

## Pellets



There are many types of pellet currently available but you will find that in one gun they are brilliant, but in another absolutely abysmal. This is something you need to experiment with, but generally hunting pellets (pointed and hollow head) or flat headed target pellets don't work well at FT distances. Almost everyone uses domed head diablo pellets in competition (shaped like a shuttlecock) and everyone uses .177 calibre. Luckily they're very cheap and you can always borrow some to try out. To make it even more awkward, many of the better pellets come in a variety of slightly different sizes. Although there is an almost imperceptible difference it's surprising how they effect consistency and as little as 0.01mm in head diameter can cause pellets to group better. There are also variations in weight. Heavier pellets tend to carry the energy further than light ones and are less influenced by cross winds, but their trajectory is a more pronounced arc which makes range finding more critical. Most .177 FT type pellets weigh around 8.4 grains (0.55 grams) which seems to be a good compromise.

When you think about it, the pellet has a tough time. In a FT rifle 0.55 grams of lead is accelerated from 0 to 780 feet per second (over 530mph) in a distance of about 30cm, it has to travel up to 165 feet and then knock down a 40mm target. It pays to get the right ones, and the only way to do this is through trial and error. It's also important to look after them, dropping a tin or rough handling can easily deform them which can change the trajectory quite considerably and the point of impact will become quite random. If your rifle suddenly becomes inconsistent, try a fresh tin of pellets before you start taking things apart as even pellets that are so slightly deformed that they appear to be OK can have a really big shift at 55 yards. They also leave a small lead residue in the barrel which needs to be removed periodically. If your group size opens up, give the barrel a so pellets through to add the most rifles like.



Most brands of pellet are similar different characteristics once they them out before you bulk buy. Even two rifles of the same type may prefer different pellet type or size, but once you do find one that works, buy a few tins from the same batch. At less than 1p each, a few thousand won't really set you back much plus you'll find that your favourite brand is sometimes hard to get. We've also found that over time the dies used to make the pellets can wear and what was once a top pellet through your gun can become a complete dog a few batches later.

The process of making pellets, combined with their light weight, means that even with high quality brands there's often quite a spread of weights within the same tin. Although we're only talking fractions of a gram, it can be quite a big percentage increase or decrease. If you want absolute confidence in your pellets it's possible to weigh and size each individual pellet to ensure consistent characteristics in competition. Checking for deformed skirts, washing and using pellet lube can also



lead residue in the barrel periodically. If your group clean and then put 30 or small amount of lead that

in shape, but have leave the barrel so try

add to this confidence. It takes time, and whilst it can help, life's too short to sort pellets! It does pay to look at the pellet before you load it though, they are quite soft and can easily be deformed whilst walking around a course. If it looks anything but perfect, throw it away and use another.

### **Use in magazines**

Magazine fed air rifles are now very popular, (although not recommended for competition use) and most are quite particular about the pellets they're compatible with. Most do not like flat headed pellets and the overall length is also important. Start with the manufacturers recommended pellet, and then scrounge some different brands from club members to try out.

### **Calibre**

This can be quite a contentious area, and is the subject of many debates. There are 4 calibres generally available in the UK; .177, .20, .22 and .25 of an inch. Although they are all quite similar, they do have very different characteristics. .177 and .22, and are by far the most common and the majority of rifles are available in these calibres. Relatively rare are .20 and .25 with fewer types of pellet to choose from and at 12ft/lb .25 is not really an option as it needs at least 20 ft/lbs to make it fly, ideally much, much more which takes it into FAC territory. For target use .177 is the only sensible choice and although there are a few people who'll tell you that .20 or .22 are just as good (or even better), we've never seen them shoot a competition. The reason for this is trajectory. All UK rifles regardless of calibre have the same maximum power limit of 12 ft/lb and this rating is a function of both pellet mass and velocity so a .177 rifle is just as 'powerful' as a .22 or even a .25. Because .177 pellets are usually much lighter than .22 they can travel faster. This gives them a flatter trajectory so although at 55 yards they still hit the target lower than at 25 yards, it's nowhere near as much as in .22. This makes range finding far less critical and makes for more points scored. The smaller calibre is gradually overtaking .22 in popularity due to this fact for both targets and hunting so it won't limit what you can do with the rifle. It's no more accurate, just easier to shoot accurately. There are still many who believe that .22 is the ultimate calibre, it's not. 20 years ago most air rifles were only available in .22 and as a result the only decent pellets were also .22. The smaller .177 calibre was used almost exclusively for paper targets and most of the pellets were flat heads, totally useless over 20 yards, hence .22 was rightly deemed the accurate calibre for anything other than 10m paper punching. Nowadays pellets in both calibres are equally well made and accurate so that reason no longer exists. It's up to you to decide, but for target shooting it's .177 every time. If you buy a .22 you'll regret it. The calibre argument is probably the most contentious thing in air rifle shooting, but look at the results for FT or HFT and you won't find a single .22, .20 or .25 in the top 20 which must tell you something. If you want to shoot targets do not buy anything other than .177 even if it's a bargain or someone else tells you to and as soon as you shoot a 177 you'll be in no doubt. At the club we've found that JSB Exact, H&N Field, Webley Mosquito, Air Arms FT and Daystate FT pellets in either 4.51mm or 4.52mm all perform well in many .177 rifles, but there are many others to try out. JSB Exacts in 4.52mm are the most commonly used pellet at the club and is a good starting point as you'll be able to scrounge a few. For non FAC rifles in .177 look for pellets between 7.5 and 9 grains as these will give you a reasonably flat trajectory. Very light or heavy pellets are worth trying but only after

ones in this range have been trialled and avoid pellets that have a plastic outer sheath as they're unbelievably random! Although not environmentally friendly, lead is still the best material as it works well in rifled barrels and doesn't ricochet back at you.

Once you've selected your pellet use the free JBM trajectory calculator (on our links page) to calculate a 'click chart'. Use a ballistic coefficient (BC) of 0.023 for .177 calibre dome heads or 0.032 for .22 domes and try out a few scope heights and you'll get an accurate chart for every distance. The best way we've found is to zero your rifle at it's natural zero (around 25 yards for a .177) and then measure the MOA or mildots on a measured 55 yard paper target and again on a 10 yard one. Once you've got real world values for 10, 25 and 55 yards, use the software and make adjustments to the scope height value until the 10, 25 and 55 yard readings are the same as the ones you've measured and it should be accurate for all distances.

## **Darts and BB**

Never shoot any ammunition made of steel or brass from an air rifle or pistol. Firstly they will damage the bore and they also have a much higher probability of a ricochet. You occasionally see steel darts with coloured tails for sale, these will destroy the rifling in the barrel in no time and are intended for smooth bore pistols and 'Gat Guns'. If you do shoot them, expect to replace the barrel if you ever want your rifle to be accurate again. BB should also be avoided as it's just not accurate.

## **I have no social life and want to sort my pellets**

If you want to spend hours of your life cleaning and sorting pellets here's what you do. There are loads of different ways to do it but this is a good starting point.

1. Wash: Using a small amount of washing up liquid and warm water place a few dozen pellets in a jar with your cleaning agent and swirl gently until all contaminants have been removed. Then rinse off in a sieve under running warm water until all traces of detergent have been removed.
2. Dry: place the pellets on a clean cloth and dry off gently using a hair drier unless you've used a flammable solvent to wash them. For obvious reasons do not use a hair drier or similar to evaporate solvents, just put them somewhere warm with good air circulation or else it'll be Kaboom.
3. Lubricate: This needs to be done as soon as the pellets are dry otherwise they'll start to oxidise as you've now removed the film of oil that protects them. Use a small amount of proprietary pellet lube and ensure that all of the pellets are completely covered with a thin film. No need to drench them. We've come across other lubes such as furniture polish and waxes that also work well.
4. Weigh: Using a diamond scale which is calibrated to 0.01 of a grain (about £40 online) weigh each pellet individually and discard those above or below your acceptable weight range. Also inspect them for damage and only keep those that appear perfect.