

The hardness of water is due to the presence of calcium and magnesium minerals that are naturally present in the water. The usual signs of a hard water supply are scaling inside kettles, poor lathering of soaps and scum.

What is water hardness?

Hard water is formed when water passes through or over limestone or chalk areas and calcium and magnesium ions dissolve into the water.

The hardness is made up of two parts: temporary (carbonate) and permanent (non carbonate) hardness. When water is boiled, calcium carbonate scale can form, which can deposit on things like kettle elements. The scale will not stick to kettles that have a plastic polypropylene lining but will float on the surface. The permanent hardness that comprises calcium and magnesium sulphate does not go on to form scale when heated or boiled.

How is water hardness measured?

Hardness is usually expressed in terms of the equivalent quantity of calcium carbonate (CaCO₃) in milligrams per litre or parts per million. You may also see hardness expressed as Degrees of hardness in Clark (English) degrees, French or German degrees. Interconversion between the different measurements can be made by using the appropriate conversion factors below.

Table 1 Conversion factors

To convert mg CaCO ₃ / litre to:		
mg Calcium/litre	Multiply by	0.4
Clark degrees		0.07
French degrees		0.1
German degrees		0.056

There are no standard levels as to what constitutes a hard or a soft water. Table 2 gives an indication of the equivalents of calcium and calcium carbonate and the relative degree of hardness.

Table 2 Drinking water hardness

mg Ca/l	mg CaCO ₃ /l	Clark Degrees	French Degrees	German Degrees	Hardness
<30	<75	<5.3	<7.5	<4.2	Very soft
30-50	75 - 125	5.3 - 8.8	7.5 - 12.5	4.0 - 7.0	Soft
50-100	125 - 250	8.8 - 17.5	12.5 - 25.0	7.0 - 14.0	Mod. hard
100-150	250 - 375	17.5 - 26.3	25.0 - 37.5	14.0 - 21.0	Hard
>150	>375	>26.3	>37.5	>21.0	Very hard

For further information



unitedutilities.com/waterquality



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8am-8pm Mon-Fri
8am-6pm Sat
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The Drinking Water Inspectorate is responsible for ensuring the quality of public water supplies. Visit their website at: dwi.defra.gov.uk

Water quality standards

There are no regulatory standards for water hardness in drinking water.

Water hardness in the North West

The majority of raw water in the United Utilities region comes from upland surface water reservoirs.

The water in the reservoirs has little chance of passing through rocks and to dissolve the minerals that make water hard. Therefore, the majority of water in this region is soft or very soft. We supply water from a number of boreholes in the south of the region that are reasonably hard, but these tend to be blended with softer sources to meet demand. No water supply in the North West is artificially softened.

Can hard water be softened?

Yes, water can be softened artificially by the installation of a water softener or the use of 'jug type' filters. Medical experts recommend that a non-softened supply is maintained for drinking purposes because softened water may contain high levels of sodium. Softeners should be fitted after the drinking water tap and comply with the requirements of the Water Supply (Water Fittings) Regulations 1999. They should be maintained in accordance with manufacturers' instructions.

Your water quality

If you're interested in finding out more about the quality of your drinking water, please visit unitedutilities.com/waterquality and enter your postcode. We'll tell you where your water comes from, together with other information such as its hardness.



About us

United Utilities is the North West's water company. We keep the taps flowing and toilets flushing for seven million customers every day. From Crewe to Carlisle, we work hard behind the scenes to help your life flow smoothly.

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