

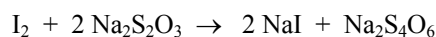
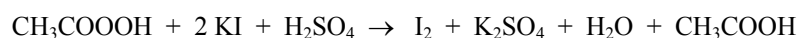
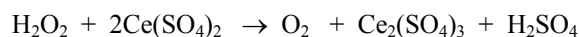
Analytical Method

Peracetic Acid and Hydrogen Peroxide Assay for 5% Peracetic Acid

Principle

Hydrogen peroxide is titrated with ceric sulfate. The peracetic acid is then determined iodometrically.

Chemistry



Equipment

1. Raisin EDP2 pipette or equivalent, 0.2 mL
2. Erlenmeyer flask, 500 mL
3. Burettes (2)
4. Analytical balance, accurate to 0.1 mg
5. Top-loader balance, readable to 0.01 g

Reagents

1. Ceric sulfate, 0.1N - Purchased standardized reagent.
2. Sodium thiosulfate, 0.1N - Prepared and standardized in bulk preparation
3. Starch indicator solution, 1% - Purchased for iodometric titrations or equivalent.
4. Potassium iodide, 10% - Dissolve 100 g of ACS grade KI in deionized water and dilute to 1L. Mix well.
5. Ferroin (1,10-Phenanthroline ferrous sulfate, 0.01 molar in water) solution - Purchased reagent.
6. Sulfuric acid, 1N - Carefully add 100 mL of concentrated ACS grade H_2SO_4 to approximately 2L of deionized water and dilute to 3.5L. Mix well and store cold in the refrigerator.
7. Deionized water.

Procedure

Pipette 0.2 mL sample (or weigh accurately ~0.23 g into a weighing cup and add directly) into a 500 mL Erlenmeyer flask containing 200 mL of ice cold 1 N H_2SO_4 to permit titration at 0° - 10°C. Add three drops Ferroin solution. Titrate with 0.1 N ceric sulfate to the disappearance of the salmon color of the indicator. Record titer. Add 10 mL of 10% KI solution or 1 g of dry salt and titrate the liberated iodine with 0.1 N sodium thiosulfate to the starch (use 2 mL) endpoint.

Calculations

Weighed Sample

$$\% \text{ Peracetic acid} = \frac{\text{mL Na}_2\text{S}_2\text{O}_3 \times \text{Normality} \times 0.038}{\text{Sample Weight}} \times 100$$

Sample Weight

$$\% \text{ Hydrogen peroxide} = \frac{\text{mL Ce(SO}_4)_2 \times \text{Normality} \times 0.017}{\text{Sample Weight}} \times 100$$

Sample Weight

$$\% \text{ Active oxygen} = \frac{[(\text{mL Ce(SO}_4)_2 \times \text{Normality}) + (\text{mL Na}_2\text{S}_2\text{O}_3 \times \text{Normality})] \times 0.008}{\text{Sample Weight}} \times 100$$

Sample Weight

Analysis of Peracetic Acid Solutions

Analysis of dilute peracetic acid solutions can be done in the plant using a simple field kit developed for the food and beverage industry by **LaMotte Company**. The test kit (order code #7191) uses two separate calorimetric titrations. The first titration determines the concentration of hydrogen peroxide; the second determines the concentration of peracetic acid present. The kit comes complete with instructions, apparatus and reagents for 50 tests. Reagent refills for 50 more tests are also available as product number R-7191. For additional information or to place an order, please contact:

LaMotte Company
Box 329, Chestertown, MD 21620
Phone (800) 344-3100 or (410) 778-3100
Fax (410) 778-6394