STARS & STRIPES AMMUNITION

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What makes a bullet a winner?

A bullet is a bullet. Right? Wrong!

More important than velocity, bullet energy, trajectories, consistency, powder selections, etc., etc. is bullet performance at the moment of truth. If you have a bullet that fails, your hunt of a lifetime could become very depressing in more ways than one.

The key aspect of bullet performance is its ability to penetrate, and that means the bullet must remain intact and retain most of its original weight. It doesn't matter if you shoot your trophy elk with a 225gr 338 Win Mag bullet or a 600gr 460 Weatherby bullet. If that bullet breaks up and can't find its way into the vital areas of the critter, then you may be tracking the animal into the next valley, or worse, going home empty handed leaving the quarry crippled and dying a slow death.

Bullets must penetrate in a straight line, even if they hit bone. They must be able to shatter that bone and penetrate engorged vital organs and expand in a controlled and reliable manner to cleanly put your game down. Nothing else but penetration of a vital area will do it quickly.

Mushrooming is a natural phenomenon of any soft or hollow point lead cored hunting bullet and the homogenous copper hollow points. Mushrooming begins when the bullet strikes its target. At the velocities bullets travel at, hitting a game animal to a bullet is like hitting an egg with a hammer. The frontal area begins to compress in and roll back, increasing the diameter of the bullet. A hollow point begins its expansion due to the fluid filled tissue that enters and fills the hollow cavity in the bullet point. This hydraulic action makes the bullet literally 'blow up'.

Control over this expansion is desired, and depending on the intended use for the bullet it can be less or more control. Most expansion control is done by varying the thickness of the jacket and or the hardness of the core. The homogenous copper Barnes "X" bullets rely on the one piece copper body to arrest the expansion once the frontal section expands back to the base of the hollow cavity. Hollow points are the most rapidly expanding bullets, while full metal jacketed types theoretically have none, but that isn't always true.

Target and varmint bullets are designed for instantaneous expansion and breakup to limit ricochets and make clean kills on varmints, no matter where it is hit. Hunting bullets need more control, and shouldn't ever break up. The heavier the game animal, the more control is needed. Full metal jacketed bullets don't need to expand and are primarily used in military arms for positive functioning of automatic weapons, or in ammunition intended for use on very heavy, dangerous game. Some pelt hunters use FMJ bullets to limit pelt damage, since they don't expand.

Another common misconception about bullets is that they must expand into these huge mushrooms twice the original caliber diameter, or more, to work their best. This couldn't be

further from the truth! Bullets are stable in flight due to the spin imparted on them from the rifling in your barrel. They must also spin in the target to remain stable in the tissue mass, and to penetrate in a straight line.

When a bullet opens up to more than 50% of its original caliber diameter, its spin slows dramatically and the bullet begins to tumble. This is usually the end of the bullet as it almost always breaks up once it begins to tumble. These tumbling bullets will never travel in a straight line and could miss vital areas. Picture the bullet as a figure skater doing a pirouette, when a skater wants to spin faster they draw their arms in towards their bodies, when they want to slow their spin they extend their arms outward. Remember the toy spinning tops some of us may have had as kids? Remember how wobbly those tops became as their spin rate slowed down? The same physics applies to a bullet.

A bullet that expands too much can shed its jacket leaving the soft lead core to break up easily. Boat tail style bullets are known for their breaking up, unless it is a partition type bullet, more on partitions later. By the nature of the boat tail design, it is very difficult to anchor the base of the lead core in the tapered heel of the bullet jacket. Any excessive expansion of the bullet will lead to easy separation of the core and jacket.

Many bullets that break up in hunting situations do kill their intended targets. With lighter game like deer or antelope, this problem doesn't have as pronounced of an effect as it would on a larger, more hearty animals due to the fact that it is rather easy to penetrate these animals and they have no heavy bone structure to prevent the fragments from entering the vital areas. Once inside the upper chest cavity, those secondary projectiles can do a lot of lethal damage. But those bits and pieces have to be in the vital area. If you only recover bits of junk from your game that used to be your bullet, you can bet your money that it failed. One is better off with a premium bullet that holds together, and thoroughly penetrates the target.

For hunting applications we always recommend the best premium bullets for what is being hunted. OEM types perform well on light non-dangerous game and for shooting practice, but that is their limitation, since these bullets are always lightly constructed and intended for use at modest velocities. Nothing will make a 150gr .308 cal. OEM bullet blow up faster than to shoot it into a Coastal Brown Bear from a 30-378 Weatherby Magnum at 50 yards! You shouldn't be hunting Grizzly with a 30 caliber rifle to begin with!

If you are new to hunting, or have never hunted a particular game, then we are happy to make suggestions which will help you score. Of course all hunters have to do their part in this equation too, the best, most accurate bullet in the world won't kill cleanly if you put it into the animal's buttocks!

Regular lead cored hunting bullets rely on several different methods to anchor the core into the jacket, some work better than others:

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BONDED OR WELD CORE
The best method is to pour the core as molten lead into the jacket thus resulting in a welded core. There are also some electro-chemical processes that will bond the core permanently to the jacket. Once welded, the core can't slip from the jacket since it is bonded to it, but this bullet can be ripped apart if it tumbles. The Nosler Accubond, Speer Hot-Cor, and Woodleigh softpoints are good examples of bonded and weld core designs.

LOCKED CORE
Next best is the most common type, the locked core. This type of bullets has its core swaged into the jacket and held in place by a heavy rib in the jacket that in practice should stop any rearward expansion of the bullet jacket, but doesn't always work. The core can be locked in place by many different techniques, but they are all essentially the same.

DUAL CORE
Next is a core of different hardness, the harder alloyed lead base core supposedly doesn't expand easily and is locked in place with a jacket cannelure or internal rib, or can even be the welded type. If the jacket ruptures past the rib and exposes the hard alloy it can easily separate. One of the most popular bullets using this design is the Speer Grand Slam.

SWAGED CORE
The poorest bullet design for hunting use is the one that has its core simply pressed into the jacket. The lube on this core used to aid automated assembly can easily allow it to slip once expansion begins. Over time this lube will cause the lead to corrode resulting in even worse slippage under hunting conditions. This core type is perfectly acceptable for match and varmint bullets where bullet breakup and instantaneous expansion are desired.

"X" BULLETS
The very best bullets are those with a homogenous body material. The only true lead free hunting bullets are the Barnes "X" bullets. These bullets use pure copper as their material and feature a hollow point for nearly instant expansion. This cavity has four segments resulting in an X shape to the expanded bullet. The bottom of the cavity in this bullet stops any further expansion. These bullets only expand to about 50% of their original diameter and retain better than 98% of their original weight, even when shot into the heaviest game on earth. "X" bullets are extremely accurate and result in more reported one shot kills than most of the other premium bullets we use in our ammunition. Since this bullet retains such a large percentage of its weight upon impact, lighter bullets can be used, within reason, resulting in higher velocities and flatter trajectories. We use Barnes "X" bullets in our custom rifle, pistol, and shotgun ammo.

ADVANCED PREMIUM LEAD CORE
The next best bullets are those with mostly solid copper bodies like the Trophy Bonded bullets and the tried and true partition bullets made by quite a number of bullet makers.

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TROPHY BONDED
The Trophy bonded bullets are quite simply a welded core design that uses its homogenous body to stop any further bullet expansion of the lead filled front cavity, resulting in limited loss of mass and straight line penetration. Almost 85% of the body of the Trophy Bonded bullets are solid copper.

PARTITION CORE
The partition bullets have two lead cores separated by a solid bridge in the jacket. These bullets typically shed their front sections under severe conditions, but in most cases the bridge material stops the expansion from going any further. Under the severest conditions the partition in these bullets can rivet and rupture resulting in complete bullet failure. Loss of mass is bad under any hunting conditions, and limits the bullet's ability to penetrate.
A new hybrid partition style by Nosler marketed under the name of Combined Technologies called the Fail Safe , has a copper hollow point foreward section and a rear lead core, which is swaged into a steel cup then inserted into the bullet's base. This bullet is much less susceptible to ruptures of the rear section than other partition designs. Another less advanced design by Combined Technologies is the Partition Gold series which uses the standard lead core partition design and has the steel reinforcing cup in the rear core to help eliminate complete rear core failures. Nosler and Swift are the most popular manufacturers making partition designs.

SOLIDS & FMJ
The best non-expanding bullets are the true solids made of homogenous materials like the Barnes and A-Square solids. These are the only true solids available. These bullets cannot rupture, or break up. They are also extremely resistant to bending. In our experience the lead cored, full metal jacket safari bullets can fail, and they do fail on a regular basis, and this could cost someone their life. Most notably the FMJ lead cored safari bullets can rivet at the nose and cause the jacket to rupture and then the bullet fails. The FMJs can also bend under severe conditions making the bullet tumble and break up. Safari grade solids and FMJ bullets are used in situations where reliable deep penetration of heavy bone and tissue are required. These are almost always used on very dangerous game animals so reliable bullet performance is absolutely a must.