

4. A 0.2054 g sample of CaCO_3 (primary standard) is dissolved in hydrochloric acid and the solution is diluted with water to 250.0 mL (solution A). A 50.0 mL aliquot of solution A is titrated with 41.12 mL of EDTA solution.

a) I calculated a Molarity of 0.00998. Is this correct? (show all calculation).

b) Now a 100.0 mL sample of water containing Ca^{2+} and Mg^{2+} is titrated with 22.74 mL of the EDTA solution in the example above at $\text{pH} = 10.00$. Another 100 mL sample is treated with NaOH to precipitate $\text{Mg}(\text{OH})_2$, and then titrated at $\text{pH} 13$ with 15.86 mL of the same EDTA solution. Calculate the ppm of CaCO_3 and MgCO_3 in the sample.

5. A solution of 0.00599 M EDTA is used to titrate 250 mL of a solution formed by adding MgSO_4 to water. The volume of EDTA solution required to reach the endpoint was 10.10 mL.

a. Write the titration reaction.

b. What was the concentration of MgSO_4 in the solution?