

# French polish from a conservator's point of view: Some ideas for a better coating

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**T**HIS POSTER BRINGS SOME NEW IDEAS in maintaining the tradition of French polishing while introducing modern materials that will hopefully prolong the life of the film-forming materials and improve their workability.

The technique of French polish has been around since the very late 18th century. Over the years, this traditional application of shellac has changed little. Various recipes can be found in many finishing books that call for a variety of different ingredients that were believed to enhance the qualities of the finish. It becomes clear from the study of old recipe books that most were concoctions based mostly on hearsay and unfounded boasts of the different materials. Even today, wood-working magazines are publishing articles based on these old recipes and flawed concepts.

Furniture conservators continue to use the French polish technique as it historically represents the correct interpretation of visual appearance of certain types of furniture. As furniture conservation matures, a more detailed look has been taken at the individual resins used in early varnish making. The resin of coniferous trees (pines) typically known as rosin, was often listed as a key ingredient under a variety of different names (Venice Turpentine, Burgundy Pitch, Colophony, and Elemi). Rosin is now known to degrade rapidly and severely. Linseed oil and other drying and non-drying oils are often listed as ingredients. With its crosslinking capabilities, linseed oil can cause the film to become tenacious and darken. Additionally, incompatible materials as oils, rosins, and even gum Arabic can lead to an internal breakdown within the film itself. Shellac, the key ingredient in French polish, is a very versatile and desirable natural resin. It is the addition of all the cheaper incompatible resins in the recipes that causes concern.

After years of following the old writings, and several failures based on those writings, I attempted to create a more stable and acceptable coating for historic furniture, while keeping the visual beauty of traditional French polish. I began to eliminate those cheaper resins prone to rapid degradation that have always been listed in the traditional literature as important ingredients. I also wished to create a clear polish, which meant I needed to eliminate the naturally occurring wax in the shellac. (The wax tends to cloud the polish.) While there are commercially available shellacs that have the wax already removed, they tend to be chemically processed to the point of instability, most notably the white, bleached, or blonde shellacs. I prefer to use button shellac primarily due to the limited amount of processing it undergoes. The wax serves as a natural plasticizer allowing the brittle shellac resin to remain somewhat flexible. With the wax eliminated, I needed to replace the wax's plasticizing effects with another material. Among the softer plant resins I have looked into are Manila copal, benzoin, sandarac, damar, mastic and others. I have chosen benzoin and the Manila copal based on traditional successes of these resins and the pleasant odor the benzoin imparts. However, they are added in small quantities in relation to the shellac.

Typically, for a 750 ml solution, I grind 2.5 ounces of the button shellac, .25 oz of the benzoin, and .25 oz of the copal. I also prefer to use 95% ethanol (grain alcohol) as opposed to denatured. It may be my imagination, but I do notice a difference between the two alcohols as I use the polish. All of this is warmed in an ultrasonic bath (the temperature of the water jacket will reach 100°) which accelerates the time the resins will go into solution. Once in solution, the wax and debris are filtered out using a medium fast filter cone. Because the solution is warm when first filtered,

some wax will pass through. I will filter a second time for the desired clear polish. I use a semi-closed filtering system, which reduces the amount of water the warm ethanol will absorb. Once I have a clean traditional recipe for the polish, I began to experiment with adding a higher molecular weight synthetic resin. I added .5 oz of B-72 and immediately noticed an improved workability of the polish. The grain-filling properties and lack of shrinkage caused by the presence of the B-72 made the polish quicker to use. Plus the added benefit of such a stable material as the ethyl-methacrylate copolymer makes this polish warrant further investigation. I also experimented with B-67 (isobutyl methacrylate polymer), often listed as a varnish resin, but I found that B-67 made the polish drag and stick as it was being padded out. B-67 also has a tendency to crosslink.

Now with an improved version of polish, I proceeded to the next step in creating a more stable surface coating. Ultraviolet damage to furniture coatings has long been a problem, and French polish is no different. The two UV-resistant additives in the coatings industry that best suited my needs were Tinuvin 292, a hindered amine light stabilizer (HALS), and Tinuvin 328, a UV absorber. The purpose of the 292 is to help prevent the ultraviolet light from breaking down the film itself, and the 328 is meant to absorb the UV, preventing it from fading the underlying wood. According to Ciba-Giegy, the manufacturer, they work in a synergistic way. However, the UV absorbing effect of the 328 also prevents using an ultraviolet lamp to identify the shellac's orange fluorescence, which is one of the unique and desirable characteristics of shellac. With the 328 eliminated, only 292 is added to the polish in a quantity of 3% to the weight of the total resin content. It should be pointed out that when the polish is filtered, as much as 20% of the weight of the original resin is removed in the form of the wax and debris, which should be accounted for when the Tinuvin is measured out.

This method of preparing French polish has only been in use for a short period (just a few years) and is subject to further investigation and research. It is my intention with this poster to spark debate and improvements.