

## Potassium Permanganate on Antler, An Experiment

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Carving another basket lid, this time in moose antler and ziricote (blackish exotic wood). Finally found a good source for potassium permanganate, ordered some and am giving it a try.

Potassium Permanganate Source: <http://secure.sciencecompany.com/Potassium-Permanganate-500g-P6507C670.aspx>

Clive Hallam originally told me about this stuff a number of years back, but I've never had a chance to try it until now. His antler carvings treated with it were nothing short of spectacular.



Here's the partially carved moose antler face about 2.5 inches in diameter (6.4 cm). Very white, and solid on the face side.

I mixed about half a teaspoon of the potassium permanganate in about a cup and a half of distilled water. It mixes up into a deep royal purple liquid - looks awful to drop your carving in, but I girded up my courage and did it anyway. Soaked the carving for about 5 minutes, so not a very deep penetration. Should be able

to polish some of the coloration away. That's the plan, anyway...



Here's the result:

Comes out a golden brown, with the purple liquid sitting in the low spots. I dried it off with a paper towel and all the purple liquid disappeared. Sigh of relief... I remember some characteristics of potassium permanganate from my chemistry days - it's a very strong oxidizer, there were some interesting fires and smoke when adding a drop or two of glycerin to a (small!) pile of the powder. Obviously the sterols/glycerols, proteins, carbohydrates and organics like calcium phosphate in the antler are being severely oxidized, which probably accounts for the brownish color rather than the purple. The potassium permanganate is being reduced by those aforementioned, so the garish purple color goes away.

I'll keep carving, sanding, smoothing etc, along with periodic applications of more potassium permanganate and see where it all goes. Will keep you posted.



The most interesting things are happening on the back side, where the antler is a little bit porous. The more porous the surface, the deeper the brown coloration. That's sort of how Clive's carvings

were done, with areas of light and dark depending on the local antler density.

The white streak is a little residual super glue left from the lathe turning, so one should be able to mask off areas to not absorb as much potassium permanganate. Have to remember that one for future use...



Here's the piece with the carving done, and the finish mostly as I want it at the end. I've carved away most of the previous potassium permanganate stain from the first application. I'll have to do some more sanding and polishing when I've soaked it in the potassium permanganate again.



Here the antler has been soaking for 60 minutes. Pretty dark. I think next time I'll try a more dilute solution, maybe one fourth of what I used here.



I used a pretty aggressive polyester abrasive pad and removed most of the potassium permanganate stain. It didn't penetrate very deeply in this very solid antler, although it's almost black on the porous backside. I like this a lot better, but the white antler is too white. I'll try a quick soak to re-color that part.



Here is the final staining, after only about a minute of soaking, and then polished with a hard felt buff and white rouge. I haven't added any oil or lacquer finish yet. I suspect a long soak in an oil finish will enhance it even more.

I still need to epoxy the antler into the ziricote base before I do that. Much improved from the initial all over dark staining. I think the dark stain would work very well on an antler knife handle, however.

**Question:** (by Sebastián Urresti) Beautifully colored! I like that brown tone. Is it a bright brown, as a copper tone? So, now you can say that it's stable? I think it is. Sorry for all the questions... I am waiting for my half kilogram of permanganate.

**Answer:** (by Tom Sterling) Just kind of a light golden brown in the light areas, and dark brown in the low areas. Really dark brown, almost black on the porous backside. It wasn't a problem to lighten the quick staining with a felt buffing wheel. You could go as light as you want by just polishing the surface more (at least on the hard antler areas - you couldn't remove the dark color in the porous areas without carving away the surface).

(by DanM) I have heard complaints from a number of knifemakers stating the potassium permanganate can turn the antler a greenish color after a number of years. I guess most of them are now using alcohol based leather dyes for their wood and antler projects.

(by Guardian) I have used PotPerm for many years, it works best on protein-based material. Just don't get the fresh stuff on your skin or you'll be wearing it for a long time (skin=protein). It does not deeply penetrate hard or dense material, only on the surface, but it will soak into anything porous. A fresh mix is best as it loses power as it gets old, and if you leave thin pieces soaking in it too long it will eat them. Best stored in all-plastic jars -- it will eat metal lids.



Here's the finished basket, with a close-up of the finished antler lid.



Here's another antler project using potassium permanganate. This is one of those ancient gray, weathered antlers with many little longitudinal cracks. I applied the potassium permanganate with a cotton swab, making sure I put it on very wet. The top image shows how the potassium permanganate looks just after application. The lower image shows it several minutes later, when the purple goes away and becomes a lovely golden tan color.



Here's the finished antler, with a linseed oil finish.

(by sergio) I use “ permanganate de potassium” with some water, I use a paintbrush , but after a few of days it will be more clear. If you put some water, it's dark, if you use more water it will be clear.

