

# How to Choose a Water Softener

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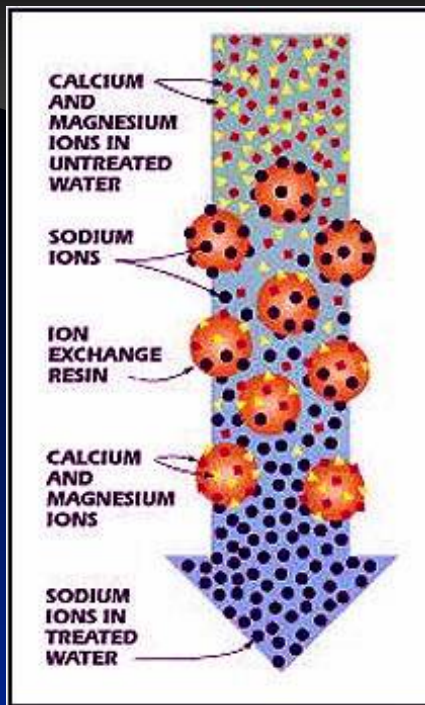
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## Introduction

- Yourwaterneeds.com team, with more than 20 years experience in the water industry, has created this presentation to assist you in choosing the right size of water softener system for your home.
- Properly sizing your system is the most important step when purchasing a water softener. Basically you are determine the minimum system capacity that you need in order to obtain the expected results in the treated water. Fail to properly size your system may result in unit saturation and inability to perform its job.
- In this presentation we will consider three basic concepts that can equip you with the tools to make the right decision.
  1. What is a water softener and How does it work?
  2. What are the general system specification of water softeners and what do they indicate?
  3. What factors should we consider when selecting a water softener?



## How does the water softener works?

- The body of a water softener is a tank filled with resin beads covered with sodium ions. As hard water passes through, the resin beads act like a magnet, attracting the calcium and magnesium ions (hardness) in exchange for the sodium ions.
- Eventually the resins beads become saturated with mineral ions and have to be "re-charge". This process is called regeneration and is conducted by the control valve on the top of the tank.
- During regeneration, a strong brine solution is flushed through the resin tank, bathing the resin beads in a stream of sodium ions which replace the accumulated calcium and magnesium ions(hardness).
- The brine solution, carrying the displaced calcium and magnesium ions, is then flushed down the drain by fresh water. The regenerated resin beads can be used again and again.

## What are the general specifications of water softener and what do they indicate?

- **System Regeneration Initiation:** The brain of a water softener system is the control valve which does the regeneration process. There are two types of control valve, Metered and Clock or Timer valves. Often the type of valve is refer to as System Regeneration Initiation. The Metered On Demand System has a previously preset water volume that will indicate when the system will be generated. The clock or timer Valve allows you to set how often the system will generated based on the days of the week giving you the alternative to regenerate the equipment more often when visitors come over.
- **Resin Quantity:** How many cubic feet of resin is put inside the mineral tank
- **System Capacity:** Measures the capacity of the system in grain. E.g 32,000 grain capacity system should be able to remove 32,000 grains of hardness before a system regeneration is needed.

## Other Systems Specifications often listed in water softener product

- Approximated Salt Usage: How much salt the system will need each time it regenerates.
- Inlet/Outlet Size: Connection Pipe size of the system
- EST Peak GPM: Gallons per minutes at the system peak performance.
- REC or SVC Max GPM: Gallons per minutes when the system is on service or recycling.
- Max STD GPM: Gallons per minutes when the system is in standard performance.
- Backwash Flow: The minimum flow rate require during back wash cycle.

## What factors should be consider when selecting a water softener.

To choose the right water softener for your application, please follow the steps below to determine the minimum water softener capacity you will need.

Step1 - Determining Water Hardness in grains per gallons: First, test your water for hardness. The hardness is usually measured in ppm (parts per millions). Take this figure and divided it by 17.1 to determined the corresponded hardness in grains per gallons.

$$\text{Hardness (grains/gallons)} = \text{Hardness (ppm)} / 17.1$$

Please note, in special conditions, water softeners are capable of removing iron and manganese. If there has being detected iron or manganese presence in the water, please adjust the hardness as follows:

1 grain of hardness per 0.5 ppm of iron detected

1 gain of hardness per 1.0 ppm of manganese detected.

## Factors to be considered ... Continuation

Example: If you have the following results from your water test:

Total Hardness = 17 grains

Iron Level = 1.7 ppm

Manganese = 1.2 ppm

Add 4 grains per Iron presence (rounded off = 2 ppm)

Add 3 grains per Manganese Presence (rounded off = 2 ppm)

Total Hardness =  $17 + 4 + 3 = 24$  grains per gallon

Step 2 - Daily average gallons use per person: Under normal conditions a person uses approximately 80 gallons a day. 100 to 120 in hot climates.

Step 3 - Total average gallons use in household. Multiply number of people in the household per the average gallons use per person.

## Factors to be consider ... continuation

Step4 - Determine water hardness to be remove daily by multiplying the water hardness in grain per gallons calculated in step one by the total average gallons use in household calculated in step 4.

Step5 - Multiply the water hardness to be remove daily for the number of days you would like the water softener to function without regeneration. Typically the water softener does not regenerate more than once within 2 or 3 days.

The result in step 5 is the minimum softener capacity needed to handle your household water demand.



## Example

Step 1 - A household with 171 ppm of hardness has 10 grain per gallons of hardness.

$$\text{Hardness} = 291 \text{ ppm} / 17.1 = 17 \text{ grains/gallons}$$

Step 2 and 3 - Assuming there are 5 people living in the house and the average water use per person is 85 gallons per day, the total average gallons used in the household is  $100 * 5 = 500$  gallons per day.

Step 4 - Water Hardness to be removed daily =  $17 * 500 = 8500$  grains of hardness per day.

Step 5 -  $8500 * 3 = 25000$  minimum grains capacity water softener.

## What's Next

We hope this presentation has been informative and will make your shopping for a water softener easier and more pleasurable. Now that you've obtained a basic understanding of water softeners, we invite you to visit our website and browse our inventory of systems.

We also offer a free water analysis to get you started. All you need to do is send us a water sample. We'll perform an in-depth analysis and respond to you with our best recommendation. See the website for instructions on how to take advantage of this free offer.

Visit us at <http://www.yourwaterneeds.com/>