

## Impurities In Water

When rain water passes through the soil it dissolves many salts. Salts that contribute to hardness are salts of the cations (metals) calcium, magnesium and iron. When water has dissolved calcium and magnesium it is called HARD WATER. Iron salts also present problems of their own. Iron can be removed from the water using a special iron filter. The cations that cause HARD WATER can be removed by a water softener.

## Hard Water And Water Softeners:

When HARD WATER is heated, the dissolved calcium and magnesium salts form a scale in the heating container. This could be in a tea or coffee pot, in a pot of peas or soup, in a hot water pipe line or in your hot water service. When hard water is used for bathing or washing clothes, the salts form a scum with the soap that coats the skin and hair leaving it dull and drab. It also leaves scum deposits on washed clothes. This all results in a high soap bill. The solution to all these problems is to SOFTEN the water.

## What Is A Water Softener?

A WATER SOFTENER basically consists of a tank, which contains a material called softener resin. The HARD WATER enters the softener and passes through the resin bed where all of the hardness salts are changed to sodium salts. The water then leaves the tank SOFT.

Softeners are rated by the amount of hardness salts they will remove before requiring to be re-activated. When this capacity is reached, the hardness cations in the resin bed are washed down the drain, using a solution of common salt in the water called BRINE. This process of reactivating the resin is called REGENERATION. The cost of salt in this process is relatively small, cents per REGENERATION.

## Taste, Colour, Odour and Iron:

A Water Softener will not remove taste, colour or odour but will remove small quantities of iron. All of these impurities are best removed with the appropriate filter.

## Will Iron Affect The Softener's Operation?

Yes, a softener being used to remove small amounts of iron must be regenerated more frequently. The iron may affect the hardness removal capacity of the Softener or build up in the tank and reduce the water flow rate through the unit. If the water chemistry is suitable, a different resin may remove iron, soften the water and correct pH all in the one process.

## What Size Water Softener Do You Need?

The size of a Water Softener depends on the number of people in the household and on how HARD the water is. The hardness is measured in milligrams per litre (mg/L). This is the weight of dissolved hardness salts in one litre of the water. A supply with above 140 mg/L is considered HARD.

Assume a household of 4 with a supply of 140 mg/L HARDNESS: The average weekly demand for water per person is 800 litres per week.

Therefore, a softener that will regenerate once per week should have a number of litres Per person per week (800) X number of people in the household (4) X hardness of water in mg/L (140) = 448 grams per week.

## How Long Will The Resin Last?

The resin remains active indefinitely when used according to specifications. The capacity of the resin will be exhausted after use, but it is re-activated during Regeneration. There are softeners in use that have had the same resin for over ten years.

## Types of Controls For A Water Softener

There are three types of controls a softener can have, manual, semi-automatic and fully automatic. All of the various functions of backwashing, regeneration and rinsing the salt out of the resin bed have to be performed by operation of control valves. This may be a single control valve or a multiple valve manifold. In the manually operated system, someone has to be present to operate the valves. In a semi-automatic, a timer has to be set periodically which then positions the valves but an automatic valve performs all of the operations without the aid or presence of anybody. In all three units someone has to periodically place the salt into the holding tank.

## SOFT WATER - ITS ADVANTAGES TO YOU

### Personal Grooming:

Users of soft water use far less soap, their hair shines, there is less skin irritation, their bath feels silky and is nice and sudsy. There are no ugly rings left in the bathtub to be scrubbed away. Shaving is easier and more comfortable. Soft water can reduce the cost of cleaning supplies up to 30%, since less are required.

### Laundering:

Soft water eliminates the greying of clothes and may lengthen the life of the fabric. The saving on soap and detergents can be quite substantial over a year.

### Cooking And Dishwashing:

Glasses, silver, and china do not spot and streak. Food's like green vegetables cook and taste better and do not shrivel.

### Plumbing And Appliances Last Longer And Function Better:

The minerals in HARD water leaves a deposit inside water pipes and heaters. SOFT water eliminates these problems. Plumbing last's longer and fewer service calls are needed. Washing machines, dishwashers, water heaters and steam irons, are some home appliances that function better on SOFT water.