

Soften Water Without Wasting It: Water-Efficient Home Water Softeners



Many homes in the United States are located in regions with hard water. While hard water is not a health concern, it can lead to build-up on plumbing and appliances, damage your home's plumbing system, make it difficult to lather soap, and leave residue on skin, clothes, and dishes. Water softeners are an effective way to reduce water hardness, but these appliances can use a significant amount of water as part of the softening process.

Water: The Hard Facts

In certain geographic areas, water picks up minerals as it flows through rocks, soil, and riverbeds. Hard water is most common in the Southwest and Midwest United States, as well as other areas that rely primarily on groundwater. Water softeners reduce hardness, scale formation, and other negative impacts of hard water.



Water Softener Technology and Water Use

Nearly all water softeners rely on ion exchange to remove hardness. Cation exchange is a chemical process that substitutes sodium ions for the calcium and magnesium ions that cause hardness, softening water in the process. These systems require periodic regeneration to purge the hardness ions and replenish the sodium or potassium ion supply, which can consume a significant amount of water in the process.

A typical softener uses 20 to 70 gallons of water per regeneration cycle, although some larger systems can use up to 200 gallons. The total amount of water used for softening is dependent on several factors, such as the rated treatment capacity of the softener and the frequency of regeneration.

Selecting an Efficient Water Softener

If water softening is allowed where you live and necessary for your home, some factors to consider include:

- Only install a water softener if your area has substantial hardness (e.g., above 180 mg/L or 10 grains per gallon) or a local water authority or health and safety code recommends them.
- Select the right sized system. The hardness of your water and typical household water use will determine the size you need.
- Choose a softener with demand-initiated regeneration, which is more efficient than one that regenerates on a set schedule.
- Select a product certified to meet NSF/ANSI 44 to assure it has been tested in a laboratory and meets safety and performance requirements.
- Look for models that use 4 gallons of water or less per 1,000 grains of hardness removed and have greater than 3,350 grains of total hardness exchange per pound of salt to ensure efficiency.

To help consumers select and maintain an efficient water softener, WaterSense has developed *Soften Water Without Wasting It: A Guide to Selecting and Maintaining a Water-Efficient Water Softener*. To access the guide, visit www.epa.gov/watersense/cation-exchange-water-softeners.