

Service Bulletin: MART Power Washer

MART Tech Services

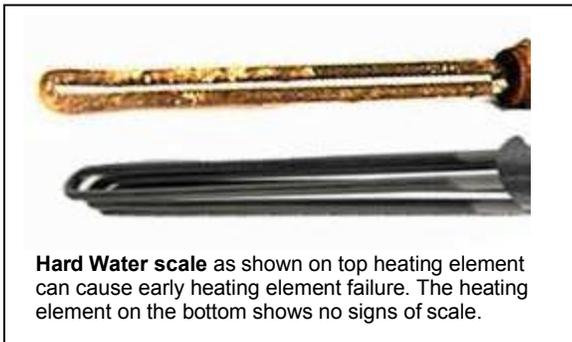
Clean-Up Your Hard Water To Improve Your Clean Results

Hard water interferes with almost every cleaning task. Water hardness is a measure of its mineral content and can be expressed in units of "grains" or "milligrams per liter". **Calcium** and **magnesium** are the most common minerals that make water hard. These minerals will react with the alkalinity builders in your cleaning chemicals and form insoluble sludge known



as **scale** or **scum**. These chemical reactions **use up** some of the detergent to form the sludge, reducing the amount of detergent available for cleaning. The sludge is additional waste that must be disposed of from your machine. Scale and scum **do not rinse** away easily. They tend to

remain behind and produce visible deposits. They also attach to the inside of the washing machine such as on heat exchanger surfaces. Heavy scale prevents good heat transfer which can lead to poor heater performance and failed heating elements.



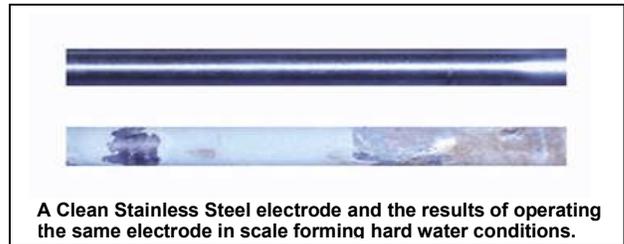
Hard Water scale as shown on top heating element can cause early heating element failure. The heating element on the bottom shows no signs of scale.

If your water is hard you need to compensate by using more detergent. Conversely, the softer the water the less detergent required to clean. Any time your water is harder than 5 to 7 grains the detergent savings from softening your water begins to make economical sense.

HARD WATER DISADVANTAGES:

- It takes up to **twice** as much cleaning chemical just to treat the hard water.
- Hard water and cleaning detergents combine to form "**scale and sludge**" that can't easily be rinsed off and when dried leave unsightly spots.
- Hardness minerals re-crystallize under heat to form scale that can plug pipes and foul heater surfaces, causing premature failure, and costly replacement.

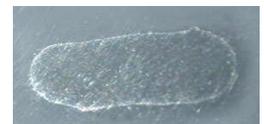
A wash machine reservoir acts like giant pot of boiling water, over time as the solution is heated, water is evaporated and replaced by additional make-up water, which adds more minerals. Because the minerals do



A Clean Stainless Steel electrode and the results of operating the same electrode in scale forming hard water conditions.

not evaporate they continuously build-up in solution. It is not unusual for the mineral content in a heated parts washing machine to increase by a factor of eight in one month. This is often the source of "**white water spots**" seen after washing. This build up of minerals must be "treated" with fresh detergent just to maintain your alkalinity. It doesn't take long for "not too bad" water to start creating real problems.

The hardness of water varies widely throughout the United States and in foreign countries. For the most part, the states of the southwest and upper Midwest have very hard water. A water hardness of 15 grains or more will cause mineral spots to be left after rinsing as shown in the photo to the right.



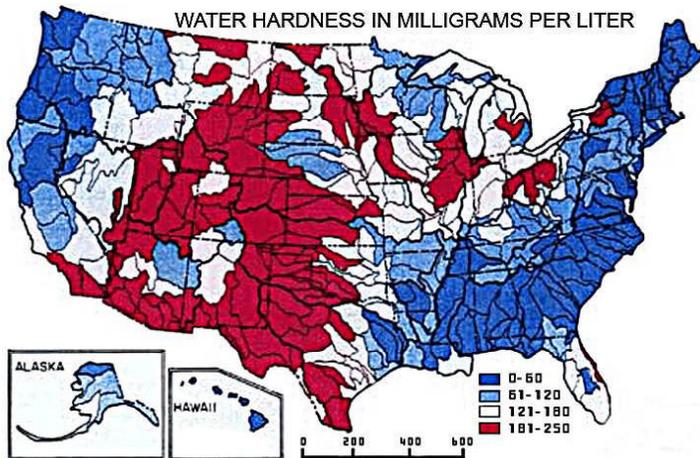
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Relative Hardness	Hardness in milligrams per liter	Hardness in Grains
Soft	0-75 mg/L	0.0 - 4.4 grains per gallon
Moderately Hard	75-150 mg/L	4.4 - 8.8 grains per gallon
Hard	150-300 mg/L	8.8 - 17.5 grains per gallon
Very Hard	Greater than 300 mg/L	Greater than 17.5 grains per gallon

TESTING:

A simple Hardness Test is an ideal method to determine your actual water hardness. The hardness test kit shown can easily determine your water hardness in less than a minute. If your hardness is not too high you may choose to live with the condition and use slightly more detergent to "treat" your water. If you are experiencing some of the problems discussed and wish to **save money** on your detergent use then it maybe be a wise move to get a water softener chemical or a mechanical water softener.



Hardness Foil Packet Test Strips Double Strip Packet - 2 strips per foil packet: PN 85084

Water Softening Chemical: PN 85085

HOW TO SOFTEN HARD WATER:

Water maybe softened in several ways. Most chemical water softeners exchange sodium for existing calcium and magnesium in the water and therefore, increase the sodium content of the water. This method is not appropriate for use in parts cleaning machines as the sodium makes the water corrosive and can damage the machine. MART Tech Services offers a *Non-Sodium based synthetic water softener* that prevents scale build-up in all parts cleaning machines without the damage caused by sodium based softeners. The liquid is extremely concentrated and is effective at concentrations as low as 10 -20 ppm (1 oz per 400 gallons) A mechanical water softening method uses a reverse osmosis (RO) membrane filter to remove the undesirable minerals and is preferred to the sodium ion exchange method. However, the RO method consumes about 30% more water as the membrane must be flushed and kept clean.

**For further information please contact
MART Tech Services
M-F 8:00 AM to 5:00 PM (central)
or visit our SUPPORT website 24 / 7
www.marttechservices.com**