

Instructions

for staining curly maple, to best reveal figure and contrast, using **Aquafortis Reagent**

Tools required: Aquafortis Reagent, for staining maple.
Steel wool, grade 0000.
Rubber gloves, safety glasses, and a shop apron to protect your clothing.
Heat source: electric hot plate, gas stove burner, or electric heat gun.
Cotton balls, swabs, or cotton flannel bore cleaning patches.
Tru Coat or your favorite traditional Linseed oil based finish.

Procedure:

After final shaping, sand your stock with successively finer grits of wet-or-dry sandpaper, backed by sanding block to keep lines straight, curves smooth, and edges straight. Use 300 to 600 grit paper for final sanding.

After final sanding, “whisker” the stock to raise compressed grain. Wet the surface with water, then dry it quickly over your heat source, raising any surface fibers. Remove these with 0000 steel wool, and repeat the process two or more times, until no whiskers remain. Inspect the surface, and wipe away any tiny steel wool fibers with a damp cloth. Steel wool particles will turn black when wetted with Aquafortis.

Wear rubber gloves, an apron, and safety glasses. Aquafortis reagent will stain skin and clothing.

Shake the reagent well. Apply it to the stock generously in small manageable areas with a cotton ball, swab or patch. It is not necessary to stain the entire stock at one time. Aquafortis will blend well with overlapping applications.

Hold the stained area over the high heat of an electric stove element, the high flame of a gas stove burner, or an industrial heat gun, until colors begin to blush. Maple will initially be yellow, then green, brown, and finally dark reddish brown. Keep the wood moving and hold it high over the heat to prevent high spots and corners from scorching. Repeated applications will darken it, if desired. Avoid getting it too dark. Aquafortis will not fade in the sun or lighten with age, but will darken to a more mellow rich tone over time. Successive coats of oil finish will also darken maple. You may wet the stained surface with water, to help judge how dark the finished stock will look. Do not apply an oil or any finish until you are satisfied with the color and tone of the Aquafortis finish. Examine your work in bright sunlight. Fluorescent lighting will often reflect a false greenish color cast.

After staining, rub the stock vigorously with #0000 steel wool saturated with Tru Coat or other pure linseed base finish, to best reveal the figure in maple. Excess rubbing with steel wool, done intentionally at the wrist, forend and wear zones, can recreate the appearance of an original finish with worn patina.

Wipe off excess oil, and allow it to dry overnight. Several additional very thin applications of Tru Coat or your favorite oil finish will build a sheen. Allow Tru Coat or other finish to dry fully between coats.

Safety: Aquafortis is the old name for Nitric Acid. In Latin it means “loud water”. Aquafortis reagent for staining maple is a Nitric Acid based mixture, with iron added to enhance the reaction and deepen the rich color tones, then diluted for safe use. Wear eye protection, rubber gloves, and an apron to protect your clothing. When blushing the stained wood, beware that the heat source can cause severe burns.

Home brewing Aquafortis: Never attempt to make Aquafortis! Concentrated Nitric Acid is dangerous, difficult to buy, ship and store. It is much less expensive to buy properly prepared Aquafortis. Highly toxic fumes are produced when the iron is added. Adding water to acid can cause a violent reaction!

Blushing precautions: Don’t overheat surfaces. Avoid scorching. Avoid charring sharp corners, edges or

ends. Allow plenty of time, at moderately high temperatures, for Aquafortis to blush the wood.

The Blushing process: Aquafortis is absorbed quickly and deeply by the large open cells of softer figure. These are the dark areas. The smaller more closed cells of the hard figure absorb less, and appear lighter. After several coats of Tru Coat oil finish, the surface will develop a sheen, and the hard figure will appear to have depth and iridescence. This figure will have a “cat’s eye” sheen, that appears to move as the surface is turned in the light. This desirable effect is more easily achieved with an acid stain, and is less obvious with pigments or dyes. Original longrifles were often stained with Aquafortis.

Troubleshooting: Common problems are: freshness, a rare green tint, and staining over an oil finish.

Freshness: Aquafortis has a shelf life of months, perhaps years, when stored in tightly sealed dark bottles in a cool dry area. Close the bottle immediately after use. Opened bottles have a shelf life of several weeks or months. Use the small two ounce bottles, and refresh your supply frequently.

Correcting a rare green tint: Probably caused by a reaction with trace elements that occur naturally in maple which is grown in some areas, it is easily corrected if noticed before an oil finish is applied. Make a thin wash of one part Birchwood Casey’s Maple stain (formerly called Colonial Red) or Walnut stain in ten parts or more of methyl alcohol (shellac thinner). Wash the entire surface with this very thin stain. It may not darken the wood, but will mask any green tint, shifting it to a desirable mellow brown with golden highlights. Birchwood Casey stains may be diluted in water, at the risk of raising the grain.

Staining after an oil finish: This is difficult or impossible, depending on the finish. We have heard reports of customers who have attempted to darken finished wood, using leather dyes diluted in Toluene or other dangerous solvents. Aquafortis will not penetrate a finished wood surface.

Reaction with metal parts and inlays: It is wise to remove inlays and parts before staining. However, if some inlays are impossible to remove, you can stain over them. Aquafortis will react very little with nickel silver, coin silver, or brass. It will oxidize steel and iron, causing black streaks.

Promptly replace metal parts, after applying any oil finish: any penetrating oil finish will fill the pores and cells, causing wood to swell. Immediately replace the patchbox, inlays, lock plate, tang and other parts after the first coat of oil finish. Else they may be impossible to replace, after a minute or two.

Other woods: Aquafortis will develop and reveal any figure in Sugar Maple and Red Maple. Other Maple species are probably too soft. Try it on Curly Ash or Birch. It will darken Cherry, Walnut, Danel (a walnut tone grainy African wood), and Beech. It will not enhance figure that is due to color. It will darken these woods, creating the appearance of a worn patina when rubbed back with steel wool and oil finish.

Aquafortis versus other stains: Aquafortis is sometimes confused with Chromic Acid (Chromium Tri-Oxide crystals in water). This acid stain also develops figure, but frequently produces a green undertone. Beware that it can react strongly with alcohol. Not authentic. Chromium compounds can be toxic. Another poor choice is Potassium Permanganate (purple crystals in water). Long exposure to the sun will bleach the color. Not an acid stain, figure is revealed by rubbing with steel wool and oil finish, to polish and lighten the hard figure. The soft cells, which have absorbed more stain, remain dark.

Aquafortis is historically correct: It is demonstrated in *The Gunsmith of Williamsburg*, a documentary movie on colonial gun making. Rent or purchase this amazing film or video from Colonial Williamsburg.

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