

## How to Pick Good Quality CO2

### CO2 Quality is Critically Important for Your Airgun

CO2 quality is critically important for the health of your airgun. We see many air pistols and T4E (RAM) markers serviced at our gun benches that have inoperable / clogged valves or deteriorated o-rings and seals. More times than not, it's evident that a lesser quality cylinder was regularly used in these airguns and markers. The performance life of your gun's valve and seals depends heavily on the cleanliness of the CO2 you're using as well as the type of seal the cylinder creates against your airgun's o-ring. Dirty CO2 can also cause diminished velocities and equate to fewer shots per cylinder.

There are several brands of cartridges (or capsules) to choose from and without being able to see inside of each capsule, it is impossible to know which brand or brands offer the cleanest CO2 and are of the best quality. Cartridges also come from various manufacturers and countries, all of which have differing standards of quality control. Each capsule has to conform to size, weight and temperature threshold specifications, but there are no regulations governing the cleanliness of the CO2 or the cartridge, so it is hard to know which is the best without testing each and every one - you could go through several o-rings and destroy a valve or two before figuring out which is best.

### CO2 Cartridges Opened and Examined - Disgusting?

Because of the number of "bad" seals and valves we were seeing, we cut open some Umarex/Walther CO2 capsules and some leading branded CO2 capsules. We were amazed at the difference.

One leading brand had extraordinary amounts of oil and grit lining the walls of the capsule. The Umarex/Walther CO2 capsule was absolutely clean. The color, texture, and smell of the grime in the leading brand cylinder was consistent with what we were seeing on our gunsmith bench and is what we determined to be the main cause of most of the "bad" o-rings and valves we were seeing in the airguns coming in for service.

### What Causes Leaks?



Dirty valve caused by bad CO2

Another issue we often have calls about is CO2 leaks. The most common leak is caused by a cartridge's tip making a bad seal against an o-ring. Cartridges are filled with liquid CO2 and then capped. There are at least three different styles of caps and one may work better than another in your airgun. Take a close look at the valve where your cartridge fits into the airgun. If the cartridge simply presses against a seal, most of the time any of the three will work. If your cartridge slides through an O-ring, you could experience leaks if you use the wrong kind of cylinder. Take a look at the three cartridges in the picture. The cylinder on the left is crimped on. The one in the middle has a pressed on

top that leaves a groove around the neck and the one on the right has a smooth neck. If your airgun has a slide-through o-ring, the style on the right is the only style of these three you should use. Umarex/Walther CO2 cylinders are produced in this fashion and are the only kind we use in our airgun testing facility.



CO2 cartridge cutaway - clean vs. dirty



CO2 cartridge cutaway - Umarex/Walther clean vs. dirty brand



You will also notice in the picture that the dimensions of the neck and shoulder of the capsules vary. We see many instances where leading brand capsules (the first and second capsules from left) will not fit properly into an air pistol and then will not pierce correctly due to incorrect dimensions. **Do not apply excessive force or use pliers to get these ill-shaped capsules in your airgun. Doing so could damage the gun's frame and/or puncture assembly.**



CO2 variations on neck seal

**One final tip to consider**, and the easiest to do – always put a drop of RWS Chamber Lube or other airgun valve oil on the tip of each CO2 capsule before installing it. Doing this will extend the life of your valves and o-rings and can prevent leaks. This one simple tip alone could save you a service call.

Used our tested and proven clean cartridges with the good type of O-ring to extend the life of your airgun:

- [88g cartridges](#)
- [12g cartridges](#)
- BULK (500 count) cartridges for serious airgunners that need a price break

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