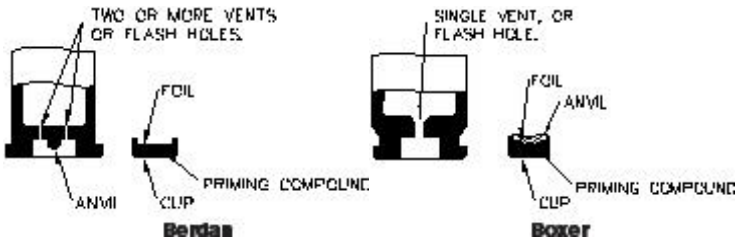
PRIMERS

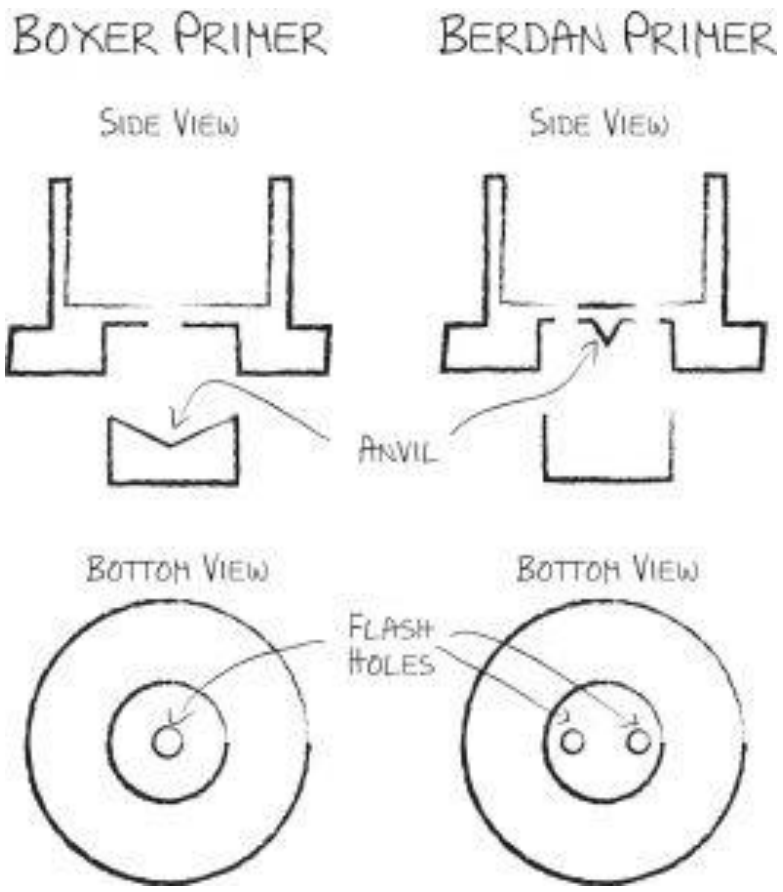
BRISANCE

Primers come in different strengths, technically known as “brisance,” a word defined as “the shattering effect of a high explosive.”
Primer brisance mostly depends on the length of the flame that leaps out of the flash-hole after the firing pin whacks the primer cup. This flame can also be manipulated to last a little longer, by adding tiny particles of other flammable material to the priming compound. These differences really can effect not just accuracy but pressure.

Types of Primers

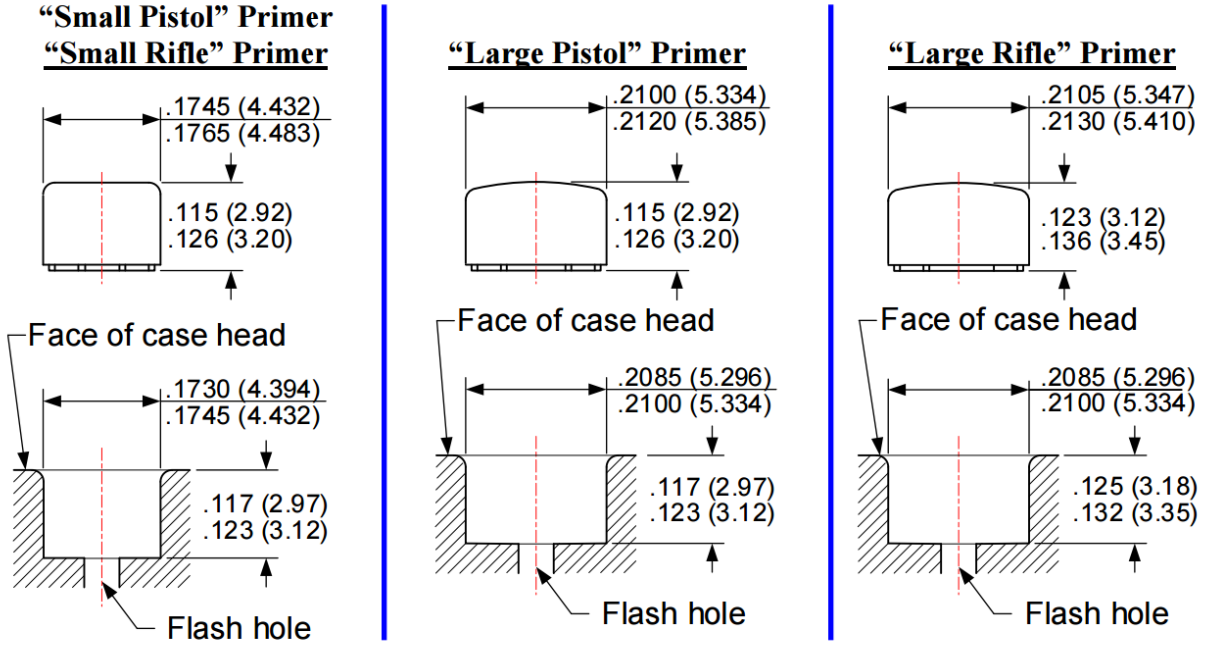
There are two basic types of modern centerfire primers: Boxer and Berdan. Ammunition made in the U.S. generally uses Boxer primers. Boxer primer cups have a small bit of primary explosive material inside the base. Directly above that is an internal anvil. When the firing pin hits the base of the primer cup, the unstable stuff is driven into the anvil portion of the primer, thereby igniting the primer compound. A flame shoots through the flash hole of the cartridge case and ignites the propellant charge. The two systems are not at all interchangeable, and must not be confused.




BOXER PRIMER
BERDAN PRIMER
SIDE VIEW
SIDE VIEW
ANVIL
BOTTOM VIEW
BOTTOM VIEW
FLASH HOLES

PRIMERS AND PRIMER POCKETS

CUP MAY BE ROUNDED OR FLAT



**PRIMERS TO BE SEATED FLUSH TO 0.008" (0.20)
BELOW FACE OF CARTRIDGE CASE HEAD**

NOTE
(XX.XX) = MILLIMETERS

Boxer vs. Berdan primers.

Berdan primers rely on an anvil that's built into the primer cup area of the cartridge case itself. For lack of a better word, you'll see a little "nub" that protrudes into the primer pocket area of the case. Since the nub is in the middle, the flash holes have to be elsewhere. For that reason, Berdan cases have two flash holes on either side of the anvil. The primer itself has no internal anvil, so the compound is pushed against the anvil part of the case to cause ignition.

Both types are technically reloadable, but Berdan is a royal pain in the butt. Fortunately, most (really all) of what most reloaders deal with is Boxer cases and primers. Those are

easy to remove from fired cases. As the flash hole is in the center, a pin in the resizing die simply pushes the spent primer out the bottom of the case. Easy peasy.

The Berdan system has seen little use here in the U.S., and is rarely encountered in anything but imported surplus foreign military ammunition. One exception to this is the CCI Blazer® line of aluminum cased, Berdan primed cartridges. In addition to their readily identifiable aluminum cases, Blazer cases are prominently headstamped “NR” to indicate their non-reloadable status. They should be discarded after use, and never mixed with Boxer primed cases.

Primer Composition

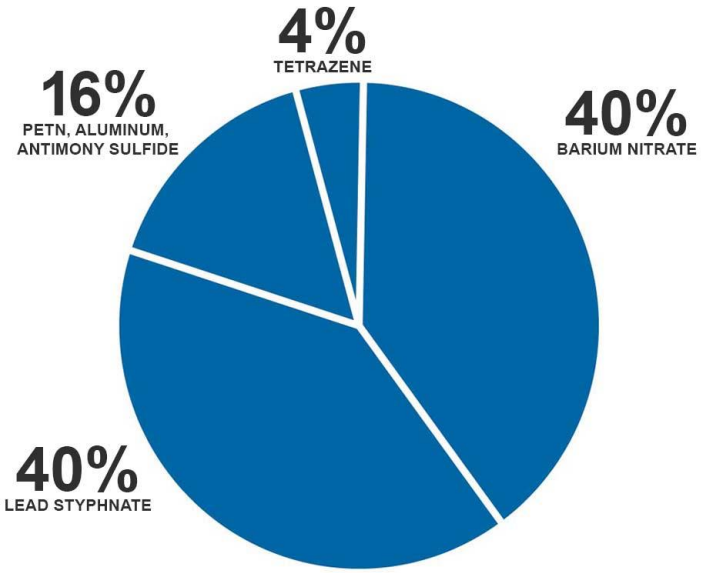
One ingredient that proved to be a great source of trouble in early priming compounds was fulminate of mercury. Easy to manufacture and very sensitive, fulminate of mercury was the basis for most early percussion caps and primers. The real problems began when brass cartridge cases and smokeless propellants began to see widespread use. Upon firing, the mercury in the primer amalgamated with the brass, chemically attacking and weakening the case. As long as black powder was the primary propellant used in small arms ammunition, this effect was minimized by the milder primers then in use, and the lower operating pressures inherent to this type of propellant. When smokeless propellants became more prevalent, the damage caused by mercuric primers immediately began to create major difficulties. While the mercury caused no damage to the firearm itself, cases fired with this type of primer became brittle, rendering them useless for further reloading. The damage was caused instantly upon firing, could not be prevented, and could not be corrected afterwards. Mercury was soon identified as the culprit, and was promptly eliminated. Virtually all commercial primers have been made without fulminate of mercury since around the turn of the century, and are still clearly labeled as being “non-mercuric.” The U.S. military completely suspended the use of mercuric primers around 1898, so the likelihood of running into mercuric primers in anything other than extremely old, or some foreign ammunition is remote.

Corrosion was also a major problem in black powder firearms, due in part to the nature of the propellant itself, but largely to the qualities of the priming compound used in most early percussion caps and primers. Potassium chlorate, used as an oxidizer, was a primary ingredient in most of these mixes. Upon firing, some of this is deposited in the bore in the form of potassium chloride. Being very similar to ordinary table salt, potassium chloride is extremely hygroscopic, which is to say it attracts and holds moisture.

Naturally, this causes rusting in short order.

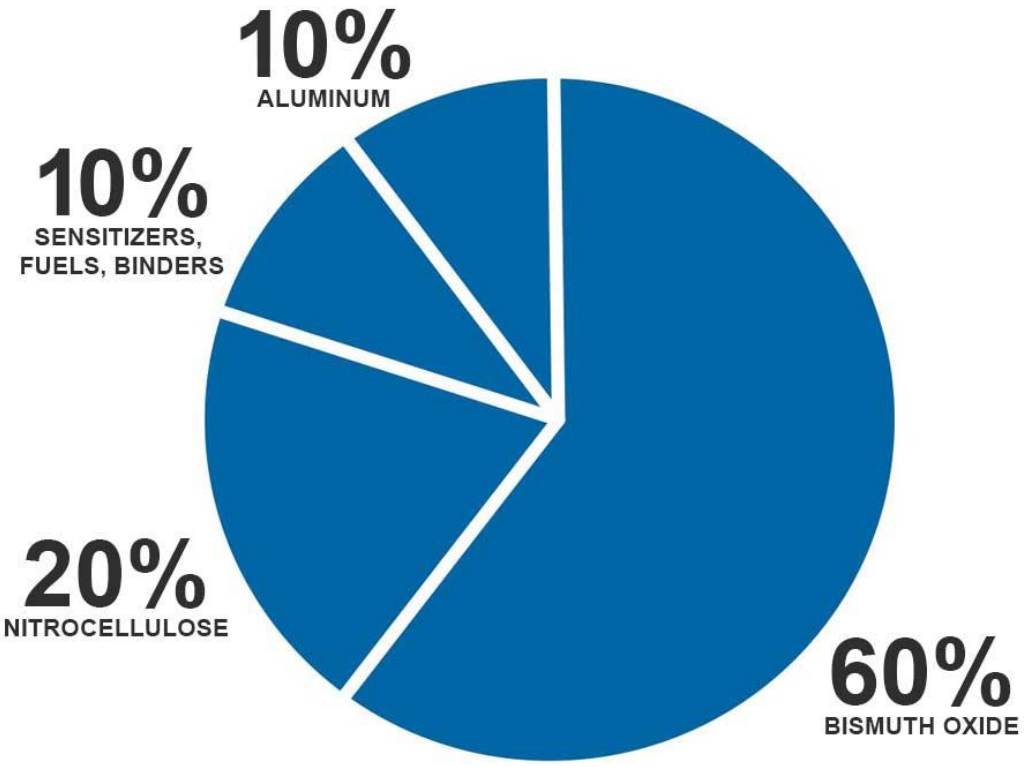
As potassium chloride is soluble in water, but not by most conventional bore solvents, its removal required very specific bore care techniques. Since most bore solvents were not effective in dissolving or removing this residue, some means of eliminating the potassium chlorate was needed. Oddly enough, it took many years and some exhaustive studies to determine what caused the gun corrosion problems experienced in this period. It was not until 1922 that Dr. Wilbert J. Huff, working for the Bureau of Mines at the request of the War Department, identified chlorate primers as being the source of this corrosion. Having located the agent causing the trouble, the next task was to eliminate it by finding a substitute. This proved to be a long and arduous task, despite the fact that rust-free primers were already in use with several foreign military services around the world. U.S. Ordnance was adamant concerning the reliability, storage life and stability of any new compound used in their priming mixtures. Their hesitancy to accept a new mixture was the result of a seemingly minor change on the eve of World War One, which nearly had catastrophic consequences. With U.S. troops already committed to combat in Europe, Frankford Arsenal was forced to literally shut down its primer production until the problem could be analyzed and corrected. After this experience, they approached new developments with an understandable degree of trepidation.

Eventually a priming compound was developed that omitted the potassium chlorate, using lead tri-nitro-resorcinate instead. Usually referred to as lead styphnate, this is still a common oxidizer in many of today's primers. This mixture proved to give the stability and reliability demanded by the military, and was finally adopted after extensive testing. On the commercial front, many American manufacturers were already using noncorrosive primers in any of several different mixtures. Corrosive primers may still be encountered, even though their use was discontinued in U.S. commercial ammunition shortly after the First World War. Foreign military surplus ammunition containing corrosive primers (often of the Berdan type) is still frequently found at discount prices. Considering the problems that may be associated with its use, this ammunition may not be the bargain that it first appears to be. In U.S. military ammunition, chlorate primers were discontinued around 1950, but they may still be encountered in old lots of .45 ACP and .30-06 rounds. The .30 Carbine was the first U.S. martial cartridge that was loaded exclusively with noncorrosive primers. Later U.S. surplus ammunition in either 7.62mm NATO or 5.56mm NATO poses no problem in this regard.



A New Catalyst

Like many innovations in ammunition, the development of the Catalyst primer was driven by a request from a large customer. In this case, the U.S. government, both military and law enforcement, wanted a duty-worthy primer that didn't contain lead or other potentially toxic metals. Federal turned the project over to one of its engineers, Joel Sandstrom, who went on to invent Catalyst.



Catalyst Primer Formula

The aluminum performs two main functions. It makes the explosive nitrocellulose more sensitive, and it helps heat up the bismuth. The “oxide” in bismuth oxide adds oxygen to the reaction, while the remaining 10 percent is a blend of fuels, binders, and sensitizers.

There have been other lead-free primers on the market for decades, but they weren’t viewed as reliable enough for duty ammunition and have been relegated to use in training ammo.

While eliminating lead was a primary requirement of the project, Federal ended up creating a primer that wasn’t just the equivalent of the current lead styphnate mixtures, but one the company says is significantly superior to the older technology.

One way in which Catalyst improves on current primer technology is that it is more compatible with modern propellants, meaning that it won’t degrade the powder it comes in contact with the way some current primers can. Even better, the Catalyst formula propels more hot, heavy metals, while producing less pressure from gases, into the propellent bed than any other primer system Federal has used—even its vaunted Gold Metal primers.

Today, small arms primers have evolved to the point of such extreme reliability that they are often taken for granted. This is a mistake, as primer selection and type can have a major effect on a given load’s accuracy and pressure. The components used in modern Boxer primers consist of 1) a cup 2) the pellet, or priming mixture 3) the foil, and 4) the anvil.

Primer Sizes

There are four sizes of primers for common centerfire cartridges: small pistol, large pistol, small rifle, and large rifle.

Small rifle and small pistol primers appear identical on the outside, but don’t use them interchangeably. Both are about .175 inches in diameter, and .120 inches tall, give or take a hair depending on brand.

Large rifle primers measure about .128 inches tall and .212 inches wide, again give or take a bit. Large pistol primers are a touch smaller at .120 inches tall and .211 inches diameter on average.

Just because primers appear to the the same doesn't mean they are.

Magnum Primers

Within each primer size family, you'll also find standard and magnum varieties. We'll get into this more in a minute, but don't simply assume magnum primers are for cartridges with "magnum" in the description. As the name implies, they are designed to ignite with more enthusiasm. Normally, they're used in loads where the combination of powder type, powder charge volume, and case size create conditions where it's harder for a standard primer to properly and consistently ignite the propellant charge, whether or not it's a "magnum" cartridge.

As you peruse loading manuals and find various recipes, it's likely that you'll encounter calibers that call for magnum primers with some loads but not with others. One example is 375 Ruger. Most jacketed bullet loads for this caliber call for magnum primers, but lead bullet loads use regular large rifle primers.

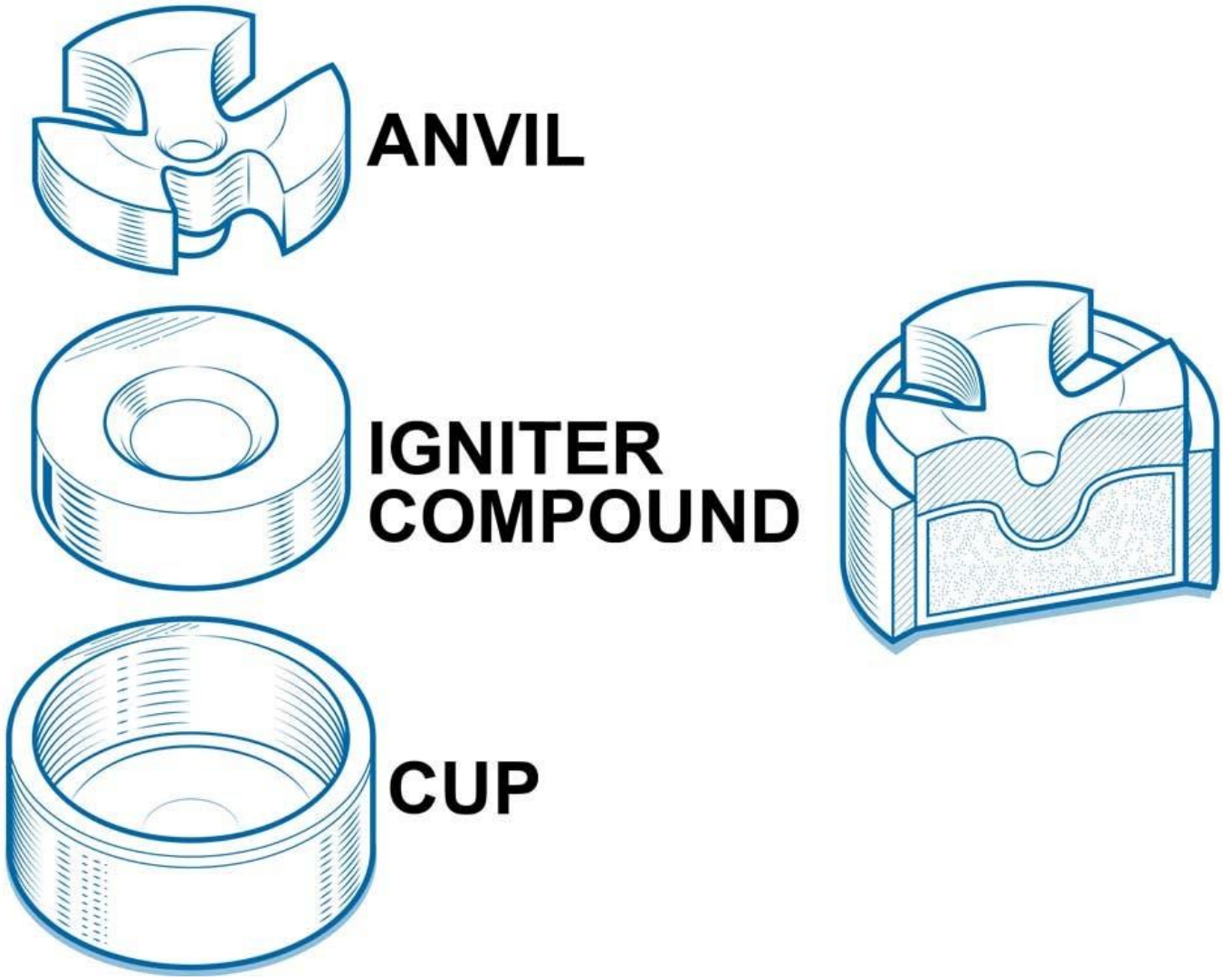
The bottom line is this. Rely on published recipes exactly. You might find non-magnum calibers that call for a magnum primer. Or the reverse. Just don't arbitrarily switch them on your own. Swapping a magnum primer instead of a regular can ignite a carefully calibrated charge way too fast and spike pressure to dangerous levels.

Benchrest Primers

Benchrest primers are simply those made with extra-special care towards consistency. Any variance in primer ignition performance can result in pretty big differences in accuracy, velocity, and pressure.

It's not unheard of for different primer brands for the exact same load to create velocity differences of 100 feet per second or more and pressure variance of thousands of

pounds per square inch. Lyman's reloading manual references one primer test that resulting in variance of 9,300 psi just from swapping to a different primer brand.



CUP THICKNESS

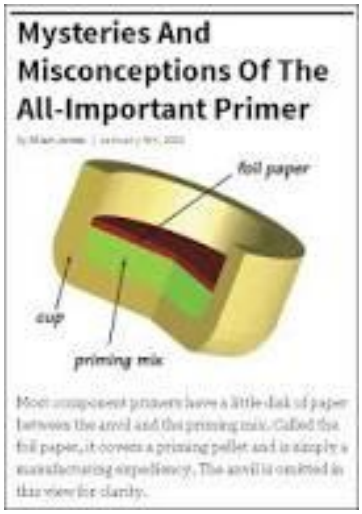
Different primers have different cup thicknesses.

Handgun primers have thinner cups than rifle primers, making them easier to ignite with the typically weaker firing pin fall of handguns. Small Pistol primer cups are .017" thick, while Large Pistol primer cups are .020" thick. This is the reason using handgun primers in .22 Hornet rifle loads sometimes results in pierced primers in some guns. Obviously, their substitution in the high pressure .223 Remington would not be a good idea.

Even the same type of primers from different manufacturers can have different cup thickness. Federal primers tend to have thinner cups than Winchester, Remington and CCI primers. On occasion this can be handy. Some revolver trigger and action lightening jobs may result in a lighter hammer fall that results in not all the primers going off. A

switch to Federal pistol primers can make the load 100% again. According to Remington, the 7 ½ has a 25% greater cup thickness and they state on their web site: “In rifle cartridges, the 6-1/2 small rifle primer should not be used in the 17 Remington, 222 Remington or the 223 Remington. The 7-1/2 BR is the proper small rifle primer for these rounds.” CCI/Speer Technical Services says: “The CCI 400 primer does have a thinner cup bottom than CCI 450, #41 or BR4 primers... [with] the CCI #41 primer... there is more ‘distance’ between the tip of the anvil and the bottom of the cup.” so that is their AR15 recommendation, although it seems like there are no complaints with using the BR4 and 450 primers by AR15 shooters and reloaders, in general. The #41 just gives you a little more safety margin for free-floating firing pins and would be the best choice for commercial reloaders who have no control over the rifles their .223 ammo is used in.

Large rifle primers all appear to have the same cup thickness of .027", no matter what the type.



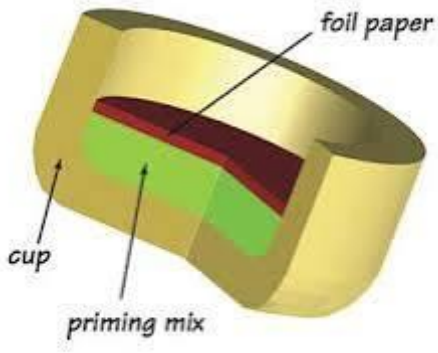
THE PELLET

The pellet is actual priming compound that is placed into the cup. As we have seen, all modern primers are both noncorrosive, and non-mercuric. Different amounts, and in some cases different types of priming compound may be used, depending on primer make, size and type.

THE FOIL

Made of shellacked paper despite its name, the foil is a small circular disc placed between the priming pellet and the anvil. This acts as a shield for the pellet, protecting it from moisture and other disruptive influences that may affect performance or reliability. Some manufacturers color code this disc to aid in identification. However, since there is

no standard coding among manufacturers, we recommend discarding any loose primers whose brand and or type has become suspect.



THE ANVIL

The anvil in a boxer primer provides the hard point against which the priming compound is crushed to detonate the primer. Like the cup, these are generally made of 70/30-cartridge brass rolled into thin sheets and punched into final shape. Most U.S. primers are of either two or three-legged design, with the three-legged design being by far the most common. In examining a primer, you will note that the anvil extends a few thousandths of an inch above the cup. This is to allow the anvil to slightly compress the pellet when the primer is seated, thus sensitizing the primer. These statements hold true for both large and small sizes and for both rifle and pistol types.

MATCH or BENCH REST PRIMERS

The difference between match primers and standard primers is the degree of testing and quality control used in their making. Hornady reports that in their research that match-grade primers performed very, very consistently from load to load as measured in their pressure tests. CCI states that Benchrest cups and anvils are selected for exceptional uniformity. During the assembly operation, the operator who meters the primer mix into the cups (or “charger”) is chosen from the most experienced workers with an outstanding record of consistency. The BR line runs at a little slower pace to provide time for extra inspection.

Shotgun Primers

They are constructed differently than rifle and pistol primers and are not interchangeable. Shotgun primers are constructed with an integral anvil, just like boxer primers. They are broken down into two main categories, Hot and Mild. Most people never find themselves needing anything beyond mild when reloading shotgun shells. The design of the shotgun primer leads them to be used in many inline muzzleloaders.

STORING YOUR PRIMERS

Primers can be damaged by extreme heat, cold, and humidity. Therefore, proper storage is necessary. We have seen primer shortages and therefore runs on primers by people stocking up for the future.

PRIMER CHART & REFERENCE GUIDE

Small Handgun Standard .017" cup thickness

CCI 500
Federal 100 - Has a soft cup - good to use if hammer strike is light.
Federal 100M - Match version of above
Magtech PR-SP - Brazil
Magtech PR-SPC - Lead-free “Clean Range” primer for indoor ranges etc.
Remington 1 ½
RWS 4031
Winchester #1 1/2
Winchester WSP
Wolf Small Pistol SP - brass cup
Sellier & Bellot - Small Pistol 4,4 Boxer - Pistol and revolver cartridges 9 mm Luger, 38 Special, 7,65 Browning, 40 S&W, 357 SIG
Fiocchi - Small Pistol

Small Handgun Magnum .017" cup thickness

CCI 550
Federal 200
Federal 200M - Match version of above
Magtech PR-SPM
Remington 5 ½
RWS 4047
Winchester WSPM
Wolf Small Pistol Magnum SPM - brass cup
Fiocchi - Small Pistol Magn

Large Handgun Standard .020" cup thickness

CCI 300
Federal 150 - Has a thinner cup
Magtech PR-LP
Remington 2 ½
RWS 5337
Winchester WLP
Wolf Large Pistol LP - brass cup
Sellier & Bellot - Small Pistol Magnum 4,4 Boxer - 22 Hornet, 222 Rem., 5,6×50 R Mag., 357 Mag.
Fiocchi - Large Pistol

Large Handgun Magnum .020" cup thickness

CCI 350
Federal 155
Wolf Large Pistol Magnum LPM - brass cup

Small Rifle Standard

CCI 400 -thin .020" cup, not recommended for AR15 use by CCI/Speer. Good for .22 Hornet, .30 Carbine.
CCI BR4 - match primer with a thicker .025" cup.
Federal 205 - Mil-Spec cup thickness according to Federal - okay for 5.56mm. .0225" cup thickness.
Federal 205M - same as the 205 but the match version.
Magtech PR-SR - .025" cup thickness (not much feedback yet on this new primer as to AR15 suitability but with the same cup thickness as the Rem 7 1/2 it looks good so far)
Remington 6 ½ - thin .020" cup, intended for older, lower pressure rounds Remington says do not use for the .223 Rem or other similar pressure rounds. Good for .22 Hornet, .30 Carbine.
Remington 7 ½ BR - A match or “bench rest” primer. Lyman & Nosler classify this primer as a Standard. Remington says the compound is the same as the 6 1/2 but with a thicker .025" cup.
RWS 4033
Winchester WSR - some piercing issues noted when changed from silver to brass cup. Cup thickness is a bit thinner at .021". Most say they are good to go for the AR15 despite that, probably because of the hardness of the cup. Some feel they are less resistant to higher pressures.
Wolf Small Rifle SR - soft, sensitive copper cup, not recommended for AR15/military rifle use or high pressure rounds.
Sellier & Bellot - Small Rifle 4,4 Boxer - 223 Rem.
Fiocchi - Small Rifle Bolt Action

Small Rifle Magnum

CCI 450 - same thicker .025" cup as the BR4 and #41.
CCI #41 - commercial version of the fully-qualified DOD primer for use in U.S. military ammo. With this primer there is more 'distance' between the tip of the anvil and the bottom of the cup than with other CCI SR primers. .025" thick cup. Same primer mix as CCI 450.
Remington 7 ½ BR - A match or "bench rest" primer. Hornady, Handloads.com 4, and Chuck Hawks classify this primer as a Magnum, differing from other sources that classify it as a Standard. .025" cup thickness.
Wolf Small Rifle Magnum SRM - hard, less sensitive brass cup intended for AR15/military rifle and high pressure rounds.
Wolf Small Rifle 223 SR223 - "This is the newest primer available in the Wolf line. It is ever so slightly hotter than the small rifle magnum primer and it comes with a brass colored thick cup. This primer can be used in place of the SRM primer or used when a different powder is used that is hard to ignite."
Fiocchi - Small Rifle Magn (Semi & Auto)

Large Rifle Standard

CCI 200 - mild in brisance. Hard enough for use in semi-automatics.
CCI BR2 - same as the 200 but the match version. Hard enough for use in semi-automatics.
Federal 210 - medium brisance between CCI/Remington & Winchester. Do not use in semi-automatics.
Federal 210M - match version of the above primer. Do not use in semi-automatics.
Magtech PR-LR
Remington 9 ½ - mild in brisance.
RWS 5341
Winchester WLR - the hottest standard primer. Hard enough for use in semi-automatics.
Wolf Large Rifle LR - all brass - Used by noted match shooter David Tubbs who says: "Be sure they are seated into the case - if not they can be hard to ignite. Russian primers use a different sinoxide compound (closer to the European type), which, in my testing, consistently delivers better extreme spreads over Federal..." Hard enough for use in semi-automatics.
Sellier & Bellot - Large Rifle 5,3 Boxer - Rifle cartridges 5,6×52 R and cal. 6,5 to 9,3 mm
Fiocchi - Large Rifle
Fiocchi - Large Rifle Sniper

Large Rifle Magnum

CCI 250
CCI #34 - commercial version of the fully-qualified DOD primer for use in U.S. military ammo.
Federal 215 - original magnum primer
Remington 9 ½ M - mildest magnum primer.
RWS 5333
Winchester WLRM
Wolf Large Rifle Magnum LRM - all brass

50 BMG

CCI #35 - commercial version of the fully-qualified DOD primer for use in U.S. military ammo.
Winchester 8312

Shotgun/Other

Fiocchi - Sur 614 (Industrial) Subsonic
Fiocchi - Sur 615 (Cal. 20-410)
Fiocchi - Sur 616 (Cal. 12-16)
Federal Champion Shotshell 209A
Cheddidte CX2000 Cletinux 209 Shotshell

Brands I am not familiar with

UNIS GINEX primers offer consistency that matches other premium primers on the market at a fraction of the cost. A manufacturer of ammo components - as well as blasting caps and electric igniters - since 1951, this Bosnia-Herzegovina–based company knows a thing or two about turning a spark into a bang. Primers from UNIS GINEX are available with standard SINOXIDE priming mixture charges, as well as EKO priming mixture that's formulated to be free of heavy metals.

GECO SMALL RIFLE PRIMER Ø 4,45MM - 5,6 mm .22 .30 - Diameter: 4.45 - Lead

GECO SMALL PISTOL PRIMER Ø 4,45MM - 6,35 mm 7,65 mm 8 mm .38/ .380/ .357/ 9 mm .40/ .41/ 10 mm - Diameter: 4.45 – Lead

Murom: Due to their mild ignition characteristics they will produce slightly lower muzzle velocities and chamber pressures and will require a 3 to 15 percent increase in powder charge to duplicate established loading data.

Aguila Small Pistol Primers #1-1/2

Primers recommended for use in .223 Rem/5.56 semiautomatic rifle loads:

CCI #41, 450, BR4 (#41 & 450 good with ball powder)
Federal 205, 205M
Remington 7 1/2 BR (good with ball powder)
Winchester WSR (good with ball powder)
Wolf SRM (good with ball powder)
Wolf SR223 (hotter than SRM - great with ball powder)

Primers recommended for use in .308 Win/7.62x51/7.62x39 semiautomatic rifle loads:

CCI #34, 200, BR2, CCI 250
Winchester WLR, WLRM (good with ball powder)
Wolf LR

Interesting article:

There Are NO Boxer Primers!
Boxer NEVER Patented A Primer!

According to the person who wrote this eBook.

I got a surprise when Ed Curtis sent me a copy of the "Remington Society Journal", 3rd quarter of 2000. A lot of what we think we know, is simply not true. Lou Behling cleared up a lot for me when I read his article. " Berdan versus Boxer, The True Primer Story." I can't reproduce it here, because I need permission. If you do not have a copy of this Journal, you are up a creek! The Article is not available to the public. (Like this FREE online book!)

An Englishman named Boxer had nothing to do with it. Boxer did patent a Reloadable Centerfire Cartridge June 29, 1869. His patent is shown below. It is basically a piece of JUNK! He used a percussion cap with a piece of metal inserted part way in. It is strangely similar to one of these earlier drawings I list here. (Benet, 1866)

In the description of a Patent, you have to say what it is for! Never Once was there mention of a patent for a primer in the patent papers! Boxer knew he would be challenged in Court! His Patent was All About The Cartridge!

Benet made a drawing of the first Excellent American Centerfire Primer in 1866. It was a darn Good Design. The Drawing was filed Away in a drawer. A patent was filed. It was not Granted. The people at the Patent Office and his bosses at the Arsenal were clueless!

There were many primer designs. Frankford Arsenal used the Benet, Internal Primed cartridges for many years. There was also a Martin Internal type primer. You find them around Old Forts in 58 Musket, 50-70, 50 carbine, 50 Remington Pistol, 45-55-405 carbine (45-70 carbine), 45-70-500 (45-70 Rifle), 45 Schofield, 45 Colt and 44 Old Model

Colt. The Benet Internal Primed 45-55 carbine and the Benet Internal Primed 45 Colt cartridges were used at the Little Big Horn in the summer of 1876. They worked OK????, but were eventually dropped for better, reloadable cartridges, with better AMERICAN primers.

Non- Reloadable Centerfire Cartridges
The Benet Internal Primer

This little section is important. You should read this! Just last weekend I had a conversation with a fellow that collects Trapdoor Springfield Rifles. I mentioned Frankford Arsenal Internal Primed Cartridges. He had no clue what I was talking about. I showed him cartridges. He said, "Those are rimfire!"

He Did Not Know What Cartridges His Rifles Fired! I hear this Over and Over!

I don't think I ever convinced him you could put a centerfire primer INSIDE a cartridge. He did not believe a Center Fire firing pin could hit the cartridge and detonate it. Sad story, but true.

Above left you see the 45 Colt and 45 Schofield Internal Primed Cartridges made by Frankford Arsenal.

These are the cartridges the U.S. Military was using at The Little Big Horn in 1876. There ain't no external primer there Boy's and Girl's! The priming fulminate is in the little cup crimped inside the cartridge. You can see the 2 flash holes inside the cup. These were made in 58, 50, 45 and 44 caliber centerfire rifle and pistol cartridges.

The Rifle cartridges were used for many years in the Trapdoor Springfield Rifles. They Are All Centerfire!

Above right is the Martin Internal Primed Cartridge. It looks like it has an external primer. It Does Not! The priming fulminate and anvil are crimped in place on the inside.

Buy some books or at least get on the internet. Learn what cartridges they used in the Rifles you collect.

You can not reload these cartridges. Reloadable Cartridges were much better.

An Early Primer With No Patent, 1866

This drawing may be the first evidence of a cup shaped primer with an Anvil inserted inside. The drawing is not totally clear. If you have a good eye, you can see what they were drawing here. The design has all the qualities of a modern American primer.

The biggest puzzle of all? Why was there no Patent on this design? If you look over the later Patents, you will see the similarities between this drawing and other Patent Applications. Most were granted Patents! What a Mistake!

A cup shaped primer. (Literally a Percussion Cap.)

An anvil standing on two legs that allows the firing pin to crush the fulminate between cap and anvil then shoot the flame around the legs of the anvil.

A central flash hole. (This allows easy removal of the primer.)

A large flat bottomed primer pocket in the cartridge case, to hold the primer and support the anvil.

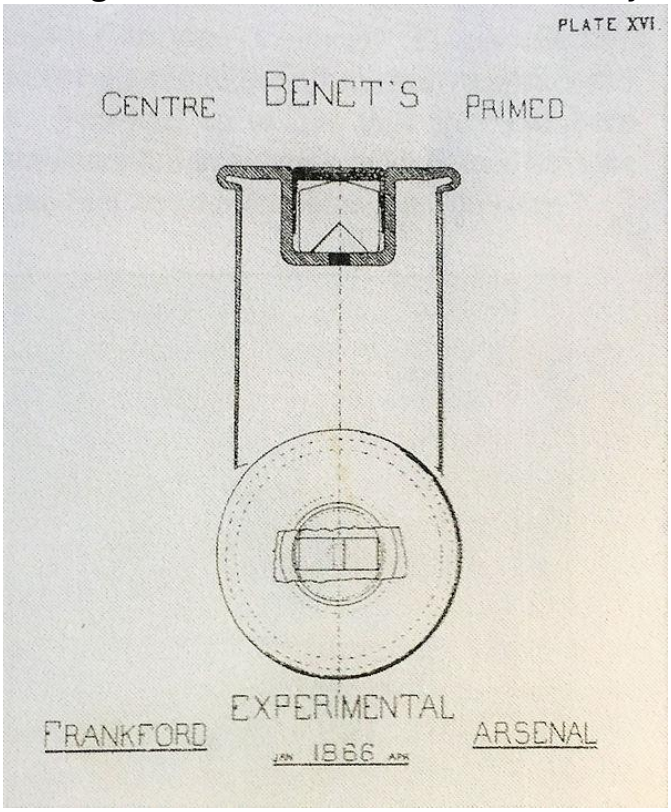
All of this by Benet in 1866!

This drawing is in the U. S. Government records. Only Lou Behling took the time to say Hey! look at this! Then, do further research.

Forming Cartridge Cases like this, from a Metal Disc, had been done since the Civil War. They were Rim-fire cartridges first, centerfire later.

Pressing in a primer pocket like this drawing, would have been easy in 1866. I wonder if experimental cartridges were made?

This drawing Predates the Boxer Patent Reloadable Cartridge by Three Years and Three Months! If a patent had been filed and granted, it would have saved everyone a lot of trouble and confusion.



Lou Behling Had it right in his American Primer Story. His Article stands up to the test of time.

Thanks to Fellow Collector Bryan Austin, we have some new information! The following two pages came from Bryan Austin. Stephen V. Benet DID try to patent his Cartridge, Primer and Anvil Idea. Government Bureaucrats at the patent office refused to patent his idea.

In a classic show of ignorance, the Patent office could not tell the difference between a flat bottomed cup, a hole and a dish shaped depression.

There is a lot more in this Ebook – here is the link from the author.

Link to our reloaders page for the ebook.