



## Technical Bulletin

### Water Softeners

Models Affected: All

#### Pros of Owning a Softener:

A water softener is the most economical way of effectively dealing with very hard water. In hard-water situations, softeners will pay for themselves in several ways. In a gas water heater, a softener will prevent the buildup of scale, which can increase operating costs by as much as 29 percent. Once scale has built up, a higher temperature setting is required to keep the water at the temperature you want. Scale also can damage electric elements to short out regularly. Scale buildup can clog plumbing pipes and can cause bathroom toilets to flush sluggishly because of scale on the rim openings. Softeners also prevent calcium deposits, which can ruin the appearance of fixtures.

These are the practical reasons for buying a softener, but there are esthetic ones, too. Shampoos and soaps don't lather or clean as well with hard water. Therefore, hard water requires the use of more soap, fabric softeners and conditioners, which can add up to an estimated 20 percent of each dollar you spend at the supermarket. At that rate, it wouldn't take long to offset the \$20-a-month cost required to rent a softener and keep it in salt. Finally, you will spend less time scrubbing spots from fixtures, shower doors and tiles.

#### The Cons of Owning a Softener:

The reasons mentioned above are good arguments if you have very hard water. If your water tests at only 7- to 12- grains hardness, then softeners begin to appear to be a foolish investment; they are expensive pieces of machinery requiring maintenance, lots of salt and several hundred extra gallons of water per month.

Another reason not to install a softener might be personal preference. Some people simply do not like the feel of softened water. They have difficulty going from squeaky clean to slippery clean.

Softened water for drinking is another concern, especially for people on low-sodium diets, although the issue is a controversial one. Softened water is said to be low in chloride, and some tests suggest it is not the sodium that threatens health, but the chloride side of the sodium-chloride compound. A spokesperson for the American Heart Association reported that test results have been too conflicting to take an official stand in this matter.

One way around the problem is to isolate the hard-water lines connecting to the cold sides of the kitchen and bath faucets, since it is the cold water being used for cooking and drinking. If your home is not plumbed in this way, retrofit piping can be difficult and expensive to install. As a result, many softeners are connected to existing systems.



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A much greater health concern than sodium in the water is the presence of metals stripped from piping. Soft water is naturally more corrosive than hard water. The Environmental Protection Agency (EPA) noted this fact in a recent ruling banning lead-based solders in residential plumbing systems. EPA tests showed that soft water is likely to leach lead from lead pipes and lead-soldered joints, thus posing a threat of low-level lead poisoning.

### **Study by the Gas Institute**

Another study, conducted by the Gas Institute, found that softened water accelerates the depletion of anode rods in water heaters. Anode rods ordinarily keep heater tanks from rusting for five years. When the life of an anode is shortened, the life of the heater is as well.

Finally, there is the problem of brine disposal. Some sanitation officials are worried about the effects of salt on sewage treatment. For instance, certain counties in California and Michigan, plus the entire state of Connecticut, have banned the purge of softener brine into public sewers.

Softener owners in these areas must contract to have their brine collected periodically. The problem is that affordable collection is likely to be too infrequent. With softener resin becoming depleted every three to six days, a collection every two weeks, for example, would leave softener effectiveness severely impaired at least one week out of the two.

### **Choosing a Softener**

If you decide to buy a softener, do lots of comparison shopping, and do not overlook the idea of buying a used softener. Softeners last 15 years on average, and used models offer up to 50 percent in savings. Many used models come with warranties.

The two types of softeners prevailing on the market today are those with demand regulating valves and those having nondemand valves. Nondemand water softeners are controlled by timers and are naturally less efficient because they automatically purge the resin tank with brine at a set time, whether you have processed enough water to warrant a purge or not.

Demand softeners feature more efficient control valves that use flow meters, resistance sensors or hardness sensing probes within the resin. Flow meters are more efficient than timers, however models with sensing probes are best.

Sensing probes are able to detect an ion or resistance imbalance and trigger recharging based on actual need. These softeners accommodate the daily fluctuations in water hardness and volume. If you live in a regulated area, demandactivated models may be required in order to meet efficiency standards.



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Nondemand models are less expensive and usually start at \$500. Demand models are likely to exceed \$800 and may cost as much as \$1,600. Check the efficiency rating of each model. If you feel you would like a softener, but are not sure, consider a rental. Most rental plans offer consumers a buy-out option after six months.

### Sizing the Softener

Other factors influencing price are warranty coverage and unit size. Sizing is very important and should be estimated with care. To make an estimate, start by assigning 75 gallons of daily water use to each member of your family and adding the total for one day. Then multiply this figure by the grain hardness of your water.

Finally, multiply the result by three, which gives you the minimum capacity needed. Most softeners can process 20,000 to 30,000 grains of hardness between purges. You will need to size your softener so that it can handle at least a three-day supply of water.

If you have any questions or concerns related to water softeners, contact our  
Product Service & Support Department immediately at:

**1-800-999-9515**