

# Instructions for Finishing Twist Barrels Using Mark Lee Slow Rust #3

When finishing twist barrels the object is show a vivid contrast in the pattern. Rust bluing or browning will be one solid color unless special procedures are followed. This method works by stripping or loosening the color by produced by bluing or browning using an etchant (Ferric Chloride Solution). The rust is removed or loosened easier on the harder steel used in the twist pattern with a process called carding.

Wear safety glasses while performing the following operations.

## **Metal Preparation Tools Required:**

- Abrasive paper preferably cloth backed, initial 120-140 grit, final 320-400 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 120-140 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
- Rubber stoppers for plugging barrel
- Threaded rod, nuts, and washers for securing rubber stoppers to barrel

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

Remove parts from the cleaning solution with tongs or hooks. Rinse thoroughly with hot water, and dry with compressed air or blot with paper towels. Do not touch cleaned parts with bare hands as the oils from your body can contaminate the metal. Wear cotton gloves while handling degreased metal parts.

Rubber stoppers are needed to keep the etchant used during the next process from getting inside the bores of the barrels. Chemical stoppers with a hole work well for double barrels, select a size that will fit securely in the bore. Select a brass rod that will tightly fit inside the hole in the stopper and is long enough to extend the length of the bore plus the length of the stoppers with at least 1” extra. Thread the ends of the brass rod, with any common male thread. Secure the stoppers on the threaded rod in the bore using washers and nuts. These will not blow out in boiling water. Leaving excess length on the rod also makes a good handle during the next procedure. Check for leaks in clean water before starting the next procedure. Bores can be oiled before installing plugs, but you must not contaminate the outside of the barrel or you must repeat the degreasing process.

**Application Tools required:**

- Vinyl or latex gloves
- Cotton gloves
- Natural sea sponge or cellulose sponge cut into one inch squares, or cotton swabs
- Small glass or plastic container with graduations
- Oil free steel wool
- Container for etchant (Ferric Chloride Solution)
- Distilled water
- Container for diluted Slow Rust #3 solution
- 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
- Etchant (Ferric Chloride Solution) available from Radio Shack

The Radio Shack Ferric Chloride Solution is 35%. Dilute this solution 8 parts of distilled water to 1 part Radio Shack Ferric Chloride Solution. If this solution removes color too easily during the dipping process it can be diluted further.

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, keeping 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 Fe<sub>3</sub>O<sub>4</sub>.

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 my at 90 degrees Fahrenheit with 60% humidity, typically with a 2 hour cycle time. 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!

Apply first coat of Mark Lee Slow Rust #3 diluted 2 parts of distilled water to 1 part of Mark Lee Slow Rust #3 when the part is at room temperature. Apply as evenly as possible to the barrel using a sponge cut into one inch square. Place the barrel in a humidity box at 90 degrees Fahrenheit and 60% humidity until covered with a coat of rust (typically 2 hours). Different temperatures and humidity will work but the rusting times will vary from 30 minutes to 5 hours. Wearing gloves carefully remove the part from the humidity box and dip in the Ferric Chloride etchant for 5 seconds. Remove the barrel from the etchant and dip in room temperature water and rub with oil free steel wool under water. Dry the barrel.

Apply the next coat of Mark Lee Slow Rust #3 diluted 4 parts water to 1 part Mark Lee Slow Rust #3. The application should always be done at room temperature. Place the barrel in the humidity box, letting the barrel come up to temperature before adding humidity to prevent condensation, and wait for a coating of rust to form. Once a coat of rust has formed remove the barrel from the humidity box and place in Ferric Chloride etchant for 5 seconds. Remove the barrel from the etchant and dip in room temperature water and rub with oil free steel wool under water. Dry the barrel.

Apply the third coat of Mark Lee Slow Rust #3 diluted 4 parts water to 1 part Mark Lee Slow Rust #3. The application should always be done at room temperature. Place the barrel in the humidity box, letting the barrel come up to temperature before adding humidity to prevent condensation, and wait for a coating of rust to form. Once a coat of rust has formed remove the barrel from the humidity box and place in Ferric Chloride etchant for 5 seconds. Remove the barrel from the etchant and dip in room temperature water and rub with oil free steel wool under water. Dry the barrel. At this point you have coats with ratios of 2:1,

4:1, and 4:1.

Apply the fourth and successive coats of Mark Lee Slow Rust #3 diluted 6 parts water to 1 part Mark Lee Slow Rust #3. The application should always be done at room temperature. Place the barrel in the humidity box until a coating of rust forms. Once a coat of rust has formed remove the barrel from the humidity box and place in Ferric Chloride etchant for 5 seconds. Remove the barrel from the etchant and dip in room temperature water and rub with oil free steel wool under water. Dry the barrel. The pattern of the twist barrel should be getting more vivid.

Repeat the sequence using the Mark Lee Slow Rust #3 diluted to 6 parts water and 1 part Mark Lee Slow Rust #3 until satisfied. It will probably take about eight cycles for most barrels.

If a darker plumb brown is desired, the barrel can be boiled in water and removed when the desired darkness is achieved. If a black and white pattern is desired boil in water after every rusting operation.

### **Neutralizing Tools Required:**

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

After you are satisfied with the pattern soak the barrel for 5 minutes in baking soda and water to neutralize any acid residue.

Rinse in clean water, dry and apply Rig gun grease and set aside for 24 hours to cure. Some finishers also apply a coating of wax or lacquer to the finished barrels.

### **Tips from Mark Lee:**

During the whole bluing or browning operation don't touch the metal with your bare hands as you can leave contamination spots in the finish.

If you use steel wool for carding make sure to buy oil free steel wool. It is available at fine wood working stores. Start off using the finest grade available but have medium on hand as you might prefer it.

If you don't have a boiling tank and are only doing a few guns you can buy a piece of PVC pipe, glue a cap on one end, hang your barrel in the pipe and fill the pipe with boiling water each cycle. The PVC pipe will also work well for the Ferric Chloride etchant. A plastic wall papering tray can also be used.

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

**[www.trackofthewolf.com](http://www.trackofthewolf.com)**

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

**#RIG-1 Rust Inhibiting Grease 1.5 oz.**