WILLIAM POWELL

since 1802

STEEL SHOT
AND THE ALTERNATIVES TO LEAD

2026 EDITION



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The Sovereign
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An Introduction

We first wrote on the subject of lead shot in May 2020, but significant developments since then have made an update necessary. In February of that year, the seven principal landowning and shooting organisations had already issued a joint press release outlining their commitment to a voluntary ban on all single-use plastics (including cartridge wads and cases), as well as a voluntary phase-out of lead shot, both to be achieved within five years. Then, in March 2021, the then UK Environment Minister Rebecca Pow announced a public review, signalling the likely phasing out of lead shot in Game shooting within two years.

This was followed on 31st March 2021 by the Department for the Environment, Food and Rural Affairs (DEFRA), tasking the Health and Safety Executive (HSE) to examine the use of lead in ammunition. In 2024 the HSE issued their 'Final Opinion' which was that lead will be banned from 1st April 2029, for use on live quarry and target shooting, both for shotgun and rifles users. As is often the way, there are a few exemptions for both competitive athletes (at the highest levels) and with small calibre rifles, such as .22 and .17HMR.

The 2028 Game Shooting Season will be last one we can use lead shot (including copper coating). Thereafter lead shot is banned.

Our thoughts are that a lot of the 'commercial' Shoots selling days will transition towards a non-toxic future in the 27/28 shooting Season, effectively one year ahead of the ban. This is to ready themselves and learn in plenty of time, of any changes that need to be made on a shoot by shoot basis. This could be as simple as moving the picking up line 100 metres further back, to how the shot Game needs to be handled and processed before reaching the Game Dealer.

We at William Powell and at our sister companies, JM Osborne Rural & Sporting and William Powell Sporting, have been closely monitoring all these developments. It is certain that within a very short timescale now, UK Game shooters are facing massive change. This is because 99% of all Game currently shot in the UK is shot with lead shot, this will not be the case in the very near future.

The discussions about a move away from lead started some considerable time ago, initially based from evidence that wildfowl were ingesting lead shot. This led to the banning of lead shot over wetland areas in 1999 in England. However, there has been continuing pressure for a ban on using lead shot for Game shooting, because lead is known to be dangerous to human health. For example, lead in petrol was banned due to it being in a gas form and as a result, it was easy for humans to inhale. Whilst it was not at all unanimous, the Lead Ammunition Group (LAG) report in 2015, confirmed that they believed there was an issue with humans ingesting lead from shot Game. In reality, the actual risk appears to be very low indeed.

UK Game Dealers are currently supplying Waitrose, M&S and others with non-toxic shot Game. We hope that the uptake for Game meat across Supermarkets, Sporting Stadiums, Hospitals, Schools and many other outlets, will increase exponentially once there is a constant and proven supply chain of 'non-toxic' Game meat.

Unfortunately, 'toxic' is the official definition of lead in food terms. We are already seeing the demand for non-lead shot Game (non toxic) increasing, since Eat Wild published their Game vs conventional chicken nutritional statistics.

Lincolnshire Game during the 2025/2026 season, had to turn down a contract to supply other major Supermarkets as they did not have enough non-toxic shot Game to supply the demand.

We now know when the main changeover is going to happen and therefore, we **ALL** need to prepare for it. This does not mean stock piling lead cartridges. It does not mean panic buying - it means assessing all our available options and seeing what will work best for us as an industry but also for individuals, within the shooting community.

It is very important to understand that it will be illegal to buy, store or use lead cartridges after 1st April 2029 – irrespective of where you are intending to shoot them. This will be the case for layman's – there are exemptions to this with top level athletes and collectors.

So, what are your options?

We have set out below, some relevant facts as we at William Powell see them. Please remember this is a developing situation and we can only comment on how we currently see matters. We do expect some further changes to occur over the next year or two, but please do not get your hopes up, as these may not be very major.

It is also becoming increasingly likely that cartridge manufacturers will stop selling lead shot cartridges to their retailers as of the end of 2028 and possibly even sooner.

The cartridge manufacturers tell us that it is very unlikely there will be many other realistic or suitable alternatives developed in the future, over and above what are available now. There are already one or two 'mixed' substance shot cartridges which have been developed. The fundamentals of metals and weight very much apply here. There has as a result of all this research, been significant improvements in non-toxic (non-lead) cartridges in recent years, and the biodegradable wads used in them. These are used in place of plastic wads, which we similarly do not want to be littering the countryside with.

What are the current alternatives to Lead Shot?

There are currently three main options:

Steel (soft iron) - page 5

Bismuth - page 10

'Mixes' such as RC Blue - page 11





Steel Shot

Steel shot first came into the UK many years ago and was then generally regarded as much less effective than lead, due to it only being approximately 70% as dense as lead. Since then there have been significant improvements in steel cartridges and today's steel cartridges are a significant improvement on what we remember from even 7 or 8 years ago.

Modern steel shot cartridges are actually 'soft iron', not steel, and millions of them are made and shot in the USA, Scandinavia, Denmark and throughout Europe each year.

Its use in these markets has previously been with plastic wads **AND** many of these cartridges are loaded to a much higher speed specification than can legally be loaded for the UK market, (which is why people using them overseas were amazed by comparison with how poor our early UK made ones were). Therefore, you must be very careful when comparing the steel shot cartridges which are available in the USA and elsewhere, with those available in the UK. Unless we have regulatory change, we cannot use these in the UK.

Wildfowlers in the UK have been using steel shot for years and generally seem to get on well with them, having adapted their shooting techniques. Modern steel shot cartridges (in the last couple of years) now have better components than were previously available, due in particular to technical advances in the powders being used. One of the problems with steel shot is that it must be used in a 'shot cup' style of wad, to protect the barrels from direct contact, which would otherwise cause damage. This usually manifests as scoring in the inside of the barrels. This means that felt or fibre wads are not suitable for use with steel shot which they are with lead shot cartridges.

In the main, these shot cups were previously made of plastic, but other options are now readily available, such as Gamebore's bio-wad, Eley's Pro Eco and Hull's Hydrowad, among others. For those who yearn to revert to paper cases, sadly they are not currently suitable for steel shot loads and may never be.

Availability

There are now steel shot cartridges available in the UK which are 2½" (65mm) long in 12 bore i.e. the standard 12 bore cartridge length. This is a very recent (and very welcome) development and is a real game changer (no pun intended!) for users of 'old' English guns with 2½" chambers. Please read more on this in the following pages, **BEFORE** you rush off and buy/use them.

Whilst modern steel (soft iron) cartridges loaded to CIP (the required UK regulations), are much better than they used to be, they are not as effective when shooting high birds as the equivalent lead shot cartridges. There is hope that CIP may change their current rules, so that higher performance steel shot cartridges would be legal to use in the UK. If these were similar to the steel shot cartridges available in America, this would be a significant improvement.

Standard Steel Cartridges

Standard steel cartridges very confusingly can now be 2½" (65mm) or 2¾" (70mm) and must have a shot size of 3.25mm or less and be lower than a 32 gram load for 12 bore. Those cartridges which are on sale in the UK now, are very effective at shooting mid-height birds (30-35 yards), as may be found on the vast majority of UK Game Shoots. The sort of traditional Pheasant shown flying out of woodland or Partridges over hedges, are perfectly capable of being shot using Standard steel shot cartridges.

Shot Size

To make steel cartridges roughly as effective as lead, the cartridge manufacturers have recommended reducing the size of the shot by one or two sizes. Therefore, if you normally shoot 6 shot lead cartridges, they suggest you shoot 4 shot with steel. However, we at William Powell are worried that this will lead to numerically inferior shot patterns (but will enable a more powerful strike), which will be particularly noticeable at range. We think that there will need to be further research (and practice) in this area and that you should first try going down one shot size and see how you get on, before reducing by two pellet sizes as recommended, when using steel over lead cartridges.

We have found that even 2½" Standard steel shot cartridges are both noisier and have more kick or recoil than their lead equivalent. Please be under no illusion that steel shot cartridges are an exact substitution for lead ones – they are not. They are however, now pretty good and getting better year on year. With the continued research and development by the manufacturers, these will be more than suitable for much of the type of shooting that is on offer around the UK. Extreme or High Bird shooting will be the exception as will in many cases, the same be for Grouse shooting. The latter is due to ricochets. Whilst lead cartridges can ricochet, they seldom do so. It is very likely that steel shot will ricochet, particularly when in contact with either stone, scree or possibly a wire fence; all quite common on moorland. We would therefore advise considerable caution before using either Standard steel shot or High Performance steel shot when Grouse shooting. The same could also be the case for rabbit and hare shooting.

High Performance Cartridges

The second type of steel shot cartridge is High Performance (which have a shot size larger than 3.25mm) e.g. a number 3 shot **OR** a 3" case, **IF** your gun is suitable to use these High Performance cartridges, you will literally have more firepower and this will mean when using these cartridges, you will be able to shoot longer range quarry. **HOWEVER**, you **MUST** make sure your gun is suitable to use with this type of cartridge; lots of guns will not be and this includes almost all English Side by Side shotguns! Please read on for more details of what this involves.

Please also note that in our own trials, we have found High Performance cartridges much noisier than the equivalent lead ones (this might cause noise problems on some bigger shoots?) and with considerable additional recoil.

We are far from convinced that many people would want to shoot many of these High Performance cartridges on a days shooting, without making alterations to their guns. This could be a change to a heavier weight of Gun, or the fitting of some sort of recoil reduction system. You will need a good pair of ear defenders (obviously from William Powell) and almost certainly a heavier gun (than what has traditionally been deemed a 'Game Gun') – something over 7.5 or 8lbs we think will become the norm going forwards, for use with the High Performance loads. These are very punchy cartridges indeed and even if safe, completely unsuitable to shoot through any lightweight gun, be it old or new.

Small Gauge Options

In previous iterations we have been sceptical of the availability of any steel loads for small gauges. However, we now have on good authority from the major UK cartridge manufacturers, that they are anticipating the arrival of small gauge steel cartridges in the very near future. Hull are already producing 16 bore steel, and 20 bore steel cartridges are already with us from several manufacturers. We hope that the .410 and 28 bore steel cartridges will be with us for the 2027/2028 season.



Before you do anything, check your gun is suitable for shooting steel shot cartridges and if it is, which ones.

Proof Markings

Images illustrating proof markings on an Over & Under (left) and a Side by Side (right)



Over & Under Proofing Marks

Explanation starting top left

Bore Size and Chamber Length in mm (12/76)

Date of manufacture (2019)

Manufacturers stamp (BR)

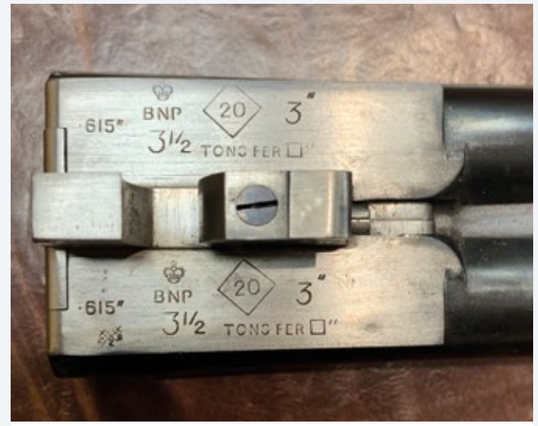
Serial Number (CO17124)

Nitro Proof - An overseas CIPS mark

Italian Proof House Stamp (Crossed Guns with star above)

Fleur-de-lys - High Performance Steel Shot Proof (CIP)

Italian date stamp - 2019 (CU)



Side by Side Proofing Marks

Explanation starting top left

Bore Diameter (.615")

Birmingham Proof House 1954 (BNP - 3½ TONS PER □")

Gauge (20 bore)

Chamber Length (3")

Birmingham Mark (Crossed swords, showing the date code and the inspectors number who did the proofing)

Unlike the adjacent Over and Under, despite having 3" chambers this Gun is not High Performance Steel Shot proofed, as it does not show the Fleur-de-lys stamp

The images above show examples of the Gunmaker's stamps which can be found on both Over & Under and Side by Side barrels. Once the Proof House stamp has been identified, use the table on page 8 to distinguish which proof house did the proofing and when. These will then tell you if you can use 'Standard Steel' or 'High Performance Steel' loads through your barrels. This is very important as the two are not at all the same! ***DO NOT**, under any circumstances unless your gun is High Performance steel shot proofed, shoot 3 shot or larger steel cartridges through it, and then, as advised by the Proof Houses, only through a maximum of half choke or less.

Again, using the table on page 8 to carefully check that your gun and the cartridges you intend to use are compatible.

We are also increasingly aware that some people now use 2¾" / 70mm cartridges in guns with 2½" / 65mm chambers. This 'shorter' chamber length is what most Side by Side guns have, unless they were either built for wildfowling, live pigeon shooting or were built quite recently. This misuse occurs currently with the wrong sized lead shot cartridges being used.

Please be aware **THIS IS HIGHLY DANGEROUS** and must **NEVER** happen when shooting steel shot cartridges. High Performance steel shot cartridges must only be used in guns correctly proofed for High Performance steel shot ensure that it is Fleur-de-lys stamped. We are also seeing the increasing importance of matching your cartridge length to your guns chamber length. This reduces pressure leaks and allows for a better performance from the cartridge.

Please check and ensure you are using the correct ammunition in your gun and this includes with lead shot cartridges but particularly so with steel.

CIP / UK	STANDARD STEEL	HIGH PERFORMANCE STEEL
London 2020	CIP N NP	CIP NP
Birmingham 2020	CIP N BNP	CIP BNP
London 2006	NP STD	NP SUP
Birmingham 2006	BNP STD	BNP SUP
London 1989	NP 850 BAR	
Birmingham 1989	BNP 850 BAR	
London 1954	NP 3 TONS PER □"	
Birmingham 1954	BNP 3 TONS PER □"	

The table above illustrates 'Standard' and 'High Performance Steel' proofing marks from London and Birmingham proof houses from 1954 to 2020. Please note that there are different proof marks from both Proof Houses going back to the 19th Century and the above are relatively recent examples.

Older Guns

NO steel shot cartridges should be used through any gun with twist Damascus barrels and under no circumstances, should **ANY** gun be shot which is out of proof or with thin barrel wall thickness. The latest recommendation we have from the Proof House is that pre 1954 proofed guns should be submitted for Standard steel shot proofing, before these cartridges are used. This should however, only be done after work we have previously described has been completed. This is a very clear recommendation by the responsible body.

We worry that **SOME** of these guns, whilst still in proof for Nitro, may not have either strong enough actions or barrels for even Standard steel shot cartridge use. Some of these guns being well over 100 years old and have already given a lifetime of service. Some may well be able to cope with the transition to steel but some will not (and no-one knows what percentage may not!).

We believe that many old Side by Side shotguns will fail reproofing for even Standard steel but could be safely used with Bismuth. If such a gun fails reproofing (which is at a higher charge level than a normal 'off the self' cartridge), it almost certainly will be a write off. Many people are suggesting that all 65mm chambered guns are suitable for shooting Standard steel shot through them. This is definitely not true and we are advising considerable care to be taken and the Proof House's recommendations as above are followed.

Lightweight English Game Guns

With regard to High Performance steel shot cartridges, we do not think many old lightweight English Game guns with 65mm chambers will withstand being reproofed (after work is done to extend the chambers and easing the cones and rejointing) for this type of cartridge. Even if they do withstand reproofing, we doubt you would enjoy the experience of shooting these cartridges through these guns!

Heavier actioned guns such as those built for live pigeon or wildfowling are likely to be much more suitable and all guns being reproofed (for either Standard or High Performance steel shot) should have good barrel wall thickness, sound actions and be well jointed. Lead being much softer than steel, did not in the main cause wear on the inside of the barrel. Steel pellets will cause more wear and therefore good barrel wall thickness **AND** very strong actions are essential. We would also suggest that guns originally made for use with black powder, even if they have been reproofed for Nitro, might be unsuitable to use with **ANY** steel cartridges. These are likely to be particularly vulnerable to failing at reproofing. It is not just minimum wall thickness which is relevant, but also the strength/condition of the action which will determine whether the gun will stand reproofing. It is from our experience, doubtful that many (if any), old lightweight guns (which most English Side by Sides were built as) will stand reproofing for High Performance steel shot. Perhaps just as importantly, is whether you would want to shoot this combination!

Please note that as currently steel cartridges are not commercially available in the UK for 28 or .410 gauge guns (although we hope they relatively soon will be), owners of these calibre guns, may have to use one of the available shot alternatives, as discussed on page 10, or in certain cases steel shot with plastic wads.

Pricing

The current price of an average lead shot Game cartridge (65mm and with a 30 gram load) is between £0.45 and £0.55. The current price of a similar steel loaded cartridge is approximately £0.60 to £0.70. These prices are based on 32gram of steel and a non-plastic wad. There is minimal price difference between Standard and High Performance steel cartridges.

In conclusion, modern Standard steel cartridges will be effective for most of us, shooting at mid-height Game birds, including partridges and pheasants, as well as at snipe, woodcock and duck. However, be very careful when using these (or their High Performance cousins), if out Grouse shooting, because of ricochets. Standard steel cartridges will take some time to get used to after lead (see below), but you can have confidence in their effectiveness, once you have got used to them. They are not suitable for use at long range, which is what high bird shoots are. Therefore, if you are shooting at high birds in Somerset, Devon, North Yorkshire, Wales etc, etc, then you will need to shoot with High Performance steel shot cartridges, which once you get used to them, will be pretty effective. They will however, be less effective than their lead counterparts, generally because of shot placement. With a less effective cartridge, shot placement becomes much more important. This is why very good shots, tell you that you will shoot the same with steel at high birds as with lead; you won't, but because these excellent shots place the centre of the pattern on the bird, they will strike the bird with the optimum number of pellets and therefore even when using pellets with less kinetic energy, they will still kill.

Most of us are very lucky indeed to place the bird in the centre of the pattern and as a result and using less effective pellets, we will kill less. It is therefore very important that you understand what the best pellet size is for the gun and cartridge you are going to be using and it is also much more important that you practice with these new type of cartridges. This will make all the difference in helping you to be a competent shot, using steel cartridges.



The Princeps
Over & Under

"Standard steel cartridges will be effective for most of us, shooting at mid-height Game birds, including partridges and pheasants, as well as at snipe, woodcock and duck."









Bismuth

Bismuth cartridges, which are approximately 85% as dense as lead, have been around for some time and were initially thought of as not as effective when compared to lead. Modern Bismuth cartridges are now significantly better than they used to be. Some manufacturers (Gamebore in particular), have now engineered a pellet which ensures the shot is malleable like lead which improves effectiveness and prevents fragmentation on impact. An increase in one shot size (from 6 to 5 for example) is recommended, to compensate for the lower density and to increase lethality.

Our overall view currently is that Bismuth cartridges are the logical alternative to lead cartridges for old English Side by Side shotguns, perhaps with thinner (but still Nitro proofed) barrels and particularly for those with 2½" (65mm) chambers. They will also be ideal for 16, 28, and .410 guns where available.

These cartridges will be perfectly good for shooting at 'normal' height Game (including Grouse, as they tend to not ricochet), just like Standard steel. We do not however, think that Bismuth, along with Standard steel, is at all ideal for shooting extreme/high birds or Game at longer range.

There is no doubt that shooting using steel or Bismuth, as opposed to lead, does take some getting used to. Please do not think that you will shoot exactly the same (or to the same standard), when you change from lead shot to one of the alternatives, because most people will not immediately do so. Instead, you will need to practice getting used to the change in load, speed and probably recoil. That said, if you swap with a like for like load from the same manufacturer, the difference will be less than swapping completely to another brand and starting afresh. With practice you should shoot to much the same standard as you did before (provided the quarry is at 'normal' height), once you are thoroughly acclimatised to this new type of cartridge.

The current price of a 30 gram 5, 12 bore Bismuth cartridge is approximately £1.70. There is no issue with using Bismuth through guns with any choke measurements, but clearly the recent and very significant price increase in Bismuth has made these quite an expensive option now.

Tungsten Matrix

Another option previously available was Tungsten. However, with the price skyrocketing over the last few years to circa $390,000 per tonne, this puts commercial cartridge prices at roughly £35 each! This is no longer a financially viable option for most as a replacement for lead.

'Mixes' such as RC Blue

These alloy mixtures are not something new and have been trialled by manufacturers previously. Given the constraints with steel and older guns, RC seem to have the product that lots have been waiting for - the HPF3 Blue is a non-toxic cartridge using a combination of Bismuth, aluminium, zinc and tin.

Pellets will deform on impact, transferring energy whilst appearing to be malleable enough to be shot through any choke constriction and used with any gun in proof. The density is not on par with lead, so the new Blue shot will likely suffer the same limitations as Standard steel on high to extreme birds. That said, it will be much safer for use on Grouse Moors with rocky ground, offering a significantly reduced ricochet than steel.

Overall this means guns built pre 1954, now have a much more cost effective solution, other than Bismuth. The cost of a 30 gram 5 fibre wad, 12 bore cartridge is circa £0.78 and a 32 gram 4 eco wad 12 bore around £0.83. Therefore these cartridges sit slightly more expensive than steel and lead but substantially less than Bismuth.

We hope to hear more from RC soon as to the availability of smaller gauge cartridges.

Rifle Ammunition

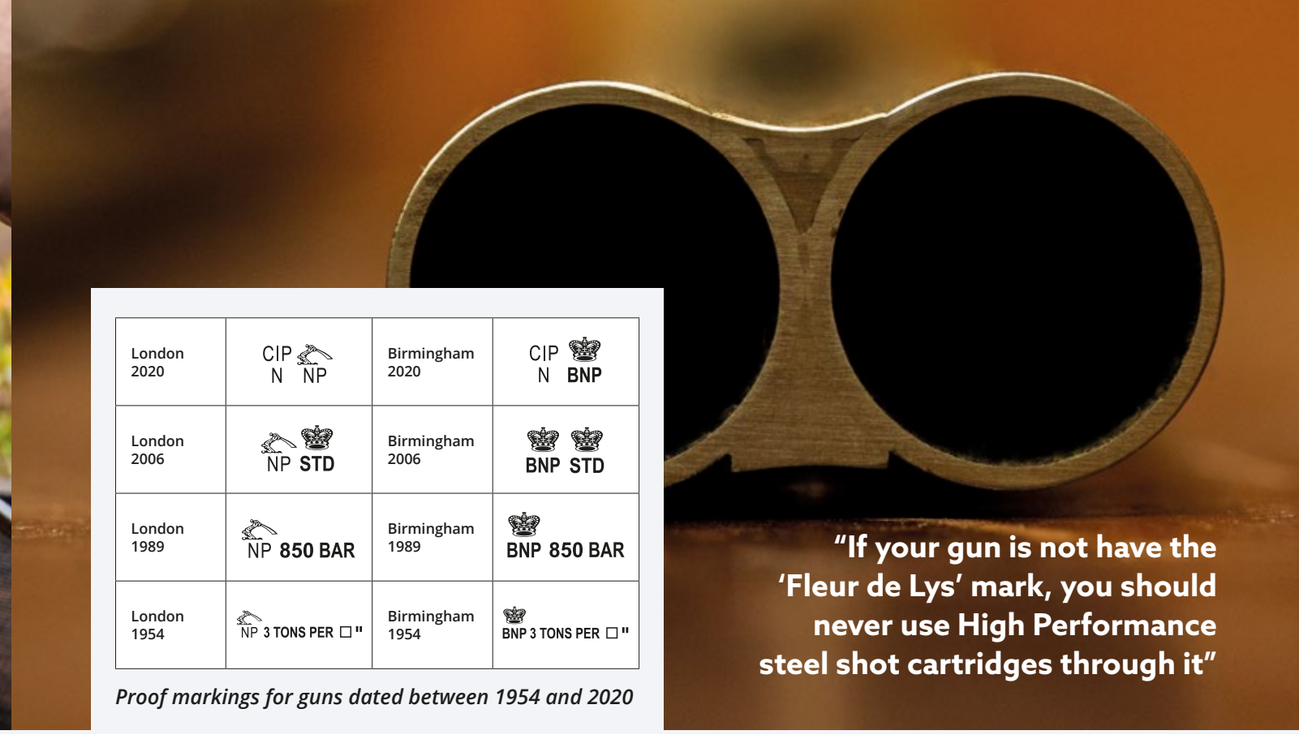
Rifles will also be hugely affected by the lead ban. Rifles up to 6.17mm, so .243 and above, will be covered by the impending ban and users of these calibres will be forced to shoot non-toxic ammunition from 1st April 2029. This poses a large problem for a lot of .243 rifles currently in use, which have older barrels with a slower twist rate of 1:10. These guns are highly unlikely to perform with longer, heavier 90gr+ i.e. non-lead bullets. Non-toxic .243 rounds tend to work much better with faster, more modern twist rates of 1:8. This is due to copper being less dense than lead. Therefore, copper bullets being longer than lead bullets of the same weight, require a faster twist to stabilise them.

In lots of other centrefire calibres, many professional and recreational shooters have already transitioned to non-toxic bullets, but possibly have also changed calibres and are as a result, experiencing excellent results. This should only get better with time.

Lots of deer managers are reporting very similar or even less meat damage with non-toxic ammunition (with correctly placed shots) than what they were previously experiencing with lead. The initial transition for most has been very positive.







London 2020	CIP N NP	Birmingham 2020	CIP N BNP
London 2006	NP STD	Birmingham 2006	BNP STD
London 1989	NP 850 BAR	Birmingham 1989	BNP 850 BAR
London 1954	NP 3 TONS PER □"	Birmingham 1954	BNP 3 TONS PER □"

Proof markings for guns dated between 1954 and 2020

So, what do you need to do now?

There is no immediate rush to do anything as you will be able to use your current lead cartridges up until the end of the 2028/29 season in most instances. However, we would urge most people to aim to change or at least to try non-toxic alternatives well before the cut-off date/season, so as to familiarise themselves with the new options available.

In lots of cases, Guns may be forced into shooting non-toxic before you might anticipate, due to the rules of the Shoot or whether or not Game Dealers will buy Game shot with lead. It is therefore very important to plan for the future, particularly if you were thinking of what gun you intend to use in the longer term. It is clear that many guns currently in use, are almost certainly not suitable for shooting **ANY** steel cartridges. A much smaller proportion of older guns, particularly English Game Guns, but also many Over and Unders are actually safe to shoot High Performance steel cartridges through.

Please do not think that the way to get around the problem, is to buy thousands of lead cartridges 'to see you out', as shoots will move across to non-toxic and sell their Game to their respective Game dealer, who will ultimately drive how quickly we all transition to using non-toxic cartridges, before the ban. As previously mentioned, it will be illegal to be in possession of or using lead shot and rifle ammunition after the ban date of 1st April 2029.

Those Shoots, which until 1st April 2029 do not sell any Game, but use it for personal consumption, will probably shoot lead right up to the 11th hour.

It is, in our view essential to look at the alternatives to lead now, to include looking at what guns you use and then make the change when necessary, which will help to protect our sport and ensure its future for everyone.

This is the largest change to how we shoot to have occurred for a very long time and will involve some people having to change the equipment (guns) they use. However, just think back, our forebears used to shoot with hammer guns and paper case black powder cartridges, which very few people do now!

Times have changed and we are going to have to adopt this change for shooting Game going forwards. It is **NOT** the end of Game shooting as we know it, just moving away from the old and very familiar, and moving forwards into a new era.

It may be that older English guns will be kept for high days and holidays, with a newer High Performance steel shot proofed gun being used for shooting on most other days. The best analogy we have heard, is treating best old English guns like classic sports cars. Don't use them all the time, but do so on nice days out with Bismuth or similar and look at modern alternatives for day to day use.

Obviously, our William Powell Continental Over and Unders and Side by Sides ideally fit that role!

Get you Guns checked!

It is exceptionally important that you get your Guns checked out by a competent Gunsmith if you are in any doubt as to what cartridges you can safely shoot. In summary therefore;

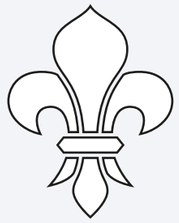
1. If your gun is proofed for High Performance steel shot cartridges, the barrels will be marked with a 'Fleur-de-Lys', showing the gun has been tested to High Performance steel proof pressures.

2. If your gun does not carry the 'Fleur-de-Lys', it should have Nitro proofed markings. There are many marks for the Nitro proofing in the UK; one for each Proof House used in Birmingham and London. We have shown these above but only dating back to 1954.

All of the above marks, show that guns bearing them can in theory shoot 'Standard' steel cartridges - provided the gun is in proof, does not have Damascus barrels, the chokes are less than half, there is good barrel wall thickness and the action to barrel fit is 'tight'. **However, these guns cannot be used with High Performance steel shot cartridges.**



For more modern guns with Nitro proof barrels from outside of the UK, these will have a mark of CIP with an S underneath showing they meet CIP proof.



Fleur-de-Lys symbol

3. Knowing this, you must consider the chamber length of your gun, to ensure you are not going to buy or use cartridges which are too long for the chamber. The chamber length is also stamped in the same area, normally in the format of 12/65 or 12/70 for modern guns and old English guns usually have a stamp of 2½" or 2¾".

4. If your gun is not 'High-performance' steel shot proofed, (does not have the 'Fleur de Lys' mark), you should **NEVER USE** High Performance steel shot cartridges through it.

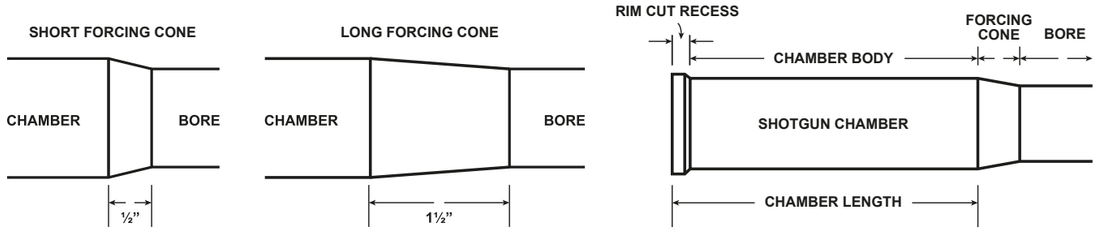
5. If your gun is Nitro proofed after 1954, then you can safely shoot Standard steel cartridges but subject to the above. If you wish to use Bismuth through a Nitro proofed gun, you can do so without any alteration to your chokes, however tight they may be, but in the case of Tungsten Matrix, check the chamber length.

6. We have attached the latest recommendations regarding the use of steel shot from BASC and would strongly advise that you make yourself familiar with this advice, but please see our comments above and our new recommendation that chokes should not be greater than a half when used with steel shot, because of the potential for barrel damage.

Forcing Cones and Chamber Length Alterations

Forcing cones are the part of the barrel from the end of the chamber (where the cartridges sit) to the start of the barrel of the gun. In some older guns, these was very 'steep' and were designed to house the old paper cased rolled turnover cartridges. Modern cartridges now have a crimped closure, but these also need additional chamber space for the crimp to open into. Some people think that increasing the length of the cone or even the chambers themselves, is a good idea. This means removing metal from the chamber to the bore and any removal of metal in this part of the gun, is likely to reduce its strength in a critical area. We would strongly advise taking expert advice from either a qualified and experienced Gunsmith or the Proof House before carrying this out.

Your safety and the safety of those around you is paramount so please be aware, that if you undertake this work to your gun, it will mean the gun will need to be resubmitted to Proof – and therefore there is a chance, it will fail.



This illustrates, in proportion, the difference between the two types of forcing cones. While there are variations, of course, the dimensions shown are average.

Standard shotgun chamber with short forcing cone.

Chokes

Chokes are the tapering at the muzzle end of the barrels which determine the diameter of which the shot will pass through. The Proof Houses current recommendation for maximum choke for Standard steel shot is half choke and for High Performance steel shot quarter choke. This is especially important on circa 10-20 year old guns which have very short multi-chokes. More recently made guns, have much longer choke tubes to make the tightening more gradual and less likely to cause any damage. It is vitally important that guns which have multi-chokes fitted, are constantly checked to make sure that the chokes are tight. As little as a quarter turn of loosening can cause the chokes to be blown out of the barrels. This is more likely to occur with steel shot cartridges.

We recommend regular removal of multi-chokes, thorough cleaning and re-fitting, using choke grease. Fixed choke guns also need to be checked to ensure that they are open enough to allow steel shot to pass freely. Issues can manifest in different ways with fixed chokes - a halo or ring bulge in the barrel is common where steel is fired through tighter than recommended choke constrictions. Unlike lead, steel pellets are not at all malleable, hence the requirement for a more open choke. Due to steel being a lot harder than lead, it does not deform and misshape when traveling through the choke tubes; thus it throws a tighter pattern.

A half choke with steel shot is roughly equivalent to a full choke used with lead shot; this is very important to remember, otherwise you could end up shooting an incredibly tight pattern by accident.





Can I get my existing gun High Performance Steel Shot Proofed?

The answer is not as straightforward as yes or no. It really will depend on the design, construction, probably the age and definitely the condition of each gun, as to whether a gun which is currently Nitro proofed will stand being reproofed for High Performance steel shot.

We have heard worrying estimates of how many 'old' English Side by Sides are likely to fail when they are submitted for High Performance steel shot proofing and we have had good experience to date of undertaking this work.

We believe that most English Side by Side guns with 2½" or even 2¾" chambers, will fail such reproofing, even after remedial work is done to them before reproofing. We are only recommending that relatively new and very sound guns, with plenty of barrel wall thickness and an excellent fit between the action face and the barrels, are sent to be High Performance steel shot proofed and ideally these guns should have been built on 'heavy' actions, such as the old Live Pigeon and Wildfowling guns.

Please remember that in most instances, when a gun fails being reproofed, it is then un-useable and is almost certainly of little or no value and only fit for scrapping. It is also worth remembering, that most English shotguns were when built, described as 'light weight sporting shotguns'. This makes them hopelessly unsuited for firing High Performance steel cartridges.

Can I alter my gun's chamber lengths?

The short answer is yes, this can be done, **BUT** you must get it done by a very competent Gunsmith, and the gun will again need resubmitting to proof. The Birmingham Proof House is recommending that 65mm chambered guns proofed before 1954, should have their chambers extended to 70mm and work will also need doing to the cones (and possibly to the chokes).

Then the gun will need to be rejointed, before being reproofed for Standard steel shot.

These guns, even after this work, would not be suitable for use with High Performance steel cartridges.



New Gun Alternatives

William Powell have been at the forefront of shooting improvements for a very long time and realising that like it or not lead was on the way out, we started looking at how this might affect many of our customers back in 2018. We worked with our Italian manufacturing partners, who we developed our Over and Under guns with, to then further develop two new models of Side by Side guns which are suitable for High Performance steel shot (as well as lead, Bismuth and Tungsten Matrix). After a couple years, countless ideas and prototypes, we have the Sovereign and the Viscount. These are exact copies of English Side by Side shotguns, at a fraction of the price. These guns are available in single or pairs, 12 bore, 16 bore or 20 bores, made to measure or off-the-shelf.

Please visit the Gunroom website for further details - **williampowellgunroom.com**













Sign up

If you would like to receive more information about steel shot, the restrictions on lead shot and the effects it will have on your gun and the shooting industry, please sign up to our newsletter by scanning this QR code.

Advice

If you would like to discuss any of these points further, please come and talk to us in our Gunroom at Carrs House in Banbury or call us on **01295 661035**.

We would be very pleased to help you.

WILLIAM POWELL
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