Danamark home

DANAMARK watercare

GUIDING WATERCARE INNOVATION

Water Softening

Water softening is the technology used to remove hardness from water. "Hardness" refers to mineral ions like calcium and magnesium that have the potential to form scale. Most of us are familiar with the white scale that deposits in water kettles over time. This occurs due to the deposition of these ions. Scale is quite unpleasant as it plugs piping over time, forms scum with soap and reduces soap's ability to lather. In regions where water is naturally "hard", softening becomes necessary.

Scale deposits a kettle due to hard water

A water softener is a unit that removes hardness from water by simply replacing the calcium and magnesium with sodium ions. Sodium ions are much more soluble, and hence they do not form scale. The softener holds a bed of small resins that contain sodium ions on its surface. When hard water is fed to it, sodium replaces calcium and magnesium until all the resins are exhausted. At this point sodium needs to be regenerated again.

Sodium chloride (table salt) is added to the softener at every regeneration cycle to form strong brine that reverses the ion exchange process and regenerates the resin bed with sodium again. Calcium and magnesium are expelled to the brine, which is flushed down the drain. The cycle is repeated automatically to remove hardness from another batch of hard water.

Water softening system

Because sodium is added to softened water, some people mistakenly think that it poses a health risk, especially for individuals on dietary restrictions. The fact is we take almost all of our mineral supply from food and the amount of sodium in water is too small to be considerable. Additionally, soft water is not more corrosive than hard water and it will not leach lead from piping.

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