

## Advantages of Non-lead Bullets

All-copper bullets were initially developed in the 1980s as a premium, high-performance alternative.

Further improvements have resulted in extremely effective and versatile bullets for hunters. In an Arizona survey, 93% of hunters who used non-lead bullets to harvest deer said the bullets performed as well or better than comparable lead bullets on game.

### Non-lead bullets for big game offer:

- Little to no fragmentation
- Great penetration and a long, wide wound channel
- Much lower toxicity for humans and wildlife
- Equal or greater accuracy



This photo shows a non-lead rifle bullet (left), and a premium bonded lead-core bullet (right). The non-lead bullet mushroomed out and retained 98% of its weight. The lead bullet lost a substantial portion of its original weight to fragmentation. Non-premium lead bullets fragment even more, with only 70% weight retention, as seen below.



.270 Win Remington Core-Lokt lead bullet, 130 grain

For more information and a list of available calibers, visit these sites:

[dfg.ca.gov/wildlife/hunting/condor](http://dfg.ca.gov/wildlife/hunting/condor)



## Alternatives to Lead Bullets

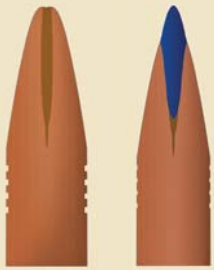


Lead poisoning is a serious problem for both wildlife and humans, but it is easily preventable. Bullet and ammo manufacturers now offer numerous premium non-lead options for pistols and rifles. Hunters are continuing their proud tradition of wildlife conservation by using these non-lead alternatives.



# Non-Lead Bullet Types

## SOLID COPPER



The Barnes Triple Shock, loaded by Federal, Corbon, Weatherby, and others, is a 99.9% copper bullet.

## TIPPED ALLOY-CORE



Alloy-core options include Remington Copper Solid, Nosler e-Tip, Hornady GMX, and Winchester Power Core 95/5.

## FRANGIBLE BULLETS



Barnes Varmint Grenade, Nosler Ballistic Tip, Hornady NTX, and DRT Terminal Shock fragment explosively.

## SMALL CALIBER/RIMFIRE BULLETS



Winchester, CCI, Nosler, Speer, Barnes, and Hornady make solid-core and frangible bullets.

# Bullet Trial Comparisons

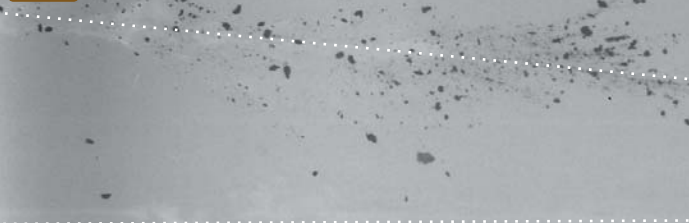
To compare fragmentation between two lead bullets and two non-lead alternatives, all were fired into ballistic gelatin at 50 yards. The gelatin blocks were then X-rayed.

Both bullet types expanded equally, but non-lead bullets showed little to no fragmentation. In comparison, lead bullets left hundreds of fragments behind. When striking bone and hide, fragmentation increases significantly. These fragments are very difficult to remove from game meat during processing.

## X-rays of bullet paths through ballistic gel.

Dotted lines show the bullet paths from left to right.

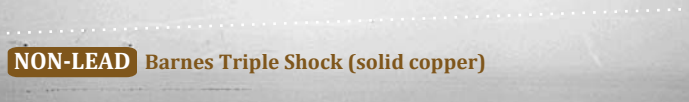
### LEAD Nosler Accubond (premium bonded-core)



### NON-LEAD Nosler eTip (tipped alloy-core)



### LEAD Remington Core-Lokt (soft point)



### NON-LEAD Barnes Triple Shock (solid copper)

# Frequently Asked Questions

## Do non-lead bullets expand as quickly as lead bullets?

Yes. The specially engineered nose cavity begins expanding on impact with hide and flesh. Tests in gelatin show comparable expansion between lead and non-lead bullets.

## Will non-lead bullets shoot through deer-sized game?

Usually. Rapid expansion results in impressive energy transfer and massive shock to the animal, very similar to lead bullets. Pass-through shots result in a long, wide wound channel with an exit wound that yields a blood trail.

## Will non-lead bullets foul or wear out my barrel faster than lead bullets?

No. Today's non-lead bullets affect barrels in the same way that copper-jacketed lead bullets do. As with any bullet, proper firearm maintenance and cleaning is essential.

## Are non-lead bullets as accurate as lead?

Yes. These bullets offer exceptional accuracy and terminal performance over a wide range of velocities. As with lead bullets, try different brands and grain weights to see which shoots best in your rifle.