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TITRATION WITH POTASSIUM IODATE

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- **Oxidations with potassium iodate is known as iodometry.**
- **Potassium iodate is a powerful oxidising agent, but the course of the reaction is governed by the conditions under which it is employed.**
- **The reaction between potassium iodate and reducing agents such as iodide ion or arsenic(iii) oxide in solutions of moderate acidity (0.1-2.0M hydrochloric acid) stops at the stage when the iodate is reduced to iodine: $\text{IO}_3^- + 6\text{H}^+ + 5\text{e}^- = 3\text{I}_2 + 3\text{H}_2\text{O}$**



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PREPARATION OF 0.025M POTASSIUM IODATE

- **Dry some potassium iodate at 120°C for 1 hour and allow it to cool in a covered vessel in a desiccator.**
- **Weigh out exactly 5.350g of the finely powdered potassium iodate on a watchglass, and transfer it by means of a clean camel-hair brush directly into a dry 1L graduated flask.**
- **Add about 400-500 mL of water, and gently rotate the flask until the salt is completely dissolved.**



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• **Make up to the mark with distilled water. Shake well. The solution will keep indefinitely.**

- **It must be emphasised that this 0.025M solution is intended for the reaction: $\text{IO}_3^- + 6\text{H}^+ + \text{Cl}^- + 4\text{e}^- = \text{ICl} + 3\text{H}_2\text{O}$**
- **but when used in solutions of moderate acidity leading to the liberation of free iodine.**
- **ideally the solution then requires 4.28 g L⁻¹ potassium iodate; the method of preparation will be adjustment with suitable amount salt taken.**



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DETERMINATION OF MERCURY

- Weigh out accurately about 2.5g of finely powdered mercury(II) chloride, and dissolve it in 100mL of water in a graduated flask. Shake well.
- Transfer 25.0mL of the solution to a conical flask, add 25 mL water, 2 mL 1M hydrochloric acid, and excess of 50 per cent phosphorous(III) acid solution.
- Stir thoroughly and allow to stand for 12 hours or more.



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- **Filter the precipitated mercury(I) chloride through a quantitative filter paper and wash the precipitate moderately with cold water**
- **Transfer the precipitate with the filter paper quantitatively to a 250 mL reagent bottle, add 30mL concentrated hydrochloric acid, 20 mL water, and 5 mL carbon tetrachloride or chloroform. Titrate the mixture with standard 0.025M potassium iodate in the usual manner.**



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