

The following document offers a simple but useful tool for deciding which filter suits which application depending on coffee volume and water hardness. Whilst this will be useful in 85% of situations, applications with unusual water quality issues may require closer, more individual analysis.

In a coffee setting, water filters should perform 3 key functions:

1. Reduce sediment & small particles such as dirt, sand & rust.
2. Reduce chemicals - specifically chlorine, which is used to disinfect town water and greatly effects the taste of espresso (especially when heated) - it can also precipitate to produce corrosive chlorides.
3. Reduce Total Hardness (TH). **TH** - refers mainly to the presence of calcium & magnesium. Not to be confused with TDS (total dissolved solids) which refers to ALL dissolved minerals. Calcium & Magnesium changes from a liquid to a solid to form scale. It is this scale that coats boilers, elements, valves and jets.

Most brands of filters do a suitable job of sediment and chemical reduction. **It is TH that creates the biggest challenge and this factor alone has the single biggest impact on coffee machine performance & ongoing service.**

There are 2 ways to approach managing **TH**. First is the use of **scale inhibitors**

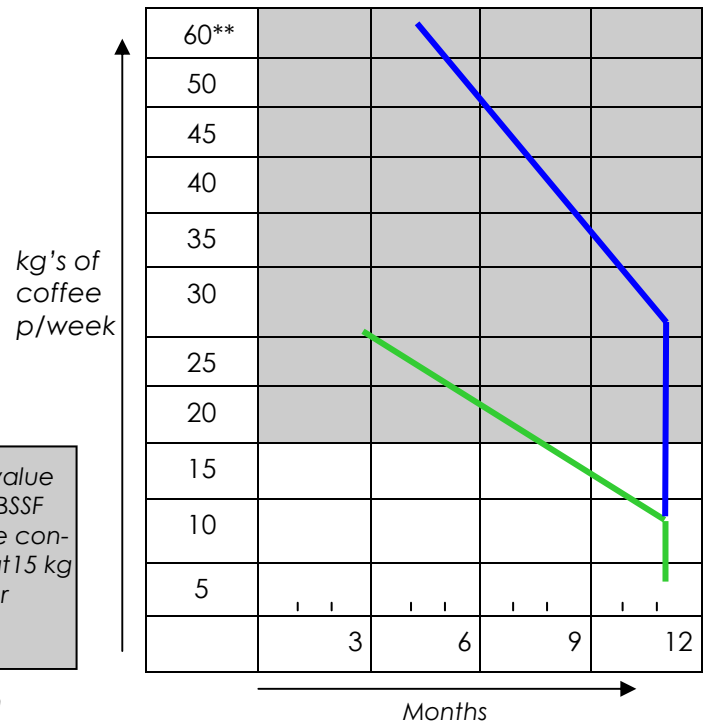
Scale inhibitors are typically a food grade polyphosphate based compound that are used as a sequestering agent—this means it suspends (prevents precipitation/oxidisation) calcium, magnesium and iron particles and prevents them from forming scale, hence protecting boilers, elements, valves & jets. The key is using the correct form - **3m** filters use carefully developed siliphos crystals that are designed to slowly dissolve over a 12 month period based on regular flow. It has been determined that a TH of 140 ppm (parts per million) or less is an optimal range for this type of scale inhibitor to perform.

More is not better - Some manufacturers use very large amounts of scale inhibitors in an effort to reduce scale build up. This approach doesn't work & can also create an apparent taste in the water which will compromise the espresso. **3m** filters have been scientifically tested to ensure a controlled, steady release for optimal scale reduction.

Best Coffee Machine Filters for Total Hardness under 140ppm



Cost vs value Benefit. BSSF should be considered at 15 kg and > per week



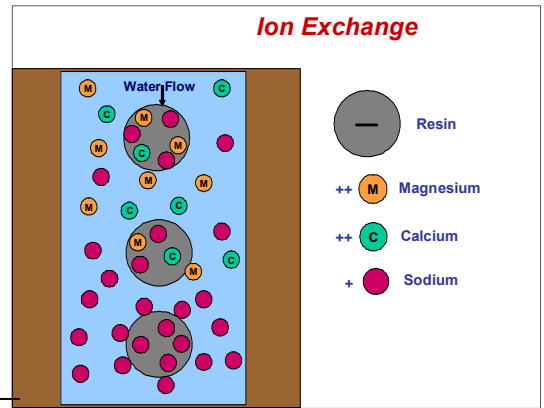
*These figures take into account the water source is town supply. The changeover periods are recommended as a guide and take into account filter media performance statistics, ambient temperature, average flow rates, sediment levels & chemical load — maximum filter life 12 months in any application.

** consult one of our representatives for cost effective strategies for turn-over greater than 60 kg per week

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The Second approach to Scale Reduction is the use of Water Softeners.

When would I use a water softener? For areas over 140 ppm of TH, it is best to use a filter than contains an 'Ion Exchange Resin'. The process of ion exchange involves swapping magnesium & calcium ions for sodium ions (see diagram). This reduces the TH down to a manageable level and maintains an **ideal PH** for serving espresso. Typically this technique costs more than traditional filters. The Scalgard Pro series filter has been developed for these applications and removes sediment, chemical & scale in one simple bayonet cartridge.



Ideal Coffee Machine Filter for Total Hardness over 140ppm



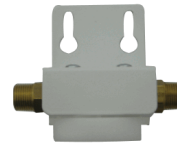
The Scalgard Pro series is the best 3 stage softening bayonet system on the market—it has been designed for the coffee industry to achieve **ideal PH** whilst providing scale protection in high TH areas. The SGP system offers a quick and simple bayonet change and far greater economies than traditional drop in resin filters.

INCOMING WATER HARDNESS	Kilos of coffee before change
140ppm	300kg
180ppm	230kg
240ppm	180kg
280ppm	150kg
320ppm	130 kg

41-P-124B



Jar of 50 test Strips



Part # BSSH
One head & bracket fits all 3 filters

How to measure my TH?

Most metro areas on the eastern seaboard range between 40 & 120 PPM—so a scale inhibitor triple action style filter is ideal and very cost effective. Most parts of SA, WA and regional Australia have TH in excess of 140ppm. You can also contact your local water board for indicative tests. Using a reliable test strip in the field can be a quick and simple way of testing TH. In conjunction with coffee usage (see relevant filter) you can determine the correct filter and changeover cycle.

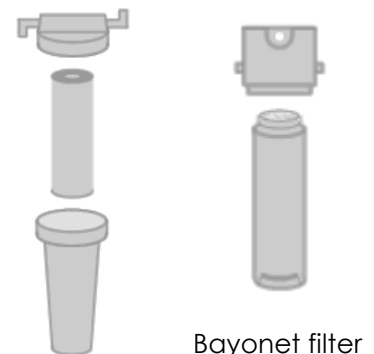
Frequently Asked Questions

Which works better for coffee machines, Carbon Block or Granular Activated Carbon (GAC)?

A tight packed GAC (machine filled not hand filled) gives equivalent filter performance to carbon block without the risk of blockage in high sediment situations - a carbon block filter will block up quicker due to its structure - and will require much closer monitoring to avoid reduced flow rate and prevent overworking coffee machine pumps.

Why use a bayonet filter over a 'drop in' style filter?

Up front, drop in filters are less expensive. However, drop in style cartridges generally offer a lower capacity compared with bayonet style filters. This capacity can vary anywhere from 2 - 5 times the difference in volume which can make them more expensive in the longer term. Bayonet filters require no ongoing maintenance of housings and o-rings and hence reduces the risks of leaks & the ongoing cost of wear and tear parts. Bayonet systems also make for a very quick and easy changeover, minimizing down time and water spills in busy cafes and reducing labor costs.



What filter can I use for my home (or non plumbed) machine?

Bombora have a range of UPGRADE options for home filters systems or manual fill machines—contact us on 1300 724 249 for more info.