# Rifles- Cleaning your Barrel!

Firing a rifle produces deposits of primer fouling, powder ashes, carbon, and metal fouling. Although ammunition has non-corrosive primers and propellant that makes cleaning easier, the burnt powder and primer residue can still cause rust if not removed. This residue contains remnants of energetics, stabilisers, plasticisers, flash suppressants, deterrents and opacifiers that can be hydroscopic (water absorbing) and if left in Chrome Moly and Stainless Steel barrels, corrosion can and usually does result.

There are two major types of fouling, carbon fouling (burnt powder and primer residue) and copper fouling. The carbon fouling must be removed before and reasonable amount of copper fouling can be removed. Precision Shooting Australia recommends non-ammonia based bore solvents for the removal of both carbon and copper deposits. Excessive wear and possible barrel corrosion can result from incorrect use of ammonia based solvents.

The frequency of barrel cleaning your rifle cannot be written in black and white. This depends upon a lot of variables. Some of which are noted below.

1. Cartridge size and projectile velocity
2. Quality of ammunition and components
3. Quality of the barrel and barrel steel
4. Hardness of barrel steel
5. Types of cleaning fluids and brushes
6. Cleaning process
7. Environmental conditions
8. Storage conditions
9. General rifle care by the owner

How you use your rifle and how many rounds you fire at any particular time, WILL determine the cleaning regimé and frequency. There will be an optimum frequency to cleaning your rifle. Since there is truth to increased damage/wear from under cleaning and over cleaning rifles, it is important for you to try and find this optimum through good sound non-biased advice of cleaning products and methods from barrel manufacturer's.

Careful cleaning after every 10 – 20 rounds of a Benchrest Rifle with a specific solvent regardless of storage times may be optimum for that rifle. The same cleaning process may not apply to a mid price ranged .308Win calibre light hunting rifle. This may range from

carbon removal after every 50 rounds and copper removal after every 100 rounds if storage times are shorter than 1 week in de-humidified safe.

Precision Shooting Australia staff generally use Hoppes #9 bore solvent for both removal of carbon and copper build up. This is not because we have any financial interest in the company or sales of their products, the solvent is mild, has good rust prevention and works well to remove both carbon and copper with virtually no risk of harming your rifle. Barrels we have used over the last 20 years in our own private and professional use have been cleaned with this product. Some of which have been inspected carefully by gun builders and ballisticians with borescopes. The results of the use of this cleaning fluid were always favourable.

The following process will not be perfect for most shooters, nothing is. However since there is not much literature available that illustrates a step-by-step basic process one has been laid out here to assist those who have had no guidance in this field.

**Carbon (Burnt Powder residue) - Removal**

1. Place the rifle on a steady table with bipod legs extended or in a cradle designed for rifle cleaning. The muzzle of the barrel needs to be lower that the receiver or start of the barrel. Excess fluid can drain off this way preventing it from entering the chamber, receiver group and trigger group of the rifle.
2. Cut some cleaning cloth or lay some pre-cut patches of cleaning cloth on a clean surface and soak them with some bore solvent. Pick up the patches and gently squeeze any excess fluid from the patches.
3. Preferably with a plastic coated cleaning rod or a carbon fibre cleaning rod, push one solvent soaked patch down the barrel from the chamber to the muzzle. Remove the patch before drawing the rod back through the barrel. This will soak and help loosen the carbon compounds from the barrel and so to prevent the bronze brush from getting stuck.
4. Place the correct calibre bronze cleaning brush on the cleaning rod and dip it into the same bore solvent. Remove from the bottle and gently tap the rod over your finger to shake the excess fluid from the brush.
5. Push the soaked brush through the barrel allow the brush to completely exit the barrel. Pull the brush back through the barrel until is completely free of the barrel. Repeat this process ten times.
6. Remove the brush and re-attach the jag which holds the patch.
7. Push solvent soaked patches through the barrel until relatively clean. The first two to three will be almost completely black.
8. If the patches still come out black after 5 – 6, repeat the bore brush process before returning to the solvent patch process.
9. With a solvent soaked patch wipe the end of the muzzle to clean the black fluid from the crown.
10. With a clean piece of cloth, wrap it around the bore brush and with a spinning motion, clean the chamber of the rifle of any black solvent, sprayed back into it from the bore brush exiting the barrel.

11. Push one dry patch through the barrel and it is ready for either oiling or placing in the gun safe.

**Copper Removal**

1. After step 9 of the carbon removal process, push a heavily soaked patch of cloth containing Hoppes #9 solvent through the barrel cover the muzzle with food wrap as well as the breach to prevent evaporation of the solvent. Place muzzle down in the gun safe for a 24 hour period. The solvent is not corrosive enough to damage the barrel during this period.
2. 24 hours later, remove the rifle from the safe and push another solvent soaked patch through the barrel. This will come out a blue-green colour. This compound (Verdigris) is the result of the copper being oxidised from the Hoppes solvent.
3. Keep pushing solvent soaked patches until no blue-green colour is present.
4. Shine a bright torch down the muzzle of the rifle and if any copper is seen in the rifle lands and grooves, repeat this process.
5. If no copper is present, run a dry patch through the barrel, oil barrel and place in gun safe.

If you wish to shoot the rifle straight away, push two dry patches through the barrel to remove any solvent.

* Always inspect the chamber and barrel and remove any foreign objects before firing the rifle. This should not only be done after cleaning but before firing the rifle at any time after it has been transported in a case or come under any situation where a foreign object may have entered the chamber or barrel.

**Cleaning other rifle Parts**

1. Wipe a solvent soaked patch on the bolt face to remove brass build up and then the surface of the bolt.
2. Dry the bolt face and body with a clean dry piece of cloth. Do not place any lubricant on the clean bolt face.
3. Place a very small amount of bolt grease on the rear of the bolt lugs. This will prevent any galling of these very important metal surfaces during chambering.
4. Place a small amount of lubricating oil on a clean dry cloth and apply a small amount on the bolt body surface and other areas of the bolt where metal components contact each other.
5. With a lightly soaked (solvent) cloth, wipe the bolt channel inside the receiver until clean. Then apply a small amount of oil to the bolt channel. Wipe all external metal surfaces of the rifle with this cloth that are prone to rust. Then wipe the rifle with a clean dry cloth to allow a very small amount of residual solvent to act as a rust preventative coating for storage.