

Role of CCPP in the Stabilisation of Drinking Water



What is CCPP?

CCPP is an acronym that stands for **C**alcium **C**arbonate **P**recipitation **P**otential. It is the calculated mass of calcium carbonate expected to precipitate or be dissolved by particular water. It is not measured directly, but rather derived through complex mathematical calculations using parameters such as pH, temperature, calcium and alkalinity concentrations. It is expressed as milligrams per litre (mg/L) calcium carbonate (CaCO₃).

Why is it measured?

Primarily, the calculation of CCPP is for water production purposes rather than for health or other concerns. The CCPP can be equated in a broad sense to how corrosive the water may be. By measuring how much calcium carbonate will precipitate or dissolve, the water treatment operators can adjust their chemical dosing to ensure final purified water that will not corrode metal or dissolve concrete pipes. As such, the CCPP is merely a guideline for treatment plant operations and not a standard to which to adhere. CCPP is not regulated by any of the local or international drinking water quality standards.

Does CCPP always remain the same?

No, CCPP will change over time due to chemical reactions until the calcium carbonate reaches a state of equilibrium. Generally, the CCPP will be high at the treatment plants and then gradually decrease in value until it reaches the consumer. Typically, values will decrease from approximately 2 mg/L CaCO₃ to -5 mg/L CaCO₃ and below. Values of between 0 and -5 mg/L CaCO₃ are considered passive, with values of -20 mg/L CaCO₃ and below considered corrosive. However, it must be borne in mind that CCPP values are part of a long-term treatment strategy and not immediate indicators of any problem. Operational conditions may dictate that the CCPP should rather be high over certain periods and then much lower over others. The real importance of CCPP is the average values taken over many months and even years as part of a corrosion control strategy.

Health issues

The CCPP of typical drinking water is a calculated value and no specific health effects are associated with it. It merely provides an indication as to the potential of the water to gradually damage pipelines and other transport structures over time.

Other effects

In a sense, excessively high CCPP values can be related to the hardness of the water (see: Hardness) and result in mineral deposits in kettles, showers and geysers. However, the typical situation is that the CCPP value will be slightly negative by the time it reaches the consumer. Excessively negative CCPP values may result from a number of factors, including the type and state of the pipelines, water stagnation, flow rates, temperatures, length of time in the distribution network and other variables. This will be apparent in that the water will turn a red or brown colour due to corroding metal pipes and other structures. These extreme situations are unlikely to occur under normal circumstances.

Rand Water purifies the water by means of a conventional purification process, resulting in water that is safe to drink. Your tap water will satisfy your daily requirements, and meets the SANS 0241 water quality specifications.

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

