

ON CAST BULLETS

By Jurie Nel

Cast bullets remain the best choice for the revolver hunter. However, there are cast bullets and cast bullets! This article will attempt to shed a bit of light on the material differences (pun intended) between them.

The cast revolver bullet must be as heavy as possible, in order to retain its momentum properly to ensure maximum penetration. For the same reason it must be as hard as possible – because a soft bullet will deform, and a deformed bullet will lose velocity and momentum, and therefore penetrating ability, very quickly. The cast bullet must also not deposit lead fouling in the barrel.

Herein lies the rub. “Heavy” and “Hard” are in opposition to each other – the heavier the bullet, the softer it is, and the harder the bullet, the lighter it is. To let the cat out of the bag, we are going to have to cast our bullets from a lead alloy consisting of lead, antimony and tin. Weight is contributed by lead, together with softness and fouling, both of which must be countered at the cost of losing weight. Hardness is contributed by antimony, which is lighter than lead and thus reduces the weight of the bullet. Antimony, however, does not counter fouling at all, as an alloy of the two metals consists of a “mud” of antimony particles covered by a lead film. Tin reduces fouling, covering the lead-covered antimony particles with a coating of tin. Tin also makes a slight contribution towards hardness, but also reduces the overall weight of the bullet by replacing some of the lead.

We can experiment, if we want to, with quantities. However, that would be reinventing the wheel, as it has all been done and documented before. The optimum is the same as an old printers’ lead alloy called “linotype”, consisting of approximately 80% lead, 15% antimony and 5% tin. Approximately? Yes – this is not an exact science, and 1% here or there does not amount to much. Also, there are other factors which affect accuracy far more than a variance of even 1% in the weight of a handful of bullets. These factors, among others, are imperfect mixing of the molten alloy, substandard fluxing, and imperfections in casting, typified but not limited to

- Too cold a mould, producing wrinkled bullets;
- Too hot a mould, causing overfilling and/or sprue smear;
- An imperfectly closed mould, causing overweight and oval bullets;
- A slightly under filled mould, producing a bullet with an irregular heel, which can never be accurate – it’s worse than a badly crowned muzzle;
- Too slow filling of the mould, causing irregular bullets probably containing air pockets, as the molten metal solidifies in the mould before the next lot falls on it;
- Too fast filling of the mould, causing the formation of vacuum pockets inside the bullet, and forcing lead “sprue” out through the air bleed passages.

Air and vacuum pockets, incidentally, would not be a problem if they were absolutely regular in shape and perfectly symmetrically distributed around the longitudinal axis of the bullet ---- but they never are.

Now, if we know most of the factors important to the accuracy and performance of our cast bullets, where do we source the necessary materials? My recommendation is to make friends with the owner or manager of a tyre fitment centre, and scrounge or buy all the used wheelweights you need. Wheelweights consist of about 94-95% lead and 5-6% tin. This alloy is fine for plinking loads in your favorite snubby or automatic, but it needs antimony to bolster it to hunting bullet specifications. The only reliable source I know of for antimony is Mittal, at about R45.00 per Kg. If 1Kg of antimony is alloyed into 5,7Kg of wheelweights, it follows that we have 6,7Kg of linotype at a cost of R6,72 per Kg – provided we did not have to pay for the wheelweights. This Kg of linotype is enough to produce 51 bullets of 300gr each – which means that the material cost of potentially the best hunting bullet for a 44/45 caliber revolver is around thirteen cents, and about seven cents for a 357. If it needs a gas check the price of that will have to be added. I have no idea what gas checks cost – the last time I bought gas checks they were about R20,00 a thousand – but that was thirty years ago. I still have hundreds left. Perhaps I should explain that my fascination with cast bullets did wane somewhat fifteen years ago, when through my late brother Louis I had the opportunity to work on bullets of a different ilk – pure brass, and pure copper. But that is another story... I am taking up casting again.

A word of caution is in order here. If you have never cast a bullet, read all you can find about the subject, and definitely invest in “The Lyman Cast Bullet Reloading Manual”. (My copy has disappeared). Casting bullets is potentially very dangerous indeed, as extremely hot molten metal is involved – molten metal which gives off poisonous fumes. Know what you are about to do before you start. If you are a seasoned bullet caster who has become tame and works indoors, GET OUTSIDE!!! At the very least, work in an area which may have a roof to protect you against the sun, but your work area must be wide open on at least three sides. Remember, this is extreme exposure to heavy metal poisoning, of which the effects are not felt immediately, but they are cumulative – once there is some of it in your body, it **never** gets out. Next time you are exposed to it, some more gets absorbed on top of what there already is. And so on and so on. The only way to avoid this poisoning is to avoid inhaling the invisible lead fumes. BE WARNED!!!

Having said that, I must admit that there is no greater satisfaction in the shooting world than shooting a good shot with a cartridge you loaded yourself, using a bullet you had made yourself – unless you had also designed that bullet yourself. (I have not yet built either a rifle or a handgun myself, but the germ of the idea is there....)

There is another source worth trying. I have heard of, but not actually met, a manufacturer of bullets which are first cast and then copper plated. The copper plating will not be thick enough to act like a strong jacket, but lead fouling should not be a problem. It may well be worth the effort to find this supplier, and either find out what the composition of his bullets is, or test them. These bullets may be more expensive, but buying them eliminates the need for investing in casting equipment, the need for time to cast bullets, and the exposure to dangerous lead fumes.

Will some reader take up the challenge to find these bullets, test them, and report on them on this website?