### What Are the Water Softener Systems

The most complete and common home solution for dealing with [hard water](https://www.thespruce.com/what-is-hard-water-2718699)—water with a high level of dissolved minerals—is a whole-house water softener. There are various types of [water softener systems](https://www.thespruce.com/best-water-softeners-4158685) to choose from. To help you make a decision, take a look at this overview of the different types of water softener systems that are readily available.

Ion-Exchange Systems

Ion exchange is a well-known type of water softening system that has been available for quite a long time. Ion exchange replaces the calcium and magnesium in water with salt, potassium or hydrogen. Of these three options, salt is perhaps the best-known water softening regeneration solution.

An ion-exchange water softener consists of a resin tank and a brine tank. As water passes through the resin bed, the hardness mineral ions in the water are exchanged for sodium (or potassium) ions. When the resin is saturated with hardness minerals, the system goes through a regeneration cycle that flushes brine solution through the resin bed, exchanging the hardness mineral ions with sodium ions. The hardness minerals are then washed down the drain, leaving the resin ready to go through the process again.

After the water softener treats the water, the water enters the household water supply as soft water. Softened water will contain either sodium or potassium, depending on which is used in the softening process. Sodium is more readily available and less expensive than potassium, but there are concerns about the additional sodium intake, particularly for anyone on a low-sodium diet. Another concern is the environmental effects of releasing large amounts of salt into the wastewater supply during the regeneration cycle. The use of potassium is considered to be a more environmentally friendly option, and it removes the health concerns associated with salt-based systems.

An additional consideration when deciding between ion exchange water softener systems is whether a single-tank or a multi-tank system is more appropriate. A drawback of a single-tank system is that here is possible downtime during the regeneration cycle. Most systems are set to regenerate overnight when the need for softened water is likely to be lower, but if water is used during the regeneration cycle, it will not be softened. If your family's lifestyle is such that you need to have soft water available any time of day, use a multi-tank system. These systems can switch from one [tank](https://www.thespruce.com/water-heater-expansion-tank-information-2719063) to the other as necessary, allowing the depleted tank to regenerate while the other is in use.

Salt-Free Systems

Salt-free (descaling) softeners don’t use chemicals or remove minerals to soften water, but instead use nanotechnology to change the structure of the molecules in the water from scale building to non-scale building. The water goes through a filtering media, and the molecules are restructured as they flow through the tank. The new structure of the molecules affects the existing mineral buildup in pipes and fixtures as the water flows through, effectively de-scaling the [plumbing system](https://www.thespruce.com/plumbing-maintenance-checklist-2718687).

Salt-free water softener systems address some of the major drawbacks of the ion-exchange system. There is no chemical use, so you aren’t introducing chemicals into the drinking water or releasing them into the wastewater system. There is less regular maintenance since they don’t require purchasing or adding salt on a regular basis. The system doesn’t waste water since there is no regeneration cycle. The water doesn’t feel slippery like salt softened water does. And these systems usually don’t require electricity.