

Coated Bullets: The future of lead bullets for handloaders?

by Brad Miller, Ph.D. - Tuesday, March 7, 2017



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There has been a revolution with lead bullets. No, they don't now have Go-Onto-Target guidance systems to help you score a perfect hit every time (but that would be nice), it's what they're lubed with. The traditional lube is a dry, waxy compound that fills the lube groove(s) of cast bullets or is applied to the outside of the entire bullet, cast or swaged. The wax prevents the lead from sticking to the bore.





Figure 1. Traditional lead bullets are cast (left) or swaged (right). Both are lubed with a waxy lube.

Another method is to coat the bullets with a non-waxy lubricating compound such as nylon, molybdenum disulfide (moly), polymer and other compound. Moly coated pistol bullets have been around for a while, so it's not new. Moly is also applied to jacketed rifle bullets, though the formulation and procedure for applying them are different.

Polymer is the hot, new coating for lead bullets. Well, that should read relatively new. Polymer is relatively new to the U.S. market, having been around a couple of years, but it has been used in other countries for some 20 years. But it's catching on here in the U.S. and is quickly becoming the lubricant of choice by many lead bullet manufacturers.

There are several types of polymer coatings, but the most common is Hi-Tek coating made by J&M Specialty Products P/L in Australia. This coating has been used Down Under for some 20 years, but has only been used in the U.S. for a couple of years. But if you search the web for bullet-makers that use polymer coatings, the Hi-Tek brand is the most commonly listed. Hi-Tek coating compounds are also available to individuals who cast their own bullets and want to apply it themselves.

Some companies use their own proprietary polymer or non-polymer coating and are rather tight-lipped about its formulation, except to say that it is not the Hi-Tek brand, or to say whether it is a teflon, moly or polymer coating.

Coated bullets have also been used in factory ammunition. Federal loaded a nylon coated lead bullet, named Nyclad, for many years, but they have been discontinued (as per email communication with Federal). Most recently, Federal has marketed a new polymer coated bullet

that goes by the name Syntech.



Figure 2. Prior (Nyclad) and current (Syntech) coated bullets in Federal ammunition.

From the user's point of view, there is not a huge difference in the appearance of most coated bullets. They cover the bullet completely, with some exceptions that don't cover the base. They might be offered in a range of colors from some manufacturers, from white to black and everything in between. I must say that the variety of colors is pretty cool, and adds some fun to an otherwise fairly dull subject.



Figure 3. Coatings come in a variety of colors.

The use of coatings instead of waxy lubes means that the bullet no longer needs a lube groove. Many manufacturers have changed or added molds to their lineup that offer bullet designs with no lube groove.

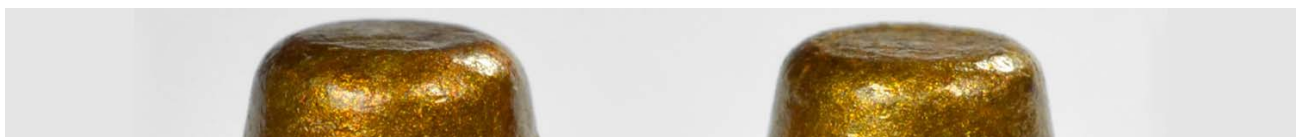




Figure 4. Some coated cast bullet makers include a design with no lube groove in their lineup (right) in addition to the traditional design with a lube groove (left).

There might be some differences in the maximum velocities that these coatings should be limited to. Generally, the coatings are good for velocities in the 1200-1500 fps range, similar to copper plated bullets, which covers the speeds of most handgun cartridges. Some polymer coatings can reportedly be driven to 2000 fps or better, such as claimed by Eggleston Munitions, which makes them a possible choice for some rifle loads.

Many, but not all, of the coated bullets can be used in Glock's polygonal barrels, according to the manufacturers. Check the bullet manufacturer's website for details.

Generally, one can use lead bullet data for load development. My experience has been that they produce about the same velocity as cast bullets with the same powder charge, but may be a little slower.

Advantages

Coated bullets offer several advantages for handloaders. Coatings that cover the entire bullet, including the base, reduce or eliminate the exposure to lead during handloading and airborne lead particles when shooting. It also means you no longer have to scrape out built-up wax lube from your seating and crimping dies.



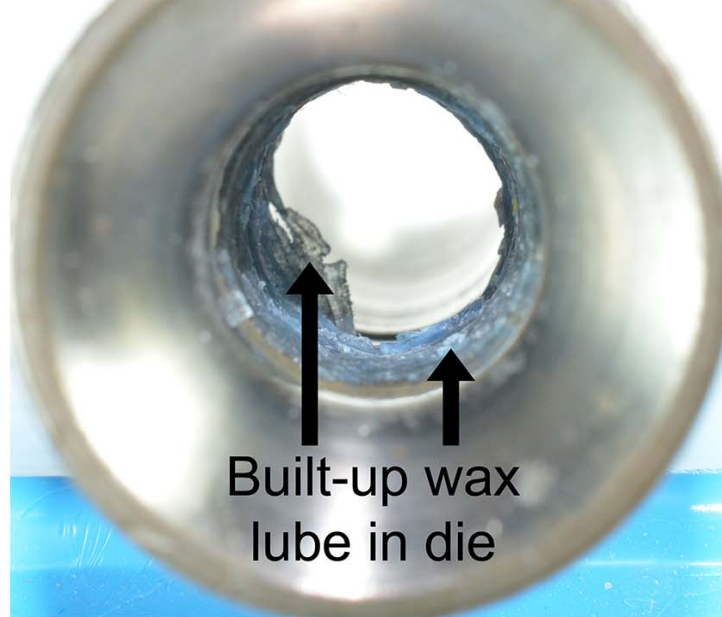


Figure 5. Waxy lubes can build-up in dies. Coated bullets eliminate this problem.

Smoke is reduced or eliminated. Most of the smoke from shooting traditionally lubed lead bullets comes from the waxy lube. The smoke can be so bad you might think you're shooting black powder. Sometimes the target disappears in the smoke after a few rapidly fired rounds. Coated bullets reduce or eliminate this smoke. They might not be as smokeless as copper jacketed or plated bullets, but they're darn close.

Some coated bullets smell a little funny when fired. People have likened the smell to burning plastic. I don't find it objectionable, and sometimes don't smell anything at all. It might depend on which brand of coating you're shooting, and which way the wind blows.

Considerations when handloading

The coating is thin and some precautions must be taken during loading to prevent the coating from scraping off. First, be sure the case mouth is sufficiently flared. Poorly flared cases can result in the coating being damaged when the bullet is seated. Second, use a minimal crimp. Like plated bullets, too much crimp can damage the coating. You want the coating to remain intact so it can properly encapsulate the bullet to prevent bare lead from coming in direct contact with the bore to prevent leading.

Donny Miculek from Hi-Performance Bullet Coatings made the following comments with respect to Hi-Tek coated bullets. Miculek used to own Bayou Bullets and sold the company not long ago, and is now concentrating on selling the coatings.

1. Hi-Tek bullets must be sized properly to the bore of the firearm they are being used in, just like every other lead bullet out there.
2. Care must be taken not to remove (scrape) the coating off the bullet as it is being seated.

3. If the bore of a firearm is rough due to poor maintenance or poor machining, Hi-Tek will not work as intended.
4. Care must also be taken not to undersize the bullet while crimping. This destroys bullet fit and decreases accuracy and increases fouling.
5. Sometimes a gun doesn't like a particular bullet/load, and it takes time to find a combo that works, be it cast, coated or jacketed.
6. Finally, it is up to the maker of the bullet to apply coatings correctly for best results.

How do they shoot?

The burning question is how well coated bullets will shoot compared to the traditionally lubed bullets that we are used to. I tested this by using the same bullet design made by the same manufacturer who offers the bullet in two forms, traditionally lubed with wax, or coated with a polymer coating (in this case Hi-Tek). I tested this in two calibers, 9mm Luger and .45 Automatic. For the 9mm, I loaded 125-grain SWC cast bullets made by Missouri Bullet Company with 4.0 grains of Vihtavuori N340 loaded to 1.065-inch overall length. They were fired from a 1911-type pistol with a 5-inch Kart barrel. For the .45 Automatic I loaded 200-grain SWC bullets from SNS Casting with 4.2 grains of Bullseye loaded to 1.240-inch overall length. The guns were 1911-type pistols with 5-inch Kart barrels. Testing was done at 25 yards with the guns mounted in a Ransom Rest. Velocity was recorded with a Shooting Chrony chronograph at about 10 feet.



Figure 6. Traditional wax lubed and identical coated bullets used for accuracy comparison.

The velocity, an average of 15 shots, of the two types of bullets was nearly the same though the

coated bullets were a little slower. The 9mm wax-lubed bullets averaged 1080 fps and the Hi-Tek coated bullets averaged 1071 fps. The .45 Automatic wax-lubed bullets average 799 fps and the Hi-Tek coated bullets averaged 777 fps.

The figures show 15 rounds fired into a single group for each bullet. The wax-lubed and polymer coated groups are nearly the same size, but the coated bullet groups are smaller. I've repeated the 9mm comparison with another barrel (Rock Island Armory) and another powder (Power Pistol), and found the same result: the polymer coated bullets shoot a slightly smaller group. The bottom line is that the coated bullets shoot at least as well as the wax-lubed variety.

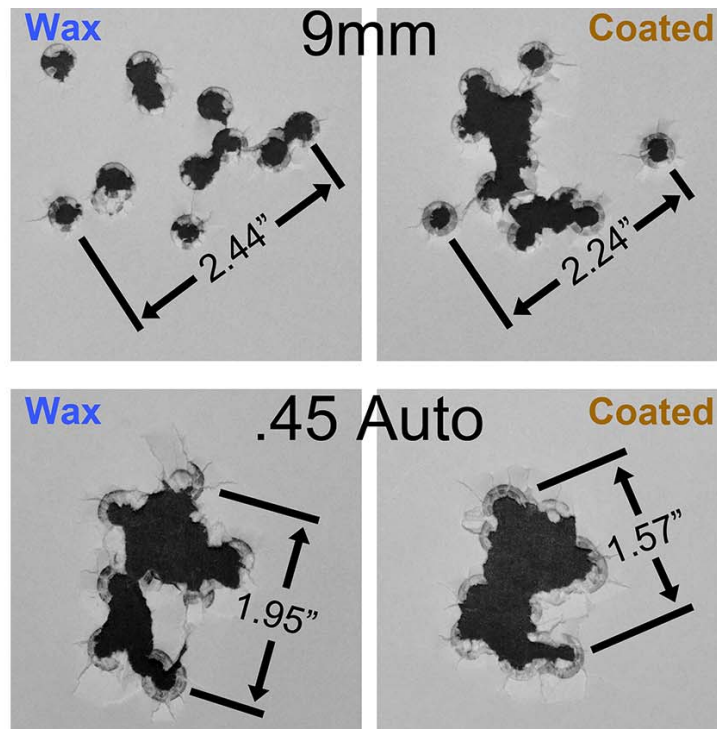


Figure 7. The polymer coated bullets produced slightly smaller 15-shot groups than the wax lubed bullets.

I've checked the bore for leading after firing coated bullets and have been amazed with how clean it was. Really. In some cases it looked like a brand new barrel off the production line. In one instance I had fired around 200 rounds through a .38 Super at 1200-plus fps. The barrel was so clean that if not for a few flakes of gunpowder residue, it looked like it had never been fired.

I'm a fan of coated bullets. No more waxy lube on my hands or reloading dies, less smoke, no leading, non-abrasive and excellent accuracy. And the colors are awesome. What's not to love? If you haven't tried them, give them a shot. They might just be your next favorite bullet.

The links below are a **partial** list of companies that offer coated bullets. Check their websites for details and any precautions about their use, including the appropriate gunpowder.

- www.acmebullet.com
- www.badmanbullets.com
- www.bayoubullets.net
- Bear Creek moly coated bullets: no website, phone: 209-874-4322. Also available at Standard Deviation Arms: www.standarddeviationarms.com
- www.billybullets.com
- www.blackbulletsinternational.com
- www.bnbcasting.com
- www.bulletdudes.com
- www.cimarronbullets.com
- www.egglestonmunitions.com
- www.gatewaybullets.com
- www.ibejiheads.com
- www.leatherheadbullets.com
- www.lucky13bullets.com
- www.missouribullet.com
- www.pennbullets.com
- www.precisionbullets.com
- www.shootersbullets.com
- www.sns casting.com
- www.thebluebullets.com

Hi-Tek coating for the do-it-yourselfers available from:

- www.hi-performancebulletcoatings.com
- www.missouribullet.com
- www.gatewaybullets.com

Factory ammunition with polymer coated bullets:

- <https://www.federalpremium.com/ammunition/handgun/family/American-Eagle/American-Eagle-Syntech>

All figures by the author.

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