

# Gravimetric Analysis

To estimate the amount of barium in the whole of the given solution of barium chloride.

# Theory

- **The Gravimetric Estimation of Barium:**

The given barium chloride solution is made up to a definite volume. A measured volume of it is then treated with dilute sulphuric acid and then treated with dilute sulphuric acid and barium precipitated as barium sulphate.

- The precipitated barium sulphate is separated and weighed. The mass of Barium in the whole of the given solution is calculated knowing that 233.36 g of barium sulphate contains 137.36 g of barium.

**Note:** For more details refer the theory of "Gravimetric Estimation of Nickel."

# Procedure

- The given barium chloride solution is made up to 100mL in a standard flask.
- 20mL of solution is pipetted into a 250 mL beaker.
- About 5mL 2N HCl is added and diluted to 150mL with distilled water.
- The solution is heated to boiling and a hot solution of 4N H<sub>2</sub>SO<sub>4</sub> (10 - 15mL) is added drop by drop with constant stirring, till the precipitation is complete.

- The solution containing the precipitate is heated in a water bath for 5 minutes.
- The precipitate is allowed to stand for an hour.
- The clear solution is decanted through an ashless filter paper (whatman No. 40).
- The precipitate is washed with hot distilled water to free sulphate ions.
- The particles adhering to the sides of the beaker and glass rod are removed by a policeman.
- Finally the precipitate is washed once again.

- The dried filter paper is folded and placed in a crucible which has been previously weighed.
- The filter paper with the precipitate is first incinerated on a Bunsen burner by a low flame and then transferred to an electric burner.
- The crucible is transferred to desiccator and cooled.
- When cold, the crucible is weighed.
- Heating, cooling and weighing are repeated till concordant values are obtained.

# Calculation

- Mass of crucible + lid = a g  
Mass of crucible + lid + Bariumsulphate = b g  
Mass of Bariumsulphate = (b-a) g.  
233.36 of barium sulphate contain 137.36 g of barium.  
Mass of barium in (b-a) g of Bariumsulphate =
- Therefore, Mass of Barium in the whole of the given solution =

# Result

- Mass of Barium in the whole of the given solution = ----  
----- g.