Corrosive Primer Redux

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With the resurgence of interest in Garand and Springfield shooting and the availability of vintage .30-06 ammunition from the CMP, questions are being asked as to how to tell which ammunition is corrosive and which is non-corrosive. A lot of hearsay information and poor copies of tables of arsenal production are in circulation. An article originally published in the January 1961 issue of American Rifleman discussed the evolution of non-corrosive primers and how to distinguish which ammunition is non-corrosive. The information contained in the original 1961 article has been condensed for this article.

First, a little history. For non-mercuric corrosive primers the primary corrosion culprit is potassium chlorate ($KClO_3$). Potassium chlorate was used as an oxidizer, providing oxygen, to the primer compound reaction. When the reaction takes place the oxygen is removed from the molecule leaving potassium chloride (KCl). Potassium chloride is a salt much like sodium chloride (common table salt). As a matter of fact, take a look at most salt substitutes and you will find that they contain potassium chloride instead of sodium chloride. The potassium chloride residue left in a gun barrel absorbs water from the air and creates a corrosive film responsible for barrel rusting. Since potassium chloride is highly soluble in water this is the reason why it is recommended that barrels be washed with hot water after shooting corrosive ammunition. It is also recommended that shooters wash their brass that contained corrosive primers in the same manner.

Enough of the chemistry review, different arsenals and manufacturers transitioned over to non-corrosive primers at different times, but the bulk of the transitions occurred in the early 1950s. The following information is provided as a means of identifying non-corrosive ammunition with the lot and date of first manufacture. As an example, Lake City Arsenal went to non-corrosive .30-06 ball with its Lot 13700 produced in June 1951. Lots produced earlier than June 1951 should be considered corrosive, while Lot 13700 and all later lots are non-corrosive.

Manufacturer	Headstamp	Ammo Type	Starting Lot No.	Date
Frankford Arsenal	FA and last 2 digits of year Single 4 = 1944 Single 5 = 1955	.30-06 ball .30-06 AP .45 M1911 ball	4149 887 1542	June 1951 October 1951 July 1954
Federal Cartridge Co.	FCC and last 2 digits of year	.45 M1911 ball	1801	November 1953
Lake City Arsenal	LC and last 2 digits of year	.30-06 ball .30-06 AP	13700 13158	June 1951 April 1952
Remington Arms Co., Inc.	RA and last 2 digits of year	.30-06 ball .45 M1911 ball	33853 5552	November 1951 September 1952
St. Louis Ordnance Plant	SL and last 2 digits of year	.30-06 ball .30-06 AP	9420 9467	May 1952 July 1952

Exception #1 .30-06 ball with zinc plated primers and headstamped "FA 47" or later is non-corrosive.

Exception #2 FA 30-06 special Match, headstamped "FA53", "FA 54" or "FA 56" that has red, purple or green primer sealant is corrosive.

Manufacturer	Headstamp	Ammo Type	Starting Lot No.	Date
Twin Cities Arsenal	TW and last 2 digits of year	.30-06 ball .30-06 AP .45 M1911 ball	19362 19776 18000	December 1950 February 1952 August 1953
Western Cartridge Co.	WCC and last 2 digits of year	.30-06 ball .45 M1911 ball	6428 6375	June 1951 November 1952
Winchester Repeating Arms Co.	WRA and last 2 digits of year	.30-06 ball .30-06 AP .45 M1911 ball steel case	23201 22007 22198 22000-22007 only	August 1951 June 1954 November 1951 June 1954
Dominion Arsenal, Canada	DAQ and last 2 digits of year	.30-06 ball	44000 all by this maker was non-corrosive	August 1945
Verdun Arsenal, Canada	VC and last 2 digits of year	.30-06 ball	42000 all by this maker was non-corrosive	April 1945

Other Ammunition

All .30 carbine ammunition is non-corrosive.

All 7.62mm NATO ammunition manufactured in the U.S. is non-corrosive except 1956 International Match ammunition manufactured at the Frankford Arsenal at the same time as the .30-06 International Match ammo listed previously. In 1930 Frankford Arsenal produced a batch of National Match ammunition that was non-corrosive. Problems with high pressures occurred at Camp Perry and the lot was replaced with a conventionally loaded lot and not used further.

The following manufacturers made small arms ammunition during World War II only and all of their production was corrosive:

Manufacturer	Headstamp
Eau Claire Ordnance Plant	EW and last 2 digits of year
Denver Ordnance Plant	DEN and last 2 digits of year
Des Moines Ordnance Plant	DM and last 2 digits of year
Utah Ordnance Plant	U or UT and last 2 digits of year

It should be noted that sometimes ammunition is repacked and the date of repacking is noted on the containers. This date is not the date of manufacture, if there is question about the manufacture date always check the headstamp!

References

1. The American Rifleman, “Beginners Digest: Nonmercuric, Noncorrosive Primers”, pp. 34-36, January 1961.

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