

Demystifying Water Softening

Water is extremely important for our bodies and our care—in fact, the average American uses 90 gallons of water per day. Yet it's amazing how little we know about the water we drink and use.

When I discuss water quality issues, the first words I usually hear are: "I have a water softener." Yet the softening process is still a mystery to most people. So I'd like to demystify it a bit.

What is "hard water?"

Water labeled hard or soft depends solely on the presence of two soluble minerals: calcium and magnesium. Water hardness is measured by the amount of calcium carbonate in the water. A measurement of one grain per gallon means that water is soft. A measurement of 3.5 to 7 is modestly hard. A measurement of more than 10 indicates that the water is very hard. Here in Barrington, we have extremely hard water (due to the limestone in our area), usually averaging over 25 grains of calcium carbonate per gallon.

If you're trying to decide whether to invest in a water softener, your first step should be to have your water tested by an independent laboratory. The lab's report will provide a complete makeup of your water, including its hardness. According to the World Health Association, dissolved solids (such as calcium) that cause hard water are beneficial to humans, plants, and animals, yet hard water is often distasteful and creates problems for homeowners, because the calcium and magnesium build up in plumbing pipes, hot water heaters, and appliances such as dishwashers. So, there is a tradeoff involved in whether or not to treat your water.

A process called ion exchange can soften water: calcium and magnesium, the ions that cause water hardness, are removed by filtering water through a synthetic material called resin or zeolite. As water flows through the unit, the resin exchanges its sodium ions for the posi-

tively charged calcium and magnesium ions. When the resin has absorbed its capacity in hardness materials, the water softener regenerates its ion exchange capacity by backwashing the resin with a brine solution (salt), flushing out the magnesium and calcium ions.

The effects of water softening

It's important to understand that water softening does not purify, cleanse, or condition your water—it addresses hard water issues only, removing minerals that occur naturally in the water. Softening does not remove contaminants such as chlorine, chloramines, trihalomethanes, or volatile organic compounds, which can often cause eye, nose, or stomach irritation.

In addition, water softening raises the sodium level of water. The average increase is eight milligrams of sodium per quart for every grain per gallon of minerals removed. In Barrington, our water is about 25 grains of hardness, resulting in a level of sodium of 175 milligrams per quart of water. As a comparison, one tablespoon of catsup contains 200 milligrams of salt, while a hotdog contains 610 milligrams. This added salt in your water could be a health risk for people on low-sodium diets. If you suffer from hypertension, consult your doctor about proper water for drinking.

Water softeners: What to remember

The most important feature to look for in a water softener is efficiency. The goal is to achieve a unit with better valving, efficient metering, and resin that has a cross link rating of at least a number 10. With a high efficiency softener, you will reduce the amount of salt that you will need to load into the brine tank.

Water flow rates for your whole house can be affected by a water softener. Even if you have a ¾-inch water supply line into your home from your well or the street, you should install a water softener with a 1-inch valve head to maximize flow. A larger line can provide more gallons-per-minute and a higher flow of water.



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Maintenance of water softeners is important, as the resin inside can develop bacteria, fungus, or become clogged. You should have your softener checked annually by a professional water conditioning company. (The Water Quality Association maintains a database of experienced professionals; go to www.wqa.com.)

It's important to remember that water softeners are only one part of water conditioning; I believe that a water softener should also be coupled with a whole-house water filter to significantly improve the quality—and health benefits—of the water in your home. 