Potentiometric titration

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Abstract

Potentiometric titrationis can be used to determine the effective content of general chemical . The method offers many advantages, including simplicity, speed, easier end-point determination and more accurate results.

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Guidelines

Composite platinum (Pt) electrodes or a monomer platinum (Pt) indicator electrode and reference electrode were used to measure available chlorine, available iodine and hydrogen peroxide content.A composite water phase pH electrode(containing a pH indicator electrode and a Ag/AgCl reference electrode)or an aqueous phase pH-indicating electrode and reference electrode monomer were used to measure glutaraldehyde content.A composite non-aqueous phase pH electrode (containing a pH indicator electrodeand a Ag/AgCl reference electrode)was used to measure the chlorhexidine content. Finally, a surfactant aqueous phase titration indicator electrode and a reference electrode were used to measure benzalkonium bromidecontent.

Materials

100 mg Potassium iodide orb134641 by biorbyt

Sulfuric Acid (H2SO4) by Contributed by users

Protocol

Ambient temperature and humidity

Step 1.

The ambient temperature was 20°C-25°C,and the relative humidity was 45%-85% for these studies.

Principle

Step 2.

The indicator electrode and the reference electrode (or the reference and an indicator electrode included as a composite electrode) were immersed in the same solution, in which the reference

electrode was maintained at a constant; then,the indicator electrode was immersed in the test substance. When the titration approached the equivalence point, small changes in the activity of the test substance solution elicited a dramatic change to the indicator electrode, and the largest change detected in indicator electrode potential was considered the end point of titration.

Titration mode, control program design, and installation

Step 3.

The Tiamo operating procedure software was installed before installing and debugging the automatic potentiometric titrator.Prior to using the instrument,titration mode was selected,and the standard detection method for test itemsand parameters were entered into the control program. The test project and the indicators for samples were transferred to the method bar and bar usage before conducting the titration,allowing the database to generate results automatically.

Method details

Step 4.

(1) The electrode and the titration mode were chosen according to the type of sample.

Method details

Step 5.

(2) Sample pretreatment: 10 times the amount of solid (powder, tablet) chemical disinfectant required for analysis was obtained, and,the appropriate amount of sample for accurate determination after grinding was weighed. The liquid chemical disinfectant was shaken until uniform and then analyzed directly or after dilution.

Method details

Step 6.

(3) Thesample information, standard titrant concentration and formula were input into the device,and the effective content of the sample was measured.

Method details

Step 7.

(4)The database then generated the results automatically.

Determination of the titration equivalence point

Step 8.

A peak maximum appears during the titration procedure when the threshold value is exceeded, and the jump point is identified by a first derivative curve, or the titration equivalence point.The titration equivalence point corresponding to the volume of titrant recorded which is transferred to the formula for further calculations.

Calculation of results

Step 9.

The calculation was repeated six times, and the average result was determined.