

Primers



PRIMERS

By deliberate design and intent, primers explode, and do so with relatively little pressure or heat exposure. They demand the care and respect you would accord any other explosive device. All primers consist of: a cup containing an impact sensitive explosive compound, a thin wad or sealant to protect the propellant and keep it in place, and an anvil, against which the firing pin mashes the cup and compound to cause detonation. There are two basic primers commonly encountered in North America:

Berdan primers use an anvil that is integral to the case primer pocket, rather than a separate anvil which is assembled in the primer cup itself (like the Boxer system). Because the centrally located anvil of the Berdan system does not permit easy removal of spent primers with an ordinary decapping pin, Berdan cases are not considered reloadable. They can be reloaded using special tools. However this is beyond the capability of most home reloaders. The only currently made American ammunition using this system is the aluminum-cased CCI Blazer line of inexpensive non-reloadable pistol cartridges. Berdan primers are also found in some foreign military surplus ammunition available in this country. Be certain to sort out and discard Berdan cases before you reload.

Boxer primers were developed with ease of loading in mind. The central large flash hole makes decapping simple, while the shape and balance afforded by the anvil makes automated primer handling and seating less problematic. All further references are to Boxer primers.



The two basic diameters of sporting primers are:

Large .210"

Small .175"

Small rifle and small pistol primers are dimensionally identical, though they aren't interchangeable in performance and one should never be substituted for the other. On the other hand, large rifle primers are too tall to seat below flush in pistol/carbine cases. **Use of large rifle primers in pistol cartridges will produce unreliable, over pressured and unsafe loads!**

The various manufacturers color code their primers for identification. Be familiar with what you use and safely discard any primers you can't identify.

Small pistol and rifle primers are dimensionally similar, but there are significant differences in performance and construction. Cup thickness of a typical small rifle primer versus a small pistol primer is .003" to .009" greater, depending on manufacturer. This thicker cup, not a difference in material, results in a harder primer that is designed to be fired by the manly blow from a rifle striker rather than the indifferent little tap offered by your highly tuned competition pistol. Misfires and/or accuracy problems associated with inconsistent ignition are a frequent result of small rifle primers being used in handgun applications inappropriately.

Standard pistol primers are more than adequate to ignite most of the loads found in this book. Pistol magnum primers are specified only for certain high density slow-burning powder loads in magnums. Generally use of magnum pistol primers is to be avoided, particularly with smaller-capacity cartridges like 9mm parabellum, 40 S&W, or 38 Special. Our testing shows increased leading, poor accuracy, and increased pressure with little improvement in velocity in all but the largest cases and densest loadings. Hard primers (thick cups as with small rifle primers) can mask pressure signs and create a false impression that a given load is safely within limits when it may be marginal or worse. Small rifle primers are rated for higher pressure and don't show pressure signs that small pistol



primers do, thereby failing to warn you of impending disaster. Small rifle primers are commonly used with major-power loads in 38 Super, 40 S&W, and 9x21, for IPSC/USPSA competition in an attempt to prevent primer flow and cratering problems. This practice must be approached with great caution! Your loads should never exceed accepted standards, or be so hot as to require rifle primers to be reliable. (*See the special IPSC section.*)

The industry-wide standard sporting priming compound in use today is lead styphenate, which replaced the older potassium chlorate compounds used through the 1950s. While potassium chlorate primers are very reliable and stable, the residue they leave is hygroscopic and corrosive. The new lead-based priming compounds have saved a mountain of rusted bores; however, the toxic lead smoke they add to the air and the residues left on your brass are significant sources of exposure. Lead poisoning is a risk for people who shoot a lot and reload their own ammunition or who shoot indoors. Many indoor ranges lack the air replacement equipment required to reduce your exposure risk to outdoor levels. If you shoot indoors you should consider a respirator. You should also wear an appropriate respirator whenever you tumble, clean, and separate media from your fired cases. Skin absorption rates from lead are low, but **washing your hands and wearing gloves will prevent inadvertent ingestion of lead particles** (from wiping your face, handling food, smoking, or drinking).

Currently, only FIOCCHI of Italy is marketing lead free primers to reloaders. Lead free primers use a compound that is more affected by moisture and humidity than lead styphenate primers. If you choose to use them, follow the manufacturer's recommendations for sealing and shelf life. Primer sealants are available commercially for this purpose. Lead based primers are largely unaffected by humidity and do not require the use of a sealant under normal conditions, nor do they require airtight containers for storage. However, high temperatures and exposure to various chemicals or fumes are very likely to cause deterioration with resulting misfires or inconsistent ignition.



PRIMER DO'S AND DON'TS

Accidental detonations of massed primers (as in a primer tube or magazine) can be lethal; eye injury, deafness and fragmentation wounds are a given. In the interest of avoiding such a catastrophe, follow these rules for safe handling and storage of primers:

- **NEVER** transfer primers from original packaging to any other container. Loose, bulk primers are called “Bombs”! One primers’ detonation will set off all adjacent primers simultaneously. Primers are designed to detonate easily.
- **NEVER** store your primers near possible sources of ignition, like: heat, flames, sparks and electrical equipment.
- **NEVER** subject primers to impact or vibration. Continued shaking can dislodge priming compound. Accumulated priming compound can become a source of detonation.
- **ALWAYS** wear eye protection when handling primers or powder.
- **NEVER** store primers and powder in the same location.
- Primers should be stored in a cool, dry environment.
- **NEVER** change primer types without testing your load with a reduced charge first.
- **NEVER** decap a live primer. Fire it in a gun or discard safely.
- **DON'T** use hard or rifle primers to mask signs of excessive pressure.
- Keep **ALL** components away from children!
- Primers are color coded by manufacturers. **DO** become familiar with the appearance of the primers you use to avoid mistakes. Unidentified components are nothing more than hazardous junk to be safely discarded.
- A clean reloading bench is a safe reloading bench. **DO** sweep away any spent or dropped primers, loose powder, and objects that could cause a dropped primer to detonate.



- **DO** keep your priming mechanisms clean and free of residues.
- **DON'T** handle individual primers with your fingers to avoid possible contamination. Dropped primers may be damaged and should not be used.
- **USE UTMOST CAUTION** when filling primer tubes or charging your press priming system. To minimize your risk of accidental detonation, drop primers into the magazine slowly.
- Keep spare primers away from your loading operation. Loaded primer tubes should be separated and placed where they cannot tip over or fall.

Primer Designation Chart				
	Winchester	Federal	Remington	CCI
Small Pistol	WSP	100	1 1/2	500
Small Pistol Magnum	WSPM		5 1/2	550 MAG
Small Rifle	WSR	200 205 205M	6 1/2	400 BR4
Small Rifle Magnum			7 1/2	450 MAG
Large Pistol	WLP	150	2 1/2	300
Large Pistol Magnum	WLP	155		350 MAG
Large Rifle	WLR	210 210M	9 1/2	200 BR2
Large Rifle Magnum		215	9 1/2M	250 MAG

Caution: when substituting a primer of a different manufacturer or type, reduce maximum loads 10% and work back up carefully watching for pressure signs.