

# Make Your Own!

"Ed's Red" Bore Cleaner... Home-Mix Really Works

By C.E. "Ed" Harris

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Four years ago I mixed my first "Ed's Red" or "ER" bore cleaner and hundreds of users have told me that they think this home-mixed cleaner is more effective than commercial products. I urge you to mix some and give it a fair trial, compared to whatever you have been using.

Competitive shooters, gun clubs and police departments who use a gallon or more of rifle bore cleaner annually can save by mixing their own, and they will give up nothing in safety or effectiveness.

This cleaner has an action very similar to standard military issue rifle bore cleaner, such as Mil-C-372B. Users report it is more effective than Hoppe's for removing plastic fouling in shotgun bores, or caked carbon fouling in semi-automatic rifles or pistols, or in removing leading in revolvers. It is not as effective as Sweets 7.62, Hoppe's Bench Rest Nine or Shooter's Choice for fast removal of heavy copper fouling in rifle bores. However, because "ER" is more effective in removing caked carbon and abrasive primer residues than other cleaners, metal fouling is greatly reduced when "ER" is used on a continuing basis.

I originally came up with this mix because I am an active high power rifle competitive shooter and hand loading experimenter who uses a lot of rifle bore cleaner. I was not satisfied with the performance and high price of commercial products. I knew there was no technical reason why an effective firearm bore cleaner couldn't be mixed using common hardware store ingredients. The result is inexpensive, effective, provides good corrosion protection and adequate residual lubrication so that routine "oiling" after cleaning is rarely necessary, except for long-term storage of over 1 year, or harsh service environments, such as salt water exposure.

This formula is based on proven principles and incorporates two polar and two nonpolar solvents. It is adapted from the one in Hatcher's Notebook for "Frankford Arsenal Cleaner No.18," but substituting equivalent modern materials. I had the help of an organic chemist in doing this and we knew there would be no "surprises." The original Hatcher formula called for equal parts of acetone, turpentine, Pratts Astral Oil and sperm oil, and optionally 200 grams of anhydrous lanolin added per liter. Some discussion of the ingredients is helpful to understand the properties of the cleaner and how it works.

Pratts Astral oil was nothing more than acid free, deodorized kerosene. I recommend "K1" kerosene of the type normally sold for use in indoor space heaters. Some users have reported successful substitution of civilian aviation grade kerosene such as Turbo-A. I am reluctant to "recommend" substitution of aviation grade kerosene, because the effects upon firearm components of the additives required in aviation fuels are unknown. Some "jet- fuels" are gasoline/kerosene blends and absolutely should not be used, because of their increased flammability.

An inexpensive, effective substitute for sperm oil is Dexron (II, IIe or III) automatic transmission fluid. Prior to about 1950 that most ATF's were sperm oil based, but during WWII a synthetic was developed for use in precision instruments. With the great demand for automatic transmission autos after WWII, sperm oil was no longer practical to produce ATF in the quantity demanded, so the synthetic material became the basis for the Dexron fluids we know today. The additives in ATFs which include organometallic antioxidants and surfactants make it highly suitable for inclusion in an all-purpose cleaner-lubricant-preservative.

Hatcher's original Frankford Arsenal No. 18 formula used gum spirits of turpentine. Because turpentine is expensive today, and is also an "aromatic" solvent, which is highly flammable, I chose not to use it. Safer and cheaper is "aliphatic mineral spirits," a petroleum based "safety solvent" used for thinning oil based paints and also widely used as an automotive parts cleaner. It is commonly sold under the names "odorless mineral spirits," "Stoddard Solvent" or "Varsol".

Acetone is included in "ER" to provide an aggressive, fast-acting solvent for caked powder residues. Because acetone is an aromatic, organic solvent, it is recommended that users leave it out if the cleaner will be used in enclosed spaces lacking forced air ventilation. The acetone in ER will evaporate, liberating volatile organic compounds (VOCs) into the atmosphere unless containers are kept tightly closed when not in use. The cleaner is still effective without the acetone, but it is not as "fast-acting."

There isn't anything in Ed's Red which chemically dissolves copper fouling in rifle bores, but it does a better job removing on carbon and primer residue than anything else which is safe and commonly available. Numerous users have told me, that exclusive use of "ER" reduces copper deposits, because it removes the old impacted powder fouling which is left by other cleaners, which reduces the abrasion and adhesion of jacket metal to the bore surface, leaving a cleaner surface condition which reduces subsequent fouling. Experience seems to indicate that "ER" will actually remove metal fouling if you let it "soak," so the surfactants will do the job, though you have to be patient.

Addition of the lanolin to ER bore cleaner mix is entirely optional. The cleaner works quite well and gives adequate corrosion protection and lubrication for most users without it. Incorporating the lanolin makes the cleaner easier on the hands, and increases lubricity and film strength, and improves corrosion protection if weapons will be routinely exposed to salt air, water spray, industrial or urban corrosive atmospheres, or if you intend to use the cleaner as a protectant for long term storage of over 1 year.

If you use other protective films for adverse use or long term storage you can leave the lanolin out and save about \$8 per gallon. At current retail prices you can buy all the ingredients to mix ER, without the lanolin for about \$10 per gallon. I urge you to mix some yourself. I am confident it will work as well for you as it does for me and hundreds of users who got the "recipe" on the Fidonet Firearms Echo.

**CONTENTS: Ed's Red Bore Cleaner**

1 part Dexron II, IIe or III ATF, GM Spec. D-20265 or later.

1 part Kerosene - deodorized, K1

1 part Aliphatic Mineral Spirits, Fed. Spec. TT-T-2981F, CAS #64741-49-9, or may substitute "Stoddard Solvent", CAS #8052-41-3, or equivalent, (aka "Varsol")

1 part Acetone, CAS #67-64-1.

(Optional up to 1 lb. of Lanolin, Anhydrous, USP per gallon, OK to substitute Lanolin, Modified, Topical Lubricant, from the drug store)

#### MIXING INSTRUCTIONS FOR "ER" BORE CLEANER:

Mix outdoors, in good ventilation. Use a clean 1 gallon metal, chemical-resistant, heavy gage PET or PVC plastic container. NFPA approved plastic gasoline storage containers are also OK. Do NOT use HDPE, which is permeable, because the acetone will eventually evaporate. The acetone in ER will also attack HDPE, causing the container to collapse, making a heck of a mess!

Add the ATF first. Use the empty container to measure the other components, so that it is thoroughly rinsed. If you incorporate the lanolin into the mixture, melt this carefully in a double boiler, taking precautions against fire. Pour the melted lanolin it into a larger container, rinsing the lanolin container with the bore cleaner mix, and stirring until it is all dissolved.

I recommend diverting a small quantity, up to 4 ozs. per quart of the 50-50 ATF/kerosene mix for optional use as an "ER-compatible" gun oil. This can be done without impairing the effectiveness of the remaining mix.

#### LABEL AND NECESSARY SAFETY WARNINGS:

RIFLE BORE CLEANER CAUTION: FLAMMABLE MIXTURE  
HARMFUL IF SWALLOWED. KEEP OUT OF REACH OF CHILDREN

1. Flammable mixture. Keep away from heat, sparks or flame.
2. FIRST AID, If swallowed DO NOT induce vomiting, call physician immediately. In case of eye contact immediately flush thoroughly with water and call a physician. For skin contact wash thoroughly.
3. Use with adequate ventilation. Avoid breathing vapors or spray mist. It is a violation of Federal law to use this product in a manner inconsistent with its **labeling**. Reports have associated repeated and prolonged occupational overexposure to solvents with permanent brain and nervous system damage. If using in closed armory vaults lacking forced air ventilation wear respiratory protection meeting NIOSH TC23C or equivalent. Keep container tightly closed when not in use.

## INSTRUCTIONS FOR USING "Ed's Red (ER)" Bore Cleaner:

1. Open the firearm action and ensure the bore is clear. Cleaning is most effective when done while the barrel is still warm to the touch from firing. Saturate a cotton patch with bore cleaner, wrap or impale on jag and push it through the bore from breech to muzzle. The patch should be a snug fit. Let the first patch fall off and do not pull it back into the bore.
2. Wet a second patch, and similarly start it into the bore from the breech, this time scrubbing from the throat area forward in 4-5" strokes and gradually advancing until the patch emerges out the muzzle. Waiting approximately 1 minute to let the bore cleaner soak will improve its action.
3. For pitted, heavily carbon-fouled "rattle battle" guns, leaded revolvers or neglected bores a bronze brush wet with bore cleaner may be used to remove stubborn deposits. This is unnecessary for smooth, target-grade barrels in routine use.
4. Use a final wet patch pushed straight through the bore to flush out loosened residue dissolved by Ed's Red. Let the patch fall off the jag without pulling it back into the bore. If you are finished firing, leaving the bore wet will protect it from rust for 1 year under average conditions.
5. If the lanolin is incorporated into the mixture, it will protect the firearm from rust for up to two years. For longer term storage I recommend use of Lee Liquid Alox as a Cosmolene substitute. "ER" will readily remove hardened Alox or Cosmolene.
6. Wipe spilled Ed's Red from exterior surfaces before storing the gun. **While Ed's Red is harmless to blue and nickel finishes, the acetone it contains is harmful to most wood finishes.**
7. Before firing again, push two dry patches through the bore and dry the chamber, using a patch wrapped around a suitably sized brush or jag. First shot point of impact usually will not be disturbed by Ed's Red if the bore is cleaned as described.
8. I have determined to my satisfaction that when Ed's Red is used exclusively and thoroughly, that hot water cleaning is unnecessary after use of Pyrodex or military chlorate primers. However, if bores are not wiped between shots and shots and are heavily caked from black powder fouling, hot water cleaning is recommended first to break up heavy fouling deposits. Water cleaning should be followed by a thorough flush with Ed's Red to prevent after-rusting which could result from residual moisture. It is ALWAYS good practice to clean TWICE, TWO DAYS APART whenever using chlorate primed ammunition, just to make sure you get all the corrosive residue out.

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In Home Mix We Trust, Regards, Ed