

Collecting and Shooting the Military Surplus Rifle



surplusrifle

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Mosin-Nag
match grade



Taking the Salt Out

Testing of popular solvents on the removal of salt formed from corrosive ammunition firing

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A Final Test

Some of you are thinking, hogwash, I have used XYZ solvent for 10 years with no rust formation. Ah, do read on....

At the beginning of the article I mentioned that I had done some initial testing using a higher temp and what I thought was going to be higher humidity. I went and re read the chapter that Julian Hatcher wrote in his book "Hatcher's Notebook" and found out that in their testing of corrosion, they found that corrosion only formed at a humidity of 68% and

greater.

Many of you probably looked at the images above of your favorite solvent (like Hoppe's No 9) and simply did not believe what you saw. But in order to prove a point I did one more series of tests with applying salt and then cleaning with each solvent.

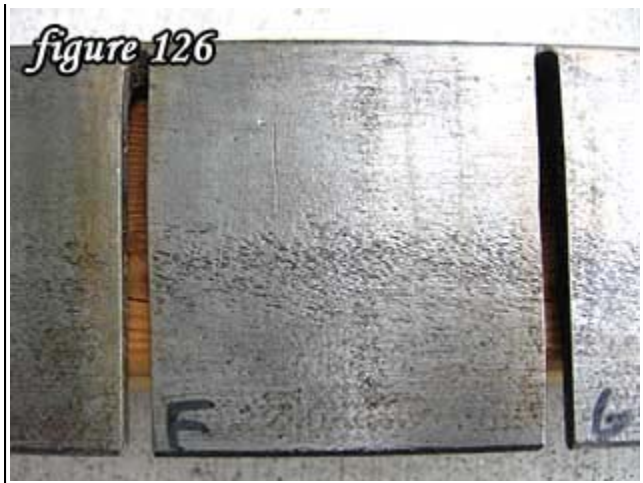
This time, instead of exposing the treated metal to high humidity (which is probably not all that common except for the wettest and most humid areas of the country), I exposed the treated metal to higher temps and less than 20% humidity. The higher temp (~100F) was needed to keep a constant low humidity level.

As before, the metal had the same amount of salt "sizzled" onto it. Each test area was swiped 15 times with a saturated patch. I did not do a control swipe of the solvent. After cleaning, I placed the metal strips into the easy bake oven with one 100w bulb in it, that maintained a temp of roughly 100F. A pan of water was also placed in the oven. Within a few minutes, the temp and humidity were stable. The test strips were left in place in the oven for over 48 hours.





E = RB-17



F = USGI 1943



G = Outers Nitro Solvent



H = Ed's Red (Commercial)



I = Kleen Bore No 10

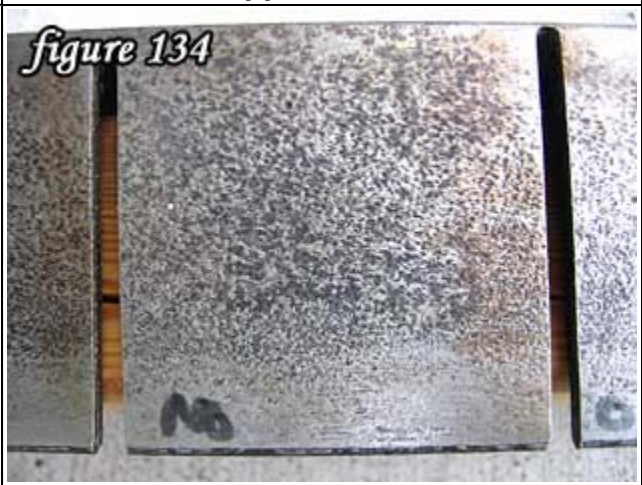


J = No Salt/No Water Control



K = No Salt/Water Only Control

L = Hoppe's Elite Foam



M = Butch's Bore Shine

N = Hoppe's No 9



O = Shooters Choice

P = Remington Brite Bore



Q = Blue Wonder



R = Windex



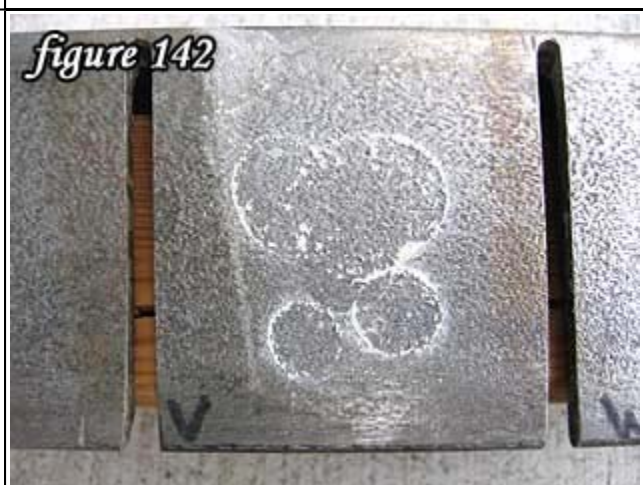
S = Remington 40-X



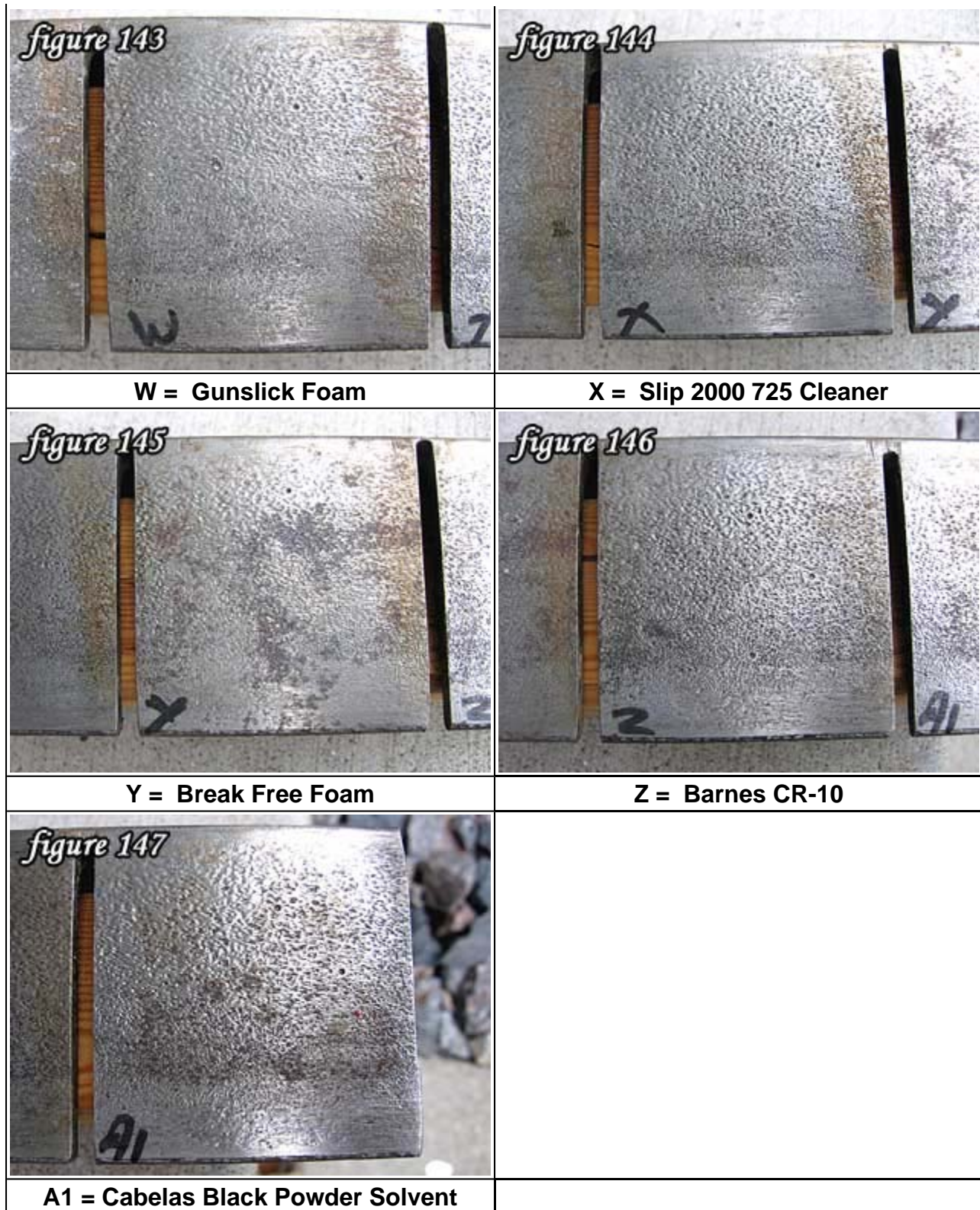
T = Kroil



U = Gunslick Ultra Klenz



V = Salt Only Control



This is a montage of all the treated metal strips. After 48 hours there was no rust formation, not even on the control (letter V)

After 48 hours in the less than 20% humidity, I turned off the light (heat) and allowed the

metal strips to sit as before. Humidity went to 99% within a few minutes. In about 8 hours the metal looked like this:


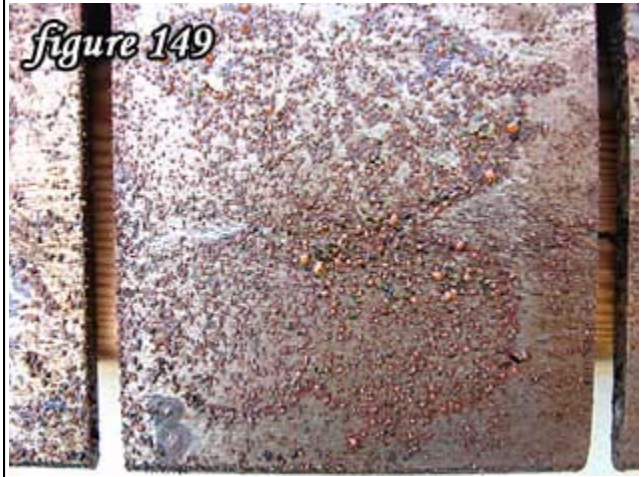
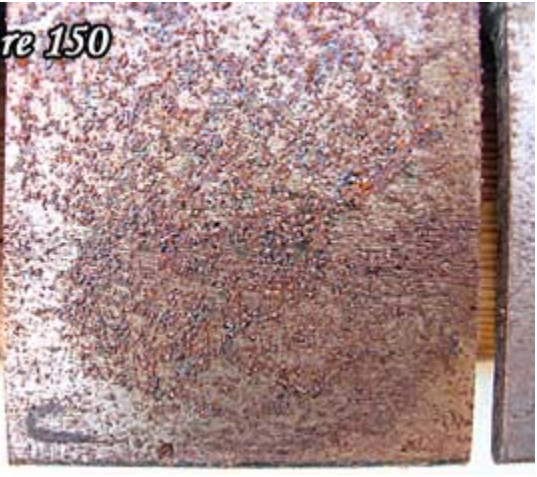

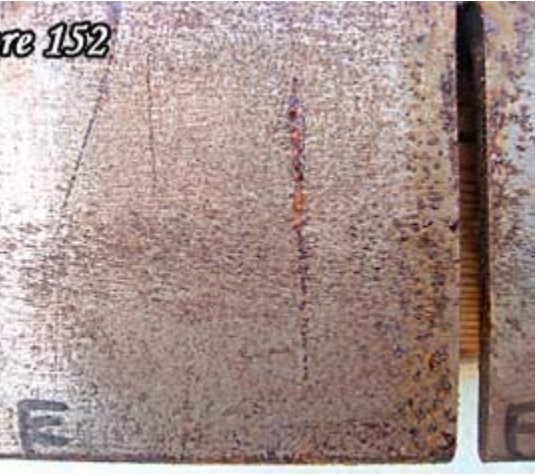

 <p><i>figure 148</i></p> <p>A</p>	 <p><i>figure 149</i></p>
<p>A = Eastern Shooting Supply Solvent</p>	<p>B = Pro Shot 1 Step</p>
 <p><i>figure 150</i></p> <p>C</p>	 <p><i>figure 151</i></p> <p>D</p>
<p>C = RIG 44</p>	<p>D = Outers Odorless</p>
 <p><i>figure 152</i></p> <p>E</p>	 <p><i>figure 153</i></p> <p>F</p>
<p>E = RB -17</p>	<p>F = USGI 1943</p>



figure 154

G = Outers Nitro Solvent



figure 155

H = Ed's Red (Commercial)



figure 156

I = Kleen Bore No 10



figure 157

J = No Salt/No Water Control



figure 158

K = No Salt/Water Only Control

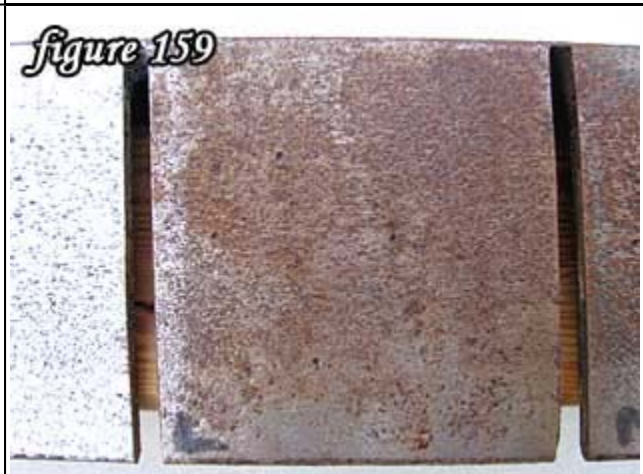


figure 159

L = Hoppe's Elite Foam



M = Butch's Bore Shine



N = Hoppe's No 9



O = Shooters Choice









P = Remington Brite Bore

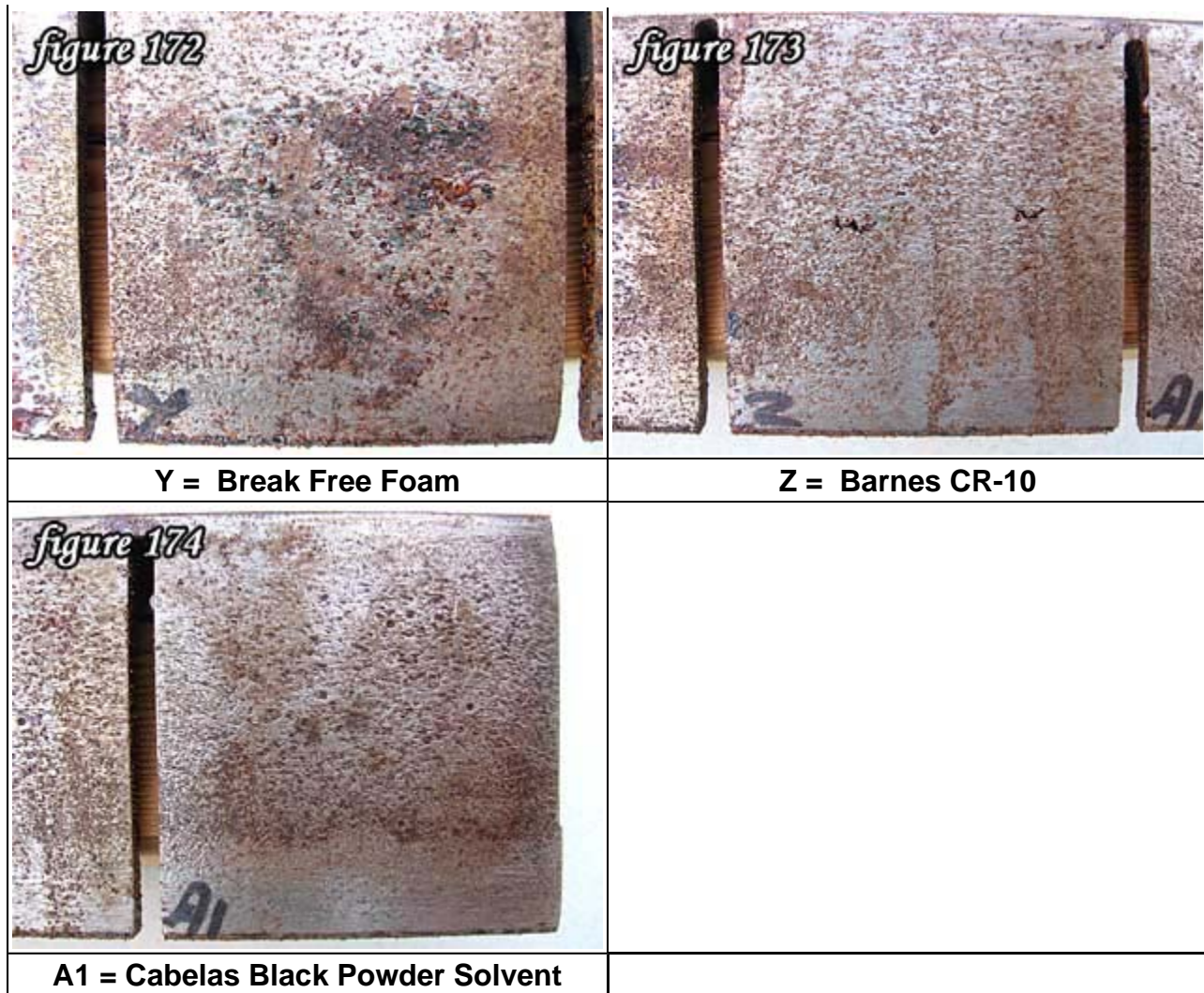


Q = Blue Wonder



R = Windex

 <p><i>figure 166</i></p>	 <p><i>figure 167</i></p>
<p>S = Remington 40-X</p>	<p>T = Kroil</p>
 <p><i>figure 168</i></p>	 <p><i>figure 169</i></p>
<p>U = Gunslick Ultra Klenz</p>	<p>V = Salt Only Control</p>
 <p><i>figure 170</i></p>	 <p><i>figure 171</i></p>
<p>W = Gunslick Foam</p>	<p>X = Slip 2000 725 Cleaner</p>



Quite a difference, right? So it appears that even though you have cleaned the weapon thoroughly, simply because you keep water away (humidity) you will not see rust form. If you live in an area that is dry most of the time, you probably will never see rust form. If you live in an area that has humidity swings, you may only see rust during the wet season.

Conclusion

Product Name	Wife Rating 0 = wife kicks you out of the house 1 = wife wants you in the garage 2 = wife does not mind the smell	Salt Removed?
Barnes CR-10	0	Y
Blue Wonder Gun Cleaner	1.5 to 2	Y
Break Free Bore Cleaning Foam	1.5	N
Brownell's Ed's Red	0	N
Butch's Bore Shine	0	N
Cabela's 100% Natural Citrus BP solvent	2	Y

Distilled Water	2	Y
Eastern Maine Shooting Supply Gun Solvent	0.5	N
Gunslick Foaming Bore Cleaner	1.5 to 2	Y
Gunslick Ultra Klenz	1.5 to 2	Y
Hoppe's Elite Foaming Gun Cleaner	2	Y
Hoppe's No. 9	0.5	N
Kano Kroil	1	N
Kleen Bore No 10 Gun Cleaning Solvent	0 to 0.5	N
Outers Bore Cleaner Odorless Solvent	2	Y
Outers Gun Cleaning Nitro Solvent	0.5 to 1	N
Pro Shot 1 Step Gun Cleaner and Lube	1.5 to 2	N
RB-17 Gun Cleaner	2	Y
Remington 40-X Bore Cleaner	1	N
Remington Brite Bore	0.5	N
RIG #44 Super Bore Cleaner	1	N
Shooter's Choice MC#7	0.5 to 1	N
Slip 2000 725 Gun Cleaner Degreaser	2	Y
Slip 2000 Carbon Killer	2	Y
Soap and Water	2	Y
USGI 1943	0	N
Windex	2	Y

In general, some assumptions for the experiments are:

1. Metal angle iron is not the same metal used in gun barrels, however it is being used as an indicator for rust formation.
2. The amount of salt is grossly exaggerated both in quantity as well as placement on the metal.
3. Every effort was made so that solvents were used and treated equally.
4. This test is ONLY for the removal of salt. No testing was done for any other aspect of weapon cleaning (i.e., carbon removal, copper removal, etc.)
5. Many solvents either state that they will degrease completely the metal or will leave behind a protective film. This test did not use any sort of metal protectant after cleaning. The combinations of solvents and various commercial protectorants is mind boggling.

From these tests, it appears that the solvents that are water based, and therefore able to DISSOLVE the salt, will do the better job of removing the salt off the metal. Petroleum based solvents also remove some of the salt, I suspect mostly by physical action of brushing strokes and repeated patches that pick up the salt or push them out of the bore as you clean. However, that being said, it does appear that humidity (water) is the key to the equation. As seen in the second test, a low humidity will make it appear that all salt has been removed and no rust will form. Cleaning weapons AND storing them properly is critical to inhibit corrosion of the metal surfaces. Part of the storage would be the

lubrication of the metal using some sort of metal protectorant to block the metal from air and water vapor and thereby keeping the rust formation in check.

Next we will explore how copper removing solvents work and put some common ones to the test.

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