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CONNECT

# THE IMPORTANCE OF DESCALING

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In many areas of Australia, water quality is a significant problem affecting the efficient operation of an espresso machine. Given that water constitutes 98% of an espresso it is not surprising the water quality issue, therefore, is an issue that must be addressed.

Water quality relates to these factors:

1. Particulate matter like sediment
2. Chemicals such as chlorine
3. Naturally occurring elements

All these factors may vary throughout the year, season to season, and as authorities source water from different areas, making it essential to provide treatment to address each factor. Let's look at each factor, the problem and the treatment.

## Particulate Matter like Sediment

These are very small particles suspended in the water, often giving water a cloudy appearance. Without treatment these particles block the very fine jets and shower screen holes, affecting machine performance and altering the coffee taste.

A filter of 5 micron or less on the water line to the machine will remove the particulate matter; however the filter must be changed regularly.

## Chemicals such as Chlorine

Chemicals in water can naturally occur or may be treatment chemicals, like chlorine. They affect the taste, appearance and odour of water and this will be transferred to the coffee. Filtration treatment can be highly effective in safely removing these chemicals provided the filter is the correct type and is regularly replaced.



## Naturally Occurring Elements that cause Hard Water Scale

Many areas of Australia have high levels of calcium carbonate and magnesium carbonate in the water which becomes a scale "crust" on surfaces when water is heated. As calcium and magnesium carbonate are soluble and do not affect the colour or appearance of water; they cannot be removed by filtration.

Scale occurs on the boiler, the heating element, and the pipe and jet network in an espresso machine, and affects machine performance eventually machine failure if not treated.

## Descaling or Decalcification

Once scale has formed in the boiler and pipe network it can only be removed by the use of special acidic descaling chemicals. Espresso machine cleaners are alkaline they will have no impact on scale removal.

There are a variety of descalers available in the market place. Many of these products are dangerous to use and can be very corrosive to some metals. Many domestic coffee machines use aluminium thermoblocks which are very susceptible to corrosive acids. Cafetto descalers have been thoroughly researched and tested to provide excellent scale removal while being safe to use without corrosion.

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## Methods of Scale Control

Water softening and reverse osmosis water treatment are two other methods of controlling scale.

**Water softeners** replace the calcium and magnesium carbonate with sodium carbonate which does not form a scale crust at boiling point. To remain effective, water softeners must be regenerated with salt regularly. It is the sodium chloride (common salt) that exchanges the sodium ions for the problem calcium and magnesium ions.

**Reverse osmosis (RO)** water treatment is a filtration technique that removes practically all particulate, chemicals and water scale elements from the water, making it almost pure water. Four problems exist for using this technique to solve the water hardness problem.

1. The equipment is expensive to install.
2. It is very wasteful using large amounts of water in the process of delivering the RO water.
3. Many coffee experts believe it imparts a 'flat' taste to espresso. Ideally, some level of water hardness is desirable for taste.
4. RO water has been found to be corrosive to equipment. The pure water has a tendency to take up elements and this causes corrosion of metals.

In summary, water is a vital ingredient for good coffee.

1. Always use an activated carbon water filter of 5 micron or less to remove particulate and chemicals from the water:
2. Don't be fooled into thinking either a normal water filter or espresso machine cleaner will prevent or remove hard water scale – they won't! Select a special water filter with built in scale inhibitor chemicals or install a water softener (as well as the activated carbon water filter) and keep the equipment maintained. The use of water hardness test kits will keep you alert to when the water softener needs re-generation with salt.
3. If hard water scale has built up speak to your specialty coffee or equipment supplier about the correct descaling product and method.

## Corrosion of Aluminium by Descalers

