



Chemical Quality: Calcium (Ca)

What is Calcium?

- 💧 Calcium is necessary to build and maintain a healthy skeleton.
- 💧 When calcium oxidises, it dissolves in water and forms calcium hydroxide (slaked lime).
- 💧 Drinking water that has calcium is good since it is a necessary dietary supplement.

Calcium in water

- 💧 When water has a calcium concentration of less than 10 mg/l, we say it is soft water and in such water soaps lathers easily.
- 💧 When water has a calcium concentration of several hundred mg/l, we say it is hard water and such water causes soaps to flake and makes lathering difficult.

What problems can Calcium cause?

- 💧 Mostly calcium has a beneficial **health** effect, since large amounts of Ca are required for a healthy bone structure.
- 💧 High Ca concentrations can however cause kidney stones in sensitive people.
- 💧 People with kidney and gall bladder stones, as well as people that drink a lot of water under extremely warm conditions, are **sensitive** to high Ca concentrations.
- 💧 **Aesthetically**, calcium in water is beneficial, since it makes water taste pleasant. When it contains very high Ca concentrations, the water can taste “hard”.
- 💧 High Ca concentrations in water can cause scaling and very low Ca concentrations can cause corrosion in distribution systems and appliances like washing machines and hot water cylinders.

How can Calcium in water be treated?

- 💧 Methods for the removal of calcium from water are typically cation exchange (replace calcium with sodium) and demineralisation techniques, such as ion exchange or reverse osmosis.
- 💧 Large amounts of water are treated by chemical precipitation and sedimentation.
- 💧 Home treatment kits, using ion-exchange processes are expensive and treat only small volumes of water.



calcium
20
Ca
40.078



Reference: DWAF (1998). Quality of domestic water supplies. Vol. 1: Assessment Guide. WRC No. TT 101/98, pp. 21.