



Overview

Total, effective and active alkali, sulfidity and causticity concentrations are determined in a sequence using the ABC Preset Endpoint titration technique with an Orion pH electrode, and hydrochloric acid as the titrant. The Orion 960 Autotitrator PLUS determines each of three endpoints and calculates the concentrations of the desired species in the sample. This log describes the method for the first endpoint (pH 11).

| | | | |
|-------------------------------|--|------------------------------|-------------------------------|
| Market | Paper and Pulp | Species Measured | ABC, Alkalinity, 1st endpoint |
| Sample | White Liquor | Sample Size | 3.0 mL |
| | | Typical Concentration | 0.8 lb/gal active alkali |
| Technique # | 8 Preset Endpoint | Electrode | Ross pH electrode 8172BN |
| Solutions | 1M hydrochloric acid; electrode storage 91001; deionized water (DI) | | |
| Solutions preparation: | 1M HCl: Add 83 mL of concentrated hydrochloric acid to about 750 mL DI. Mix well. Dilute to 1 L with DI. | | |

Titrant standardization Titrate 3 mL of 1.00N sodium hydroxide standard solution diluted to 50 mL with DI. Use technique 11 and reaction ratio of 1.

Sample Prep Pipet 3 mL of white liquor into an analysis beaker containing 50 mL of deionized water. Titrate with 1M hydrochloric acid in a sequence of methods to endpoints at pH 11, pH 8.3, and pH 4.1. This log describes the method for the first endpoint, pH 11.

Write three methods, one for each endpoint, as described in logs 337A, 337B, and 337C. Link in a sequence. Select Special Calculation, ABC in the sequence routine. See Section IX.3 in 960 manual for details.

Statistics

| | | | | | | |
|--------------------|---|-------------|-------|------------|-----|----------------------|
| # of Trials | 4 | Mean | 0.832 | %CV | 1.1 | Analysis Time |
|--------------------|---|-------------|-------|------------|-----|----------------------|

Comments Rinse the electrodes, stirrer, and dispenser probe thoroughly between measurements with deionized water.

Use Applications Logs for ABC, Alkalinity, 1st endpoint (337A), 2nd endpoint (337B), and 3rd endpoint (337C) together.

Method Parameters

| | | | |
|-----------------------------|-----------|------------------------------------|----------------------------|
| Sample Volume/Weight | 3.00 mL | Timed or Stability Readings | 3.0 seconds timed |
| Constant Increment | 0.15 mL | Number of Endpoints | 1 at pH 11 |
| Max Titrant Volume | 15 mL | Desired Units | ...V |
| Molecular weight | 31.00 | Predose | 6 mL |
| Prestir | 5 seconds | Additional Parameters | Modify method as required. |
| Reaction Ratio | 1 | | |



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Potentiometric Titration Application Notes

Applications Log # 337A

Results