



How Hard Water Affects Your by Scott Warrington



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Hard Water - How It Affects Your Cleaning

Hard water refers to water that has a high content of dissolved minerals. The most common particles dissolved in water are positive ions (cations) of calcium and magnesium although a number of other minerals and metals may be present in small amounts.

"Pure" water with nothing dissolved in it is rather rare. This pure water is aggressively seeking something to dissolve. Free flowing fresh water will quickly dissolve carbon dioxide from the air forming small amounts of carbolic acid in the water.

Water hardness is not a black and white issue. Hardness covers a wide range of possibilities. Hardness is commonly measured in grains* per gallon (gr/g) or milligrams per liter (mg/L). To convert from gr/g to mg/L multiply by 17.11. The U.S. geological survey calls 60 mg/L or less soft water. (That is about 3 ½ grains per gallon.) Hard or very hard water is anything above 120 mg/L. In between those levels is moderately hard water. Most of the U.S. has water in the moderate, hard or very hard ranges.

There is some evidence that hard water is good for our health due to the extra minerals we get from drinking it. But hard water is definitely not good for the health of our cleaning equipment.



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As water gets hotter, it can not hold as much calcium. So, the calcium precipitates out of the water in the form of calcium carbonate. This white, chalky crud coats the inside of any pipe, hose or part the water flows through. This coating is especially harmful to heat exchangers because the coating acts like an insulation that slows down heat transfer. You will now require more fuel and more time to keep your water hot. At current fuel prices, you don't want that additional expense!

The calcium carbonate coating is like making your hoses narrower. If you don't descale on a regular basis, flow rates will drop, hoses and other parts can even fail completely if the build-up remains excessive. Like plaque in our arteries, this will also raise pressure while decreasing flow rates. One TM manufacturer demands a water softener for their warranty to be effective. Use of alkaline cleaning products can increase the rate at which these minerals precipitate out.

The addition of an acid rinse agent running through your Truckmount or portable carpet cleaning unit helps to slowly dissolve some of this build-up or keep it from occurring in the first place. So, an acid rinse like End Zone offers benefits beyond getting carpet cleaner and rinsing away residue.

If you make a switch from using an alkaline to an acid side product in your rinse, the acid will begin to remove the build-up inside hoses and plumbing. As this gunk is cleaned out, you will find filters and jets clogging or gunk in the water dispensed. So activate the wand over a sink, in the yard or somewhere other than a client's nice white carpet until the water runs clear. Then clean the filters.

Detergents are less effective in hot water. Soft water offers a significant savings on chemical usage while leaving less residue. You may find that you only need about half the concentration of prespray or other cleaning agents. (Label dilution rates are usually provided for "average" water hardness. So, you use slightly more if the water is extra hard and less for soft water.) This is another potential savings for soft water users. Your clients will also appreciate the benefits. With increasing awareness of the amount of chemicals coming into our homes and the trend toward "green" this is an advantage you can market.

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One home water softener manufacturer promotes a study by Purdue University** stating that fabrics washed in hard water tend to wear out 15% sooner compared to those cleaned in soft water. We don't know if these numbers hold true for to carpet cleaning, but it can't hurt and likely extends carpet life to clean with soft water.

Many cleaning products have ingredients to combat the effects of the minerals in hard water. These may be called Water softening agents, chelating agents or by other names. The chelating agents bind to calcium, magnesium and other minerals to aid in taking them out of circulation. If you are cleaning natural stone, the chelating agents don't know the difference between calcium in hard water and calcium that is part of the natural make-up of the stone you are cleaning. Since they want to bind to the calcium, they can make your cleaning solution more difficult to thoroughly rinse away. Failure to completely rinse can leave behind a film that dulls the appearance over time.

SUMMARY – Consider the benefits to your equipment and chemical costs and savings in maintenance labor if you use a water softener. A water softener may take up only 1 or 2 sq. feet of space in your van and pay for itself in 2 or 3 years.

When cleaning stone look for products specifically made for stone and that are known to contain no chelating agents.

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* The "grains" used to measure hard water is a weight equal to 0.0648 gram. It takes 437.5 grains to make one ounce. This is the same grain used to measure water vapor in the air.

** From "Benefits of Using Soft vs. Hard Water in Laundering Operations" published by Water Quality Research Council, Purdue University.