



P.O. Box 52, Crown Point, IN 46308

## **Barrel Brown & Degreaser**

These instructions are an expanded version of the instructions that are included with Barrel Brown & Degreaser. The directions should give even a beginner at rust browning or bluing a perfect job the first time. The process is not hard or overly complex, just follow our recommendations. If this is your first attempt at bluing or browning, try it with a scrap piece of steel before attempting a whole barrel.

There is enough solution in one 2.5 oz bottle of Barrel Brown & Degreaser to brown at least 2 complete long guns.

### **Directions for Rust Browning:**

Surface preparation of your parts is an important step before the actual application of Barrel Brown. In order to insure best results all surface defects and blemishes should be removed. For most browned firearms, sanding the barrel with 180 grit silicon carbide paper works well, depending on the smoothness desired. The smoother the surface is to start, the smoother the final finish will be. If a smoother finish is desired, sand the barrel and parts with succeeding finer sandpaper, finishing up with 400 to 800 grit emery or silicon carbide paper.

Oil the bore of the barrel well and seal with tightly fitting wooden plugs at the muzzle and breech. Wipe the surface of the barrel with a clean dry cloth to remove any remaining sanding dust. The barrel is now ready to brown. Degreasing is not necessary, as Barrel Brown is formulated to remove all traces of grease and oil. The barrel can even be handled with bare hands at any time during the browning process (except while still wet with solution) without affecting Barrel Brown's ability to take. However, if any buffing compound has been used to achieve the final finish on the raw steel, it will be necessary to remove the residual wax from the buffing compound with a good solvent degreaser. The active ingredients in Barrel Brown & Degreaser will not work through a wax residue, so it must be removed first. We have found that using lacquer thinner and a clean cloth works well. If using lacquer thinner, be sure to wear the proper protective

equipment and use in a well-ventilated area away from all open flames and other possible ignition sources

The rust browning process depends on atmospheric moisture to activate and accelerate the browning process. If you attempt to brown when the humidity is low, there will not be enough moisture present to allow the rusting process to take place. Where conditions of low humidity prevail, you should devise some method of increasing the humidity. One easy method is to brown in a bathroom where you can run some hot water in the bathtub and use this to increase the relative humidity. Another method is to construct a simple humidity tent out of PVC pipe or wood and cover it with a clear plastic painter's drop cloth. Once you construct the tent, place a couple of containers of hot water inside the "tent" to raise the humidity.

To apply Barrel Brown, use a piece of clean cotton cloth folded into a pad about 1" square. Moisten the pad lightly with Barrel Brown and apply to the barrel, being careful to apply in a long even coat from muzzle to breech. Do not rub the surface of the barrel with Barrel Brown. Apply Barrel Brown as evenly as you can with a single coat if possible. Rubbing the surface with Barrel Brown can cause a metallic copper colored film to form, which will impede the browning process. After applying the first coat of brown, set aside to work for a minimum of three hours. The timing is not critical and depends to a large degree on the relative humidity and temperature of the area where you are browning. If the humidity and temperature are high, three hours will be long enough. If the humidity and temperature are lower, it may take as long as 24 hours. If you leave any coat of Barrel Brown on for longer than 24 hours, the rusting process may become too vigorous and cause surface pitting. To be on the safe side do not leave any coat on, without scaling, for longer than 24 hours.

After the first coat of Barrel Brown has had a chance to work, a good coat of orange to red rust should appear. It may appear uneven and streaked with a greenish-black color, but that is perfectly normal and should not be cause for alarm. Once a good coat of rust has formed, apply a second coat of solution to the barrel. The second coat, and all subsequent coats, is applied very sparingly to the barrel surface. Only enough Barrel Brown should be applied to dampen the surface. This will minimize the chances of pitting due to too vigorous action or streaking due to unevenness of application. Too heavy an application of solution can also remove the existing brown, lengthening the browning process. After letting the second coat work for 3 to 12 hours, again depending on your application conditions, rub the surface of the barrel with a piece of coarse cloth dipped in hot tap water. This step removes the surface scale that has built up and evens the brown. After scrubbing the barrel, flood the surface with hot tap water and dry. Repeat the cycle of applying Barrel Brown, letting the application work and then scaling the barrel, 4 to 5 times more until the desired color has been achieved. Note: if you cannot get back to the barrel within 24 hours of applying a coat of brown, do not apply another coat after scaling. Just scale the barrel and set aside until you are ready to resume browning.

When carding off the rust, you are only trying to remove the loosely adhering scale. Using a coarse cloth such as an old piece of denim blue jeans works fine for this. You can also use an old toothbrush in the hard to reach areas. The advantage of carding with a piece of cloth is that no matter how hard you rub, you can't go too far. Some gunsmiths prefer using 0000 steel wool for

carding. If you use steel wool, it is possible to completely remove the brown by carding too vigorously. If you are striving for a very smooth/glossy brown carding with 0000 does work particularly well. Just make sure you do not card too hard. The smoother the steel is to start with and the smoother you card the surface, the smoother the final finish will be.

Once you have achieved the desired depth of color you need to neutralize the browning process. To stop further action, scrub the surface of the barrel using a solution of hot tap water and baking soda. The familiar Arm & Hammer brand works fine. Use a clean cloth and an old toothbrush to apply the neutralizing solution and remove any of the remaining scale. Next rinse the barrel well with clear hot water and allow to flash dry.

To finish the barrel, heat the surface with a torch until it is too warm to comfortably touch with bare hands, about 125<sup>0</sup> to 130<sup>0</sup> F. This will drive off any remaining moisture. Next apply a liberal coat of motor oil. Allow the oil to bond with the brown for 24 hours and then polish off any excess with a soft dry cloth. Apply a final finish of a quality gun oil, non-abrasive furniture wax or neutral color shoe wax.

For a rougher "antique" brown, apply heavier coats of Barrel Brown at 12-hour intervals. 2 to 4 coats should be sufficient, depending on humidity and temperature. To maximize roughness, do not scale the surface between coats. After the desired depth of color has been obtained, wash with water and baking soda in the normal manner, to stop further browning. This method works especially well on actions and small parts.

### **Directions for Rust Bluing:**

Prepare the barrel and other parts being blued as described for rust browning. For a high gloss surface, sand parts and the barrel with succeeding finer sandpaper, finishing up with 800 grit emery or silicon carbide paper. If an even higher gloss is desired, polish the barrel with buffing compound and a wheel to whatever finish is desired. If you do use buffing compound, you must remove all traces before proceeding with the rust blue process. Even though Barrel Brown & Degreaser works through any oil type surface contaminates, it will not work through wax left from the buffing process. If you have buffed the parts, make sure you remove the wax residue with a solvent-based degreaser.

Rust Blues are basically rust browns where the iron oxide (rust) has been converted from the Ferric Oxide state ( $\text{Fe}_2\text{O}_3$ ), which is red, to the Ferric Ferrous Oxide state ( $\text{Fe}_3\text{O}_4$ ), which is blue-black. This conversion is accomplished by placing the browned parts in boiling distilled water. The easiest method to accomplish this is to make a simple scalding trough.

Purchase a length of 2.5-inch PVC pipe and two end caps. The PVC should be a few inches longer than the barrel you will be bluing. Cut the PVC pipe lengthwise, about 1/3 of the way down, leaving an opening of about 2 inches. Now glue on the two end caps. This will result in a trough long enough to accept the barrel and deep enough to cover the barrel when immersed in water. Now for the actual bluing process.

1. Apply Barrel Brown & Degreaser as you would for a rust brown, allowing the first coat to work 3 to 24 hours, depending on humidity and temperature. Remember, higher humidity and temperature require less time between application coats.
2. Apply second coat of Barrel Brown & Degreaser and allow it to work 3 to 12 hours.
3. Place the barrel in the scalding trough and scald with boiling water. Use enough water to thoroughly cover the barrel. Make sure the water you use is **distilled**. If the water used has any dissolved minerals, you will permanently keep the brown in the red Ferric state, and it will never blue.
4. Once the barrel has cooled to the touch, remove it from the scalding bath and card off the rust scale. The carding method used is one of personal preference. Carding with a damp cloth and toothbrush is easier than the traditional steel wool or wire wheel but produces a more matte finish.
5. Repeat steps 1, 3, & 4...applying Barrel Brown & Degreaser, Scalding and Carding two more times or until the desired depth of color is reached.

At this point neutralize any further rusting by scalding with boiling water and baking soda. Give the barrel a final carding, rinse well and then scald one more time with clean boiling water. Remove the barrel from the scalding trough and flash dry.