

All you ever wanted to know about water softening

Everyone knows the difference between soft and hard water, but some consumers are hard pressed to remember exactly what softened water is, says an engineer in Penn State's College of Agricultural Sciences.

"For most people, their definition of hard and soft water is based on whether the water leaves a detergent film on pots and fixtures or whether the water makes their hair more silky and manageable," says Paul Robillard, an associate professor of agricultural engineering.

Robillard explains that water labeled "soft" or "hard" depends solely upon the levels of two soluble minerals—calcium and magnesium—in the water. "From a health standpoint, calcium and magnesium have no adverse affects," he says. "Both minerals are essential daily nutrients and along with other minerals often give drinking water the fresh taste many consumers want."

If calcium and magnesium are at high levels, the minerals will build up on surfaces such as plumbing pipes, eventually plugging them. Minerals also can damage hot water heaters and make laundry detergents less effective. Engineers measure water hardness by calculating how much calcium carbonate is dissolved in the water. A measurement of less than 1 grain per gallon or 17 parts per million means that the water supply is soft. Robillard offers a table of hard water values. (See below.)

"If you have your water tested, the report will use one or both of those values to determine how hard the water supply is."

Water	Grains per gallon	Parts per million
Soft	less than 1.0	less than 17
Slightly hard	1.0 to 3.5	17 to 60
Moderately hard	3.5 to 7.0	60 to 120
Hard	7.0 to 10.5	120 to 180
Very hard	greater than 10.5	Greater than 180

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Robillard says, "Once you determine the hardness level of the water, you either can live with it or treat the water to reduce the mineral content."

Water can be softened by a process called ion exchange. Ion exchange works by filtering water through a synthetic or natural sandlike material called resin or zeolite. The resin is coated with positively charged sodium ions. As water flows through the unit, the resin exchanges its sodium ions for the positively charged calcium and magnesium ions.

When the resin has absorbed its capacity in hardness minerals, the water softener must regenerate its ion exchange capacity. "Regeneration works by backwashing the resin with a brine solution that flushes out the calcium and magnesium ions," Robillard explains.

—Kinds of softeners, Robillard says most homeowners can choose between softeners that have programmable regeneration timers or demand-control models outfitted with regeneration sensors. "Timer models work best for households that have regular water use cycles, but they can waste water and salt because they regenerate whether the resin needs it or not," he says.

—Maintenance. All water softeners require regular maintenance to function properly. The resin can develop bacteria or fungi, or become clogged with mud. Iron deposits can clog the resin as well.

"The main thing to remember about water softening is that it has nothing to do with purifying, cleansing or conditioning the

water," Robillard emphasizes. "It merely removes minerals that can be a nuisance."

Softened water is an advantage if homeowners experience soap film on pots, utensils and skin, or find that detergents are not cleaning up to expectations. "Softening technology can be designed to bypass toilets and outdoor fixtures that do not require

soft water," Robillard says. Water softening does raise the sodium level of water to about 7.5 to 8 milligrams per quart for every grain per gallon of minerals removed, which can be a health risk for people on low-sodium diets. "The final sodium level would be higher than 7.5 milligrams per quart after treatment," Robillard points out. "Depending on your

water source, you may have to filter the water as well, before it enters the softener."

If consumers choose to soften water, Robillard recommends that the water be tested by an independent certified laboratory. "Water tests are not expensive and the results can help you resist buying softening equipment you may not need," he says.

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Source: NFPA US Fire Problem Report April 2000

Good advice valuable in remodeling projects

(HT) "The decision has been made. You've decided that the time has come to turn your dream kitchen or bathroom into a reality. Great! Now what?"

You might want to think about hiring a professional kitchen/bathroom designer from the National Kitchen & Bath Association (NKBA). What can a professional do for you? Plenty.

A kitchen/bathroom specialist can guide you through every phase of your project—decorating, design, construction, and plumbing and electrical systems.

Specifically, kitchen/bathroom specialists are able to:

- work with contractors, electricians and plumbers.
- answer any questions you have about design, products and colors, as well as anticipate and prevent problems that you may not have considered.
- create designs that reflect your individual personality through color, style and pattern selection.

"To ensure a successful project, it is important to find a kitchen or bathroom professional who is right for you," explains Stephanie Witt, CKD, CBD, of Kitchens by Stephanie, Grand Rapids, Mich.

"Similar to finding a doctor or dentist, you need to locate someone who is capable of completing the job, but who also meshes with your personality." NKBA provides a list of its members, including Certified Kitchen and Bathroom Designers (CKBDs and CBBDs) in your area, who can help you with your project.

The Middle
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kitchen/bathroom planners near you. It is a good idea to visit them in person," says Witt. "This gives you the opportunity to see kitchens and bathrooms on display and to talk with designers about products, materials and colors. This will help you discover which designer is right for you."

Witt also suggests that you prepare for your visit. Here's how:

- Collect and clip photographs of kitchens or bathrooms that appeal to you. Examining these with the designers during your visits will give them a good idea of the styles to which you are attracted.
- Evaluate your current kitchen or bathroom to find out what works and what doesn't. For example, is there enough cabinet shelf space? Is there enough counter space? Is there adequate task lighting about the countertop? In the bathroom, is the bathtub big enough? Is the showerhead at a comfortable height for all users? Is the bathroom safe? Does it include grab bars and non-slip flooring?
- Write down the answer to these questions, and bring them with you when you visit the kitchen/bathroom planner. They will play an important role in the design of your new space.

The Completion
After you choose a firm, a designer will visit your home to take precise measurements. He or she will also spend a great deal of time interviewing you to discover the exact type of style of kitchen or bathroom you desire. Then, a

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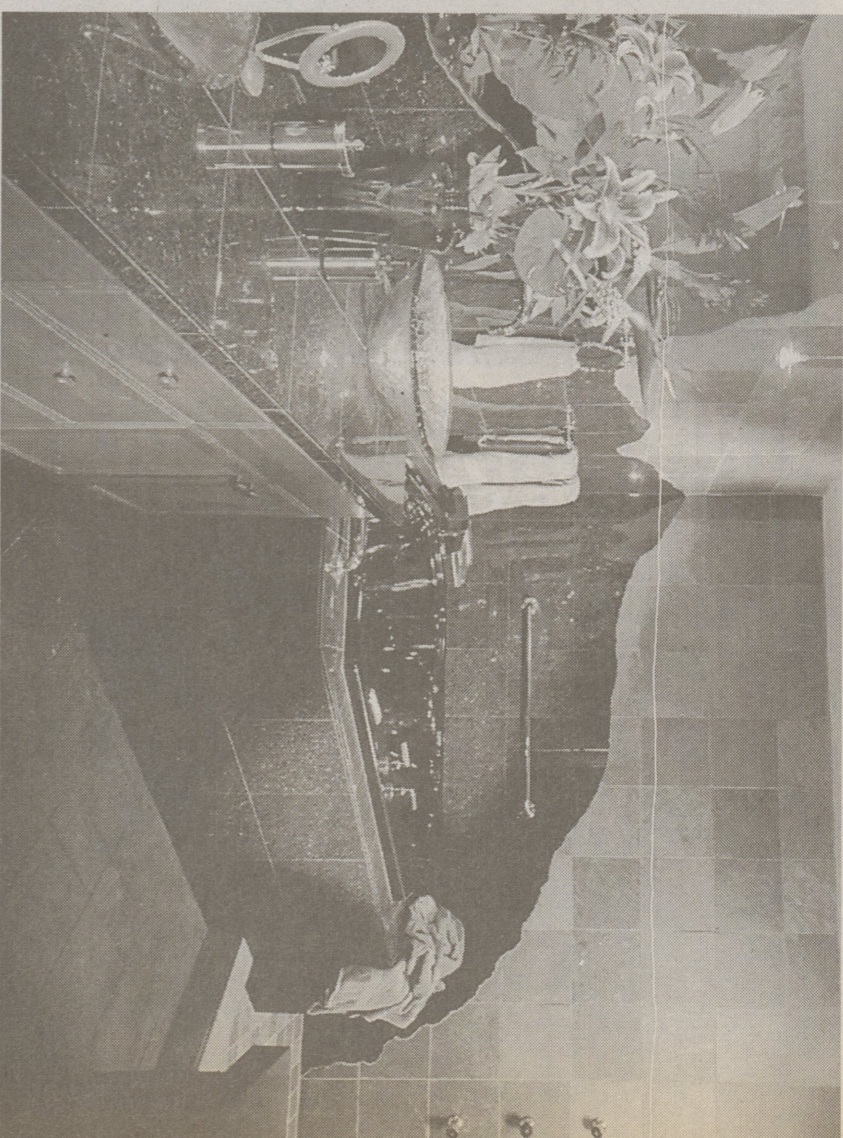
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