

HARD WATER



Water Quality & It's Importance to a Car Wash Operator

By Alan Palermo, AP Formulators, Lead Chemist

To produce a clean car your carwash must have three things:

- 1) **Properly Working Equipment**
- 2) **Quality Chemistry**
- 3) **Water Quality**

This article will focus on knowing and improving your carwash water quality. When I enter a carwash for a monthly evaluation the first item I test is water hardness. Hardness is addressed with a water softener. The most common water softener method called "ion exchange" is a reversible chemical process of exchanging hard water ions for soft water ions. The hard water ions are made of calcium, magnesium, and iron. The soft water ions are sodium (salt) added to the salt tank. The soft water ions and hard water ions meet in the resin bed of the soft water unit. The resin bed has a negative charge, and therefore attracts a positively charged ion such as calcium, magnesium, and iron minerals. The ion exchange happens very easily since the sodium (salt) ions have a positive charge of one, while the calcium, magnesium, and iron minerals have a positive charge of two. The results of this process leave the operator with soft water.

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Why is this important to the car wash operator? A carwash that uses soft water will use less chemical and have less mechanical failures. Soft water allows the soap to lather. Therefore the operator has to use less soap to get the desired lather he or she is looking for. I have found for every drop/grain of hardness the soap will loose five percent of its detergency and foamability. For example *(continued ...)*

Water Hardness Test



Fill test tube to the **top** with water sample.



Pour sample into mixing bottle.



Add 1 level spoonful of Hardness Agent.



Hardness Agent will cause your sample to turn pink.



Add Titrant Solution to the mixing bottle one drop at a time while swirling the bottle.



When the color changes from pink to blue, record the number of drops added.

Number of drops it takes to turn water blue equals the total sample hardness.
*If one drop produces a blue color, total hardness is <1 grain per gallon
If it takes two drops, total hardness is <2 grains per gallon, and so on.*

if your carwash has six drops hardness, you are running at a 30% handicap!!! This is a critical point for touchless carwashes. It is extremely important for a touchless carwash to have soft water!!!! Hard water also effects equipment by causing scale to build up in the lines. When this scale breaks loose it causes solenoids to stick and tips to clog. A car wash operator can measure water hardness with a Water Hardness Test Kit. An acceptable test result is 0-1 drop/grains hardness.

The second test I perform at a carwash is a Total Dissolved Solids (TDS) test. TDS is more commonly referred to as hard water spots left behind when the water evaporates. To be certain your customers don't drive off with these hard water spots a carwash should have a Reverse Osmosis System (spot free system). This Reverse Osmosis system removes 98-99 percent of these solids allowing your vehicle to dry "spot free". The TDS of water is measured with a Total Dissolved Solids Electric Meter. I like to see a TDS reading of 20ppm or less. At some sites I will see a reading of 50ppm and often recommend a simple change of the pre-filter. By changing the pre-filter monthly you will see a 20ppm or less reading.

By performing these two tests monthly at your carwash you will ensure your water quality is proper. High quality water will lead to very clean cars.

By Alan Palermo
(Alan Palermo is the lead chemist with AP Formulators)

Kleen-Rite carries a variety of water testing kits, we have added them below for your convenience.

HACH Test Kits

Testing kits for water hardness, nitrates, nitrites, alkalinity and pH analysis. Designed for quick checks on the quality of water supplies or the efficiency of water softeners, spot free systems, etc.

Pocket Pal Testers

Designed to perform quick, on the spot tests for pH, Total Dissolved solids, & temperature. All units feature easy to read liquid crystal display, LCD. Testers are small enough to clip onto your shirt and produce immediate results.



Pocket Pal Temperature Tester

TK44450



Pocket Pal TDS tester

TK44400



Hardness measurement paper strips 0-425 PPM

TK274525

Hardness test kit with paper strips for analysis.

Hardness test kit with a liquid drop count titration method of analysis.



Kit for water hardness

Featured

TK5B

pH test kit with paper strips for analysis.



pH measurement paper strip

TK26013

TDS Test (Total Dissolved Solids)



Press the ON/OFF switch once to turn the tester on.



Remove protective cap from the bottom.



Immerse the bottom of the tester 1 inch to 3.5 inches into water sample. Gently stir the water with the tester for several seconds until the digital display stabilizes. Once display stabilizes, read your TDS value.



To maintain and improve the performance of your tester clean the stainless steel electrodes on the bottom with isopropyl alcohol.

Product	Description
TK26013	pH measurement paper strip
TK274525	Hardness measurement paper strips 0-425PPM
TK44350	Pocket Pal PH Tester
TK44400	Pocket Pal TDS Tester
TK44450	Pocket Pal Temperature Tester
TK5B	Kit for water hardness