Scale is solid material that builds up on the surfaces of water-using kitchen equipment such as coffee makers, ice makers, dishwashers and instant hot taps.

This build-up causes problems including diminished water quality and taste, clogged water lines and shorter life of appliances. Scale can cause equipment to use up to 25 percent more energy to heat or cool water properly.

The most common scale material is lime scale. There are measures that can be taken to help prevent or reduce scale formation and extend appliance life. The most effective remedies are special filtration systems and stabilizing chemicals called polyphosphates, which inhibit the growth of scale crystals.

Causes of Scale Build-up

Every water supply has some dissolved mineral content. Rainfall, for example, dissolves minerals when it falls to the ground. Limestone, the most common mineral, is dissolved by rain and produces "hard" water. The longer water is in contact with the ground, the more minerals are dissolved in it and the harder it gets.

Even fresh lakes and streams that may be quite "soft" at their origin can become hard from evaporation. In the home, scale build-up can affect the performance of coffee makers, ice makers and instant hot taps and produce film in shower stalls and clog shower heads. Scale forms directly on heat-transfer surfaces, such as the bottom and sides of a coffee pot, and even on the heating elements themselves. On heating elements, scale acts both as an insulator and heat mirror, requiring more energy to heat the water and causing the heating elements to burn out more quickly. Scale also can clog the openings and pipes in instant hot taps.

In addition to surface growth, scale also forms around tiny particles floating in water. They act as "nuclei" to attract scale. Removal of these specks of dust can prevent or delay a lot of scale formation.

Refrigerators with automatic ice makers and water through the door also are affected. As water becomes ice, the minerals present in the water become concentrated, and scale begins to form on the cooling element. This results in ice maker breakdowns. Scale can also form on the water-dispensing unit in the door.

The Power of Polyphosphates

Fortunately, scale growth can be reduced by adding small amounts of polyphosphates to water. Polyphosphates are completely safe and non-toxic, and many occur naturally in foods or are added during processing. They are also used in the treatment of drinking water to combat corrosion and scaling. At high concentrations, polyphosphates combine with minerals but stay dissolved to produce "soft" water.

Steps for Eliminating Scale

Most scale-producing situations can be resolved more effectively with a point-of-use water treatment system that couples fine filtration and a polyphosphate feed.