



-THE-
10,000
BULLET
BLUEPRINT

**HOW TO CREATE AN UNLIMITED
SUPPLY OF AMMO... AND STILL
STAY OFF THE GOVERNMENT
WATCH LIST**

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THE 10,000 BULLET BLUEPRINT

How To Create An Unlimited Supply Of Ammo... And Still Stay Off The Government Watch List

As has been witnessed in the first half of the year 2013 firearms can become useless without a steady supply of ammunition. It does not take an act of war or Congressional writ to halt the ammunition supply; the market can easily suffer as a result of speculation and panic buying.

When big box discount stores have to limit customer's purchases to 2 boxes a day it has gone beyond the warning stage.

Most shooters and those with a preparedness mindset could see events like these coming months if not years in advance and built their supply steadily. However, it was noticed that as the supply situation did not resolve within a reasonable amount of time, these prepared shooters had to resort to using ammunition that was saved for a rainy day with no signs for replenishment in sight.

Even dedicated reloaders of ammunition faced the same pitfalls as the companies who make ammunition also make reloading components. The major manufacturers saw their components going right back to their own production lines to feed the consumer demand for more ammunition.

When traditional methods of acquiring ammunition are not available, the shooter needs to think outside the box on occasion in order to ensure that their ammunition supply stays constant.

Shooting is a deteriorating skill. Regular practice is needed to maintain this skill and improve it. Alternative methods such as dry-firing, shooting pellet guns or airsoft guns and video simulators will only take a shooter so far. The only way to become more efficient is to shoot and that requires a regular supply of ammunition.

The following report outlines different methods of acquiring or manufacturing ammunition besides heading down to the local "Monster-Mart" and buying a few hundred rounds once a year. It does not have to take a crisis or disaster situation to find oneself cut off from ammunition for their firearms.

There are other ways to acquire ammunition as well as make it legally and safely. With regard to reloading ammunition and casting or swaging bullets, it is essential to take every reasonable precaution suggested by the manufacturers involved. There is always an inherent danger involved, but this can be strongly minimized by practicing safe loading and handling procedures.

CENTER FIRE AMMUNITION

Modern center fire ammunition gets its name from the primer located in the center at the rear end of the cartridge case. Primers are composed of two metal components: the cup and the anvil; and an explosive priming compound covered with foil paper. The cup is the base of the primer which holds the compound and foil, which in turn is held in place by the anvil.

Modern primers used in the US are referred to as Boxer primers, named for their designer, Edward M. Boxer, a British Army officer who invented them in 1866. In that same year, Hiram Berdan, an American Army officer developed a primer that bears his name: the Berdan.

Berdan primers were cheaper to produce from a manufacturing point of view as the anvil was a small projection extending from the primer pocket within the cartridge case, whereas the anvil of the Boxer primer was a separate piece inserted into the cup. Berdan primers featured two or three, off centered flash holes compared to the single centered flash hole of the Boxer.

From a reloading perspective, Berdan primers were difficult to work with, as the fired primer needs to be pried from the case. Boxer primers, on the other hand, are easily removed by pushing a de-capping pin through the flash hole.

As fate would have it, Boxer primers became the standard in the US and Berdan's design was adopted in Europe. The majority of modern center fire ammunition is Boxer primed and referred to as "reloadable". Blazer Ammunition, which utilizes aluminum cases instead of brass, is the only major manufacturer of modern center fire ammunition that still uses Berdan primers.

RIM FIRE AMMUNITION

Rim fire ammunition gets its name from the action of the weapon's firing pin striking the edge of the cartridge's rim as opposed to a primer in the center of the case. The rim basically acts as the primer mechanism to ignite the powder within the case. Rim fire ammunition is unable to be reloaded, but in spite of this, it is typically inexpensive to purchase when compared to center fire ammunition.

Rim fire ammunition is the oldest type of fixed ammunition that is still in use. The first rim fire cartridge was the Flobert 22 BB Cap, an elongated percussion cap with a projectile crimped in the front and a rim at the base to hold the round in the chamber. It used no powder and relied only upon the priming compound to fire it through the barrel. The cartridge would evolve in 1857 as the 22 Short, developed for Smith & Wesson's first revolver. The 22 Short fired a conical bullet from a slightly longer case and incorporated 4 grains of black powder.

The 22 Short is still in production and its design formed the basis for 22 Long, 22 Long Rifle (22lr) and 22 Magnum.

Because of its low cost, rim fire ammunition is excellent for training purposes. A shooter can purchase 500 rounds of 22 lr for the same price as a 50-round box of center fire handgun ammunition. Shooters can buy dedicated rim fire rifles and pistols or in some cases, conversion kits for their existing center fire arms to take advantage of this cost effectiveness.

Rim fire ammunition can be effectively used in small game hunting and pest control. The past 10 years has seen the appearance of rim fire ammunition in .17" caliber, based on manufacturers necking the 22 cartridge cases down to accept the smaller bullet. These calibers have become popular in the sport of varmint hunting.

COMMERCIAL AMMUNITION



Figure 1: A box of Sellier & Bellot ammunition in 38 Special

The most common way to buy ammunition for most people is “off the shelf” at their local sporting goods store, gun shop or hardware store.

Most large discount chain stores typically have a sporting goods counter and the area of the country where the store is located will dictate the supply of ammunition. At East Coast locations short-range ammunition for hunting in brush like 35 Remington or 30-30 Winchester will be prevalent. In the Western United States with its wide-open spaces it may be 22-250 or any of the Magnum rifle calibers. A good rule of thumb when purchasing a new firearm is to check what is typically available in the area ammunition-wise. A rifle chambered in 358 Norma Magnum might be suitable for all the big game needs you have, but when the ammunition or its components need to be special ordered, it goes back to the supply problem.

Factory ammunition can be purchased via mail order or over the internet in most of the United States, although some states and cities may have ordinances against this or place limits on the amount of ammunition that can be

purchased at one time. Usually all that is required is a copy of a driver’s license or a “proof of age statement” to be kept on file for the shipper to ensure the purchaser is over the age of 18.

Ordering by mail can represent a significant savings even with the freight charges factored in to the cost. In most instances it may be the only way to acquire certain types of ammunition for calibers or loadings not readily stocked in the shooter’s local area.

An issue can come up with some shooters who may not have enough money to purchase 5000 rounds at one time. The solution to this is to make ammunition a weekly or monthly purchase. It does not mean that the shooter’s family has to go hungry or he cannot go to work because he bought 500 rounds of 45 ACP the night before and cannot afford to put gas in his car. A shooter with low or no disposable income should try to buy a box a week of whatever caliber he needs, even if he thinks he already has enough.

Commercial ammunition is typically the safest and most reliable ammunition that can be had.

SOURCES OF COMMERCIAL AMMUNITION

- www.aimsurplus.com
- www.classicarms.us
- www.dansammo.com
- www.grafs.com
- www.jgsales.com
- www.midsouthshootersupply.com
- www.natchezss.com
- www.targetsportsusa.com
- www.wideners.com

MILITARY SURPLUS AMMUNITION

One of the best sources for reliable ammunition can be importers and wholesalers of military surplus ammunition. In most cases the ammunition is affordably priced and purchasing in bulk can save you money. This type of ammunition is loaded to military specifications where reliability and long-term storage are the primary goals.

Most importers have their ammunition rigorously tested by various underwriter laboratories for liability purposes. The materials and weights used in bullet and case construction are almost always listed in the product descriptions of their catalogs. Most will identify if the ammunition is corrosive or non-corrosive and if it is reloadable.

CORROSIVE AMMUNITION

Corrosive ammunition is manufactured as a result of the use of primers containing mercuric salts. Although it is most commonly found in Berdan primered ammunition, there are instances of factories using corrosive Boxer primers, particularly in pre-1950 manufactured 30-06 ammunition. Corrosive ammunition is not necessarily bad when fired through a stainless barrel or a barrel with a chrome lined bore. In these instances the corrosive compounds can easily be removed by means of a thorough cleaning. When a bore is not chrome lined or made from stainless steel, the ammunition can still be safely used, but a cleaning with hot soapy water and an ammonia-based detergent is in order before putting the firearm back into storage.

TESTING FOR CORROSIVE AMMUNITION

In certain instances the buyer may not be aware of the properties of the ammunition's primers. This can be a result of the importer or distributor not properly testing the ammunition or purchasing ammunition from someone who does not know whether or not it is corrosive.

The buyer can test for corrosive properties by pulling a bullet by means of a kinetic bullet puller and emptying the powder from the case. The primed cartridge case is

then loaded into a firearm of the appropriate caliber and the buyer will need to fire it onto a piece of carbon steel.

The steel should be marked with the ammunition type and left in an area where it can be exposed to the elements. Depending on the temperature and relative humidity, the results can be seen in as little as three days, but typically can take as long as two weeks.

In a case of non-corrosive ammunition, the steel will retain a simple carbon burn from the primer. If the ammunition is corrosive, the area that has been shot will resemble an old battery terminal with evidence of hydroscopic corrosion that will eventually develop as obvious rust.

PRESSURES OF SURPLUS AMMUNITION

Another area of concern with regard to military surplus ammunition can be with regard to excessive chamber pressure. This is common with calibers that are designed for use in machineguns and sub machineguns such as 7.62 X25mm, 7.63 X54R and 9mm Parabellum. This ammunition is usually fine when used in most modern firearms but can prove hazardous when fired in inexpensive or older firearms. A classic example is the 7.62X25 mm which was mostly manufactured for use in sub machineguns, but is commonly sold as 30 Mauser because the case design is identical. While it may function fine in Tokarev and CZ52 pistols, it can prove dangerous when fired in a Broomhandle Mauser.

SIGNS OF EXCESSIVE PRESSURE

The most obvious but least reliable sign of excessive pressure can be excessive recoil. Recoil can be subjective, however, and if a shooter is anticipating it from a new batch of ammunition, they may perceive that it is excessive, when it might not be. I am particularly bad at describing recoil from shooting many varieties of high-powered rifles and handguns over the years. Someone who is not an avid shooter may feel any and all recoil is excessive.

Some of the most reliable indicators of excessive pressure can be hard extraction and ejection. A fired cartridge case expands to fit the firearm's chamber and seals it. Excessive pressure can cause dramatic expansion, which makes the fired case difficult to extract. If the bolt handle feels like it

will not come open easily, chances are that the round was over pressured. Further signs can be seen by examining the rim of the cartridge. If the extractor causes it to bend, it is more than likely a result of over pressure. Likewise, the case head can extrude into the recess of the extractor cutout within the breech causing a raised bump to appear on the head in the shape of this recess. This should not be confused with a tight chamber or one not machined to SAAMI specifications.

Primer flow or flattened primers can be another sign of excessive pressure, but this cannot be taken as the only sign. This condition is created by the primer hitting the face of the breech and flattening out making the primer flow into the beveled areas of the cup. The indentation of the primer strike by the firing pin may become distorted as well because the back pressure is popping the indentation backward. A more telltale sign is the pierced primer. This is caused in a similar manner to the flattened primer with the exception that the primer will be pierced from the pressure. Whenever a shooter experiences a pierced primer it is a definite sign to stop shooting immediately.

SOURCES OF SURPLUS AMMUNITION

- www.aimsurplus.com
- www.classicarms.us
- www.centuryarms.com
- www.jgsales.com

AMMUNITION 'SEARCH ENGINES'

With the internet, there are several online search engines that make it easy to find ammunition listed on multiple dealer and auction sites. Most of these tools are as easy to use as typing in the caliber and narrowing down the search by bullet type.

- www.ammoengine.com
- www.amnoseek.com
- www.gun-deals.com/ammo
- www.gunbot.com

ALTERNATIVE CALIBERS AND MULTIPLE CALIBERS

Several years ago I received a flyer in the mail advertising an ammunition deal from a firearms importer. It was 2500 rounds of 5.45 X 39mm non reloadable ammunition for \$100 with free shipping. The dilemma was that it was a caliber that I did not shoot. With the prospect of acquiring 5000 rounds for \$200 I made the decision to purchase a \$600 carbine in that caliber with 7 magazines. It may not solve the present problem of looking for ammunition to fit your existing firearms, but it can make for a relatively inexpensive way to ensure that there was enough ammunition should the other calibers run dry.

In the early months of 2013 when most ammunition shelves were bare there were several calibers that always seemed to be present in bulk and at reasonable prices at several local retailers: 45 GAP and 327 Federal Magnum. Had a firearm in either of these two calibers been readily available it could have addressed the problem in a similar manner. At the very worst the ammunition could have



Figure 2: 357 Maximum and 357 Magnum, the shorter cartridge can be fired in a revolver chambered for the longer one.

been pulled apart to use the components for different reloading projects.

Sometimes a shooter may have to look at what ammunition is most readily available and purchase a firearm to suit those needs. In the past this was often the mainstay of 22 lr (long rifle). A shooter may have had more of a need for a larger caliber firearm, but the low cost and common availability of 22 lr made having a rim fire caliber a cost effective way to train. The most recent lesson of the ammunition shortfall of 2013 proved that 22 lr could become problematic to find.

Another variation on this theme is acquiring firearms that can fire different calibers. The most common and obvious ones are the 38 Colt, 38 Special and 357 Magnum combinations that can be fired from the 357 Magnum. The 44 Special/44 Magnum is a common combination as well, but as the two types of ammunition are so similar in price it addresses more of the availability issue than that of cost.

Years ago a revolver was manufactured called the Medusa that would fire 357 Magnum, 38 Special, 380 ACP, 38 Colt, 38 Super, 9 X 19mm, 38 Super, 9mm Steyr, 9x21 IMI and about 20 other cartridges that are mostly confined to surplus catalogs. Other firearms that can take advantage of multiple calibers are the Thompson Center Encores and Contenders, which offer just about everything from 22 lr to 45/70 Government.

Lastly, conversion kits for center fire handguns and rifles to fire inexpensive 22lr ammunition can be invaluable when it comes to getting the most bang for your buck with ammunition.

RELOADED AMMUNITION

Ammunition that has been reloaded can be safe to use or can propose a hazard. All too often, one reads about the disastrous effects of a shooter buying reloaded ammunition at a gun show and the end result is catastrophic failure of the firearm and injury to the shooter. Reloaded ammunition often represents a substantial discount over factory ammunition and for the most part it is safe to use if the reloader is licensed and bonded.

The best way to take advantage of remanufactured ammunition is for the shooter to load their own.

RELOADING COMPONENTS

If you were to read an article or a book on hand loading published in the past 100 years; the one statement that is constantly parroted is the great “savings” that comes with reloading. However, if the cost of brass, bullets, primers and powder was tabulated; this savings comes across as minimal, especially when factoring in the cost of dies, presses and other equipment.

Over a long period of time the savings becomes more apparent, particularly when reloading the same cases repeatedly. As a business plan, many potential ammunition manufacturers have failed, even when purchasing components at wholesale or distributor prices. What is it that makes hand loading profitable or even preferable to reselling another manufacturer’s ammunition?

The answer is in sourcing the components. I determined long ago that sourcing one or two components independently was the key to making a reloading business profitable, but this mentality can be applied to the shooter looking to produce their own ammunition.

The manufacture of modern primers and smokeless powder should not be attempted by the novice and should be handled by companies that adhere to strict quality control. For our purposes that leaves brass cases and bullets.

THE CARTRIDGE CASE

Sourcing cartridge cases is the basic foundation of a reloading effort. It starts with the shooter saving their

cases and perhaps obtaining cases from other sources. Without brass cases, there can be no ammunition.



Figure 3 5.56 NATO Brass Cartridges

TYPES OF CARTRIDGE CASES

The rimless case is the most common type of cartridge case. It is primarily used in rifles and handguns which accept a detachable magazine since the rim is very close to the diameter of the cartridge body. The extractor groove is cut into the solid head of the case.

Despite its name, a rebated rim is a type of rimless cartridge where the rim is smaller than the case body. This made a slight resurgence in popularity to allow certain auto pistols greater interchangeability by simply replacing the barrels. The two most famous for this design are the 50 AE and the 41 AE. The rebated rim of the 50 AE is the same size as the rim of the 44 Magnum, allowing the Desert Eagle pistol to fire either, by exchanging the barrel. In the case of the 41 AE, the rebated rim is the same size as the 9mm, allowing Jericho pistols and Uzi carbines the same type of interchangeability.

The belted case is used on magnum rifle ammunition. Chambers for belted magnums have a recess to accommodate the belt. It is postulated that the belt is more for looks, as there is ample shoulder on these cartridges for head spacing.

All rim fire ammunition is loaded in a rimmed case. In center fire ammunition; the rimmed case is found in a few rifle cases and in most cartridges developed for revolvers. The rim is used for extraction of these cases.

Most cartridge cases are made of brass, although lacquered steel, zinc, aluminum, copper and even plastic can be used. Of all these materials, only brass cartridge cases are suitable for reloading.

Brass cartridge cases can be bought in wholesale lots, bartered for or collected from shooting ranges. When using range pickups, the hand loader needs to inspect for Berdan primers. This is an older type of primer mostly found in surplus ammunition from Europe and are evidenced by two flash holes inside the case as opposed to the single flash hole of the Boxer primer. Although technically they can be reloaded, they require specialized and expensive tooling to do so, as well as a supply of Berdan primers.

Additionally steel and aluminum cases cannot be reloaded and can cause damage to the shooter's reloading equipment if this is attempted. Aluminum cases mostly have a flat grey metallic color and are most commonly found with a "CCI Blazer" head stamp on the rim of the case. They can further be identified by their use of Berdan primers and their distinctive pair of flash holes inside the case. Steel cases typically have a dark green, black or even copper colored case to reflect an anti-corrosive coating on their exterior. Like aluminum cases they are most often found with Berdan primers.

Lastly, certain calibers will only sustain a certain amount of reloading depending on the firearm that has fired them. This is most notable in 40 S&W rounds fired in pistols with unsupported chambers (1st and 2nd Generation Glock) or 223 or 308 ammunition fired from H&K or CETME rifles which use a fluted chamber to aid in extraction. These particular pieces of brass should be avoided at all costs and make good candidates for the scrap bucket as repeatedly resizing them will weaken the brass and could result in catastrophic failure.

PROCESSING BRASS CARTRIDGE CASES

In order to be an effective hand loader, one must inspect, sort and process the brass cases in order to ensure that the ammunition will be safe to load. Processing helps eliminate the Berdan primed cases, aluminum cases, steel cases and hopefully any cases of the incorrect caliber or that are not in their correct specifications.

While inspecting cases, the shooter should look for cracks in the neck and excessive bulges near the base. More than likely these cases will not resize properly and will need to be discarded to the scrap bucket.

When using brass that has been fired and collected from a shooting range it is advisable to clean and lube the cases. This can be done in a media tumbler with crushed walnut shell or dried corncob. Polishing chemicals can be added to speed up the process as well as special lubricants that will reduce wear and tear on the reloading equipment.

Depending on the equipment used, the brass can be de-primed at this time. This is usually done via a single stage reloading press and a de-capping pin. This step in the process resizes the case mouth as well.

PRIMER POCKET

The primer pocket is the part of the cartridge case where the primer is seated. Some types of military surplus brass will have an extra crimp to hold the primer in place.

While processing brass for reloading, the crimp will need to be removed. In extreme cases the pocket will need to be de-burred or reamed so a new primer can be seated.

BULLETS AND PROJECTILES



Figure 4: Sierra JSP bullets in .270

Bullets are the one component that can most easily be made and stockpiled by any shooter of any skill level. Again, the prospective hand loader has choices instead of simply buying bullets or even the base material with which to cast them.

When it comes to store-bought bullets, the possibilities are seemingly endless. Leafing through a supplier's catalog or scrolling through a manufacturer's webpage can be overwhelming when it comes to choosing the correct bullet for a reloading project. Most manufacturers will list the weight of the bullet (typically in grains) and the profile of the bullet as well as the composition.

With the exception of specialty made bullets, most will be sold at a similar price point. The major cost will usually be the shipping charges (bullets in bulk can be heavy). An alternative to ordering from manufacturers, distributors or internet retailers that require shipping to the customer can be in the form of finding a local bullet manufacturer where the bullets can be picked up locally. If this does not seem to be an option, the enterprising hand loader can always make bullets at home.

The easiest type of bullet to make is the cast lead bullet. Lead bullets work best in handgun calibers (particularly revolvers) and rifle rounds loaded less than 1000 feet per second. Any bullet travelling faster than this will cause excessive leading in the barrel. This can be alleviated in certain calibers to a degree by using a gas check; which is a cup or disc made of a harder metal that is situated at the rear of the projectile.

Lead can be bought in lead ingots of the proper alloy for shooting or it can be found by digging up the berms of shooting areas; sourced from rivers, lakes and streams in the form of old fishing sinkers or dive belts and obtained from tire shops in the form of old wheel weights. Most tire shops will be happy to give it away as they typically pay for disposal.

When lead known as bullet alloy is acquired it is actually a mixture of lead, tin and antimony. These additional elements aid in making the bullet harder than lead, by itself to reduce leaving lead deposits in the rifling of the barrel when a bullet is fired at a velocity greater than 1,000 feet per second. Recycled lead will not often have these properties.

Making cast bullets is simple in theory. The lead must be

melted and poured into appropriate size molds for the caliber in question. However, lead is a toxic substance and must be handled and prepared carefully. With proper precautions this can be performed safely.

There are three essential pieces of equipment needed to cast bullets”

- Bullet mold
- Lead melting pot
- Lead dipper or ladle

Other equipment to have on hand includes a respirator, work gloves and an old metal spoon.

THE BULLET MOLD



Figure 5: Bullet molds

It is paramount to research which bullet profile will work best in the firearm in question before investing in a mold. This can most easily be accomplished by the shooter purchasing factory ammunition with a lead projectile of a similar profile and trying it out in the firearm beforehand.

After determining which rounds work well, the goal will be to attempt to reproduce that load; the first step toward that goal will be to produce the bullet in question with the appropriate sized mold.

Bullet molds can be purchased for almost any caliber and different manufacturers will offer different patterns or

profiles of different weights for each.

THE LEAD MELTING POT



A melting pot can be made using an old stock pot or cast iron pot. If the bullet caster has the means, a special purpose electric pot specifically made for melting lead can be purchased.

Lead melts at 600 to 621 degrees Fahrenheit. This means that the caster must be able to supply a heat source of that temperature. Because of the potential toxic fumes, the lead must be melted in a well-ventilated area, preferably outdoors. If the temperature gets hotter than 650 degrees, the potential for toxic fumes becomes even greater so a gauge of some type should be used to monitor this. The special purpose lead melting pots often have these gauges built in.

It is strongly advised to use a respirator and gloves while melting the lead.

THE LADLE

The dipper or ladle is used to pour the molten lead from the pot into the mold. Some of the special purpose melting pots have a bottom spout to alleviate this. Some old time bullet casters prefer the ladle, even when they have a bottom spout because they believe the pour is more consistent.

THE MELTING PROCESS

It can take 10 to 20 minutes for the lead to melt at the proper temperature.

If the caster is utilizing recycled lead, impurities will separate and rise to the surface. This will be in the form of dirt or even residual jacket material or lube with regard to recycled bullets. Recycled wheel weights may have rubber or other metal as a residue. The rubber and lube will burn off, but the metals and dirt will need to be sifted and removed from the lead pot before pouring it to cast by use of a metal spoon. These impurities will appear blackish in color and after removal may leave a trace color within the molten lead. These impurities should be placed in a metal container for disposal.

Wax shavings can be introduced to aid in fluxing out any remaining impurities. After stirring in the wax, the caster should scrape the bottom and sides of the melting pot to remove every last bit of these impurities before pouring into a mold. The final product should be a bright silver color.

THE CASTING PROCESS

It is important to follow the manufacturer's instructions completely when using a bullet mold. Some will recommend heating the mold; some will recommend using a release agent, beforehand.

Whether the caster is filling the mold from a bottom spout or using the ladle, the molten lead needs to be poured directly into the hole on the top of the mold's sprue plate until there is a slight overflow (which is called sprue and how the plate gets its name). This will allow the mold

cavity to fill properly as the lead cools.

The bullet will take its shape in about five to seven seconds. The caster can then rotate the sprue plate by tapping on it with a wooden dowel or a rubber or wood mallet. The sprue plate should cut the excess lead from the top and the open mold should release the bullet. The bullet may need to be tapped free of the mold by using the mallet again.

The first bullets may have a crackled or wrinkled appearance due to the mold being too cool. Eventually the mold will achieve the proper temperature and the bullets will look fine. If they take on a frosted appearance it means the mold is getting too hot.

The newly formed bullets should be dropped into a towel, wooden box or in some instances, a pan of water to quench the bullets. The excess lead sprues can be added to the melting pot along with any flawed bullets and melted again to make new ones.

The bullets should be allowed to cool down and set for at least 24 hours before hand loading. In most cases the bullets will be ready to go at this point. If the bullets prove to be inaccurate, they may need to be resized to fit the firearm's bore. There are specialized motorized tools that can be bought for this purpose for under \$1000 or the bullet caster can purchase a bullet sizing die of the appropriate diameter and mount it in a single stage reloading press in order to process several batches of properly sized bullets.

If the caster wishes to size and lubricate the bullets, there is a specialized tool for this or the bullets may be lubricated individually. Spray lubricants can be applied or the caster may want to take another step and apply a coating.

SOURCES OF BULLET MOLDS AND CASTING EQUIPMENT

<http://www accuratemolds.com/>

<http://www.buffaloarms.com/products.aspx?CAT=3754>

<http://leeprecision.com/bullet-casting/rifle-bullet-molds/>

MAGMA ENGINEERING

This company makes the most state of the art equipment when it comes to cast bullet production. When you see the high cost of some of the machines, bear in mind that these are designed for large scale manufacturing and not the casual hobbyist.

<http://www.magmaengineering.com/>

PLATING BULLETS

In order to reduce leading, some bullet casters have their bullets plated with a gilding metal such as copper or brass. This can be an expensive endeavor between the costs of the gilding metal and its preparation by using caustic soda and the associated hazardous waste material disposal fees.

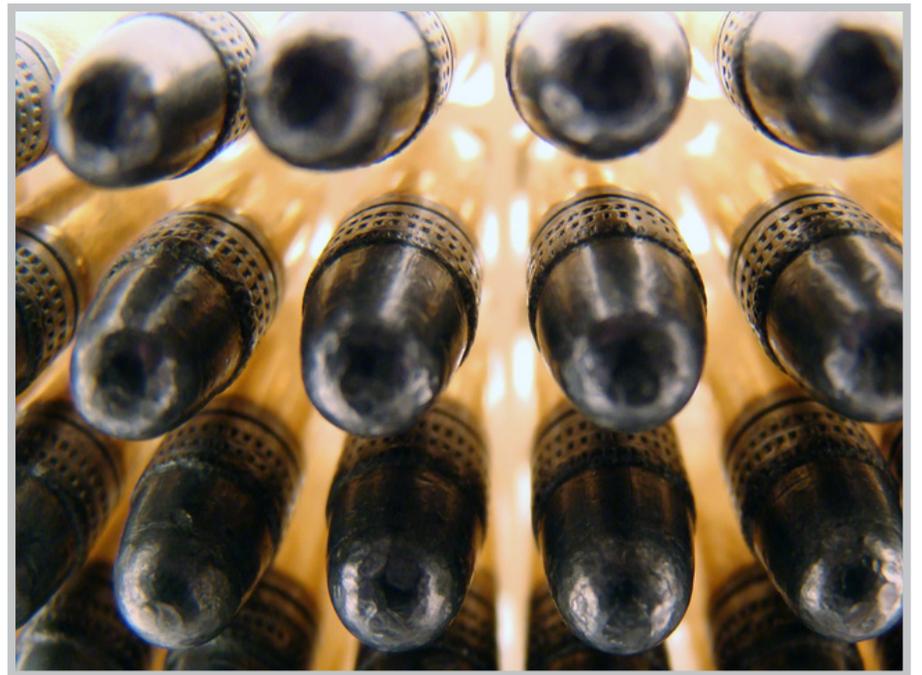
The end result is a plated bullet that can be loaded similar to a lead bullet, but not quite as “hot” as a true-jacketed bullet. It will prevent barrel leading and make a firearm easier to clean.

COATING BULLETS

An alternative to plating a bullet is to coat them in a substance like Molybdenum disulfide. Moly coated bullets completely seal the lead and make them environmentally safe, minimizes cleaning due to reducing the chances of leading and have been reported to increase velocity due to the superior lubricating properties of the Molybdenum disulfide.

The bullets must be completely degreased prior to preparation. This can be accomplished by washing the bullets in a strainer of some kind and using dish detergent. If this is not practical the bullets may be cleaned using brake cleaner or rubbing alcohol. Regardless of the method used, the bullets must be completely degreased and dry before beginning the coating process.

Once the bullets are dry, they can be placed in a bowl with the Molybdenum disulfide powder. The bullets must be tumbled in order to completely coat them. This can take the form of a typical ammunition electric tumbler



or for a large quantity of bullets, a portable cement mixer. Tumbling should take at least one hour.

When the bullets are completely coated they should be bounced on a screen to remove any excess moly. This powder can be used again in the next batch.

http://www.midwayusa.com/product/432100/lyman-super-moly-bullet-finishing-accessory-pack?cm_vc=subv1162840

SWAGING BULLETS

Bullet swaging is an alternative method of producing bullets at the individual level. Major ammunition manufacturers mostly use it with expensive machinery and dedicated factories. Swaging utilizes pressure to form a bullet. As opposed to casting, no heat is needed and there is no requirement to melt the lead. Of course this negates the ability to use recycled materials such as dive weights, wheel weights, fishing lures or previously fired bullets, but it is the way to go if the hand loader wants to produce jacketed ammunition or specialized bullets such as a hollow based wad cutter. For making effective use of pre-existing materials, previously fired brass rim fire cases can be recycled and used as jacket material.

The pressure to swage a bullet is applied by means of either a hydraulic or hand-powered press. The press holds a die and a set of internal and external punches. The two punches apply force against the material from both ends of the die until it flows and takes on the actual shape of the die. When manufacturing a jacketed bullet, the lead core or wire is forced into the jacket material in the same manner.

Swaging can be performed in a home workshop using machinery made by companies such as Corbin. Most of the presses used for reloading can be used in the swaging process to swage the bullets, form bullet jackets from copper strip or tubing and make the lead wire, itself. Corbin offers dedicated swaging presses that can be easily converted to single stage reloading presses as well.

The initial set-up of a swaging operation is more costly than a basic casting venture, but can be more versatile, particularly if the end user has a greater need for jacketed ammunition for use in semiautomatic rifles and handguns. There is a reduced risk of exposure to toxic substances and the operation can be conducted “under the radar” with no one being the wiser to a manufacturing facility as they would with the smell of melting lead ingots. The end-user does not have to be concerned with fluctuations in the molding and casting process due to temperature, either.

After the initial cost of setting up the machinery, the cost of bullet production is essentially the same cost as the raw materials and the end result is usually a more accurate bullet as opposed to a cast bullet.

As mentioned previously, Corbin is the ultimate source for swagging material and machinery. Their website contains a wealth of information that goes beyond our scope here:

<http://www.corbins.com/>

MACHINING BULLETS

In some instances, bullets can be machined. Although it is not an ideal situation, it can be a method of last resort. I know several shooters of 338 Lapua Magnum and 50 BMG who have found it cheaper to turn out bullets for these rifles on a lathe or a screw machine. Some use bronze or copper and one uses steel in his 50 BMG rifle. The problem with steel is that it quickly erodes the bore of the rifle; however the shooter in question maintains that he spends so little on reloading components that he finds it cheaper to replace the barrel after it is shot out.

THE FINAL WORD ON LEAD BULLETS

Lead is a toxic substance that can cause health problems and birth defects. It is advisable to wear gloves whenever possible while handling it and strongly advised for reloaders to wash their hands after handling it and before eating drinking or enjoying tobacco products.

POWDER

Gunpowder is an invention that traces its history to centuries before firearms development, much like the parachute was invented before the concept of airplanes. There are numerous types of powder available to the reloader and each one has its own properties.

It would be exhaustive and a waste of the reader’s time to list every brand of propellant that is available. So we will cover the basics in this report.



Figure 7: Various powders

BLACK POWDER

For over 600 years, black powder was the only small arms propellant available. In those six centuries it was noted for being hygroscopic and dangerous for the shooter to use. Black powder or its equivalent can be purchased today and is mostly used in muzzle loading firearms and certain black powder cartridges from the 19th century.

Black powder can be made from charcoal, sulfur and saltpeter. It is an explosive and potentially dangerous, its manufacture is beyond the scope of this report.

NITROCELLULOSE POWDER

The first major breakthrough in gunpowder manufacturing was the development of nitrocellulose. Basically it is a combination of nitric acid and cotton. On combustion it separates into several gasses and burns at a high temperature. Known as guncotton, it was deemed unsuitable for use in small arms, but proved essential in the development of explosives in the mid-19th century.

Its use in explosives with relation to burn rates paved the way for the development of smokeless powder in the 1890s by Viellie and Nobel.

SMOKELESS POWDER

After the discovery that burn rates of powder could be controlled by changing the granule size of the powder,

Viellie and Nobel introducing smokeless powder to the world. This new powder did not have the corrosive or hygroscopic properties of black powder and most importantly it did not leave clouds of white smoke in its wake when a round was fired.

Because of the higher pressure involved with smokeless powder, it should only be fired in modern firearms made after 1898 and never fired in firearms marked “For Black Powder Only”.

PRIMERS

Of all the components that make up a round of ammunition, primers tend to be the most dangerous to handle or attempt to make.

PRIMER SIZE

Earlier we wrote about two types of primers, Berdan and Boxer. This report will focus on the Boxer primer and its role in reloading. There are three sizes of primers: shotgun, small and large.

Small and large size primers each come in three different degrees: rifle, pistol and Magnum. The size of the primer depends on the case.

Most center fire pistol ammunition uses the small pistol primer with the exception of 10mm, 45 ACP, 44 Special, 41 Magnum, 44 Magnum, 45 Colt, 45 ACP, 50 Action Express, 500 Smith & Wesson, 454 Casul and Wildcat cartridges based on these case designs. Small Magnum primers are used by 357 Magnum and the large Magnum primers are intended for 41, magnum, 44 Magnum, 454 Casul, 50 Action Express and 500 Smith & Wesson when used in conjunction with a slow burning powder that takes up almost all of the capacity of the case to guarantee proper ignition. Shooters looking to save money should know that using a case loaded with a small amount of a fast burning powder does not require the more expensive Magnum primer.

Magnum primers should be used when the temperature is below 0 degrees and is safe to use with any ball powder. It may not be particularly advantageous to use with a fast burning powder and despite their expense, they may be the only primer that is available to the reloader. The bottom line is that they are completely safe to use in non-Magnum rounds despite their ominous sounding name.

Shotgun primers are used for reloading shotgun shells and are used in lieu of percussion caps in certain inline modern muzzle loading rifles. They cannot be used to reload pistol or rifle ammunition.

RELOADING EQUIPMENT

There is an entire industry dedicated to the reloading of center fire ammunition, apart from the individual ammunition components. A reloading press can cost anywhere from \$30 to \$30,000 depending upon its intended use.

THE LEE LOADER

The Lee Loader is a pocket sized reloading tool available in a variety of pistol and rifle calibers. The company claims that a single round of ammunition can be loaded using this tool in as little as 30 seconds. This tool is commonly used in the field by Bench rest rifle shooters who reload their fired brass on the firing line and is perfect for a bug out bag, provided that the reloader brings along ammunition components such as powder, primers and bullets.

The kit contains all the basic tools to remove the fired primer, seat the new primer, flare the case mouth, measure and pour powder, seat the bullet and crimp the bullet in place. Because it only resizes the neck portion of rifle cases, it is advised to only use it to reload brass that has been fired from a single rifle.

This low cost entry (\$30- \$40) is often a gateway tool into more dedicated reloading, but still holds a place in most bug out or survival situations and can be handy to take to the range for basic load development.

THE SINGLE STAGE PRESS

The heart of most reloading workshops is the single stage press. Most reloaders who move on to progressive or automated systems will still use classic single stage presses for case preparation or calibers that are not loaded as frequently.

Single stage presses are manufactured by



Figure 8: Hornady Single Stage Press

a variety of companies such as RCBS, Dillon, Lee and Hornady. Essentially these presses consist of a device to hold the cartridge case in place and a handle to move the case into one of the dies.

The user must remove each case from the press after each step is completed. When each stage of assembly is finished, the reloader removes the die from that stage and places the die for the next one to complete the loading sequence.

Production is faster and much more stable than the Lee Loader, but not as fast as the progressive or automated press.

THE PROGRESSIVE PRESS

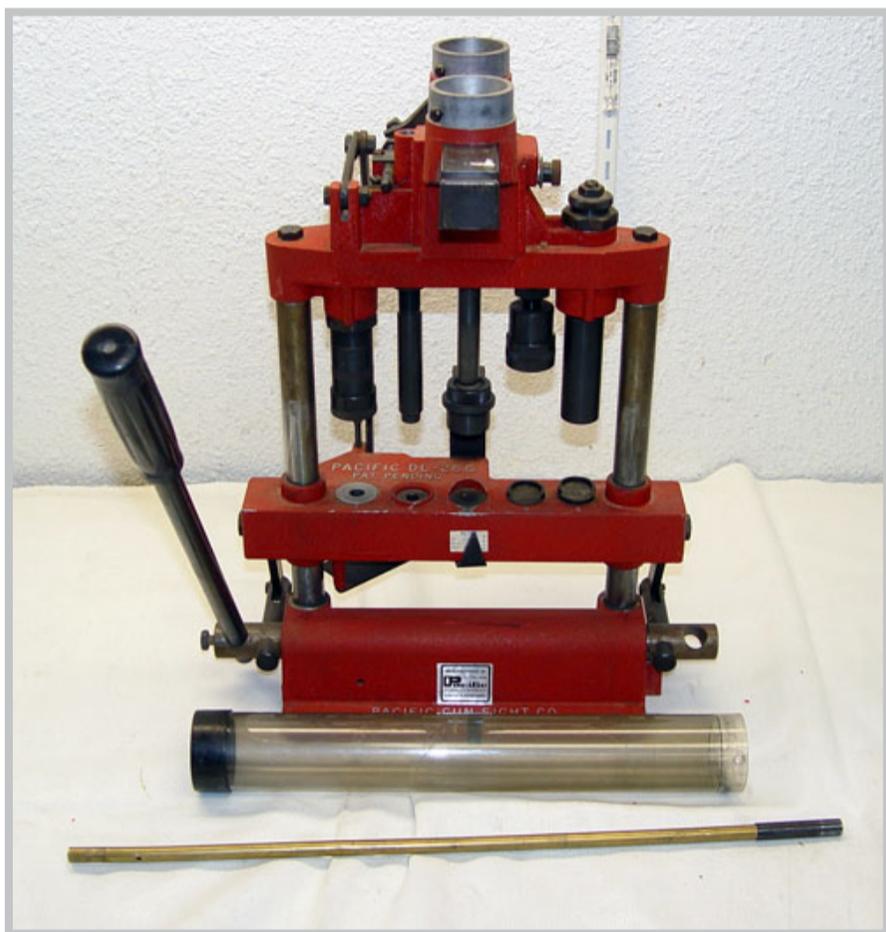


Figure 9: Pacific Shot shell reloader, note the different stages in the press.

If ever there was a press that changed the way ammunition is loaded, it would have to be the progressive or multi stage press. Similar in operation to the single stage press with regard to moving the handle, the progressive press makes use of several dies at once by means of a tool head.

Most progressive presses are hand indexed, meaning that the reloader must manually move the cartridge case from one stage to the next, but a fair number of presses

are coming to market with an auto indexing feature. Auto indexing allows the cartridge case to move automatically as the handle is raised or lowered depending on the manufacturer.

Progressive presses have numerous safety features, which can be installed to ensure safe operation. Some feature a powder warning, alerting the user to the presence of too much or too little powder in the case. On presses, which feature a feed system for primers, a low primer sensor can be installed to let the user know that the primer tube will soon be empty.

Advanced and more expensive presses can have case feeding stations and bullet feeding stations attached so all the reloader needs to do is keep these feeders full of components. Some of these presses will allow the reloader to load as many as 1200 rounds in an hour.

THE AUTOMATED PRESS

At one time these machines were relegated to manufacturers only due to their initial cost. However, automated presses have been making their way into home reloading operations over the past decade at a high rate.

Two of the most popular are those made by Ammo Load and Camdex. These presses can churn out thousands of rounds per hour. The downside to running an automated press is that typical reloading dies cannot be used in their operation. Each manufacturer uses a proprietary toll head that runs inline as opposed to the more circular path of the progressive loader and each of these tool heads is expensive and can take a long time to change between calibers.

Almost every station on an automated reloading press has an independent safety check for primers, powder, bullets, etc. With the automated press, the warnings are more severe as they will completely stop the continued operation of the press until those warnings are addressed.

RELOADING DIES

The most critical piece of reloading equipment for the progressive or single stage press is a set of reloading dies. Each of the dies performs one or more specific functions during the reloading process and each set of dies is made for a spe-

cific caliber. Some sets of dies will work on similar calibers, but this is not universal.

For example a typical set of dies for 38 Long Colt will work with 38 Special and 357 Magnum, because all three cartridges have the same external dimensions apart from length. It is the same with

44 Special and 44 Magnum or 45 Colt and 45 Schofield, although the latter two have different rim diameters. In a similar vein 45 ACP dies will work with 45 Auto Rim, aside from the shell holder.

Magnum handgun dies marked “357 Magnum Only” or “44 Magnum Only” will not work on the shorter calibers due to the internal dimensions with regard to setting the crimp. These dies cannot be adjusted to sit lower in the press.

RELOADING BENCH

The loading bench is vital for all single stage and progressive presses, as well as keeping all of the other equipment organized. You should look at mounting a press to a bench as critical as you would with regard to mounting a scope to a rifle. The more stable and strong the mount is; the more consistent your reloads will be. The Lee Hand Loader and the automated presses (which come with their own workbenches) would be the exceptions to this.

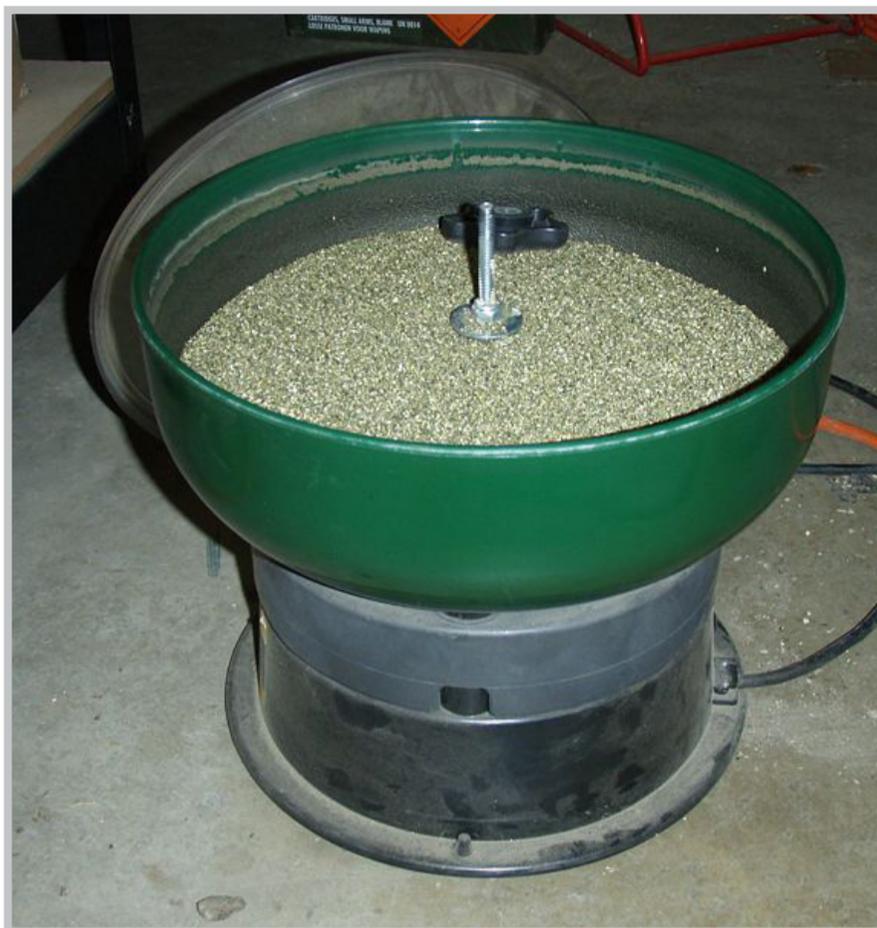
A quality bench can take the form of a solid wood top workbench from a hardware store or a purpose built unit designed for reloading.

THE TUMBLER

A dry media tumbler may be seen as a luxury by most reloaders and not necessary. As stated earlier it can be invaluable for case preparation and preserving



Figure 10: RCBS Reloading Dies



the life of the reloading press and its parts, but it can serve an equally important function when the reloading stage is complete.

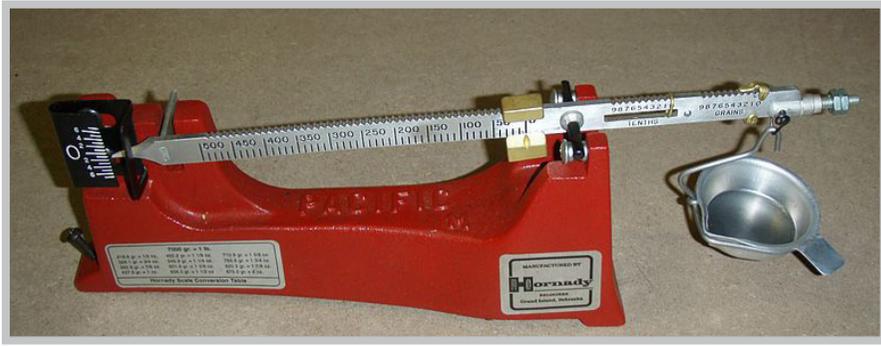
All modern ammunition factories tumble and polish their brass when it is complete. This gives the ammunition that fresh and shiny appearance when it is first taken out of the box and is completely safe to do so.

Specially made rotary tumblers for this purpose are sold by various companies who cater to the reloading industry, but the same effect can be had by using a cement mixer to tumble large quantities of brass.

As in case preparation, dry corncob or walnut shell makes the best media, but some reloaders use cat litter. Polishing and lubrication agents made for reloading can be used to aid the process, as can products such as Brasso.

THE POWDER SCALE

Powder scales are vital to the reloader. Too much powder can create a hazardous situation, which can cause a catastrophic failure in the firearm (i.e. the gun blows up). Too little powder can cause a bullet to become lodged in the bore and is often referred to as a squib load. There are two types of scales on the market, the older balance-beam



type and the digital. Both are effective, but the digital scale tends to be more reliable and easy to read.

MANUALS

If there is one thing there is not a shortage of, it is reloading manuals. Just about every bullet and powder manufacturer publishes usable reloading data and releases a free version of it. These can range from 3-page leaflets to 100 page brochures and are yours for the asking.

More dedicated versions are available in hardback bound book or CD/DVD format for a fee of \$10 to \$50.

A company known as Load Books produces 68 caliber-specific manuals available in spiral bound paperback from their website or at retail locations that sell reloading equipment. <http://www.loadbooks.com/>

SOURCES OF RELOADING COMPONENTS AND EQUIPMENT

- www.brownells.com
- www.midwayusa.com
- www.dillonprecision.com
- www.grafs.com
- www.midsouthshooterssupply.com
- www.natchezss.com
- www.wideners.com

STORAGE OF AMMUNITION AND COMPONENTS

All ammunition and reloading components must be stored in a cool, dry place. Despite the old wives tales that circulate in gun shops or over the internet, there is no shelf life on ammunition. Ammunition that was properly loaded and stored in 1886 can safely be fired today. It is when the ammunition has been exposed to widely fluctuating temperatures and humidity conditions that it can be problematic.

Some shooters go an extra step and secure their ammunition in a safe or locking cabinet to protect it from home burglaries or children finding it.

Reloaded ammunition should not be stored in plastic bags. The ideal way is to use ready-made ammunition boxes to store the rounds and label them with the load information and date of manufacture. A cheaper alternative to this can be reusing the trays if not the ammunition boxes of commercial store-bought ammunition with a label to mark the loading data.

Powder is perhaps the most fragile component to store. It should always be stored in its original container of metal or fiber and must follow all the safeguards of ammunition storage with regard to temperature and humidity. Exposure to light and wide temperature fluctuations can cause powder to deteriorate rapidly and turn an indefinite shelf life to that of a few months. Powder should never be stored in a glass or clear plastic container for these reasons.

HOW MUCH AMMUNITION IS ENOUGH?

When it comes to storing ammunition or keeping a reserve, the question often becomes: “How much do I really need?”

The answer is different for everybody. A basic rule of thumb is a minimum of 1000 rounds for each caliber of center fire ammunition and 5000 rounds of each caliber of rim fire. This is not set in stone, it is merely a guideline. A competitive pistol shooter will burn through 1000 rounds in a few weeks of intense practice leading up to a match. A hunter who makes a trip to Africa once a decade for a safari may only need several boxes of 458 Winchester Magnum or 375 Holland & Holland.

GLOSSARY

When ordering ammunition or components, most manufacturers use acronyms abbreviations and some terms that are not familiar to advanced firearms enthusiasts. The following is a list of the most common terms and abbreviations used to describe ammunition and bullet types.

ACC – Accelerator, an innovation by Remington in which a .22” bullet was loaded into a sabot and fired from a .30 caliber rifle, the smaller bullet could be fired at increased velocity

ACP – Automatic Colt Pistol, an abbreviation used to denote cartridges developed in part with the Colt Manufacturing Company (25 ACP, 32 ACP, 380 ACP, 45 ACP)

AE – Action Express, an abbreviation used to denote cartridges developed in part with Magnum Research or Israeli Military Industries (41 AE and 50 AE)

AET – Advanced Energy Transfer, composite frangible ammunition marketed by Winchester

AGS – African Grand Slam, a tapered, jacketed soft point bullet made with internal flutes at the jacket opening for symmetrical and consistent expansion at long ranges for African Big Game

A-MAX – a Polymer tipped long range target bullet made by Hornady

ANVIL – a fixed metallic point against which priming compound is crushed and thereby detonated by the action of the firing pin or striker.

AP – Armor Piercing, ammunition designed to penetrate light armor by use of a steel jacket or core

API – Armor Piercing Incendiary, ammunition designed to penetrate light armor by use of a tungsten core and a powdered zirconium charge to burn upon impact for 10 minutes

APT – Armor Piercing Tracer, ammunition designed to penetrate light armor by use of a tungsten core it has a tracer element at the base of the core

APTI – Armor Piercing Tracer Incendiary, ammunition

designed to penetrate light armor by use of a tungsten core it has a powdered zirconium charge to burn upon impact for 10 minutes and a tracer element

ATBT – Accu Tip Boat Tail, a polymer tipped bullet design from Remington with a lower drag coefficient which produces less turbulence in its wake. So-named because the base of the bullet has a boat tail like shape.

BBWC– Bevel Base Wadcutter, a lead bullet with a cylindrical profile and a bevel at its base

BEB – Brass Enclosed Base

BHN – Brinell hardness, refers to the hardness of a material on the Brinell scale

BJHP – Brass Jacketed Hollow Point, a jacketed bullet where the bullet nose has a cavity which causes the bullet to expand when it hits its target. It utilizes a jacket made of brass as opposed to copper.

BMG – Browning machine gun

BORE – the inside of a barrel of a firearm.

BP - Bronze Point, hunting ammunition manufactured by Remington with a bronze tip. When the bullet strikes the target the bronze tip pushes against the core and causes expansion

BT – Boat-tail, a match grade bullet design with a lower drag coefficient which produces less turbulence in its wake. So-named because the base of the bullet has a boat tail like shape.

BTHP – Boat Tail Hollow Point, a hollow point bullet design with a lower drag coefficient which produces less turbulence in its wake. So-named because the base of the bullet has a boat tail like shape.

BTM – Boat Tail Match, a match grade bullet design with a lower drag coefficient which produces less turbulence in its wake. So-named because the base of the bullet has a boat tail like shape.

BTSP – Boat Tail Soft Point, a soft point bullet design with a lower drag coefficient which produces less turbulence in its wake. So-named because the base of the bullet has a boat tail like shape.

CANNELURE – Circumferential groove or grooves around a bullet or cartridge case. A cannelure can be used for identification, to hold a lubricant or to crimp.

CARTRIDGE – A complete unit of assembled ammunition including case, powder, primer and bullet.

CB – Cast Bullet, a lead bullet made by pouring molten lead or a lead alloy into a mold

CHAMBER – the part of the bore at the breech, which is formed to accept and support the cartridge.

CHOKE – A constriction at the muzzle of a shotgun barrel to control the spread and dispersion of the shot.

CL– Core Lokt, a controlled–expansion bullet designed by Remington which has a progressively tapered copper jacket is locked to a solid lead core.

CLU- Core Lokt Ultra, a controlled–expansion bullet designed by Remington which has a progressively tapered copper jacket is locked to a solid lead core.

CORE – the interior part of a jacketed bullet, usually a lead alloy, but steel can be used in some military rifle rounds.

CNL - Conical Nose Lead, a bullet shaped like an inverted cone. It is similar in profile to a semi wadcutter without the shoulder.

CP - Cone Point, a bullet shaped like an inverted cone. It is similar in profile to a semi wadcutter without the shoulder.

CT – Combat Target, jacketed hollow point ammunition marketed by Hornady

DEWC– Double Ended Wadcutter, a lead bullet with a cylindrical profile and a bevel at its base

DGS – Dangerous Game Solid, ammunition manufactured by Hornady from a copper clad, steel jacket for use on Big Game such as elephant, rhinoceros, hippopotamus and Cape buffalo

DGX – Dangerous Game Expanding, ammunition manufactured by Hornady from a copper clad, steel jacket for use on Big Game such as elephant, rhinoceros, hippopotamus and Cape buffalo; unlike a DGS, this bullet is designed for expansion

DPX– Deep Penetrating X, a CorBon cartridge made with a Barnes X all copper hollow point bullets

EFMJ – Expanding Full Metal Jacket, defensive ammunition marketed by Federal which has a two-part bullet core, with rubber in the forward section and lead in the rear. When impacting a target, the jacket ruptures, driving the rubber tip into the lead core, causing the bullet to expand dramatically.

EP – Expanding Point, ammunition loaded with a hollow point bullet with a round lead ball inserted into cavity which is designed to expand when it hits its target. Winchester developed this round for the 25 ACP round for personal defense.

FEB – Fully Encased Bullet, a lead bullet where all of the lead is covered by a jacket or plating of copper, polymer or other material to prevent lead exposure

FHS– Federal Hydra–Shok, a type of Jacketed Hollow Point, marketed by Federal utilizing a center post within the cavity to aid in expansion.

FMC – Full metal case, similar to full metal jacket, but the tail end of the bullet is encased in copper as well; whereas most full metal jacket ammunition has an exposed lead base.

FMJ – Full metal jacket, the lead bullet is encased in a metal jacket to reduce lead fouling in the barrel. These rounds in general do not expand when they hit their target.

FMJBT – Full Metal Jacket Boat–Tail, a match grade bullet design with a lower drag coefficient which produces less turbulence in its wake. So–named because the base of the bullet has a boat tail like shape

FMJ–ENC – Full Metal Jacket, Encapsulated; a type of FMJ bullet marketed by Hornady where the lead core in the base is covered by the copper jacket material

FMJFN – Full Metal Jacket Flat Nose, a jacketed bullet which has a flattened front profile for use in rifles with tubular magazines

FMJFP– Full Metal Jacket Flat Point, a jacketed bullet which has a flattened front profile for use in rifles with tubular magazines

FMJRN – Full Metal Jacket Round Nose, a jacketed bullet which has a rounded front profile

FMJRP – Full Metal Jacket Round Point, a jacketed bullet which has a rounded front profile

FMJSWC – Full Metal Jacket Semi Wadcutter

FMJTC – Full Metal Jacket Truncated Cone

FN – Flat Nose, bullet which has a flattened front profile for use in rifles with tubular magazines

FNEB – Flat Nose Enclosed Base

FNSP – Flat Nose Soft Point, a soft point bullet which has a flattened front profile for use in rifles with tubular magazines

FORCING CONE – Refers to the slope of the forward end of a rifle or shotgun chamber which decreases the chamber diameter to bore diameter. In a revolver, the forcing cone is the bevel in the rear of the barrel just ahead of the cylinder

FP – Flat Point, a bullet with a flat front profile made for use in lever-action rifle ammunition

FPD – a type of Jacketed Hollow Point ammunition marketed by Hornady, meaning “For Personal Defense.”

FPS – feet per second, the speed at which a bullet travels, on a box of ammunition this is usually the speed at which the bullet leaves the muzzle.

FS – Fail Safe, a partition bullet with steel bands around lead cores made by Winchester

FST – Winchester Fail Safe Talon, a type of Jacketed Hollow Point, marketed by Winchester utilizing a reverse-tapered jacket to aid in bullet expansion upon impact

GAP – Glock Auto Pistol

GC – Gas check, a small disc made of copper, brass, or zinc. Gas checks are primarily used in magnum handgun calibers with lead bullets to prevent lead fouling in the barrel.

GD – Gold Dot, copper plated lead bullets made by Speer with a thicker than normal plating. The plated lead bul-

let is swaged into a die so that they perform like jacketed bullets.

GDHP – Gold Dot Hollow Point, copper plated lead bullets made by Speer with a thicker than normal plating. The plated lead bullet is pierced and swaged into a die so that they perform like jacketed hollow point bullets.

GRAIN – a unit of weight. In selecting ammunition, the grain refers to the weight of bullet. 1 grain is approximately 1/16th of a gram.

GROOVES – spiral cuts in the bore of a firearm which causes the bullet to spin as it moves through the barrel.

GS – Golden Sabre, a type of Jacketed Hollow Point, marketed by Remington utilizing a reverse tapered jacket made of brass to aid in bullet expansion upon impact.

H&H - Holland and Holland, a British gun maker founded in 1835 and responsible for the development of several big game hunting loads.

HAP - Hornady Action Pistol, a jacketed hollow point patterned after the Hornady XTP designed for competitive shooting as opposed to self-defense.

HC – Hard Cast, a type of bullet made by melting lead and other alloys such as antimony and tin into a mold rather than swaging. Hard Cast bullets made this way are usually much harder than “pure lead” bullets.

HBWC– Hollow Base Wadcutter, a lead bullet with a cylindrical profile and a cavity at its base

HE - High Energy

HEADSPACE – the distance from the surface of the barrel or chamber that positions the cartridge and prevents further forward movement into the chamber to the face of the bolt or breech block when the latter is fully back against the supporting surface.

HEEL – the edge of the base of the bullet

HM HEAVY MAGNUM

HMR - Hornady Magnum Rim fire

HS - Hi Shok, a range of shotgun ammunition offered by

Federal

HS2 - Hi Shok 2, a range of shotgun ammunition offered by Federal

HSP - Hornady Soft Point, also Hollow Soft Point

HP – Hollow point, a bullet that has a cavity in its tip intended to cause the bullet to expand upon impact with a target.

HPJ - High Performance Jacketed

HPWC - Hollow Point Wad Cutter, a wad cutter bullet that has a cavity in its tip intended to cause the bullet to expand upon impact with a target.

HS– Hydra Shok, a type of Jacketed Hollow Point, marketed by Federal utilizing a centerpost within the cavity to aid in expansion.

IRT - Indoor Range Training, lead-free ammunition made by Federal for use in indoor ranges

JAP – Jacketed Aluminum Point, a hollow point rifle bullet with an aluminum tip seated in the cavity. On impact, the tip initiates expansion.

JFP – Jacketed Flat Point, a jacketed bullet which has a rounded profile with a flattened front

JHC – Jacketed Hollow Cavity, a jacketed bullet where the bullet nose has a cavity which causes the bullet to expand when it hits its target, marketed by Sierra

JHP – Jacketed Hollow Point, a jacketed bullet where the bullet nose has a cavity which causes the bullet to expand when it hits its target.

JHPBT – Jacketed Hollow Point Boat Tail, a jacketed bullet designed for use in a rifle where the bullet nose has a cavity to reduce weight and causes the bullet to expand when it hits its target. The rear profile of the bullet has a truncated profile to eliminate parasitic drag

JSP – Jacketed Soft Point, similar to FMJ ammunition with exposed lead at the tip. This is mostly used in rounds loaded for hunting as it allows for expansion.

JSPF – Jacketed Soft Point Flat, a jacketed soft point bullet with a flat tip, made for use in lever-action rifles

JSZ – Jacketed Stranded Zinc, a jacketed bullet with a zinc core designed to shatter upon impact with a hard target, made by Federal

LANDS– the spiral raised portion of a bore remaining after the grooves have been cut

LF – Lead Free, a bullet containing no lead

LFP – Lead Flat Point, a lead bullet that has a flat tip for use in rifles with a tubular magazine

LFN – Long Flat Nose

LFP – Lead Flat Point, a lead bullet which has a rounded profile with a flattened front

LGC – Lead Gas Check, a lead bullet with a gas check to minimize barrel leading

LHP – Lead Hollow Point, a lead bullet that has a cavity in its tip intended to cause the bullet to expand upon impact with a target.

LM – Light Magnum

LRN – Lead Round Nose, a lead bullet which has a rounded front profile

LSWC – LEAD SEMI–Wad Cutter, a lead bullet with a tapered profile mostly used in revolvers

LSWC–GC –LEAD SEMI–Wad Cutter, Gas Checked; a lead bullet with a tapered profile mostly used in revolvers with a gas check in its base

LTC – Lead Truncated Cone, a lead bullet shaped like an inverted cone. It is similar in profile to a semi wadcutter without the shoulder.

LWC – Lead Wad Cutter, a special-purpose lead flat-fronted bullet, designed for shooting paper targets at close range and at subsonic velocities below 900 fps.

LWFN – Long Wide Flat Nose

LWN – Long Wide Nose

MAGNUM – a cartridge having greater power or a cartridge case with exceptionally large powder capacity in relation to the bore diameter.

MB – Multi Ball, a type of pistol or revolver round where the case is loaded with 2 or more balls of shot of the same diameter as the cartridge's caliber

MEPLAT – French term meaning “flat surface”, it is the technical term for the tip or nose of a bullet.

MKBTHP – Match King Boat Tail Hollow Point, match grade bullet offered by Remington

MON – Monolithic Solid

MRWC– Mid Range Wadcutter, a lead bullet with a cylindrical profile and a cavity at its base designed for target shooting at close range

NBT – Nosler Ballistic Tip, a jacketed soft point rifle bullet with a polycarbonate tip to prevent deformation of the round while handling.

NOS – Nosler, a bullet manufacturer

NOSBT – Nosler Ballistic Tip, a jacketed soft point rifle bullet with a polycarbonate tip to prevent deformation of the round while handling.

NP – Nosler Partition, a specially designed jacketed bullet enclosing two separate lead alloy cores to aid in expansion and penetration

+P – A cartridge loaded to higher pressures than what is standard (10–15% overpressure). The +P designation originally applied to 38 Special as the cartridge case was found to be capable of handling more pressure in 357 Magnum revolvers. This designation is found on various calibers, now including 9mm and 45 ACP. Always confirm with the firearm manufacturer (or consult the owner's manual) if your firearm is capable of handling these higher pressure loads.

+P+ – A cartridge loaded to higher pressures than a +P loading, resulting in 20–25% overpressure. Always confirm with the firearm manufacturer (or consult the own-

er's manual) if your firearm is capable of handling these higher pressure loads.

P – Plated, a bullet usually made from lead, which has been coated in copper or brass through an electric bonding process

PB – abbreviation for Parabellum

PG – Partition Gold, a jacketed hollow point bullet designed by Nosler, for loaded in Winchester's magnum handgun line of ammunition.

PHP – Plated Hollow Point, a lead bullet with copper plating where the bullet nose has a cavity which causes the bullet to expand when it hits its target.

PL –Power Lokt, ammunition by Remington designed for varmint hunting, featuring a copper plated lead hollow point bullet

PP –Power Point, hunting ammunition made by Federal featuring an exposed soft lead-alloy nose and a notched metal jacket to aid in expansion

PSP – Pointed Soft Point, soft point rifle ammunition with a pointed tip, not for use in tubular magazine rifles

PSPCL – Pointed Soft Point Core Lokt, soft point hunting ammunition made by Remington where the jacket is bonded to the bullet's core

PTHP – Platinum Tip Hollow Point, a type of Jacketed Hollow Point, marketed by Winchester utilizing platinum colored jacket material.

RHT – Reduced Hazard Training, a lead free bullet marketed in a joint venture by Federal and CCI/Speer

RN – Round Nose, refers to a bullet with a rounded front end.

RNSP – Round Nose Soft Point, a round nose jacketed bullet with exposed lead at the tip to aid in expansion.

RNFP – Round Nose Flat Point, a lead bullet which has a rounded profile with a flattened front

RNL –Round Nose Lead, a lead bullet which has a rounded

front profile

S&W – Smith and Wesson

SABOT – a device used in a firearm to fire a projectile that is smaller than the firearm’s bore diameter. The word “sabot” comes from a Dutch word for wooden shoes. It is the origin of the word “sabotage” as Dutch factory workers on strike would throw their wooden shoes into the gears of factory machinery to cause it to break down.

SCHP – Solid Copper Hollow Point, a hollow point bullet made from a solid piece of copper and containing no lead

SFHP – Starfire Hollow Point, a type of jacketed hollow point ammunition manufactured by PMC

SHP – Speer Hollow Point, a type of jacketed hollow point bullet manufactured by Speer

SJ – Semi Jacketed or Short Jacket, a jacketed soft point bullet or hollow point bullet with an exposed lead tip to aid in expansion.

SJHP – Semi Jacketed Hollow Point, a jacketed soft point bullet where the exposed lead tip has a cavity to aid in expansion.

SJSP – Semi Jacketed Soft Point, a jacketed soft point bullet with an exposed lead tip to aid in expansion.

SLAP – Saboted Light Armor Penetrating

SOL – Solid, ammunition designed to not expand or minimally deform upon impact, usually made from a hard metal for penetration on Dangerous Game animals

SP – Spire Point, a soft point rifle bullet designed by Hornady with a lead tip to aid in expansion.

SPBT – Soft Point Boat Tail, a soft point bullet for use in a rifle, designed to expand when it hits its target. The rear profile of the bullet has a truncated profile to eliminate parasitic drag

SPSX – Spire Point Super Explosive, a jacketed hollow point rifle bullet designed by Hornady

SPTZ – Spitzer, a pointed jacketed rifle bullet

SSP – Single-Shot Pistol, a type of rifle ammunition made by Hornady for use in single shot pistols such as the Savage Striker, Remington XP-100, or Thompson/Center Encore

SST – Super Shock Tip, a hollow point rifle bullet designed by Hornady with a plastic tip seated in the cavity. On impact, the tip initiates expansion.

STHP – Silver Tip Hollow Point, a type of Jacketed Hollow Point, marketed by Winchester utilizing a silver-colored jacket material.

SUB – Subsonic, ammunition which travels slower than the speed of sound

SX – Super Explosive

SXT – Supreme Expansion Technology, a type of Jacketed Hollow Point, marketed by Winchester utilizing a reverse-tapered jacket to aid in bullet expansion upon impact.

SWC – Semi Wadcutter, a bullet with a tapered profile mostly used in revolvers

SWN – Short Wide Nose

TAP – Hornady ammunition meaning “Tactical Application for Police”

TB – Trophy Bonded, a jacketed soft point bullet completely bonded to the lead core for use in hunting manufactured by Speer for Federal

TBS – Trophy Bonded Solid, a tungsten bullet bonded to a copper jacket manufactured by Federal for use against dangerous Big Game animals

TC – Truncated Cone, a bullet shaped like an inverted cone. It is similar in profile to a semi wadcutter without the shoulder.

TCMJ – Truncated Cone Metal Jacket, a jacketed version of the truncated cone bullet

TCSP – Truncated Cone Soft Point, a jacketed soft point version of the truncated cone bullet

THP – Tubular Hollow Point, a steel cylindrical bullet com-

pletely hollow from front to end, designed to penetrate body armor

TNT – a hollow point rifle bullet manufactured by Speer

TRU – Tactical Rifle Urban, rifle ammunition manufactured by Federal

TS– Triple-Shock a solid copper hollow point bullet manufactured by Barnes

UHC – Ultra High Coefficient, aerodynamic jacketed rifle bullets developed by Hornady for the 50 BMG to retain more kinetic energy

VLD – Very Low Drag, a series of aerodynamic jacketed rifle bullets developed in the 1990s to retain more kinetic energy

V-MAX – Polymer Tip Varmint Hunting Bullet manufactured by Hornady

V-MAXB – V-Max Boat Tail

Wadcutter – a special-purpose flat-fronted bullet designed for shooting paper targets at close range and at subsonic velocities below 900 fps.

WFN – Wide Flat Nose

WLN – Wide Long Nose

WMR – Winchester Magnum Rim fire

WN – Wide Nose

WSM – Winchester Short Magnum

WSSM – Winchester Super Short Magnum

XTP – Extreme Terminal Performance, a type of Jacketed Hollow Point, marketed by Hornady.

X-BULLET – a solid copper hollow-point bullet manufactured by Barnes

XP3 – Winchester Fail Safe bullet without the steel bands

Z-MAX – V-Max Polymer Tip Varmint Hunting Bullet marketed by Hornady as “Zombie ammunition”

APPENDIX 1: RECYCLING

One element common to hand loading, bullet casting and bullet swaging is recycling. In some respects this may be the most productive “green activity” there is. Cartridge cases are the most common element that can be used over again. Enterprising loaders often dig up berms at shooting ranges to retrieve the fired lead to melt down and cast again.

Although rim fire cartridges are not reloadable, a swaging die can be purchased from Corbin to process the fired cases into cheap and effective bullet jackets if the reloader goes the swaging route.

Some reloaders will take advantage of certain components found on existing ammunition to further this end. Certain blank cartridges can be reused as cases with intact primers. Calibers which share a common bullet can be recycled for their bullets.

Lastly, the scrap bucket was mentioned in the text for disposal of weakened cartridge cases. These damaged cases and the used primers from a reloading operation are made of brass which can be taken to a scrap metal or recycling plant and sold off for the value in the metal. Some reloaders make connections at these operations and will trade their scrap brass and aluminum for reusable lead. If it ever comes down to financing a home reloading operation, this can be an alternative way to do it.

In a similar vein, 223 or 5.56mm NATO ammunition shares the same base as 9mm and 380 ACP. These cartridge cases can be cut down and trimmed to be used for that purpose if cracks are discovered in the case neck, rendering them unsuitable for use in a rifle.



APPENDIX 2: WORK PRACTICES

Reloading ammunition, casting bullets and bullet swaging are rewarding activities that cannot only help you save money, make money and tailor your loads to your guns, but they are fun activities as well.

As stated earlier, they all carry some inherent risk. Whether it is lead exposure, a catastrophic malfunction in a firearm or blowing up a stack of primers in an automated press; accidents can happen.

The best way to avoid this is to adhere to safe work practices and avoid distractions. Some reloaders go as far as to wear hearing and eye protection as if they were on a shooting range. A shop apron can keep lube, grease, powder and other substances off your work clothes.

Keeping work areas clean goes a long way, too. Spent primers, loose bullets or cartridge cases can not only clutter a work bench but can create a hazard if dropped on the floor. Having a broom or air blower handy can go a long way with regard to keeping your area clean.

It is vital to mark everything you make with powder weight and type as well as the bullet weight. Sometimes it might be the only identifier of which load shoots better at the range.

FINAL THOUGHTS

Whether you take advantage of the online ammunition search engines, buy from online or brick-and-mortar retailers or boldly decide to make your own ammunition or components such as bullets, it can be done relative to your own economic scale. This guide should give you the basic tools to start building your own ammunition supply.

When it comes to reloading ammunition, I strongly urge the reader to consult the various reloading manuals available for free or for a nominal cost. The information contained in those works is invaluable and not only will you be independent of the shifting supply of ammunition at the retail level, but you will gain a greater understanding of shooting and how your various firearms work.

Over time you will discover which loads and bullets work best in your guns and you will become a more proficient shooter.

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