

# Water Softeners

## *Annual Maintenance*

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In Alaska, as in many locations in the Western United States, household water is hard. This means the water has high levels of calcium and magnesium. Hard water can adversely affect household washing and plumbing fixtures. The most common way to reduce hardness is with an ion exchange water softener system. Softened water has many advantages: ease in cleaning, improved laundry and dish washing, reduction in scale and better use of energy for heating hot water.

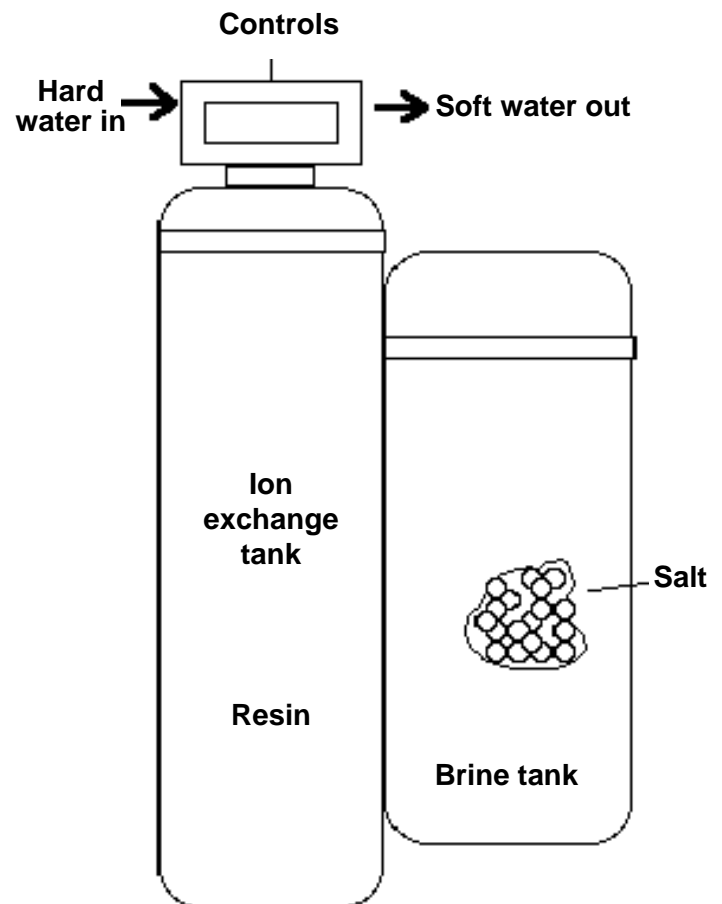
As with most appliances, there is routine maintenance that should be done to keep the water softener working properly. One of those is to clean out the brine tank annually. Another is to clean the softener's resin bed of impurities. The water softener contains a brine tank to store the salt needed to generate the resin. The salt used in softeners is not pure and over time, impurities may accumulate and bacteria may begin to grow in the tank.

### **Cleaning the tank**

Let the salt run out of the tank. Rinse the tank with a bleach solution made from one cup of 5% chlorine bleach to a gallon of water. Chlorine and salt can kill plants, so be sure not to dump the rinse solution on the ground where plants are growing.

### **Cleaning the resin bed**

The resin bed is in a pressure tank containing a bed of ion exchange resin beads. This is the site of the actual softening. As the water softener operates, the resin bed is exposed to dissolved minerals, metals and particles of suspended matter from the water. Foreign matter can also come from the salt during the regeneration process. Precipitated iron, manganese, silt and organics are the most



common culprits in fouling up the resin bed. An in-line cartridge filter can be installed to reduce particles entering the softener. After a while, the resins can become clogged and not work efficiently. The resin bed should be cleaned with a chemical treatment.

There are different chemicals you can use to clean and remove unwanted contaminants. How often you use them will depend on how many impurities are in the water. Consult the water treatment specialist who has installed the system and is familiar with your type of water. A water softener distributor can be a source of cleaning products and instructions on their use.

Sodium hydrosulfite compounds are strong reducing agents and excellent for dissolving insoluble ferric iron from the resin beads. Sodium hydrosulfite breaks down when exposed to high humidity or heat, so it is marketed as a compound with other stabilizing ingredients. An offensive sulfur dioxide (a rotten egg odor) will develop when it is used. Dissolve the cleaner in water and add it to the brine water; it will carry the sulfite to the resin bed during operation. The sodium hydrosulfite will dissolve the ferric iron; the salt brine solution takes the iron out of the resin beads.

Citric acid cleaners have no offensive odors; instead, they give off a pleasant fruit-like smell when dissolved. They are also nontoxic and therefore safer to use around the home. The acid is added to the brine, and in turn causes the iron to dissolve.

Phosphoric acid cleaners are very effective and can be used in a preventive program. By feeding through a drip method directly down inside of the brine well, concentrated solutions are the first water drawn during the brining step of the regeneration cycle. With regular feeding of a phosphoric type cleaner, each regeneration of the softener gets an injection; this is the best bet for an effective softening operation. Phosphoric type cleaners are also excellent for a one shot cleanup of a badly contaminated resin bed.

Probably the best cleaner is hydrochloric acid. Hydrochloric acid will restore the resin to its maximum capacity, and completely redissolve the iron and other metallic ions into the solution. A word of caution: Hydrochloric acid is hazardous as well as toxic.

If used improperly the harsh acid can damage metal valves, the tank interior and any plastic components. For these reasons, it should only be used by highly skilled personnel under careful safety conditions. It should also be used in a well-ventilated area since the fumes can be harmful to the respiratory system.

If you notice that your water softener has not been doing a great job and rust is beginning to accumulate on fixtures, it is time to clean the water softener. An annual cleaning will keep it working as intended.

If you have any additional questions, call the equipment manufacturer.

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