

Verdigris By ibdennis

Yuck! The word “yuck” is a word that some of us use when all others fail us. Yuck is stepping into a mud puddle with new shoes. Yuck is the expression used when the baby’s diaper ain’t wet. And “yuck” is the expletive expressed when you take your knife out of storage that has been housed in leather and see a green, slimy growth on the brass parts of the knife.

You might note the green is a crystalline based compound. You might also observe that the green colour is pretty cool looking. But it does nothing to enhance the knife so we express ourselves with “yuck.” This green is verdigris (vird-uh-gree). The word “verdigris” is derived from Old French *vertegrez* which means green of Greece. I suspect that now that you are so well versed in verdigris you will have an appreciation for this green, chemical slime. Maybe not sez, dear elayne.



The green patina on the Statue of Liberty is verdigris.

The first practical application for verdigris was in Europe during the 13th to 19th centuries as a paint pigment. This intense green was used in landscapes and draperies. Artists used this blue, green colour in their ceramics and oil based paintings and sometimes as a glaze over paintings. Verdigris was easy to make and was quite accessible. So just what is this thing called verdigris?

Verdigris is the chemical reaction between copper and acetic acid to form the compound copper acetate. It is this chemical reaction that makes the beautiful (unwanted in some cases) colour that is so

distinct. But it is not simple to pigeon hole this chemical for there are numerous other copper derived chemicals: copper carbonate, copper chloride and copper sulfate that also exhibit various shades of the green colour. In fact the green that covers the Statue of Liberty and copper roof tops of Canadian Parliament buildings is more than likely copper carbonate. Verdigris is not a single compound of a fixed composition. Instead it is a generic term for green patina.

One more example of a form of verdigris is the green on the skin of those who wear copper bracelets. This green is caused from numerous chemicals that interact with the copper. But for the purpose of this article we will call verdigris copper acetate and point out that one needs to be careful with this stuff as it is considered toxic. In other words wash your hands very well after handling and do not eat it. Obviously there will not be a problem from my friend,

Frank, who refuses to have anything green on his plate.

When planning this article I knew that I would not have a bit of trouble finding examples of verdigris in our collection. I have numerous firearm holsters, knife pouches and sheaths and their contents that have been overwhelmed with copper acetate. In the past I would merely wipe them off and remove the green. It wasn’t difficult to do. Sometimes I used a rag, sometimes some steel wool and sometimes I just carefully scrapped it off. But I always knew it would be back again some day.

And then there was this nagging problem of doing this article in a black and white publication. I mean lovely to look at green stands out in colour but in gray on gray and black and white it doesn’t quite make the point. So for this article, please let your green colour imagination go to work for you.

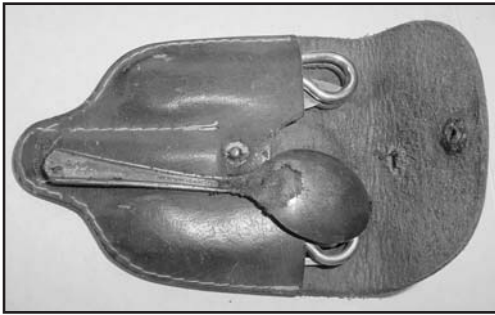


Verdigris has formed around the brass rivets of this old Barr Bros knife. When the verdigris was removed, the knife was like new again.

Copper is a pure metal and is one of the elements in the periodic table. Brass is a composition of 70% copper and 30% zinc. Bronze is a chemical made of copper and tin. Brass is used to make buttons, snaps and rivets and other items that are used in leather products. Leather contains acetic acid and over a period of time, with the right temperature and humidity, a chemical compound is formed on the copper based item. Copper plus acetic acid equals copper acetate equals verdigris. As far as bronze is concerned, it becomes a big issue if you have an old cannon and store it in leather.

In doing the research I noted that copper acetate is soluble in several liquids. One is alcohol. Then again I couldn’t recall which alcohol would work best, and I think dear elayne drank all the good alcohol that would have worked. I also read that copper acetate was water soluble. I tried the water first but discovered that it worked slowly and was dependent on temperature. Just as a whim I dropped a few drops of Hoppe’s #9 gun cleaning solvent on verdigris. Talk about fast acting. Like shazam. A rag finished it off and the green went away. I suspect that this product is kerosene based and so I then tried some WD-40. It worked quite well, but not as good as the Hoppe’s.

This was a great solution for the verdigris removal however I did not know the effect of Hoppe’s on leather. I followed up by placing leather preservative on the chemically treated leather. The leather discolored, but no more than the leather preservative would do by



This Boy Scout wire knife pack has undergone the ravages of verdigris. Clean up is easy so read on.



Verdigris is often found on the brass snaps of firearm's holsters. Does it hurt the leather?

itself. I also did not know the long term effects of kerosene on leather. So thus armed with curiosity I went to the Oregon Leather Store in Eugene, Oregon. Gareth Thomas was a storehouse of information as he works with leather every day. I asked him if he knew about verdigris, and I got this kinda far away look. However when I pulled out the leather holster with the green he knew exactly what I was talking about.

My first question was how to remove it. He, like me, just wiped it off and followed it up with a leather preservative. I told him about my Hoppe's #9 and he saw no problem with this if followed up with leather preservative. Leather is tough he stated but only if properly cared for. I then got a great education on leather with regard to the subject of verdigris. There are two different tanning processes. One is Indian tanning which includes Latigo leather. The other is natural tanning or vegetable tanning which includes bark tanning and oak tanning. Indian tanning uses acetic acid in the process and it is the release of the acetic acid that works on the copper. The natural tanning process does not use acetic acid and is less susceptible to the forming of copper acetate. Gareth also stated that knife and sheath makers should be using natural tanned leather when making knife related products.

I was going through some 45 long Colt brass the other day that I had forgotten about for years. I noted that there was a green stripe on several of the rounds. I knew immediately that these cartridges had spent some time in a leather holster and had formed copper acetate on the portion that had direct contact with the leather. It then dawned on me that ammunition makers made rounds using nickle. Simple to understand that now that I have a better handle on verdigris. Nickle rounds would not turn green. I bet this is why the Lone Ranger used silver bullets. Now all becomes clear.

So now for some practical thoughts on this subject: I have suggested how to get rid of verdigris but failed to tell how to make verdigris if you can't wait for the verdigris to be grown on your knives. The most ancient way is to take copper and hang it over fermenting grape skins. Another way is to steal grandpa's copper bracelet and hang it over hot vinegar. The acetic acid released from the vinegar will form copper acetate on the bracelet. Won't grandpa be surprised!

And now for the practical to tactical as they say on the television. I discovered a Gerber brass framed knife in a leather sheath in my car under the seat. Of course it was graced with cool green verdigris like big time. Hoppe's #9 took it off in a flash like shazam and a fine grade of steel wool polished the brass and made it sparkle. Forget the leather for knives with brass on them and switch to nylon cases and pouches or have a kydek sheath made for that special knife. So what did I do with the Gerber brass knife? Yep, I stuck it back in the leather pouch and threw it back in the car. Oh sigh.

For years I have been taught to store knives separate from the leather sheath or pouch. This goes for firearms too. And for the most part I do. Like anything that was once living, proper care is a requirement to make it last forever. Like oiling your knives, your leather sheaths should also command attention. Use leather care products of your choice, be it leather preservative spray on products or mink oil. Please bare in mind that this article is to inform you about something we all have contact with. For your knives and leather I recommend you follow your own procedures for the leather and the removal of the "Yuck."

