Water Treatment – Scale Inhibition.

TECHNICAL BULLETIN

OAS0043A

Most water supplies contain various minerals that enter the water supply as the water source passes through rock formations. Certain minerals such as metal carbonates, chlorides and sulphates result in the condition known as “hardness” of water.

When water temperature is raised, certain minerals (such as dissolved calcium carbonate and magnesium carbonate) are precipitated out of solution. These minerals are then deposited onto the water pipes, hot tanks etc through which the water flows. Over time these deposits build up and can restrict the flow of water. These deposits are known as scale.

To reduce the build-up of scale (which is a particular problem with hot & cold water coolers, coffee machines etc), OASIS uses a material called **polyphosphate** which is added to the filter cartridge in the form of slow-dissolving glass beads.

Polyphosphate type chemicals react with soluble metals (such as calcium and magnesium) by sequestering the metals to maintain their solubility in water. Sequestering is a complex chemical process – basically it means that the metal ions are not able to precipitate out of solution and form scale.

It should be noted that the use of a sequestering agent (such as polyphosphate) does not **remove** hardness from the water. If you measure the calcium and magnesium levels of water before and after treatment there will be no difference in the results. However, the polyphosphate dissolves into the water and coats the calcium and magnesium in it, making it impossible for these agents to precipitate out of the water and create the problems associated with hard water.

A dosage of 2 - 4 mg/L of polyphosphate is all that is required to modify the crystal growth of calcium carbonate. By modifying the crystalline structure, these compounds will not precipitate into scale and actually stay in solution. This crystal growth modification function prevents the formation of mineral scale within water distribution systems. Polyphosphates will also dissolve already deposited mineral scale deposits within the system thereby increasing the carrying capacity of the water system.

The grade of polyphosphate used in OASIS water filters is certified as meeting all of the following international standards:

- ANSI/NSF Standard 42: Drinking Water Treatment Units – Aesthetic Effects
- ANSI/NSF Standard 60: Drinking Water Treatment Chemicals – Health Effects
- EN 1208: 2005 Chemicals used for treatment of water intended for human consumption