Water Hardness

By Dr. Larry Sunn and Dr. Steven Grainger

A no-cost benefit of harvesting rain is that the water is naturally soft. Hardness is, however, present in water sourced from groundwater. The water is high in dissolved minerals, both calcium and magnesium. As water percolates into the earth, it moves through soil and rock. It dissolves small amounts of these naturally occurring minerals as it descends and carries them into the groundwater supply. We have lots of it in some parts of the Texas hill country, particularly in deeper water pumped out of the Trinity aquifer.

Hard water interferes with almost every cleaning task, from doing the laundry to washing dishes to taking a shower. Clothes can look dingy and feel rough and scratchy. Dishes and glasses get spotted and a film may build up on shower nozzles, doors, bathtubs, sinks, and faucets. Washing your hair in hard water may leave it feeling sticky and dull. Hard water can also cause a residue to build-up in pipes that can lower water flow throughout the house.

Hardness, however, does not pose a health risk and is not regulated by Texas or federal agencies. In fact, calcium and magnesium in your drinking water can help ensure you get your average daily requirements for these minerals in your diet. But hard water can be a nuisance due to the mineral buildup on plumbing fixtures and poor soap and detergent performance. It often causes aesthetic problems, such as an alkali taste to the water that makes coffee taste bitter; a build-up of deposits on dishes, utensils, and laundry basins; difficulty in getting soap and detergent to foam; and lowered lifespan of dishwashers and water heaters.

Most water softener installers will test your water's hardness without charge. Obviously, if your water is hard, they'd like to sell you water softener services. But you can also contact a state-certified laboratory (there's a fee). Or you can purchase an inexpensive home test kit from a local hardware or home supply store for about $10.

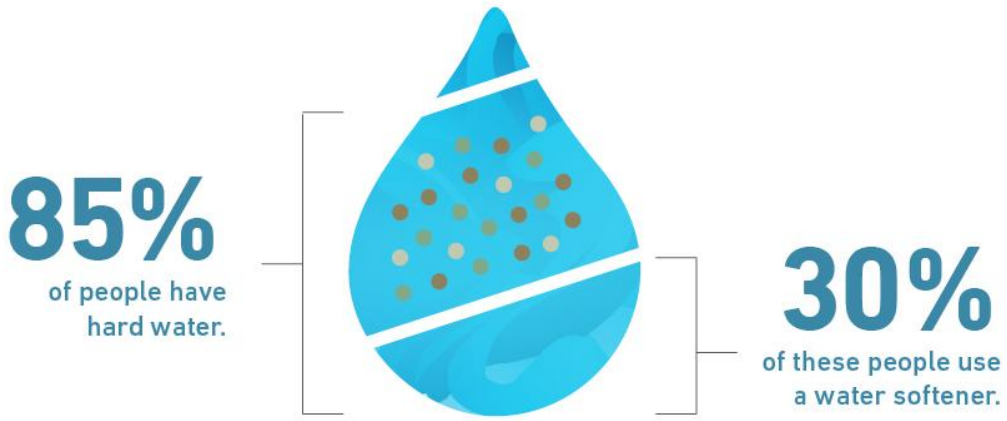
The following classifications are used to measure hardness in water: soft 0 - 17 parts per million (ppm); slightly hard 17 – 60 ppm; moderately hard 60 - 120 ppm; hard 120 - 180 ppm; and very hard 180 or more ppm. Here in western Bulverde, my hardness is 8 and my neighbor's is 12. On the other hand, folks living north of Canyon Lake often have hard water at 100 or more.

You treat hard water by adding a water softener to treat all of your household water. Water softener systems deal with hard water in various ways, but the most common way is by exchanging mineral ions with sodium ions. That creates a softer feel to water and prevents scale buildup while still retaining the healthful minerals. In simple terms, water softeners exchange the mineral ions of calcium and magnesium with either sodium or potassium. By reducing the mineral content this way, the system prevents scaling on your shower walls, and the exchanged ions are then flushed down your drain. The salty flushed out water that comes out of a softener system is not good for watering plants or landscape because the salt content is too high.

About now you are wondering, "How much water will my water softener use when it regenerates?" This is often asked and does not have a simple answer because it depends heavily on how hard the water is, how many "grains" the unit is, how often it is set to regenerate, and how much water your family uses. Basically, at 60 psi water pressure, the regeneration cycle takes about half an hour, and an 18,000-grain system uses about 43 gallons per flush cycle, whereas a 48,000 "grain" system uses about 100 gallons.

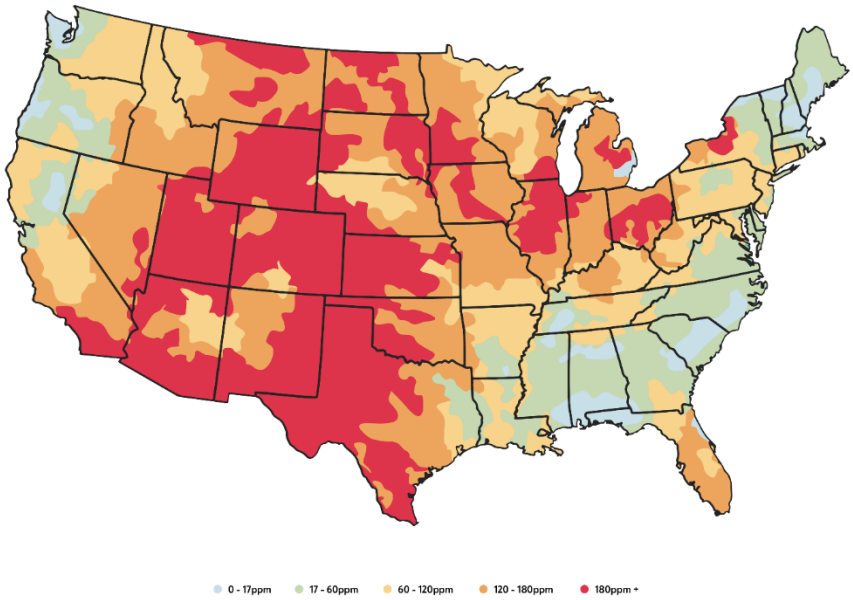
Notes to editor:

Possible graphics, with sources:



Source: https://libertylake.org/water-hardness/

Map of hard water across the US



Source: https://www.baristahustle.com/lesson/twc-5-01-pros-and-cons/