



# PROVIDING QUALITY IN EVERY DROP

## FOR MORE INFORMATION

For more information related to drinking water standards, customers can also call the EPA Hotline: 1-800-426-4791



## HARDNESS

Causes of white residue on glassware, dishes and household plumbing fixtures

### WHAT IS WATER HARDNESS?

Water hardness is one of the most common causes of white residue on dishes and household plumbing fixtures. Hardness in water consists primarily of two elements: calcium and magnesium. Both naturally exist in groundwater and surface water supplies. Regional geology, like the limestone throughout Missouri, contributes to water hardness. As water moves through soil and rock it dissolves small amounts of naturally occurring minerals and carries them into the water supply. Lack of sufficient rainfall can concentrate or increase hardness levels, while abundant rainfall or snowmelt can decrease hardness levels by diluting raw water sources.

### WHAT IS THE DIFFERENCE BETWEEN HARD AND SOFT WATER?

Hardness is a term used to describe high levels of calcium and magnesium in water. Hardness can cause scale (white buildup) in boilers, pipes, faucet aerators and shower heads. Soft water is either water that is low in calcium or magnesium, or water that has been treated in a softener. The degrees of water hardness are as follows:

DEGREE OF WATER HARDNESS	RANGE IN PARTS PER MILLION (ppm)	RANGE IN GRAINS PER GALLON (gpg)
Soft	Less than 17.0	Less than 1
Slightly Hard	17.1 to 59	1.0 to 3.4
Moderately Hard	60 to 119	3.5 to 6.9
Hard	120 to 179	7.0 to 10.4
Very Hard	Greater than 180	Greater than 10.5

Missouri American Water does not soften water in all of our systems because calcium and magnesium pose no health concerns. Additionally, softening source water incurs additional treatment costs, costs that impact you, our customer. Conversely, removal of these components through advanced processes has the potential to increase sodium levels in the drinking water, which could be harmful for those who have high blood pressure. Softer water is also more corrosive and might shorten the life of your home plumbing.

### HOW HARD IS MY WATER?

Missouri American Water customers typically receive hard to very hard water (150–200ppm). However, that value can vary throughout the year depending on conditions of our source water.

## QUESTIONS?

We can be reached at our Customer Service Center: 1-866-430-0820

Hours: 7 a.m.–7 p.m.

For emergencies, we're available 24/7.

## ABOUT HOME WATER SOFTENERS

A water softener can improve the aesthetic qualities of your household water. Water softeners do not improve the safety or quality of your water. Most water softeners exchange sodium for existing calcium and magnesium in the water and, therefore, increase the sodium content of the water. If you are on a sodium-restricted diet, you might want to consult your physician prior to purchasing a system.

Also, there is evidence that softened water might be corrosive to certain metallic pipe materials. The cost of softening water is another factor that must be taken into consideration. According to Consumer Reports, water softeners can consume from 15 to 120 gallons of water for every 1,000 gallons of water processed. The decision to purchase a home water softener is a personal preference.

## FREQUENTLY ASKED QUESTIONS

### WHY IS THERE WHITE BUILDUP ON MY PLUMBING FIXTURES OR WHITE SPOTS ON MY GLASSWARE?

In areas with hard water, the minerals (usually calcium) are left behind as water evaporates, leaving white deposits. This is also the cause of white residue when boiling a pot of water. Distilled white vinegar and other consumer products can help remove this buildup. Commercial products are also available that allow the water to drain from glassware more completely.

### COULD MY HOME WATER HEATER HAVE A FAULTY DIP TUBE?

Between 1993 and 1997, nearly all the major water heater manufacturers were buying the same defective plastic dip tubes from the same manufacturer and installing them in their gas and electric units. Unfortunately, many problems were reported including tubes breaking, crumbling and dissolving. Many homeowners have also experienced clogged aerators or valves as pieces of the plastic tubes travel through the hot water and build up in faucet nozzles.

### HOW CAN I DETERMINE IF THE RESIDUE IS THE RESULT OF WATER HARDNESS OR MY HOT WATER TANK?

Collect some of the white flakes and try dissolving them in vinegar. If the material is calcium carbonate (hardness), it will soften and dissolve when it comes into contact with vinegar. If the material does not dissolve, the problem might be the result of a faulty dip tube in your hot water heater. White calcium carbonate particles can also easily be crushed into a powder when rubbed between your fingers unlike particles that are present due to dip tube problems. In addition, dip tube particles will float whereas hard water mineral buildup will usually sink.

