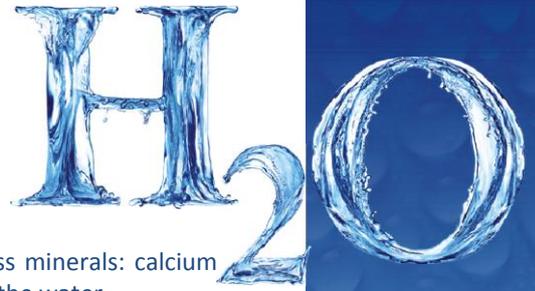


HARDNESS



Water described as “hard” is the sum of the concentrations of two harmless minerals: calcium and magnesium. The greater the concentration of these minerals, the harder the water.

What is "Hard Water"?

Perhaps you have on occasions noticed mineral deposits on cooking dishes, or rings of insoluble soap scum in your bathtub. These are not signs of poor housekeeping, but are rather signs of hard water. Hard water is water that contains cat ions with a charge of +2, especially Ca²⁺ and Mg²⁺. These ions do not pose any health threat, but they can engage in reactions that leave insoluble mineral deposits. These deposits can make hard water unsuitable for many uses, and so a variety of means have been developed to "soften" hard water; i.e., remove the calcium and magnesium ions.

Sources of hardness minerals in your water

Water is a good solvent and picks up impurities very easily, when water is combined with carbon dioxide to form a very weak carbonic acid, an even better solvent results. As water move though soil and rock, it dissolves very small amount of minerals and holds them in solution. The degree of hardness becomes greater as the calcium and Magnesium content increases and is related to the concentration of multivalent cations in the water.

The hardness of your drinking water around South Africa varies depending on the rocks and soils of the area that the water comes from, and the treatment process used.

Potential health effects

Hard water is not a health hazard. In fact, the National Research Council (National Academy of Sciences) states that hard drinking water generally contributes a small amount towards total calcium and magnesium human dietary needs. They further state that in some instances, where dissolved calcium and magnesium are very high, water can be a major contributor of calcium and magnesium to the diet.

Rand Water has not established drinking water guidelines for hardness because there are no known health effects associated with calcium and magnesium minerals in your drinking water.

Indications of hard water

Excessive hardness in water interferes with almost every cleaning task from laundering and dishwashing to bathing and personal grooming. Dealing with hard water problems in the home can be nuisance. The amount of hardness minerals in water affects the amount of soap and detergents necessary for cleaning. Soaps used in hard water combine with the minerals to form a sticky soap curd. Some synthetic detergents are less effective in hard water the active ingredients are partially inactivated by hardness, even though it stays dissolved. Bathing with soap in hard water leaves a film of sticky soap curd on the skin. The film prevents removal of soil and bacteria.

Excessive hardness in water may also change the taste of water, especially for brewing tea and coffee.

Hard water also contributes to inefficient and costly operation of water using appliances. Heated hard water forms a scale of calcium and magnesium minerals that can contribute to the inefficient operation or failure of water –using appliances. Pipes can become clogged with scale that reduces water flow and ultimately requires pipe replacement.





Measurement

Hardness of water is classified as follows:

Hardness Range (mg/L CaCO ₃)	Description of Hardness
0-50	Soft
50-100	Moderately Soft
100-150	Slightly hard
150-200	Moderately hard
200-300	Hard
>300	Very Hard

Criteria

Total hardness should be limited to between 50-100mg/l, where possible. It should be noted that many

Soft Water

Soft water is great for laundry, bathing, steam irons, and auto batteries, but definitely not for anything else. A soft water is aggressive at leaching metals and has been linked to heart diseases. If you are contemplating installing a softener (Home treatment device), there are serious questions you should ask: Who will test the effectiveness of the softener, how often will these tests be run, and how will your drinking water quality be affected?

Rand water does not test any home water treatment device, including softeners, and does not recommend the use of particular devices.

Visit www.reservoir.co.za for further information on water quality in your area.

