

A 2.00g sample of limestone was dissolved in hydrochloric acid and all the calcium present in the sample was converted to $\text{Ca}^{2+}_{(\text{aq})}$.

Excess ammonium oxalate solution, $(\text{NH}_4)_2\text{C}_2\text{O}_{4(\text{aq})}$, was added to the solution to precipitate the calcium ions as calcium oxalate, $\text{CaC}_2\text{O}_{4(\text{s})}$.

The precipitate was filtered, dried and weighed to a constant mass of 2.43g.

Determine the percentage by mass of calcium in the limestone sample.