5 pound bag.

Copper-Tite Vehicle #3: One gallon.

#281 Mirror-Backing Thinner: One gallon. Use with Copper-Tite Vehicle #3.

Peacock Copper Powder: 6 pounds, enough for mixing with 4 gallons of Copper-Tite Vehicle #3. Use if spraying only.

Mirro-Bond 175: One gallon. Use as a top coat over Permalac with or without Copper Powder. Can be brushed or sprayed on.

#178 Mirror Backing Thinner: One gallon. Use to thin #175 Mirro-Bond Backing Paint.

EQUIPMENT:

Peacock deluxe silver spray gun

Peacock sensitizer Gun

Siphon Bottles (Qt)

Graduated Cups: Four 4 ounce size and four 16 ounce size.

No. 3000 Brush: One only.

Rubber Gloves: Two pairs, assorted sizes, please specify.

Safety Glasses: Two pairs. Wear a pair at all times when working with chemicals.

Clear Vinyl Aprons: Two only.

Cartridge Type Respirator: Includes two ammonia cartridges.

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