



How to Measure the Hardness Water - water mineral content test guide - Water Softener Guide.

- Water softener impact on septic systems
- Managing salt in drinking water
- Salt damage to septic drainfields
- Water softener volume damage to septic drainfields?
- Does a water softener hurt the septic tank or drainfield?

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MEASURE WATER HARDNESS - How is Water Hardness Measured?

Water hardness is measured in "grains" per gallon, in milligrams of calcium (Ca) per liter, or parts per million, and German Degrees of Hardness (dH) [which we drop here as this is for fish tanks]. You can take a water sample to a water test lab to have its hardness measures.

You can convert among water hardness measures. Water with hardness of 25 ppm = 25 mg. of hardness-causing minerals per liter of water.

Degrees of Water Hardness	
Soft water	0-17.1 mg/L of minerals
Slightly hard water	16.1-60 mg/L of minerals
Moderately hard water	61-120 mg/L of minerals
Hard water	121-180 mg/L of minerals
Very hard water	more than 180 mg/L of minerals
- adapted from web search Wikipedia 01/31/2011	

We repeat this table with more details, below where we show other measures of water hardness.

Use this simple soap test to measure the grains of hardness of your water supply

You will need:

- a small glass bottle with a tight cap, or a water hardness test kit bottle that is of an ideal size and has a water level line mark on it.
- dish soap
- any measuring device such as a measuring cup marked in ml, cc's or ounces, or a 12-oz drinking glass

Water hardness can be easily measured using a simple soap test kit that will measure in "grains of hardness" (a little bottle with a line marked on it which you fill to the line with water, add a drop of soap, and shake to look for suds. More drops of soap - more degrees of hardness).

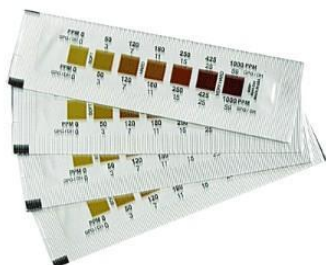
The very crude do-it-yourself water hardness test method that some folks try is just adding dish soap to 12-oz of tap water (the left two columns in our table below). In our OPINION this is a very crude test and you'd be better off obtaining a free or low-cost but more accurate water hardness test from one of the sources listed below at Water Test Kits & Guide

Water Hardness Measurements - Crude Home Soap Test Method				
Test Water Volume - crude test	Soap drops - crude test	Grains/gallon GPG of Water Hardness	ppm mg/L Water hardness in parts per million in milligrams per liter	Softness of the water
12 oz	10	0-1	0-17.1	Very Soft
	20	1-3.5	17.1 - 60	Slightly Hard
	30	3.5 07/13/2010 - 07.0	60 - 120	Medium Hard
	40	7.0 - 10.5	120 - 180	Hard
	50	> 10.50	> 180	Very Hard

NOTE: 1 German degree of hardness dH = 17.5 ppm. For fish tanks, 200-300 ppm is considered "hard", 300-500 ppm "very hard" and over 500 ppm "extremely hard" water.

Sources of Water Test Kits & Guide to Using a Water Hardness Test Kit

Water hardness test kits may use water hardness test tablets or paper test strips (see below).



When mixed with (a test tablet) or wet by (a test strip such as those shown at left) water of a specified volume (fill the test bottle with the specified amount dictated by the test kit instructions or to the line marked on the test bottle), the water in the bottle plus test tablet changes color (green or red, for example) or the test strip changes color (on a scale, for example) that is compared to a standard provided with the kit.

Other simple test kits provide a small glass bottle with a line marked on it and intended for use with dishwasher soap. One drop dish soap at a time. More soap drops = harder water. We bought our Total Water Hardness Test Kit at Sears where water softeners were sold. Or the hardness of your water may be measured at no charge if you ask the local water treatment company to take a look.

A typical water hardness test kit that uses water strips provides with each strip a color chart. Match the color on the strip (after you wet it with your test water) against the color chart to see the hardness of your water sample, measured in ppm or grains. A typical water hardness test kit strip measures hardness from 0-1000 ppm or from 0-59 grains of hardness.

Water Hardness Test Kits [available at Amazon.com and from other suppliers]

[Disclosure: you can buy these test kits from many online sources including Amazon.com. Amazon pays us a pittance per item if purchased via these links. Here are our WEBSITE VISITOR PRIVACY POLICY (we do not collect any information about individual website visitors) and our ADVERTISING POLICY.]

- Aquamerck® Mercks total hardness & oxygen content "rapid tests" using the titrimetric method with dropping bottle or titration pipettes for accuracy. Contact Merck or EMD Chemicals in the U.S. or other countries. Merck & Co., Inc. Global Headquarters, One Merck Drive, P.O. Box 100, Whitehouse Station, NJ 08889-0100 USA, Phone: 908-423-1000 - <http://www.merck.com/>
- Diamond Crystal Water Softening Products: free water hardness test kit: Tel: 800-428-4244. Website: <http://www.diamondcrystalsalt.com/>. Note: The free test kit distributed by Diamond C.W.S.contains one Hach SofChek test strip which we describe immediately below.
- Hach SofChek Dip-and-Read Water Quality Test Strips: Total Hardness 0-425 ppm, Easy to use test strips - dip and read against a scale on the bottle label. OPINION: Suitable for checking water softener operation - Ed.
- Hach AquaChek Dip-and-Read Water Auality Test Strips, Multiparameter, 5 tests Easy to use. OPINION: Hach is a long-established, reputable water test kit manufacturer; we use this kit - Ed.
- Home Water Quality Test Kit, Industrial Test Systems, Inc. , most expensive test kit in this list, measures for Bacteria, Nitrates, Nitrites, Hydrogen Sulfide, Total Hardness, Total Alkalinity, Total Chlorine, Free Chlorine, Chloride, Copper, Sulfate, Iron, & pH. Watch out: some state health departments (e.g. New York) may not accept as valid the type of bacteria test provided.
- Jungle Labs Hardness / Alkalinity Quik-Dip Test Strips, Easy to use.
- Sears, Roebuck & Co., (Kenmore) Free water test. Sears offers free water testing to its customers, testing for hardness, acidity, and clarity. Website: <http://www.kenmorewater.com/> Kenmore Water Telephone: 1-800-426-9345. Most Sears stores will provide a sterile water sampling bottle at no charge. Fill the bottle with tap water from your building and return it to Sears for a free "in-store" analysis. Or use your own sterile (clean) glass jar with a scure lid, collecting 4 ounces of tap water for this test. Sears will report Hardness in grains per gallon or GPG, clarity (iron or color or sediment), and acidity of your water sample.
- Total Water Hardness Water Test Kit m#480008 [bottle of 50 test strips, available at Amazon.com], produced by Industrial Test Systems, Inc. - a reader comments were critical of a lack of precision in this test with an uncertainty of at least 200 ppm [Jan 2011]; others complained that test strip colors did not resemble the color chart. Easy to use.

- Water Hardness Test Reagent, Taylor R-0012 - 0.75 oz bottle (least expensive test kit in this list)
- Water Hardness Tester, Micro Essential Lab, Inc.

Measuring Water Hardness to Test Water Softener / Water Conditioner Operation using Water Hardness Test Tablets

If you need to confirm that your water softener equipment is working properly you will want to measure the hardness or mineral content of your water supply taken at a plumbing tap (sink faucet) located after or "downstream from" the water softener. The following procedure is adapted from IBC [using "water hardness tablets" and other water conditioner installation manuals.

There are three conceptual data points you might want to test:

1. incoming water hardness - take a water sample from a tap that bypasses or is before the water softener
2. water hardness after a water softener regeneration or "backwash" cycle
3. water hardness a day or more after a backwash cycle, or each day of normal water usage in the building between one backwash cycle and the next one - this can confirm that the settings on the water conditioner controls, including regeneration or backwash cycle frequency are adequate.
 - Collect a water sample to be tested from a tap after the water softener if you are performing test #2 or 3 above.
 - Place 10 ml of water into a clean plastic bottle - choose a plastic bottle of about 30 ml capacity so that your water sample will fill the bottle to 1/3 full.
 - If working with an IBC water conditioner test kit, add one "Yes/No" tablet to the water sample and shake the sample until the tablet has dissolved completely.
 - **Watch out:** do not touch the Yes/No tablet with your fingers, or if you accidentally have done so, stop and wash your hands thoroughly. And don't put your finger in your eye or mouth.
 - Check the color of the water sample. If it is green (of any shade) the water is below 20 mg/L of hardness. If the water sample is red the hardness is 20 ppm or above.
 - **Note:** if your incoming water is very high in hardness, the water softener may not be able to drop the hardness level to below 20 mg/L - consult your water softener company for advice.

- Reference: Water Softener with Microprocessor: Installation & Operating Instructions, IBC Filtration & Water Treatment Products (Australia), IBC Water, Ltd., 18 Dividend Street, Mansfield Qld 4122, Postal Address: PO Box 2247, Mansfield BC, Qld 4122 Australia, Tel: Sales/Service: 1-300-166-253; Tel: (07) 3347 1600 Int. +61 7 3347 1600, Facsimile: (07) 3219 2266 Int. +61 7 3219 2266, Email: sales@ibcwater.com.au , web search 01/31/2011, original source: http://www.ibcwater.com.au/zone_files/PDF/as0922mp-cl.pdf