

**The  
Truth  
About  
Water  
Softeners**

**A Guide to Not Getting Ripped Off**



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# About this guide

Shall we be blunt? The purpose of this guide is to help you avoid being ripped off when you buy a water softener.

This guide covers why hard water matters, how to check your home for hard water, and how water softeners soften water.

**Perhaps the most useful advice begins on page 13, “Choosing a water softener and a water softener dealer.” There you will find valuable advice in the form of *dos*, *don’ts*, *when to be skeptical*, and *when to show a dealer the door*.**

Steve Cuno has written for *Skeptical Inquirer* and other science-oriented publications. He is known for exposing and criticizing unethical marketing practices and sticking up for ethical ones.

# What makes hard water “hard”

On its way to your home, water has a nasty habit of picking up magnesium, calcium, manganite, and other metal particles. If it picks up enough of them, as 85 percent of the nation’s water does,<sup>1</sup> it becomes “hard.”

Water is defined as “hard” when it contains 121 or more milligrams<sup>2</sup> of those particles per gallon.<sup>3</sup> If 121 milligrams doesn’t sound like much, consider that the average family of four goes through 146,000 gallons of water every year.<sup>4</sup>

**Every three years, that’s over a half-ton of metal particles dragged through plumbing, with much of it staying behind, building up, and causing extensive (and expensive) damage.**

Although hard water can be safe to drink, it’s murder on water heaters, other appliances, and plumbing. That’s because those metal particles love to gather into rock-hard piles of gunk in the worst possible places, where sooner or later they’ll cost you money. (See page 7, [Why the costliest hard water damage happens where you can’t see it.](#))

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1 [http://articles.chicagotribune.com/2001-05-04/business/0105040066\\_1\\_softening-water-heater-hard-water](http://articles.chicagotribune.com/2001-05-04/business/0105040066_1_softening-water-heater-hard-water)

2 The industry usually goes by *grains*, with one grain equal to 64.8 milligrams.

3 <http://extension.usu.edu/waterquality/htm/whats-in-your-water/hardwater>

4 <http://www3.epa.gov/watersense/pubs/indoor.html>

Clearly, it pays big to remove hard water particles from your household water. The removal process is called “softening” and, of course, the result is “soft water.”

Given the obvious benefits of soft water, why don't more people own water softeners? Perhaps more people would if they could see inside pipes, water heaters, washing machines, dishwashers, and other appliances where hard water particles are piling up and wreaking gradual, costly havoc.

# Why the costliest hard water damage happens where you can't see it

If you have hard water, then calcium, magnesium, and other metal particles are building up right where you can't see them. (To learn where you *can* see them, see the next section, “Easy ways to find out if you have hard water.”)

**Spoiler alert: Chances are you *do* have hard water. 85 percent of U.S. homes do. The chances are highest if you live in an Intermountain or Southwestern state, where the nation's hardest water is found.<sup>5</sup>**

Hard water deposits build up inside pipes, where they restrict flow and may cause water pressure to drop. Minerals build up inside and shorten the life of washing machines, dishwashers, and other appliances, and leave an ugly film on dishes and glassware—and on skin and hair.

**One place where hard water deposits do some of their costliest damage is *inside the water heater tank*.**

Water heater tanks are sitting ducks for hard water deposits because *heat makes hard water particles*

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<sup>5</sup> <http://water.usgs.gov/owq/hardness-alkalinity.html>

*separate from the water and form into clumps.* Every time you increase your water heater setting by 20 degrees, the number of particles that clump together *doubles.*<sup>6</sup> The clumps sink to the bottom of the tank or attach to its walls, where they remain and pile up.

When that happens, a water heater must heat the buildup of clumps before it can heat the water. This wastes huge amounts of energy. As the buildup increases, you will spend more and more to heat less and less water. But because the increase is gradual, it's easy not to notice, or to falsely chalk up the increase to inflation.

**Besides increasing energy costs, the buildup eats away at the water heater from the inside out, *reducing its life by years.***

Purchasing and installing replacement water heaters isn't cheap. That alone is ample reason to own a water softener. Unless, that is, you enjoy paying too much to heat your water ... and replacing your water heater and other appliances years earlier than you should have to.

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<sup>6</sup> D. D. Paul, V.V. Gadkari, D.P. Evers, M.E. Goshe, and D.A. Thornton: Battelle Memorial Institute Final Report Study on Benefits of Removal of Water Hardness (calcium and magnesium ions) from a Water Supply, 2013



# Easy ways to tell if you have hard water

The next time you take a shower, *look closely at the shower head.*

If you see water spurting out at weird angles from some of the holes, and no water at all coming out of others, *you are looking at a sign of hard water.* That's because as water evaporates, it leaves behind calcium, magnesium, and other metal particles that build up and clog the holes.

Next, check the shower walls and the tub. When soap and hard water particles meet, they bind together, sticking to shower walls and forming bathtub rings. Together they are much stronger than soap alone, which is why that stuff is so hard to scrub away.<sup>7</sup>

Before leaving the bathroom, look inside the toilet bowl. The concrete-like white ring that you just about have to chisel off is made of coagulated hard water particles.

Now have a look at the dishwasher. If you see a dull, whitish, translucent film and spots on flatware, glasses, and dishes, you're probably looking at a buildup of hard water particles and soap residue.

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<sup>7</sup> <http://www.popularmechanics.com/home/interior-projects/how-to/a150/1275126/>

Do you have dry or itchy skin? Many people report noticeable improvement after switching to soft water. LIVESTRONG.com<sup>8</sup> and other websites suggest that hard water residue on the skin may trap bacteria and block pores.<sup>9</sup>

You may also notice that soap doesn't foam as much as it should, and that white fabrics come out of the washer looking gray and dingy. These, too, are signs of hard water.

Besides making your own observations, it's a good idea to call your local water utility. They routinely test water hardness, and should be able to tell you the average water hardness where you live.

To narrow it down from your area to your home, you can pick up a water testing kit at a home improvement store or order one online. You can also ask a water softener dealer to test your water. It's probably safe to trust the results. If you live in a hard water area, salespeople have little need to exaggerate.

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8 <http://www.livestrong.com/article/294004-skin-care-water-softeners/>

9 These frequent anecdotal claims point to a need for a carefully controlled study.

# How a water softener softens water

**F**or those who are into physics, suffice it to say that water softeners remove hard water particles by means of an *ion exchange*.

For those not into physics, here's the plain English version. Inside every water softener tank are tiny beads made from specially treated resins. When the resin beads and hard water meet, a trade takes place.

The water trades its calcium and magnesium particles for a small amount of salt from the resin beads. Unlike hard water particles, the tiny amount of salt in soft water is friendly to your water heater, washing machine, dishwasher, other appliances, plumbing, showerheads, shower walls, dishes, laundry, and skin and hair. It causes no problems because it stays dissolved and doesn't pile up.

Once the resin beads have given up all of their salt and collected all of the hard water particles they can hold, the water softener flushes them clean. That's why you need to add salt from time to time to your water softener.

Unless you need to limit your salt intake or you live in an area with an extremely hard water supply, soft

water is generally safe to drink. Chances are your taste buds won't even notice the low salt content.<sup>10</sup>

Some people like to install a water purifier for their drinking water. When you choose a purifier, be sure you choose a good one. Cheap purifiers, like those that some dealers “give away free” with the purchase of a water softener, have a habit of leaking within a few years and causing a good deal of damage. Moreover, replacing filters and parts on cheap purifiers can end up costing more than investing in a quality unit from the outset.

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<sup>10</sup> [http://www.csicop.org/si/show/magnetic\\_water\\_and\\_fuel\\_treatment\\_myth\\_magic\\_or\\_mainstream\\_science/](http://www.csicop.org/si/show/magnetic_water_and_fuel_treatment_myth_magic_or_mainstream_science/)

# Choosing a water softener and a water softener dealer

If a water softener salesperson tells you that you have hard water, it's probably true, especially if you live in the Intermountain or Southwestern United States.

If the salesperson tells you that a water softener is a good idea, that's probably true, too. It doesn't take long for hard water deposits to cause expensive damage to water heaters, appliances, pipes, and more. (See page 7, [Why the costliest hard water damage happens where you can't see it.](#))

**Now comes the difficult part. How do you evaluate a dealer? How do you evaluate the dealer's recommendations? Are you buying good equipment? Is the price fair? Is your dealer to be trusted?**

There are plenty of water softener sellers who are experts, trustworthy, and have your best interest at heart. Unfortunately, experience has shown that there are plenty of the other kind, too.

The following sections are intended to help prepare you to make an informed decision when you're ready to buy a water softener. For convenience, it is organized into *dos*, *don'ts*, *when to be skeptical*, and, if necessary, *when to show a dealer the door*.

## *Choosing a water softener and a water softener dealer:*

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### *DOs*

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► **DO insist on a written warranty.**

Be sure the warranty spells out what is and is not covered. Should the equipment, installation, or service fall short, the warranty should clearly state how and by when the company will make good. Do not settle for verbal assurances. A good water softener company is eager to be accountable for their products and their work. (Note: Not all warranties are what they seem. Be sure to see page 19, [BE SKEPTICAL of warranty games.](#))

► **DO insist on WQA or NSF certified equipment.**

The [Water Quality Association \(WQA\)](#) and the [National Sanitation Foundation \(NSF\)](#) are independent, not-for-profit organizations that conduct controlled tests of water softeners and products. Their certification provides an assurance of equipment that meets or exceeds exacting standards. Ask your dealer to show

you written proof of certifications.

▶ **DO your homework.**

Consult reviews in publications like *Consumer's Digest* and *Consumer Reports*. Online, search topics like “water softener reviews,” “water softener complaints,” and “best water softeners.” Include independent websites and reviews in your search, since information posted by dealers may be biased.

▶ **DO check out the dealer.**

Be sure the dealer is licensed, bonded, and insured. Check online reviews, ask for testimonials, preferably with real names, and see if the Better Business Bureau has received complaints about them.

▶ **DO buy from someone who knows water softeners.**

No two households use water alike, which means you should seek an expert to advise you in selecting a water softening system and to provide service over time. Plumbers and other contractors who sell water softeners among all of their other products and services are not likely to have developed that expertise.

▶ **DO check to see if the dealer has undergone suspicious name changes.**

Disreputable dealers have been known to weasel out of honoring warranties simply by changing their name. Some have done so more than once.

## ► **DO** ask questions.

A competent, ethical dealer welcomes opportunities to answer questions, be of help, and share expertise. Here is a checklist of questions that may help you to know if you're dealing with a pro or a hack:

- Is the dealer licensed, bonded, and insured? Accredited by the Better Business Bureau?
- Is the product **WQA** or **NSF** certified? What kinds of reviews has the product received in respected publications?
- How does the dealer determine what type and capacity of system to recommend?
- What can they tell you about the quality of the brand or brands they sell? What do they mean by "quality," and how do they measure it? If you're replacing a water softener, how is the new one different and better?
- How does their system determine when to recharge? (See page 22, **BE SKEPTICAL of too-fancy electronics.**)
- What evidence can they provide of claims they make about their products?
- If you purchase a water softener from them, who will service or repair it?
- What does the warranty cover? Is it a manufacturer's or dealer's warranty? If it's a lifetime warranty, what does "lifetime" mean? (See page 19, **BE SKEPTICAL of warranty games.**)
- Is the warranty valid *without* requiring you to add chemicals?
- What happens if you are not happy with the unit after it has been installed?



## *Choosing a water softener and a water softener dealer:*

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### *❧ DON'Ts ❧*

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▶ ***DON'T* buy from a plumber, contractor, or other non-specialist.**

Well-intended though they may be, plumbers, home builders, home improvement centers, contractors, and other non-specialists do not keep up on the science of soft water or the latest in water softening technology. Most cannot tell good systems from bad and are clueless when it comes to matching a system to your unique water use patterns. If the water softener you end up with needs servicing, which it may sooner and more often than a properly selected and adjusted one, the person who sold it to you may not be qualified to help. Hold out for expertise and quality equipment.

▶ ***DON'T* rush.**

No law says you must buy from the first salesperson you call or who visits your home. You have a right to take your time and to shop around. An ethical salesperson should provide a detailed quote and product literature, and let you review them at your leisure.

▶ ***DON'T* buy online or over the phone.**

Have a water softener salesperson visit your home, test your water, audit your plumbing, recommend a system, and explain why that system is suited to your home and your family's usage.

▶ ***DON'T* look at price alone.**

A high price may mean a high-quality unit or just an overpriced one, but a too-low price is almost always a warning sign. The unit may use inferior parts you'll soon need to replace at no small expense; the low price may be a lure for trading you up; or the unit may be smaller than you need, giving you soft water only some of the time or not-soft-enough water all of the time.

▶ ***DON'T* buy without reviewing client testimonials.**

Ask for references. Read customer reviews. Don't settle just for reviews the dealer provides. Google the dealer's name. Then Google the name again, this time with the word "complaint." Caution: Approach online comments, both negative and positive, with a skeptical eye. More people write reviews when they're angry than when they're pleased, and they may exaggerate. Also watch out for positive reviews that seem to be written by the same person, which could be an indication of dealers writing their own reviews.

# Choosing a water softener and a water softener dealer:

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## ✎ *When to be skeptical* ✎

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### ► **BE SKEPTICAL** of warranty games.

Sad but true: some warranties are written to *sound* great but cover next to nothing. To avoid finding out the hard way a few years later, read the small type carefully, accept no verbal assurances, and run anything you don't understand or that sounds fishy by a qualified attorney. Meanwhile, as you read your warranty, here are some slippery games to watch for:

- **The Lifetime Warranty Game.** “Lifetime” doesn't refer to *your* lifetime, but to *the lifetime of the product*. A water softener's lifetime is generally considered to be about 10 years. That means that most of the time a lifetime warranty is a ten-year warranty.
- **The Lifetime Warranty Game, Part 2.** If you read the small type, you'll probably find that the lifetime warranty applies *only* to the resin tank. Computerized controls and other components, which fail often and are expensive to repair or replace, are usually warranted for only one to five years.
- **The PSI Game.** The warranty of even the highest-quality resin tanks is void if water pressure becomes unreasonably high.<sup>11</sup> Until recently, the industry standard was to warrant resin tanks

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<sup>11</sup> It's advisable to not let household water pressure exceed 60 psi. Keeping psi under control is what your home's water pressure regulator does. Regulators wear out, so it's a good idea to check and replace as needed.

for up to 100 psi. More recently that has dropped to 85. If you shop around, you can still find tanks warranted for up to 125 psi.

- **The Valve Body Warranty Game.** The *valve body* is the box that houses the microprocessor controlling your water softener. A generous valve body warranty may seem impressive until you realize that it covers the box *only*—not the microprocessor inside. The microprocessor is a water softener’s costliest part to replace. Moreover, due to operating in a damp, salty environment, it is one of the most frequent to fail. (A mechanical control can be a good alternative. See “Be skeptical of too-fancy electronics,” page 22.)
- **The Jump-Through-Hoops Games.** Most warranties are subject to conditions, but some are loaded with needless conditions that someone is probably counting on you not to follow. For instance, your warranty should *not* require you to purchase and use chemicals and additives. The only thing you should ever need to add to your water softening system is salt.
- **The “Normal Wear and Tear” Game.** Normal wear and tear is exactly what your water softener should be warranted to handle. A warranty excluding normal wear and tear is a license not to cover any problem from the moment your system is installed.
- **The “You Can’t Move” Game.** Some warranties are void if you move your water softener to a new home or sell it with your old home. This is an unnecessary exclusion.
- **The Dealer Warranty Game.** A dealer warranty is only as good as the dealer, and only valid for as long as the dealer stays in business. A manufacturer’s warranty tends to have more teeth.

► **BE SKEPTICAL of a too-low price.**

See page 18, [DON’T look at price alone.](#)

► **BE SKEPTICAL of “we’re the manufacturer.”**

Most dealers do not *manufacture* their products. They *assemble* them from components made by only a handful of companies. Most dealers assemble their products from similar if not identical parts.

► **BE SKEPTICAL of “buy now and you’ll also receive ...”**

There’s nothing wrong with a dealer’s offering a gift or add-on device if you buy before a certain date. Still, it pays to investigate. Does the gift really sell for the claimed regular price? Did the dealer raise the product price to cover the cost of the “gift”? Is the free device prone to break down, leak, and cause damage (as many “free” reverse osmosis drinking water systems do)?

► **BE SKEPTICAL of mixing carbon granules with resin beads for “purification.”**

Dealers who claim that mixing carbon granules<sup>12</sup> with resin beads provides the same benefit as a reverse osmosis filter are mistaken or trying to mislead. Carbon is used to remove chlorine from water. While that’s certainly of value, it’s a far cry from purification.

Carbon requires much more frequent replacement when mixed with resin beads inside a resin tank than in a tank of its own. Replacement is costly,<sup>13</sup> yet ignoring the need for replacement is unwise. Once carbon becomes saturated, it quits working and may grow and release unfriendly bacteria *into your water*.

If chlorine removal is important to you, look for a water softener that houses carbon separately, or

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<sup>12</sup> Instead of “carbon granules,” a dealer might use the term *water refiner*, *filtration media*, *mixed resin*, or something else sounding equally science-y.

<sup>13</sup> It’s even more costly when carbon and resin are mixed, because you must replace both, even though resin should not need replacement as often.

purchase an external, *quality* reverse osmosis filter. (See the preceding, “[BE SKEPTICAL of “buy now and you’ll also receive ...”](#) on page 21.)

▶ **BE SKEPTICAL of a “five-year supply of soap.”**

Usually the soap is of such poor quality that people end up not using it or throwing it away.

▶ **BE SKEPTICAL of devices only claimed to leave “less scale.”**

“Leaves less scale” is usually code for “does not remove hard water particles,” meaning they’ll still end up on your dishes, in your wash, and on your skin.

▶ **BE SKEPTICAL of “uses less salt.”**

Some well-designed models really do use less salt than others. But often what a dealer means by “less salt” is “less salt than water softeners used 50 years ago.” If your dealer claims that a unit “uses less salt,” be sure to ask, “Than what?”

▶ **BE SKEPTICAL of too-fancy electronics.**

A computerized control is only as good as the data fed into it. It has no way of knowing when a family changes water use patterns. A few extra loads of laundry or a change in shower schedules can fool it. This can lead to recharging more often than needed, which wastes salt. Or, it can lead to recharging *less*

often than needed, leaving you with harder water, which defeats the purpose of having a water softener.

If your unit has a computerized control, know how to program it, and check it from time to time to ensure that it's using up-to-date data. If you do, your home should have problem-free soft water.

A mechanical system, which almost never needs adjusting, may be a good alternative. Rather than *estimate* water use, mechanical systems *measure* it in much the same way that mechanical odometers count miles. Changes in household routines can't fool it, because it recharges based on actual, not calculated, use. Water stays soft with no danger of wasting salt. Some mechanical systems even supply soft water as they recharge, whereas computerized systems cannot. Moreover, mechanical controls tend to last much longer than computerized controls.

## *Choosing a water softener and a water softener dealer:*

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### *↻ When to show a dealer the door ↻*

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- ▶ ***SHOW A DEALER THE DOOR*** at the first sign of a fib.

That includes exaggerations, technically true claims that are phrased to mislead, and outright lies. There are plenty of honest dealers. There's no need to put up with anyone who isn't 100 percent on-the-level.

- ▶ ***SHOW A DEALER THE DOOR*** who tries to sell you a “no-salt” water softener.

There is no such thing. Chances are you're being sold a *water conditioner*. If it works—many do not—it will *unbind* but not *remove* hard water particles. This may reduce (not eliminate) water heater buildup, *but it will provide no other soft water benefits*. Hard water deposits still collect in washing machines, dishwashers, and fixtures, and on dishes, skin, and hair.

Also show any dealer the door who tries to sell you a so-called magnetic water softener. There is no evidence



to support manufacturer and dealer claims.<sup>14</sup> Equally ineffective are systems that use citrus cartridges, or that wrap pipes with electromagnetic wires.

- ▶ **SHOW A DEALER THE DOOR if they offer to “throw in” a free water softener with another purchase.**

A water softener is a major appliance. Any water softener that you can *have* for nothing is probably *worth* about nothing.

- ▶ **SHOW A DEALER THE DOOR if they try to sell you “resins designed for where you live.”**

The dealer is misinformed or fibbing. Hard water particles are the same wherever you go, so the same resin works wherever you go. If the water in your area is unusually hard, you may need to step up how often you add salt, but you won’t need special resins.

- ▶ **SHOW A DEALER THE DOOR if they try to sell you additives to “res up” your water conditioner.**

These so-called additives do nothing besides move money from your wallet to the dealer’s. With very few exceptions—say, your water has unusually high iron content—the only thing you should ever need to add to your water softener is salt.

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<sup>14</sup> CSICOP, *op. cit.*

► ***SHOW A DEALER THE DOOR* if you're pressured to buy on-the-spot.**

Don't fall for a discount or freebie available only if you buy before the dealer leaves your home. Dealers have the flexibility to extend deadlines until you're ready to decide. If they tell you that they cannot extend a deadline due to "truth-in-advertising laws," they are either misinformed or trying to pull a fast one.

► ***SHOW A DEALER THE DOOR* who offers you a stainless steel or decorator tank for an extra \$1,000.**

A stainless steel or decorator tank looks spiffier than a plain one, but don't hand over \$1,000.00 extra for the upgrade. What you'll get is the same tank, just hidden under a stainless steel slip cover that cost your dealer around \$40.

► ***SHOW A DEALER THE DOOR* if they say, "You can cancel, but don't cancel."**

When you commit to purchase a water softener to be installed in your home, most states give you the right to cancel within a few days and receive your money back in full. No reputable dealer will try to guilt or pressure you into giving up that right.

► ***SHOW A DEALER THE DOOR* if they pressure you for names of people they can call using your name.**

It's wonderful when a dealer offers you an incentive or reward for sending them new customers. But do not let a dealer *pressure* you for names of family and friends. Finding new customers is their job, not yours.

► ***SHOW A DEALER THE DOOR* if they make exaggerated claims.**

It's true that soft water offers you a number of money-saving advantages. This guide lists many of them. *But the savings build over time.* Any dealer who claims that you will recoup the cost of your equipment and installation within one or two years is not being realistic.

# So you have hard water. Now what?

If yours is one of the 85 percent of U.S. homes with hard water,<sup>15</sup> a quality water softening system is a wise choice. Abundant scientific evidence attests that hard water is bad for your home's plumbing, water heater, dishwasher, clothes washer, other appliances, and your budget. And many people love how their skin and hair feel after bathing in soft water.

Hopefully the information in this guide will help you make better-informed decisions as you meet with dealers and hear them out.

Do not procrastinate. A half-ton of magnesium, calcium, manganite and other particles running through your pipes every three years can add up.

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<sup>15</sup> usgs.gov, *op. cit.*

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