

# Complexometric determination of water hardness

[Environment](#), [Water](#)



**Abstract:**

Create a standardized EDTA solution for use as a titration solution to determine the hardness of water from a single random sample. Introduction: Using a calibrated EDTA solution to determine water hardness from a random sample. Essentially the Na<sub>2</sub>EDTA solution reacts one to one with the mineral content of a sample of tap water and by use of a standardized solution a ppm estimation can be obtained for the hardness of water.

Current knowledge in this area is well understood and procedures used follow generally accepted guidelines. Method: First the calibration was completed using an approximately. 7340g Na<sub>2</sub>EDTA/500mL solution. A 1.000g/L calcium ion solution was used as the primary standard with approximately 3mL of ammonium chloride as a buffer and Erichrome Black T as the indicator solution. Three titrations were performed to ensure accuracy of the molarity of the Na<sub>2</sub>EDTA solution. The 1.000g/L calcium ion solution had to be converted to M so 1g/L/100. g=.009990M calcium ion solution. Since the first titration is so far out from the other two it was thrown out giving an average result of .04233M Na<sub>2</sub>EDTA Sample B was used in this experiment with at 25mL and three titrations were performed to ensure accuracy with the same buffer solution (appx 3mL ammonium chloride @ pH10). A magnetic stirrer and standard burette were used in the procedure with a read accuracy to .01mL. Eriochrome Black T was the indicator solution. Discussion: The results are very consistent however the website for checking the data is no longer valid. Provided that the titration solution was calibrated properly the results from the experiment to determine the

hardness of water should be accurate with a margin of consistency between samples vs. average hardness @ 1. 89% at most for any of the three samples.