

# Hardness

## **What is Hardness?**

The basic definition of water hardness is the amount of dissolved calcium and magnesium in the water. Hard water is high in dissolved minerals, largely calcium and magnesium.

## **Does Hardness have any additional names?**

No.

## **What are the known health effects?**

Both calcium and magnesium are essential minerals and beneficial to human health in several respects. Inadequate intake of either nutrient can result in adverse health consequences, including increased risks of osteoporosis, kidney stones, colorectal cancer, hypertension and stroke, coronary artery disease, insulin resistance and obesity. Increased intake of magnesium salts may cause a temporary adaptable change in bowel habits (diarrhea), but seldom causes hypermagnesaemia in persons with normal kidney function.

## **How does exposure occur?**

The principal natural sources of hardness in water are dissolved polyvalent metallic ions from sedimentary rocks, seepage and runoff from soils. Calcium and magnesium, the two principal ions, are present in many sedimentary rocks, the most common being limestone and chalk.

Water systems using groundwater as a source are concerned with water hardness, since as water moves through soil and rock it dissolves small amounts of naturally-occurring minerals and carries them into the groundwater supply.

## **What are the effects of water hardness?**

Because softened water can be corrosive to pipes and plumbing, a certain amount of water hardness is required to form a protective coating on pipes and plumbing inside your home. The recommended minimum level of water hardness to prevent damage to piping and fixtures is 50 ppm. This protective coating will also inhibit the leaching of heavy metals such as copper and lead into your drinking water.

The most apparent effect of hardness in water is seen in its reaction with soap; hard water requiring considerably more soap to produce a lather. Hard water also often produces a noticeable deposit of precipitate, including a bathtub ring. The optimal level for hardness in drinking water is 80-100 ppm.

## **Is this contaminant regulated?**

Yes, and water supplied to customers of Mount Laurel MUA is in compliance. Hardness is a secondary contaminant by USEPA and NJDEP which is a non-enforceable guideline for aesthetics. The recommended upper limit (RUL) is 250 ppm; water supplied to MLTMUA customers has a detected a maximum of 130 ppm.

## **Do I need a water softener in my home?**

As stated above, the optimal level for hardness in drinking water is 80-100 ppm. Hardness of water from MLTMUA's treatment facilities and NJAWC is within this range; however, water received from WMUA ranges in hardness up to 130 ppm. Therefore, a water softener may be recommended for those in the northern areas of Mount Laurel. Additionally, hardness can be removed by point of use reverse osmosis, and distillation.

**Additional information about water hardness, including the information referenced, can be found at:**

[https://www.who.int/water\\_sanitation\\_health/dwq/chemicals/hardness.pdf](https://www.who.int/water_sanitation_health/dwq/chemicals/hardness.pdf)

[https://www.usgs.gov/special-topic/water-science-school/science/hardness-water?qt-science\\_center\\_objects=0#qt-science\\_center\\_objects](https://www.usgs.gov/special-topic/water-science-school/science/hardness-water?qt-science_center_objects=0#qt-science_center_objects)

<https://www.co.washington.mn.us/DocumentCenter/View/739/Water-Hardness-?bidId=>