

Calcium nitrate solution



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The following observations were made during the titration of 60 ml of 0.100M of Calcium Nitrate solution with 0.100M solution of Sodium Phosphate:

The temperature of the titrated solution in the beaker increase gradually until a particular point after it started reducing on further titration. The color of the solution changed from clear to cloudy in the course of titration coupled with continuous stirring. Solid deposits were left at the bottom of the beaker after titration. The calibrated electrical conductivity gradually increased as the titration of calcium nitrate progresses up to the point of equilibrium.

The results of the experiment were entered in the table 4a below

The calibration curve for the Calcium Nitrate Titration with Sodium Phosphate

Discussion

The electrical conductivity of 0.120 M Aqueous Sodium Nitrate solution drops steadily with the volumetric addition of 0.100 m of sodium phosphate up to the equilibrium point when the reacting ions from two reactants are perfectly in proportion. Further addition of the solution of 0.100M Sodium Phosphate to the sodium nitrate solution past the stoichiometric equilibrium results into a gradual increase in the electrical conductivity. The reverse is true with the thermal pattern of the titrated solution. Unlike the electrical conductivity, the temperature of the mixture solution of Calcium Nitrate and Sodium Phosphate shoots suddenly at equilibrium but begins to fall on further titration.

The volume of 0.100 M Sodium Phosphate required to neutralize 60 ml of the 0.100 M Calcium Nitrate during the experiment proves that the amount of reactants is proportional to the quantity of products formed in any stoichiometric reaction. The experimental values did not match the literature values giving a percentage volumetric error and percentage conductivity value error of 2.5% and 21.5% respectively. This could be caused by contamination of the reagents and or apparatus.