Tigershark with plenty of bite

Geoff Smith

The 158-grain HP bullets flattened right out at 100m on steel silhouette targets.

Many of us who shoot centrefire handguns and reload our cartridges find jacketed projectiles are prohibitively expensive so we opt for cheaper cast ones. However, those whose guns have polygonal rifling (such as Glock or H&K) are discouraged from using these as their barrels apparently don't cope well with plain lead bullets and this is where the more recently developed electroplated bullets have come into their own.

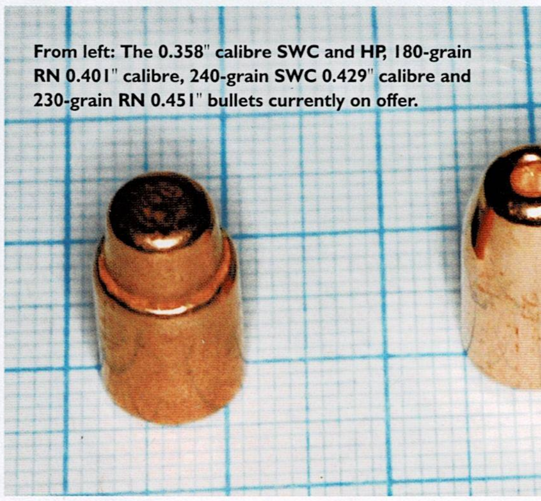
While some shooters express anxiety about the fact these appear to be 'full metal jacket', in reality the plated coating is quite thin (typically only 5 or 6 thousandths of an inch - around the thickness of an aluminium soft drink can), so they pose no threat of ricochets or damage to range equipment. While several brands have been available previously, the subject of this review is relatively new. Steve Hoy of Tigershark Ballistics in Queensland sent some examples from his broad range of copper-plated projectiles now being offered to handgun shooters.

For testing purposes we were given round-nose and hollow-point 0.356" bullets weighing 145gr, 135gr and 123gr, semi-wadcutter and hollow-point 0.358" bullets weighing 158gr and round-nose flat point 0.429" bullets of 240gr weight. Enough were sent to enable loading batches of 10 rounds each, using several different propellants for use in a 9mm self-loader and in .357 Magnum and .44 Magnum revolvers. Their range also includes 230gr RN bullets in 0.451" diameter and 180gr RN in 0.401" diameter.

Steve's main clients are IPSC and Action Match shooters, to whom he's marketing all over Australia. Even so, Tigershark bullets are suitable for most other matches and perform extremely well in conventionally rifled barrels. The bullets look impressive, being swaged from a lead antimony alloy then fully covered in copper via an electroplating process carried out by the manufacturer, LOS in Cerkno, Slovenia. Launching in 2008, the company develops and produces premium quality ammunition components and since 2010 have focused on plated, solid machined brass and fully metal jacketed bullets as well as cases.

Our tests began initially by weighing groups of the nine different projectiles and determining standard deviations to evaluate uniformity. Diameters were also measured with a micrometer to check compliance and radial uniformity and, not surprisingly, all were exactly correct. After this, batches of 10 each were loaded with local components using two separate loadings (see tables) and these were then test-fired over 25m as 10-shot groups to determine grouping capability and velocities. The LabRadar Doppler chronograph measured bullet velocities from which RSI's Shooting Lab software was then used to display and analyse this data.

The projectiles themselves load easily and shoot well and from all loads and tests



From left: The 0.358" calibre SWC and HP, 180-grain RN 0.401" calibre, 240-grain SWC 0.429" calibre and 230-grain RN 0.451" bullets currently on offer.

the only problem arose when using APS450 propellant with 145gr 9mm bullets. We used recommended loads from the 10th edition of the *ADI Handloaders' Guide* but found velocities were well below those required to cycle the test gun. In contrast, using our precious last few remaining loads of Vihtavuori N340 propellant, these 145gr bullets performed flawlessly and accurately. While none of the loads tested showed the slightest signs of high pressure it was decided not to exceed ADI's recommended figures, since these gave maximum allowable pressures (around 34,000psi) in their test firearms.

Our tests used an 8.125" barrelled .44 Magnum S&W Model 629 revolver, a 12" barrelled Taurus Model 66 .357 Magnum revolver and a 5" barrelled Tisas 1911 self-loader in 9mm Luger. Loads were assembled using freshly cleaned and sized brass with CCI standard pistol primers. The table on Page 66 shows velocities and standard deviations (SD) achieved with each loading. Average velocity from just 10 shots alone can be misleading so the SD (calculated as a 'small sample' ie, less than 30 data measurements) provides a good measure of consistency, with the smaller the value of SD the better.

The potential accuracy expressed as an 'average group radius' (AGR) was determined by placing each target on to a carefully calibrated computer screen then nominating each shot position with a mouse click. The resulting data obtained from the software contains several details about each group of which, for test purposes like this, probably the most useful is

The 158-grain HP bullets in the .357 Magnum with APS 450 propellant gave acceptable groups and retained velocity well.

the AGR. This figure represents a statistically determined average group radius in minutes of arc (MOA) which seeks to compensate for shooter error.

Groups were hand-held, shot over a rest from which the occasional flyer resulted, most likely because of muzzle lift and slight variations in grip. If, for example, an AGR of 5 MOA is obtained, this suggests the combination of gun and load should be capable of shooting a group whose diameter is twice this (10 MOA) which can be represented as a 10" circle at 100 yards. The 18 targets and data sets obtained were all carefully examined and basic information compiled into the tables presented. The most accurate groups were obtained with the .44 Magnum, although all were acceptable. Sadly it shows my .44 revolver is easily capable of 40/40 in the silhouette match, something I've never achieved.

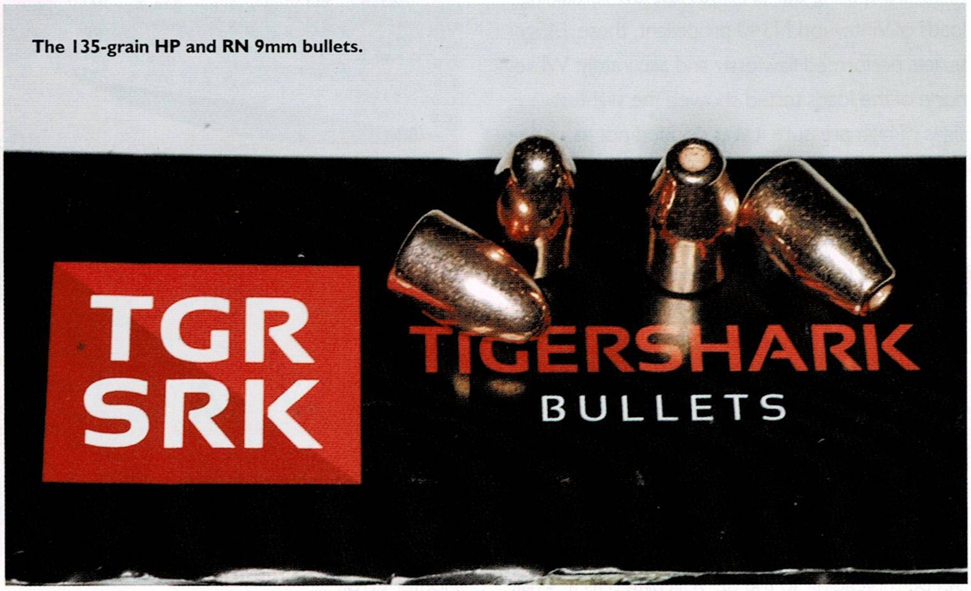
Another feature, important for those who compete in IPSC matches, is power factor (see page 66) as here the focus requires speed and accuracy coupled with sufficient hitting power. Competitors are given scenarios to follow, some of which can be quite complex and must fire a number of shots in a limited time, perhaps including changing shooting hands, reloading their handguns and engaging a variety of targets while also avoiding shooting certain other targets. Because this simulates real, practical shooting situations it's important the cartridges used meet the required levels of energy.

Power factor is a number related to the inertia of the fired bullet and is calculated by multiplying bullet weight in grains by velocity in feet per second then dividing by one thousand. For example a 158gr bullet travelling at say 1200fps will have a power factor of (158 x 1200) ÷ 1000 = 189.6 which would generally satisfy 'Major Power Factor'. For more details on this, readers should visit their local club and talk to competitors or download the online rule book by Googling 'IPSC Rules'.

Tigershark bullets can be ordered online from tigersharkballistics.com.au and freight is usually free when ordering more than $249 worth. Some retailers also hold stocks. Typically, projectiles cost around 14c to 19c each when buying in quantities around the 2000 mark, so sharing purchases with fellow shooters is a good way of keeping costs down. By comparison, these bullets are roughly the same price as commercially cast ones and have the advantage that they leave less lead in the bore and have no sticky lube on the exterior. It has also been claimed aerosol lead from plated bullets is completely eliminated.

One warning pointed out to me at the range is these fired projectiles should not be re-melted if the copper coating remains intact, since they sometimes burst in the lead pot and spray molten lead. ■

Tigershark Projectile weight tests including standard deviations				
Cal	Weight	Shape	mean wt	sd
9mm	123	RN	123.3	0.23
9mm	123	HP	123.3	0.21
9mm	135	RN	135.2	0.35
9mm	135	HP	135.1	0.35
9mm	145	RN	145.2	0.25
9mm	145	HP	145.2	0.24
357M	158	SWC	157.9	0.50
357M	158	HP	158.3	0.30
44m	240	RNFP	240.2	0.30



The 135-grain HP and RN 9mm bullets.

Tigershark bullet tests										
Cal	Weight	Shape	Load A	Vm	sd	AGR	Load B	Vm	sd	AGR
9mm	123	RN	5.8gr AP100	1020.6	71.30	not rec	4gr APS450	1040.70	6.20	7.63
9mm	123	HP	5.8gr AP100	1076.4	35.80	not rec	4gr APS450	1061.40	12.70	6.67
9mm	135	RN	5.8gr AP100	1062.7	26.90	6.83	3.3gr APS 450	962.00	13.00	5.30
9mm	135	HP	5.8gr AP100	1103.8	25.10	7.11	3.3gr APS 450	961.80	10.50	6.47
9mm	145	RN	4gr N340	940.4	34.00	7.15	2.5gr APS450	746.4*	16.60	NA
9mm	145	HP	4gr N340	978.8	11.80	4.64	2.5gr APS450	NA		NA
357M	158	SWC	5.1gr AP70N	801.5	65.00	4.00	5gr APS450	977.10	25.40	4.92
357M	158	HP	5.1gr AP70N	809.3	53.60	4.33	5gr APS450	965.60	28.60	3.85
44m	240	RNFP	7.9gr AP70N	829.7	42.40	2.97	6.4gr APS450	738.8	20.20	3.43

Power factors								
Cal	Weight	Shape	Load A	Vm	PF	Load B	Vm	PF
9mm	123	RN	5.8gr AP100	1020.6	**125.53**	4gr APS450	1040.70	**128.01**
9mm	123	HP	5.8gr AP100	1076.4	**132.40**	4gr APS450	1061.40	**130.55**
9mm	135	RN	5.8gr AP100	1062.7	**143.46**	3.3gr APS 450	962.00	**129.87**
9mm	135	HP	5.8gr AP100	1103.8	**149.01**	3.3gr APS 450	961.80	**129.84**
9mm	145	RN	4gr N340	940.4	**136.36**	2.5gr APS450	NA	
9mm	145	HP	4gr N340	978.8	**141.93**	2.5gr APS450	NA	
357M	158	SWC	5.1gr AP70N	801.5	**126.64**	5gr APS450	977.10	**154.38**
357M	158	HP	5.1gr AP70N	809.3	**127.87**	5gr APS450	965.60	**152.56**
44m	240	RNFP	7.9gr AP70N	829.7	**199.13**	6.4gr APS450	738.8	**177.31**


Although working near the upper recommended loads for the 9mm rounds, there was no sign of excessive pressure.