

Mark Lee

Slow Rust Blue #3 Instructions

Wear safety glasses during all the following operations.

Metal Preparation Tools Required:

- Abrasive paper preferably cloth backed 120-400 grit
- Selection of files

Remove pitting with files and or abrasive paper. The main goal is to polish the metal while preserving the lines of the firearm without rounding off edges around details and screw holes. Soft buffing wheels can quickly make a mess in the wrong hands. Your metal preparation will probably begin with a 120 coarse grit abrasive paper, but should be completed by using 320 or 400 grit.

Degreasing Preparation Tools Required:

- Detergent, Simple Green® recommended
- Scrub brush
- Tongs or wire hooks
- Air compressor or paper towels
- Clean cotton gloves

Degreasing is essential in getting fine results. Parts should be soaked in hot soapy water using a cleaner such as Simple Green. Scrub parts with a brush during the cleaning process. Remove parts from the cleaning solution with tongs or wire hooks. Rinse thoroughly with hot water, and dry with compressed air or blot dry with paper towels. Do not touch cleaned parts with bare hands, the oils from your body can contaminate the metal. Wear cotton gloves while handling degreased metal parts.

Etching Tools Required (optional)

- Sandblasting gun
- 150 grit garnet (150-240 grit aluminum oxide can be used)

Etching helps the first applications to take hold of the base metal. Etching can be accomplished chemically (acid dip) or mechanically (blasting with media). I do not recommend using acid because it is too hard to control. Experience has proven that blasting with 150 grit garnet is the best. Set the pressure to 40 psi. The polished metal will appear dull grey after blasting but the process of rust bluing will bring the sheen back. The finish will look almost the same whether or not it is blasted. If you use the cabinet just for bluing the blasting is best performed after the degreasing. This will leave the parts in the ideal state for rust bluing. Once completed the parts should only be handled with clean cotton gloves. **Warning:** Do not blast with glass beads or sand. Sand is not graded fine enough. The glass beads produce different textures to hard and soft steel.

Application Preparation Tools Required:

- Vinyl or latex gloves
- Cotton gloves
- Natural sea sponge or cellulose sponge cut into one inch pieces, or cotton swabs
- Small glass or plastic container
- Steel wire brush (.003-.005" bristles) or oil free steel wool
- Container for boiling distilled or deionized water (tap water can be used in many parts of the country but it depends on the mineral content in your area)

- Humidity box

A humidity box can be constructed from plywood. Heat the box with a heat lamp. Humidity can be added by hanging a wet cloth in the box. Ideally the box should have a very small fan to keep the air moving, which keeps the temperature and humidity consistent throughout the box. A temperature and humidity gauge can be mounted to the box. A window is very helpful so you can see rust forming. When parts are covered with brown rust they are ready to be boiled in order to convert the rust to black oxide or Fe₃O₄.

When placing parts in a humidity box let the metal come up to the temperature of the box before adding humidity, so that water droplets do not form on the parts. If water droplets form on the parts remove them from the box, boil, card, let cool to room temperature, and recoat.

Temperature and humidity can be varied so the rusting time can vary greatly. I usually run mine at 90 degrees Fahrenheit with 60% humidity. Winchester was running their humidity box up to 150 degrees Fahrenheit with 95% humidity with rusting cycles from 7 to 15 minutes. Parts have to be watched!

Pour the Mark Lee Slow Rust Blue #3 solution into small glass or plastic container. Use vinyl or latex gloves during application. If you are using natural sea sponge or a cellulose sponge cut the sponge into one inch pieces. The object is to get the thinnest most even coat possible. The part should be at room temperature before applying any slow rust solution. Apply to barrels in long even coats keeping overlaps to a minimum. You will get a feel for how wet to get the solution. The first application will probably bead up on the metal unless the parts have been etched. Wipe over the coated parts with a sponge without adding any new solution and set aside for 15 minutes. The parts will start to turn green. Apply a second coat. This time the solution should wet out evenly on the steel. If not rub with sponge again.

Now place the parts in your humidity box (I run mine at 90 degrees Fahrenheit and 60% humidity). When the parts are covered with a brown rust (usually about 2 hours) remove from the humidity box and place in boiling water for 5 minutes. Remove the parts from the boiling water and dry. They will be covered with what appears to be black soot. Wear cotton gloves and card the part using a wire brush, or oil free steel wool to remove residue. The color will be silver grey or black depending on the type of steel and whether the parts were pre-etched.

After the first boiling and carding examine the metal under the light of a incandescent light bulb or sunlight. If you see any shade of brown or purple card the metal until that area is silver, grey, or black. Applying coats over the top of bad color will lock in that color. You usually will not see it happen again after the first boiling and carding.

Once the parts have cooled to room temperature apply just one coat of bluing solution and place back in the humidity box. Did you remember to let the parts come up to the temperature of the box before adding humidity? You do not want condensation on the part! Never apply more than one coat of solution between boiling and carding except the first coat. It will probably take about 5 hours for the next coat of rust to form. Remove from the humidity box and place in boiling water for 5 minutes to convert the brown rust to black rust and then card the part with a wire brush while wearing cotton gloves. Repeat the sequence of applying solution, standing in the humidity box, submerging in boiling water, carding with a brush, and letting cool to room temperature. Three complete cycles and the parts should be done. Examine the finish to make sure you are satisfied.

Neutralizing Tools Required:

- Baking soda
- Container large enough to contain the parts.

Soak blued parts in a solution of baking soda and water at room temperature for 5 minutes. The soaking can be eliminated if fresh water is used to boil the last few coats. When satisfied with the metal finish, oil parts, and coat the bluing with RIG® rust inhibiting grease and leave set for 24 hours.

Tips from Mark Lee:

During the entire bluing operation do not touch the metal with your bare hands, you can leave contamination spots in the finish.

Sometimes carding with steel wool and water can blend a streak in the blued finish.

If you have a very small spot along the rib that doesn't want to take color take a piece of new 400 grit paper and scuff the area. The following coats should take.

If you use steel wool for carding make sure to buy oil free steel wool. It is available at fine wood working stores.

Garnet is preferred for etching as it is unlikely to imbed in the metal. This is only a concern on parts that rub against each other such as the bolt.

Do not try to rust blue the ends of a barrel, you don't want to get any bluing solution in the bore. Polish the barrel crown back to white after bluing. I do not plug bores anymore when slow rust bluing but make sure I'm using fresh water when boiling the barrels.

If you don't have a boiling tank and are only going to do a few guns you can buy a piece of PVC pipe, glue a cap on one end, hang your barrel in the pipe on degreased wire and fill the pipe with boiling water each cycle.

Parts can be strung on a degreased wire for boiling but **-DO NOT-** wire brush the parts with the wire attached when using a rotary brush, serious injuries can occur! I almost lost an eye when the rotating wire brush grabbed a string of parts.

After initial cleaning, a light scrub down with a scotch pad while in the water rinse is often helpful to insure that all cleaner residue is removed.

Rust bluing can be lightly buffed with a loose muslin wheel and a compound used for mirror finishing. This adds a little sheen to the finish. This operation can be done just before applying grease or oil to the finished parts.

Mark Lee Slow Rust #3 can be diluted up to 50% by adding distilled water. The purpose is to tone down the strength for certain steels or when trying to achieve a finer grain finish.

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The Mark Lee Slow Rust Blue #3 and
RIG® Gun Grease are both available at:

www.trackofthewolf.com

#ML-SRBLUE3-4 Slow Rust Blue #3 4 fl. oz. bottle

#RIG-1 Rust Inhibiting Grease 1.5 oz.