

Technical Information:

Date: 06/10/05
Subject: Hardness
Product: Water

Water described as "hard" is high in dissolved minerals, specifically calcium and magnesium. Hard water is not a health risk, but a nuisance because of mineral buildup on fixtures and poor soap and/or detergent performance.

Water is a good solvent and picks up impurities easily. Pure water is tasteless, colorless, and odorless. As water moves through soil and rock, it dissolves very small amounts of minerals and holds them in solution. Calcium and magnesium dissolved in water are the two most common minerals that make water "hard." The degree of hardness becomes greater as the calcium and magnesium content increases.

Grains Per Gallon	Milligrams per liter(mg/l) or Parts Per Million (ppm)	Classification
less than 1.0	Less than 17.1	Soft
1.0 - 3.5	17.1 - 60	Slightly Hard
3.5 - 7.0	60 - 120	Moderately Hard
7.0 - 10.5	120 - 180	Hard over
10.5	Over 180	Very Hard

For large-scale municipal operations, a process known as the "lime-soda process" is used to remove Ca^{2+} and Mg^{2+} from the water supply.