



PRIMER SWAPPING

A BIG MISTAKE SAYS TOM CERETTO

In the last issue of this publication I wrote about the effect on ballistics that crimps have and on loading import hulls. This issue I will cover a mistake that many reloaders commit – primer swapping.

Almost everyone that reloads

has done it and it is the most egregious swap you can make. Every time someone asks me to print a list of primers by strength, I regret doing so right after I do it. There is probably no component a reloader can swap that can have a greater effect on the performance

of his reloads than the primer.

Hodgdon conducted a test to determine the effect primers had on a control load of both $\frac{7}{8}$ ounce and $1\frac{1}{8}$ ounce loads they assembled. They used Winchester cases and Winchester wads when assembling the loads. They were loaded and

pressure tested under tightly controlled conditions. A deep crimp was used to create the highest possible pressure for a given load. Note the difference of 2,700 psi in pressure for the $1\frac{1}{8}$ ounce load from the hottest to the mildest load. That much pressure



1 1/8 oz TEST		
PRIMER	VELOCITY	PRESSURE
FED. 209A	1,172 FPS	11,100 PSI
WIN. 209	1,173 FPS	10,900 PSI
FIO. 616	1,171 FPS	10,800 PSI
CCI 209M	1,171 FPS	10,400 PSI
REM. 209P	1,157 FPS	8,500 PSI
CCI 209	1,162 FPS	8,400 PSI

7/8 oz TEST		
PRIMER	VELOCITY	PRESSURE
WIN. 209	1,214 FPS	10,300 PSI
CCI 209M	1,217 FPS	10,200 PSI
FED. 209A	1,195 FPS	9,100 PSI
FIO. 616	1,196 FPS	9,000 PSI
REM. 209P	1,187 FPS	8,200 PSI
CCI 209	1,180 FPS	7,700 PSI

differential can have a big effect on how the powder burns and on patterns. If you are using a mild primer in a recipe that has a stated pressure of 10,000 psi, a switch to a hotter primer can take the load beyond the SAMMI limits of 11,500 psi for 12 gauge 2³/₄ inch hulls. The 7/8 ounce load had an almost identical variation in pressure as the heavier 1 1/8 ounce load did. What is important to note is that the hottest primer in the 1 1/8 ounce test was not the hottest primer in the 7/8 ounce test; the only change was the weight of the shot charge. What works in a 1 1/8 ounce load may not work the same in a 1 ounce or 7/8 ounce load. This backs up my theory that shotgun ballistics, like meteorology, is not always a perfect science – there are no “givens” in reloading.

Dick Quesenberry at Alliant does a primer comparison test every year using various Alliant powders. The following was done in May 2009 using Alliant’s popular Red Dot powder in both a Remington one piece tapered plastic case and a Federal Gold Medal straight wall one piece plastic case. Quesenberry included the extreme variation (EV) in both velocity and pressure with his data. The control load for the 1 1/8 ounce Remington case is as follows, the only difference was with the primer indicated.

As with the Hodgdon test, there was a change in which primer performed the same in the Alliant test. Note that the CCI 209 had the lowest pressure and the highest extreme variation in pressure and velocity in both cases in this Alliant test.

CONTROL LOAD					
CASE: REM. STS. POWDER: 17.5 GR. RED DOT. WAD: REM. FIG. 8. SHOT: 1 1/8 OZ. LEAD					
PRIMER	VELOCITY	EV	PRESSURE	EV	
FED. 209A	1,159 FPS	13 FPS	10,920 PSI	700 PSI	
CCI 209M	1,156 FPS	10 FPS	10,850 PSI	1,200 PSI	
REM. 209P	1,151 FPS	18 FPS	10,270 PSI	1,500 PSI	
WIN. 209	1,142 FPS	20 FPS	9,800 PSI	1,500 PSI	
CHEDDITE	1,144 FPS	24 FPS	9,550 PSI	1,400 PSI	
FIO. 616	1,186 FPS	19 FPS	9,100 PSI	1,300 PSI	
CCI 209	1,132 FPS	25 FPS	9,020 PSI	2,200 PSI	

CONTROL LOAD					
CASE: FED. GOLD MEDAL. POWDER: 18.0 GR. RED DOT. WAD: DRXXL ORANGE. SHOT: 1 1/8 OZ. LEAD					
PRIMER	VELOCITY	EV	PRESSURE	EV	
FED. 209A	1,205 FPS	18 FPS	8,820 PSI	1,300 PSI	
CCI 209M	1,202 FPS	20 FPS	8,690 PSI	1,600 PSI	
REM. 209P	1,192 FPS	29 FPS	7,930 PSI	1,800 PSI	
FIO. 616	1,186 FPS	34 FPS	7,490 PSI	1,800 PSI	
WIN. 209	1,184 FPS	34 FPS	7,460 PSI	1,600 PSI	
CHEDDITE	1,186 FPS	28 FPS	7,370 PSI	1,200 PSI	
CCI 209	1,168 FPS	48 FPS	6,770 PSI	2,500 PSI	

While I would use the bottom four loads in the Alliant Remington test, I would be more inclined to use the top three loads in the Alliant Federal Gold Medal case test. The pressure values in these loads would be in the pressure range that Red Dot performs best at and would allow more leeway for inconsistent powder or shot drops.

Quesenberry informed me that he did this years test using Alliant Clay Dot and the results tracked pretty much the same as with Red Dot.

One of the reasons Quesenberry makes these primer checks every year is that some primer manufacturers make changes and do not always inform powder companies (especially imports) or reloaders of the changes. When Federal changed from the 209 primer to the 209A primer it was a change from a mild primer to a hot primer and the 209A could not be used in the same recipes as the 209 primer (or higher pressures resulted). Rio went from a mild primer to a hot primer recently and the same problems developed.

It is always best to keep exactly to powder company recipes when reloading and keep up to date on any changes manufacturers make to components.

(Thanks to Dick Quesenberry and Ron Reiber for allowing me to use the data in this article.) ■