

Oxidation-Reduction Analysis of Hydrogen Peroxide

Many oxidation-reduction reactions serve as a basis for quantitative analysis. One of the most widely used oxidizing agents is potassium permanganate, KMnO_4 . It is a powerful oxidizing agent that also serves as a self-indicator. One drop in excess of the endpoint volume of a titration turns the solution a pale-pink color.

In this experiment, you will titrate a standardized solution of 0.02 M KMnO_4 into a measured amount of an unknown concentration of hydrogen peroxide, H_2O_2 . Your objective is to determine the percentage and molarity of H_2O_2 in ordinary over-the-counter solutions of hydrogen peroxide.

Pre-Lab Assignment:

Balance the equation for the titration reaction using the half-reaction method. The reaction takes place in acidic conditions. (Record your work in your lab notebook.)



Materials

2 burets
Erlenmeyer flasks
Stir plate
Magnetic stir bar
Balance
Household hydrogen peroxide
0.02M potassium permanganate solution
3.0 M sulfuric acid
0.1M manganese(II) sulfate
Distilled water

PROCEDURE

1. Obtain and wear goggles.
2. Rinse and fill a buret with standardized KMnO_4 solution. Record the molarity of the solution.
3. Determine the mass of a clean, dry Erlenmeyer flask to the correct number of significant figures, and record.
4. From the buret on the front table, record the initial volume (again, to the correct number of significant figures). Add approximately 1.5 mL of ordinary household hydrogen peroxide. Record the final buret volume.
5. Find the mass of the flask with the peroxide and record.
6. Add about 35 mL of distilled water, 5 mL of 3.0 M H_2SO_4 , and 3 or 4 drops of 0.1 M MnSO_4 , which acts as a catalyst.

Analysis Of Hydrogen Peroxide Answers

Mr. Rohit Manglik



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