

PCHROME SPRAYING INSTRUCTIONS

FOR DECORATIVE APPLICATIONS

While the coating instructions must be carefully followed to achieve a optimum result, the process is not limited to the treatment of one article at a time. By securely attaching articles to a rack or spindle, users can treat a number of objects simultaneously.

Naturally, care must taken to assure that the articles are compatible in size and shape and that all surfaces are accessible to the PChrome spray process.

The basic shop requirements include the following:

1. Clean, filtered, dry compressed air supplying approximately 5 cubic feet of air per minute at 60-70 psi is sufficient for the following basic procedures: spraying the metalizing chemicals, spraying the protective coatings and force drying between steps. To prevent contaminants from tarnishing newly sprayed metallic layer the air must be clean.
2. To protect the operator from harmful fumes, a spray area with adequate ventilation and a powerful exhaust fan is required.
3. Achieving mirror-like PChrome finishes that are long-lasting and blemish-free, requires water that is de-ionized, demineralized, or distilled. Even a low level of dissolved solids will adversely affect metal deposition, especially chlorides and sulfates. For example, brown metallic color deposits and other problems can result from impurities in the water as low as 4 ppm.
4. For maximum shelf life store PChrome chemicals in a cool, dark, and dry place.

PREPARATION OF SOLUTIONS

The instructions for PChrome formulation below have proven effective on a wide variety of surfaces.

IMPORTANT:

PChrome chemistry is highly sensitive to cross contamination. To avoid cross contamination it is important to mark all bottles and measuring cups with the chemical used. Each cup and bottle should only be used with one chemical. Rinse all cups and bottles with DI water after use.

PChrome S Solution -Mix 1 part PChrome S with 30 parts DI water.

PChrome R Solution - Mix 1 part PChrome R with 30 parts DI water.

PChrome D Solution Mix 1 part PChrome D sensitizing solution with 30 parts DI water.
This solution must be prepared fresh daily.

#87 Degreaser and Wetter Mix 1 part of #87 concentrate with 30 parts water. This

solution can be stored for several months

PChrome W Solution - Mix 4 part PChrome W with 30 parts DI Water. This solution will keep for several months and can be left in the spray bottle.

Only enough ready-to-spray PChrome solution should be prepared for a day's work. Solution containers and fluid tubing must be rinsed with distilled water at the end of each day.

Step 1 – Prepare the Substrate

For best results PChrome should be applied on a clean, smooth substrate. An appropriate primer for the substrate will help achieve this effect. Pieces with multiple surfaces (metal and body fill for example) should be coated with a premium automotive primer/sealer.

Step 2 - Apply and Cure a Base-Coat

Articles molded, cast, or otherwise formed of plastic, wood, plaster, or metal require a base coat which must be properly cured. Improper curing is evidenced by frosted or crackled appearance at edges or in crevices where the coating has gotten too thick. For this reason the application of a base coat with uniform thickness over the entire surface is highly desirable.

How to proceed:

Mix equal parts Permalac 2KA, Permalac 2KB. The 2K base coat cannot be buffed, so it is essential that orange peel and other imperfections be avoided at this stage. Best results are generally achieved with fine atomization, large droplets are more likely to result in orange peel. Good results can be achieved by using an HVLP cup gun with a 1.2-1.4 tip size. Use 28-32 PSI. Adjust the fluid settings so that a fine atomization is achieved. Enough material should be sprayed so that the coating flows glass smooth within two to three minutes. The pot life is approximately 90 minutes. *Any mixture not used within this time frame should be discarded.* Be sure to follow local disposal guidelines. Clean your gun immediately after use. The gun can be cleaned with lacquer thinner or acetone. Temperature will play a role in the behavior of base coat. See the chart below.

Temp (F)	Humidity	Sweat Time	Pot Life	Thinner	Tac Free
55-65	50%	10 min	120 min	NA	180 min
65-75	50%	5 min	90 min	NA	120 min
75-85	50%	1 min	60 min	NA	60 min
85 +	50%	30 sec	45 min	#500 1:20	30 min

At room temperature (25 C/75F) silvering can generally be undertaken 6-8 hours after application. Cold temperatures will extend the cure time, at 50F a 36 hour cure is recommended. Curing can be accelerated by baking in an oven for 30 minutes at 150F (65C) or by placing under IR lamps. *Note:* before it goes into the oven, the base coat must be air dried for about 30 minutes. This allows the coating to flow smooth and helps prevent solvent pop. It is important not to touch the surface of the project at this point, fingerprints will show in the chrome. Once cured you may proceed to the next step. Attempting to chrome before the base coat has cured will yield poor results.

Before proceeding the chroming phase be sure to have all the required solutions mixed and all your guns primed and ready to spray. This includes the S, R, D, and W solutions. You will also need DI water for rinsing.

Step 3 - Prepping the Surface for Sensitizing.

Generously apply the #87 solution. Allow the #87 to sit on the surface for 30 seconds. Then apply the PChrome W solution with a squirt bottle.

Step 4 - Applying PChrome D Solution

Using the single nozzle D spray gun, liberally and evenly spray the entire surface with PChrome D solution. Be certain to start your spray pattern at the bottom of the object. Starting at the top or middle can cause streaking or spotting in the chrome. Next, rinse the object thoroughly with deionized water.

The water should create a flat surface and fall off in sheets. If instead it beads up, or instantly pulls away from the surface, Reapply the W and D solutions. Repeat the rinse process. Once the rinse water behaves properly on the PChrome D treated surface, proceed immediately to the next step. *The surface must not be allowed to dry.*

Step 5– Metalizing

Follow steps found in “Preparation of Solutions” above. For this step to generate the desired finish, the mixes must be properly prepared and fed into the PChrome dual spray S and R gun with appropriate fluid dispensers, or tubing and fittings. Because stainless steel is used for the critical parts, the gun is highly resistant to PChrome’s corrosive solutions. *Note:* the solutions do not mix in the gun or at the nozzles. Compressed air at 50-60 PSI atomizes the solutions so they don’t mix until about six inches past the nozzles. It should also be noted the water temperature will have a large impact on the reaction speed of the chemistry. Very cold water will require much more material be used to achieve a bright silver. Ideal water temp is between 80 and 85 F.

To follow the recommended spray pattern, begin at the bottom of the object and moving in a horizontal manner ascend to top as quickly as possible, getting a small amount of spray over the entire piece. Return to the bottom and repeat. Continue this process until the surface achieves the desired reflection and brightness. It is important that the finish be very bright to avoid excessive yellow later on. If spraying a vertical object, you must spray a few extra seconds at the top due because solutions tend to drain downward leaving the upper portion with a thinner metallic layer.

Finish the PChrome metalizing process by thoroughly rinsing the bright new reflective metal film with deionized water.

Step 6 - Drying the Metallic Film

The part must be completely dry and free of water before proceeding. Any water droplets should be blown off the object as soon as chroming is complete to avoid water stains. A hot air gun applied for a few minutes can also be used for drying. After you have dried the part let it rest for at least 1 hour.

Step 7 - Apply a Clear Top or Protective Coating

Once the object is completely dry it is ready for a protective top coat of 2K. To mix the top coat, add equal parts Permalac 2KA and Permalac 2KB. To counteract the natural yellowing effect of top coating silver, add 1 ml of violet top coat tint for every 75 ml of 2K. The top coat should be applied in a series of light passes. Use the same HVLP gun and air pressure as with the base coat, but tighten the fluid setting so that less material is applied. Mist the topcoat on so that it takes between two and three passes for the paint to slick out. This will be touch dry in 60 minutes. Full hardness 24 to 48 hours. At this point another top coat can be applied if desired.

When gold or any other color is desired, a dye is either incorporated into the top coating before spraying or applied after the coating is applied and fully cured.

Step 8 - Clean Up

Clean your paint gun immediately after use. The gun can be cleaned with lacquer thinner or acetone. Rinse the quart siphon bottles with DI water and spray clean water through the silver gun. Spray the silver gun and the water gun dry before putting away, extended wet storage can cause corrosion. Rinse all measuring cups and spray bottles with clean water and allow to air dry.

Trouble Shooting:

1) Base coat is taking a long time to cure: The 2K receiving coat cure time is sensitive to several factors. Temperature and coating thickness are the biggest variables. Cooler shop temperatures will exponentially effect cure time. A thick layer or base coat can also lead to longer cure times. It is best to apply the base in a thin coat with a finely atomized spray mist.

2) Spots on the part are not taking the metal finish. There are a few things that can cause this problem. The most common is the part has not been sufficiently wetted. You may have noticed the water breaking as soon the SR solutions are sprayed on the part. On larger parts you may need to repeat steps 3 and 4 several times. The next factor is the age of the D solution. This chemical has a shelf life 6 months. The last factor is surface contamination. This can be obvious, in the form of visible nubs in the base coat, or less obvious in the form of fingerprints, latex residue or overspray from other projects.

3) Rainbow or Crazing Effect when Top Coat is Applied: The base coat was not sufficiently cured before the metalizing process. Allow more time, or use a heat cure.

4) Excessive Yellow When Top Coat is Applied: A small amount of yellowing is expected and should be easily neutralized with an addition of violet or black tint to the top coat. However if you are experiencing a lot of yellow that will not neutralize, there are a few things to look for. First is insufficient deposit of metal. The finish should be very bright before going to the top coat. Thinner metal deposit can cause a yellow finish. Second, this process should not be attempted if the level of humidity in your shop is above 60%.

5) Metal is slow or will not plate: The reaction is heat sensitive, so cold water can cause delayed metalizing. You should also look to the purity of your water. Even as much as 5ppm dissolved solids in the water can prevent the plating process from working. Finally check the age of the R solution as it can begin to lose potency after 6 to 9 months.