

Water Filters and What You Need to Know.

Lets start with something most people have bought.

Have you got one of these. A jug filter often from a company such as Britta. We see them in so many kitchens and most people buy them because they want to stop the scale build up in their kettle. So what is the filter doing? The best way of explaining is to explain the different methods of filtration, and what they do.

- Mechanical Filters
- Absorption Filters
- Sequestration Filters
- Ion Exchange Filters
- Reverse Osmosis Filtration

We use these separately and in combination to deal with different water issues in homes and in businesses. It can be to improve taste, to protect equipment or to remove contamination.

Mechanical

This is the simplest to understand. A physical barrier that catches sediment and particles. From simple screens, string filters to complex ceramic units. We measure and rate them by how small a particle they can trap. This is in microns and a typical string filter would be 5 microns removing visible size debris. Going down to 0.5 microns we can remove cysts. One note is that the finer the filter the slower the water will flow.



Absorption

One of the most common filters. They normally use carbon (GAC) which is an amazing material due to its massive surface area. It is useful in removing chlorine. That is the bleach flavour than many people complain about from their drinking water. Chlorine is put into the water at source to keep it safe and it is very important that if we remove it we consider the safety of the water. We would never recommend that chlorine is removed before water is stored for example, much better that it is removed just as it leaves the tap.

Sequestration

In science terms this means to isolate a substance chemically. In the water industry we can use polyphosphates to sequester calcium and magnesium and less commonly iron. We all know that it is the Calcium that causes scaling issues across much of the UK. The polyphosphate does not remove the 'hardness' but instead tries to keep it in solution stopping it from scale deposits. Most customers soon discover the more efficient and effective method of ion water softening aka traditional salt based machines. In fact it is noted that sequestration becomes less effective as water temperature increases and above 95degrees is ineffective.

Ion Exchange

There are versions of ion exchange and they all use a polymer matrices resin material. This looks like a fine sand and is held in storage tanks that your water passes through. For water treatment we will use a Strong acid cation resin. Unlike sequestration we are physically removing the 'hardness' elements and trapping them in the resin. We can then backwash or clean the material for reuse and in our case we use salty water.

Because salt is used we need to be conscious of the salt content of the water which must under regulation be kept below 200ppm. For most of the country that is not a problem but where it is we can easily manage it. This brings us on to our next type of filtration.

Reverse Osmosis

This system is always combined with other filtration methods but in itself removes

dissolved inorganic solids by forcing water through a semipermeable membrane under pressure which allows the clean water to pass through and leave the contaminants get left behind. It is an exquisite solution and when as engineers we are confronted with challenging drinking water it is our go to. The system is normally installed at point of use and may have a small storage tank, extra filters or a small pump to make it more efficient. Increasingly we are also fitting post filters or filters after the RO that puts a small amount of mineral into the water. This can be beneficial in tea and coffee making or for giving the water a mineral water taste. Most Reverse Osmosis systems when combined with a water softener will legitimately claim to remove 99.9% of contaminants.



Getting Back to That Jug Filter.

So the average 'Britta' jug has a combination of carbon, polyphosphates and ion resin to keep just you kettle clean. Most people forget to change the filters and leaving a jug of water on the side in a warm kitchen is questionable from a hygiene perspective. There are so many better solutions that can be installed that will save you time and money.

So Many Choices.

The question is what do we want to achieve. Many people in the UK struggle with hardness in their water supply that damages their homes. The best method for removing those damaging minerals is a whole house water softener. Put in by the incoming water main this will protect all of your home.

We like to consider then what other water we might want in our home. Ideally for the garden we would not treat it at all and preferably use rain water.

So back to drinking water, what do you want. The choice is yours and the best advice is to let a local AIWSE expert guide you.

So below we have included some typical examples used in our industry.

Inline Systems

These are typically used at Point of use and designed to remove sediment and some taste. You can find them on some commercial equipment. It is important to ensure that the filter is the correct one for the job at hand. In a home environment they are normally paired with a small secondary drinking tap or a combined 3 way tap.



American Style Fridges

These filters come in a bewildering range of sizes and fittings but can often be an

inline unit hidden behind a unit. It is very important to maintain these filters and a AIWSE member will be able to help you find the correct unit.

Coffee Machines

This is a very specialist area as coffee roasters have discovered that to brew the very best drink it is important that the water has the correct chemistry. This means that they actually need some mineral in that water but not enough to damage the equipment. Increasingly our members are fitting water softeners to protect the building and then a reverse osmosis unit to give the final high quality water for the coffee making. If you need help and advice then always speak to a professional from the AIWSE before you invest in a system.

Cartridges

Lots of different filter types and materials but these are of the type where the filter screws or drops into a housing. Most Franke and Britta taps use this method. AIWSE members can normally supply suitable replacements.

Commercial

In the industrial world water is used in all manner of processes. From the dentist drill, laser cutting, food production, steam ovens, mould making the list goes on. This all requires water treatment knowledge go specify the correct equipment and also to maintain it. The Association of Water Softener Experts are best placed to offer customers across the UK this service. So make sure you use an Expert on your next project.

