

Bullet Composition and Characteristics



Full Metal Jacket (FMJ)

Composition: These are bullets that have a metal coating around the majority of the bullet. This does not include the base of the bullet, which still has exposed lead. These bullets are ideal for target/plinking situations because of their lower cost.

Expansion Characteristics: As a general rule, these bullets do not expand and tend to penetrate very deeply, causing a straight through wound channel.

Specific bullet examples: Speer Lawman, Winchester White Box (WWB), Remington UMC, CCI Blazer, etc.

Extra Notes: These bullets are perfect for target shooting and plinking due to their lower price levels. They are not ideal for most hunting or self-defense situations.



Total Metal Jacket (TMJ)

Composition: These bullets are totally encapsulated in a brass or steel alloy jacket. They are perfect for use at indoor ranges where there are restrictions on lead exposure.

Expansion Characteristics: As a general rule, these bullets tend to penetrate very deeply with little to no expansion (oftentimes exiting the source), causing a straight through wound channel.

Specific bullet examples: Speer Lawman, Winchester White Box (WWB), Remington UMC, CCI Blazer, etc.

Extra Notes: These bullets are perfect for target shooting and plinking due to their lower price levels. They are not ideal for most hunting or self-defense situations.



.45 ACP BJHP
(+P) 185-gr.

Jacketed Hollow-Point (JHP)

Composition: Jacketed Hollow-Point (JHP) bullets are designed with a concave tip on the bullet. They are lead bullets plated with a brass or steel alloy for strength upon impact.

Expansion Characteristics: JHP bullets are designed for maximum expansion, thereby causing a greater sized wound channel. Upon impact, the presence of the hollow cavity, allows the bullet to compress together. The presence of a metal coating increases external wall stability and causes the bullet to in fact expand into a larger mass. This is called “mushrooming”.

Specific bullet examples: Hornady XTP, Speer Gold Dot, Remington Golden Saber, Winchester SXT, Federal Hydra-Shocks, etc.



Lead Bullets

Composition: Lead bullets are made entirely of lead. They are often accompanied by a gas check to prevent bullet vaporization and to assist in the bullet traction on the rifling of a barrel.

Expansion Characteristics: Dependent on the alloy hardness used, lead bullets tend to penetrate further and expand deep inside of their target. Harder alloyed lead bullets tend to expand less than softer alloys. Lead bullets also tend to break up easier as they have no jacket to hold them together.

Extra Notes: Lead bullets are generally much cheaper to shoot than any other type of bullet on the market. They are also used extensively in older cartridge composition.



Semi-Wadcutter bullets (SWC)

Composition: Semi-Wadcutter bullets are generally characterized by a cone-shaped tip with a flat nose. They can either be all exposed lead or have a jacket covering the bullet. They are given their name because the front flat tip punches a perfect hole through the paper rather than tearing like a round-nosed bullet would.

Expansion Characteristics: Basically, semi-wadcutter bullets tend to have very similar expansion characteristics as normal lead bullets. The only difference would be with semi-wadcutter bullets with jackets. They should be deep penetrators with little to no expansion.

Extra Notes: Semi-wadcutter bullets are cheap to shoot and are used extensively for practice and competition.



Ballistic Tip Bullets

Composition: Ballistic tip bullets are lead bullets encapsulated with a copper or steel alloy and topped with a polymer tip.

*Per cross-section above:

- (1) Delrin tip
- (2) Fully tapered jacket and lead alloy core
- (3) Heavily jacketed base
- (4) Boat tail construction for a more true flight

Expansion Characteristics: The polymer tip initiates expansion within the bullet by pushing back and compressing the bullet together. The alloy coating is designed to strengthen the sidewalls providing for a more controlled expansion. Still, as a general rule, ballistic tips fired at high speeds and at short distances, tend to “blow-up” on impact, often fragmenting. Ballistic tips at closer range are known for dumping their energy inside of the target source. At longer ranges or lower velocities, ballistic tips are designed for high weight retention and expansion, often resulting in a nice large mushroom.

Specific bullet examples: Nosler Ballistic Tip, Combined Technology (Nosler + Winchester) Ballistic Silvertip, Hornady VMAX, Federal Ballistic Tip, Sierra BlitzKing, etc.

Extra Notes: Ballistic tip type bullets, as a general rule, are inherently more accurate and tend to be more aerodynamically efficient than many other types of bullets.



.30-06, 180-gr. SPCL,
.8", 100 yds.



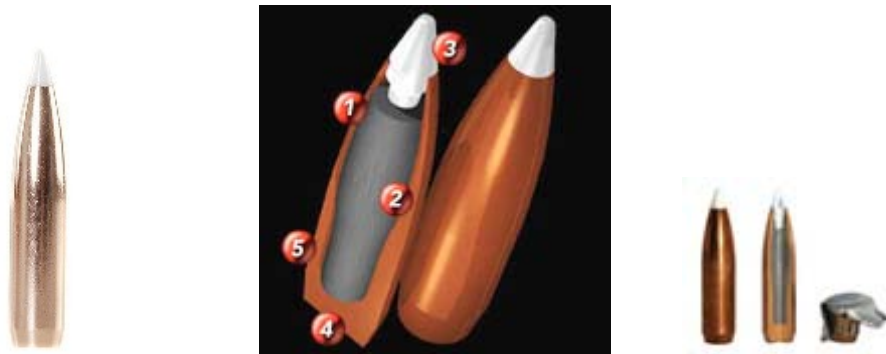
Soft-Point Bullets (SP)

Composition: Soft-Point bullets are constructed of lead (or other material) and are usually encapsulated with a copper or steel alloy jacket, with the exception of the tip of the bullet.

Expansion Characteristics: Soft-point bullets are designed for controlled expansion and high weight retention. Upon impact, the lead tip pushes back, compressing the bullet, while the jacket keeps the bullet from fragmenting and helps the bullet achieve a “mushroomed” state. This provides for excellent weight retention and induces a larger wound channel.

Specific bullet examples: Remington Core-Lokt, Winchester Power-Point, Federal Power-Shok, Speer Hot-Cor, Sierra GameKing, etc.

Special Notes: These are also called jacketed soft-point (JSP), protected point, spire point, round nose soft point (RNSP) and flat nose soft point (FNSP).



Bonded Bullet (Fused):

Composition: Bonded bullets, are bullets designed by fusing or bonding the lead core of the bullet to the brass or steel alloy jacket. Some versions of bonded bullets contain the polymer tip (shown here). This helps keep bullet tips from deforming in the magazine and helps to initiate expansion.

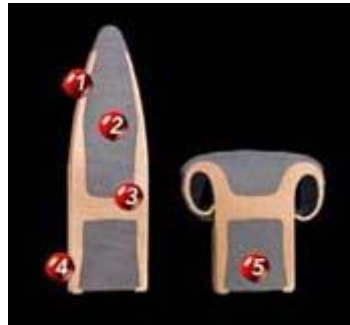
*Per cross-section above:

- 1) Heavy alloy jacket
- 2) Fully tapered jacket is bonded to the lead alloy core of the bullet
- 3) Polymer tip
- 4) Nosler solid base design
- 5) Boat-tail construction

Expansion Characteristics: Bonded bullets are designed to hold the bullet together upon impact, resulting in controlled expansion, deep penetration and high weight retention. The tip (polymer or lead) initiates expansion and drives backwards towards the base of the bullet. The bonding property keeps the jacket and the lead core together, resulting in a “mushrooming” effect.

Specific bullet examples: Nosler Accubond, Hornady Interbond, Federal Fusion, Remington Core Lokt Ultra-Bonded, Federal Trophy Bonded, Woodleigh Weldcore, etc.

Specialty Bullets (A league of their own)



Nosler Partition

Composition: The Nosler Partition upon first glance looks like a normal soft point. The cross-section above shows that is not exactly the case. Partitions are lead bullets with a tapered jacket, solid base and a copper partition separating the head and base of the bullet.

* Per cross-section above:

- 1) Fully tapered jacket
- 2) Lead alloy core
- 3) Integral partition
- 4) Jacketed crimps secure the base core of the bullet
- 5) Lead alloy base core

Expansion Characteristics: Upon impact, the tip is pushed back towards the base of the bullet. The tapered jacket is very thin at the tip for an instant initiation of bullet expansion upon impact. As the tip of the bullet is driven back towards the base, the thickening of the jacket controls expansion to the levels needed at a given velocity. The bullet then mushrooms while keeping the full integrity of its base, often causing a profile such as the second cross-section picture above. Partition bullets are known for their great expansion and unbelievable weight retention.

Extra Notes: These are excellent bullets for a wide variety of game.



Winchester XP3

Composition: The Winchester XP3 is a solid copper bullet bonded with a lead base and boattail construction for better flight. The XP3 also has a polymer tip that influences better expansion at lower velocities.

Expansion Characteristics: The XP3, upon impact, is encouraged to expand (at both low and high velocities) by its polymer tip. The tip drives the bullet back towards the base of the bullet. The XP3 is designed for 2-stage expansion. The first stage is the expansion of the tip of the bullet, creating a large mushroom for an expanded wound channel. The next stage in the 2-stage expansion process is the expansion of the body and base of the bullet itself. This process helps keep the bullet together for high weight retention, better penetration and increased down-range energies.

Extra Notes: Winchester designed these bullets to be used, with maximum effectiveness from dangerous game animals such as Cape buffalo to thin-skinned animals such as whitetail deer and pronghorn.



Hornady SST

Composition: The Hornady SST is a jacketed bullet that is designed upon the Interlock™ design. The SST is equipped with a polymer tip for instantaneous expansion upon impact. The polymer tip and boat tail design provide for better bullet flight and a higher ballistic coefficient.

* Per cross-section above

- 1) Polymer tip
- 2) Tapered jacket with boattail base construction
- 3) Hornady's Interlock ring

Expansion Characteristics: Upon impact, the tip of the bullet is driven back towards the base of the bullet but is stopped by the Interlock ring. This ring is designed to keep the base of the bullet and the jacket together for superior expansion, retention and larger wound channels.

Extra Notes: These bullets are excellent for all varieties of game. They fly like normal ballistic tip bullets but do not break up like a good majority of ballistic tip bullets.



Barnes Triple-Shock Bullets

Composition: Barnes Triple-Shock bullets are designed from 100% copper. There is no lead or other “softer” materials in this bullet.

Expansion Characteristics: Upon impact, the Triple-Shock bullet expands into four copper petals. The lack of “softer” metal within the bullet assures that this bullet will not break apart.

Extra Notes: Triple-Shock bullets have virtually 100% weight retention, which is essentially unheard of with any other bullet.



Barnes MRX Bullets

Composition: This bullet from Barnes contains a tungsten core, wrapped in a copper jacket with a Delrin tip to initiate expansion and to protect the tip of the bullet.

Expansion Characteristics: At the source of impact, the Delrin tip starts the expansion process by driving the tip of the bullet back into the tungsten core. The copper jacket expands into four near-perfect petals, while the tungsten core dissuades separation of the jacket and the bullet base, thereby maintaining weight retention and increasing penetration.