Chlorine HR (Cl_2)

Method — Iodometric Titration with Photometric Detection

After adding the reagents required to establish the appropriate acidic conditions in the sample, free chlorine is converted into iodine by reaction with potassium iodide. The iodine generated is titrated with a standard sodium thiosulphate solution. The end point of the titration is detected photometrically using an LED light source at 490 nm. The controlled micro-dosing of the titrant by syringe drive (minimum dose 0.015 ml) ensures high accuracy and excellent repeatability between consecutive analyses of the same sample.

Principle of measurement

The method is based on an iodometric redox titration: In acidic medium, free chlorine oxidizes iodide ions to iodine. The liberated iodine is titrated with sodium thiosulphate and the decrease in iodine concentration is monitored photometrically at 490 nm, allowing precise detection of the equivalence point without reliance on visual indicators. The amount of thiosulphate consumed is directly proportional to the free chlorine concentration in the sample.

Advantages of the method

- Wide measurement ranges
- High precision due to controlled titrant micro-dosing
- Photometric end-point detection eliminates subjectivity
- Excellent repeatability between successive analyses
- Suitable for highly concentrated chlorine solutions after appropriate dilution

Specifications

Range: From 0 to 250 ppm / 500 ppm / 750 ppm / 1000 ppm. Adjustable higher concentrations with internal dilution and titrant concentration.
Accuracy: ±2 %
Repeatability: ±2 %
Resolution: 0.1 ppm
Analysis time: Approximately 15—20 minutes
Sample volume: 6 ml
Detection: LED photometric measurement at 490 nm
Calibration: One-point

Reagents consumption

- Reagent 1: 2 ml / analysis - 1.5 L/month
- Reagent 2: 2.5 ml / analysis - 1.8 L/month
- Titrant: up to 6 ml / analysis - 4.4 L/month

Monthly consumption calculated assuming 1 analysis per hour.

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