

NR 1300

Date: 18-Feb-04

Application Data Sheet

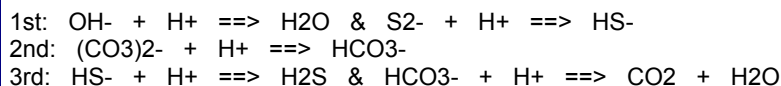
Alkali, Carbonate, Hydroxide & Sulfide

Matrix

White, green and black liquors

Principle

The total alkali, active alkali, effective alkali, hydroxide, carbonate and sulfide are determined in a Dynamic Endpoint Titration (DET) using 1 M HCl. Titration with HCl results in three inflection points or endpoints.



In the first endpoint the hydroxide and sulfide are determined, in the second endpoint the carbonate is determined and in the third endpoint the sulfide and carbonate are determined.

The effective, active and total alkali are calculated.

Detection method

Method:	Detector	Ion:	λ:
Alkali (active, effective, total) Titration - Acid/base	pH Glass electrode	n.a.	n.a.
(CO ₃) ²⁻ Titration - Acid/base	pH Glass electrode	n.a.	n.a.
OH ⁻ Titration - Acid/base	pH Glass electrode	n.a.	n.a.
S ²⁻ Titration - Acid/base	pH Glass electrode	n.a.	n.a.

Specification

Range	Standard Dev.	Repeatability	Inaccuracy	Analysis time
Alkali (active, effective, total) 0.1 - 8 mol/l	< 0.01 mol/l	+/- < 0.03 mol/l	+/- < 0.03 mol/l	15 minutes
(CO ₃) ²⁻ 0.1 - 3 mol/l	< 0.01 mol/l	+/- < 0.03 mol/l	+/- < 0.03 mol/l	in total
OH ⁻ 0.1 - 6 mol/l	< 0.01 mol/l	+/- < 0.03 mol/l	+/- < 0.03 mol/l	
S ²⁻ 0.1 - 3 mol/l	< 0.01 mol/l	+/- < 0.03 mol/l	+/- < 0.03 mol/l	

Interferences

Other acids and bases.

Reagents

Carrier solution (water) 30 ml per analysis
 NaOH solution (1 M) 15 ml per analysis
 HCl (1 M)

Procedure

- clean the analysis vessel with water
- transfer 2 ml of sample with carrier solution to the analysis vessel
- perform drift controlled Dynamic Endpoint Titration
- add NaOH solution after the titration
- calculate the results

Remarks

Conform Scandinavian pulp, paper and board testing committee SCAN-N 30:85. During the titration a precipitation occurs. Use a rotating rinsing nozzle. For safety reasons NaOH is added after the titration to remove H₂S.

Possible Analyzer

- 2040
- 2016
- 2018 HD
- 2018 Compact
- 2019 HD
- 2019 Compact
- 2019 Special

Typical Wet Part layout

(Other layouts may be realised in order to meet desired criteria, e.g measuring range.)

