

Maintaining consistency in your brass

My last article on brass prep centered on preparing new brass for loading. This article will cover maintaining that brass for long life and the processes I use in my brass loading prep. What I am outlining is what I do; I might spend more time in some areas and much less in others. Basically it boils down to how I can load match quality ammo efficiently as possible.

When we fire our brass for the first time we as shooters tend to call this fire-forming, in reality that term is most often used in the description of brass changing dimensions such as the forming of an AI case or a Dasher from a BR. In fact we are fire-forming the first time with virgin brass as most factory brass is at least .004" undersized from even a tightly headspace match chamber. So you have your new rifle and 500 pieces of virgin brass. You fired enough rounds through your gun for the velocities to stabilize and you developed a load that keeps 5 rounds into 3/8" groups. You take it to a match and finish better than ever before. When you get back home you unpack your gear and you have 27 rounds left over from the original 500 you loaded. You have another match in 2 weeks. What do you do?

What I do is go out and fire my remaining rounds, then I sit down to size my 500 pieces of brass, I want to do it in one sitting and without die resetting. So how do I set my dies, I shoot for a full length resize that pushes my shoulders back .001-.002" Some guys shoot for less but what I am specifically looking for is that all my loads chamber with zero bolt resistance. For one reason or another if you think you can or do set your die for .0005"-.001" of shoulder bump, you will invariably get 1 out of 10 or 20 cases that will close with noticeable bolt resistance. Consistency is key in all aspects of our sport and this is just another area where I want all my cases to chamber freely, thus the use of a full length die all the time omitting neck sizing dies. Now be very hesitant to push your shoulders back more than .002" by doing that we are lessening the life of our brass. When we oversize or push our shoulders back excessively, we begin the process of case web thinning, through excessive sizing and firing causing excessive web stretch, eventually leading to case head separations.

I use a simple process to measure my shoulder bump, I use blue masking tape on the back of my case head and chamber the sized piece of brass. The tape is approximately .003"-.004" thick. So if the bolt closes easily with no tape on the case, and I feel firm resistance with tape, I know I am there. If the bolt closes all the way with only slight resistance I know I am around a .003" bump.

A word on dies, I have used everything from Lee to Forester, all have loaded quality ammunition. These days I use the Redding and Hornady standard 2 die sets with expander balls in. You must lube the inside of the case necks when using expander balls, if you don't you will get scratched cases and hard resistance on the upstroke of the press, as well as accuracy issues. I feel like the expander ball gives me a consistent neck ID so neck tension will be near to perfect as I can make it, without having to turn necks and use just a neck bushing and no expander. The fly in the ointment on this entire principal is that some barrels/chamberings don't care what the neck tension is. I use this process universally with all my match, target and hunting ammunition. Other guys buy the best dies they can afford and there is nothing wrong with that, but don't let the fact that you can only afford \$35.00 dies hinder your ideas of making ¼ minute ammunition.

In the process of setting the die there is a little trial and error getting it set correctly for the amount of bump you want. During this process I will NOT repeatedly size the same case over and over as I set

my die. I will lube and size one case, measure it, adjust the die, and lube a different case size it, and readjust. I may repeat this process until I am satisfied with my die setting. I may now have 12 cases that have been run through the die just once (rather than 3 cases that I ran through 4 times each). Once the die is set I will re run those twelve cases, doing it this way insures I did not work harden the brass by sizing it 3-5 times in setting the die, again consistency. By all means use the locking collar on your dies so this process does not have to be repeated every time you size a batch of brass. If you have multiple guns in the same cambering with slightly different head space, buy another sizing die and set it for that gun.

At this point I will sit down and size all my brass without disruption, paying particular attention to consistency in lube, press ram resistance, and any other anomalies that may cause me to cull out a piece of brass. If I ditch 2 or 3 pieces because something didn't feel right, I feel like that loss is better than losing a point in a match from something I could have prevented. I will also measure about 20 pieces of brass randomly and make sure they do not measure longer than the maximum case length set by SAAMI standards. If some do they all get trimmed to length and re-chamfered. On case lube, I have used One Shot Aerosol , RCBS lube, and Die wax, all have worked well for the most part, just don't skimp on the One Shot. It was the only lube I was using when I stuck 2 cases in the last 10 years, in both instances I had just not applied enough.

Case cleaning has been done a dozen different ways and sometimes not at all. The process I have used the most these last few years is chemical cleaning. I size all my brass dirty, then wash it in HOT soapy water, rinse, then chemically clean in losso Case Cleaner per instructions. (basically a 1-2 minute soak) I then drain the losso back into its container for re-use, rinse the brass in hot water, drain, pat dry on a bath towel, and then back into a dry gallon bucket. I then use a hair dryer set to max temp to dry the cases in the bucket, agitating them slightly over about 4-5 minutes will have 200 cases free of water and clean enough to load. This process takes about 15-20 minutes for 500 cases, and I can be seating primers as soon as the cases cool. My cases are not as shiny as some but this process is fast and I do not have a concern of left over tumbling media in my flash holes or primer pockets'. Oh primer pockets I neither clean nor uniform them ever, the little bit of carbon grit in them stays from loading to loading.

Annealing is the process of softening our case necks/shoulders, after repeated firings and sizing that cause this area of the brass to work-harden. Work hardened brass crates inconsistent neck tensions and will eventually lead to brittle brass causing split necks. I anneal my cases after every 3 firings using one of the commercially available annealing machines on the market. In years past I did use a manual method, but gave that up over pure convenience. Some guys anneal more often than this which is not a problem. I just found over time that every 3rd firing was satisfactory. When I set up the machine I let my cases dwell long enough that I can see a red/orange glow, in a darkened room, on my entire case neck and half of the shoulder, this has worked well for me. If you under anneal your brass all you did was waste your time so make sure you reach the critical temperature.

Well this was a lot of information that I tried not to get too descriptive about, I hope some of this is usable to the new and experienced shooters alike. After 20 years of making my own ammo I still have some learning to do!! Next time I will get into my process of load development, which is another one of those philosophies of make it quick accurate and painless.

Bio; Jim See currently competes as a Pro in the Precision Rifle Series, having finished the last 4 seasons Ranked in the top 15 Nationally. Jim has worked in the precision bolt action rifle industry since 2008 as owner of Center Shot Rifles, Quality Manager at Surgeon Rifles action division, and currently operates "Elite Accuracy LLC" a Training and Gun Smithing Business in Decorah Iowa.