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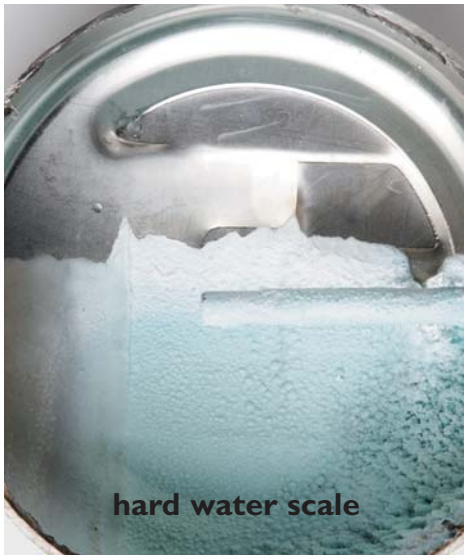
per il caffè perfetto

machine cleaning vs **descaling**



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 a number of factors:

1. Particulate matter like sediment
2. Chemicals such as chlorine
3. Naturally occurring elements that causes hard water scale build up in machines.

All these factors may vary throughout the year as water authorities source water from different areas and as water conditions and treatments may vary. Since water quality can be so variable across the country and across the seasons it is essential to provide some level of 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 suspending in the water and will often give water a cloudy appearance. Without treatment these particles may block the very fine jets and shower screen holes which will affect machine performance and will alter the taste of the coffee.

The solution is to have a filter of 5 micron or less on the water line to the machine. This filter will remove the particulate matter and must be changed regularly to ensure it does not get blocked.

Chemicals such as chlorine

Chemicals in the water supply range from naturally occurring to treatment chemicals, like chlorine. Many of these chemicals affect the taste, appearance and odour of water and this will be transferred to the coffee. Again, 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 causes hard water scale build up in machines

Water scale is a major problem in many areas of Australia. It is caused by the use of "hard water" or water with high levels of calcium carbonate and magnesium carbonate which forms a scale "crust" on surfaces when water is heated. The problem is that calcium and magnesium carbonate does not affect the colour or appearance of water and since it is totally soluble in water, is not removed by filtration.

When water is heated to boiling point the calcium and magnesium carbonate come out of solution and form a hard scale crust on the boiler, the heating element and the pipe and jet network in the espresso machine. This scale steadily builds up affecting machine performance eventually causing machine failure.

Water filtration does not remove calcium and magnesium carbonate from the water. Filters are available that contain imbedded chemicals that slowly release into the water to inhibit the formation of scale. Naturally, these filters need regular replacement to be an effective treatment.

Once scale has formed in the boiler and pipe network it can only be removed by the use of special acidic descaling chemicals. Since espresso machine cleaners are alkaline they will have no impact on scale removal. The correct use of espresso machine descaler will remove the scale buildings from the boiler, espresso delivery system and milk frothing system.

Two other treatments are available, water softening and reverse osmosis water treatment. 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. It is, then, 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 wont! To prevent hard water scale build up 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.

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