

FROM A GUITAR MAKER'S NOTES:
VARNISH
by Sebastian Stenzel

My guitars are varnished with an authentic French Polish. French polish consists of natural resins dissolved in spirit (alcohol), the most common being shellac¹. It is applied with circular movements of a pad filled with the Polish². I consider it to be the best varnish not only in regard to sound properties, but as well to beauty and environmental compatibility.

For guitars that will be exposed to extreme climatic strain, I often use a polish that in addition to shellac also contains nitrocellulose, because it gives better resistance against high temperature and high air humidity. Its acoustical and aesthetical properties are equal to pure natural-resin-French Polish, and it is applied in the same manner.

The varnish has a significant influence on the sound of the instrument. One should be aware, though, that the undercoat, i.e. the part of the varnish body that is in and directly at the wood surface, has the greater part of this influence. Nowadays, unfortunately, many guitars are offered as "French polished" which in reality have an synthetic undercoat of acrylic, polyurethane, epoxy resin, or even superglue, and only a last coat of shellac. Such varnish has completely different properties than the authentic French polish³, which consists of hundreds extremely fine layers of varnish.



[Application of shellac: the varnish drenched pad leaves a trail that makes a new layer in the thickness of few molecules.]

These layers are further compressed with the polishing pad, straightening and densifying the molecule structure. Only this gives the French polish its characteristic properties.

¹ Shellac is resinous secretion of the tiny lac insect, *Laccifer lacca*, which is a species of scale insect. This insect deposits lac on the twigs and young branches of several varieties of soapberry and acacia trees and particularly on the sacred fig, *Ficus religiosa*, in India, Thailand, Myanmar (Burma), and elsewhere in Southeast Asia.

² In this context, the term "Polish" is synonymous with "varnish". It is often confused with "furniture polish", which is not a varnish, but rather a very mild abrasive to clean and give luster to a varnished surface.

³the term refers both to the thing and to the technique of application.

For this reason, the application of French polish with a spray gun as has become common practice especially in Granada is a questionable compromise: the molecule structure is more chaotic and less dense with big cavities making the varnish more susceptible and decreasing its acoustical properties.

The term "French polish" actually covers a vast field of varnish recipes and techniques differing widely in quality and appearance. Some guitar makers, for example, leave the wax that is a natural component of shellac (but is removed in high quality varnish) in the varnish which results in an extremely soft and delicate surface.

The same holds true for many ready-made French Polishes, which usually contain softening agents enabling the layman to touch-up old furniture. The extreme susceptibility of such varnishes made them quite unpopular with many guitarists: who has not heard stories of a guitar that got stuck to the lid of its case. It is a fact, though, that all spirit varnishes are much more delicate than polyester or polyurethane coatings found on most guitars from industrial production, especially against high temperature and chemicals, but not necessarily against hit-damages: the thin and elastic film of the French Polish (or correspondingly of a very thin, high-grade nitrocellulose laquer) will show a dent the same as it would on a polyurethane coat, but underneath the wood will probably be only compressed and can usually be swollen up again, while the polyurethane coat often breaks, ripping the wood fiber underneath and thus causing much more severe damage. The susceptibility of spirit-varnishes is compensated for by a reparability that is hard to beat. But even with the best of care - with a French polished instrument one has to reckon with a touch-up job after some years, which will, remarkably enough, leave the varnish in better condition than it ever was, because it takes at least half a year for a fresh polish to really cure and settle, then giving a solid ground for the new surface. The cost for a touch-up depends much on the quality of the original varnish (another reason to make a more precise distinction than the term French polish alone allows): in the worst case it comes close to building up the varnish from zero, in the best case it is a matter of about three hours.

The "English Polish" I used for many years as my standard varnish (which I made from dewaxed shellac, copal⁴ and other natural resins), I now use only on occasion, since I have found a source for raw shellac of extraordinary quality that gives a varnish which equal or better properties as the English Polish. In addition, the name "English Polish" sometimes caused confusion, although it had been chosen deliberately: Whereas the art of varnishing progressed quickly in France during the 18th century (hence the name "French Polish"), the art of polishing, at least in my opinion, reached its climax in England some hundred years

⁴ Copal consists of the exudates obtained from various tropical trees. For spirit varnishes as is French Polish, a half-petrified variety is used.

later. I had named my shellac/copal varnish "English Polish", because the recipe is the result of my experiments with English recipes and techniques that were developed in those days for export to the "colonies", after the normal French Polish proved too susceptible for such climate.

Update remark Sept. 2013:

Together with my colleague Otto Vowinkel, I have bought the original recipes of the Poligen varnish from Zweihorn. Poligen is a so-called "Einheits-Politur" which is a term for a French polish containing both shellac and nitrocellulose. The famous German firm Zweihorn discontinued its production some years ago. As both Otto and me consider Poligen to be the best French polish ever developed, we wanted to save it for ourselves and future generations of instrument makers. We hope to be able to offer it soon to anyone interested. This will be under a different name, though, a condition required by Zweihorn.