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Spectroquant®

Aluminium Cell Test

Al

1. Method

In weakly acidic, acetate-buffered solution aluminium ions react with chromazurol S to form a blue-violet compound that is determined photometrically. The method is analogous to APHA 3500-Al B and DIN ISO 10566.

2. Measuring range and number of determinations

Measuring range	Number of determinations
0.02 - 0.50 mg/l Al	25

For programming data for selected photometers / spectrophotometers see www.service-test-kits.com.

3. Applications

Sample material:

Groundwater, surface water, and seawater
Drinking water
Industrial water
Wastewater and percolating water

4. Influence of foreign substances

This was checked in solutions containing 0.25 and 0 mg/l Al. The determination is not yet interfered with up to the concentrations of foreign substances given in the table.

Concentrations of foreign substances in mg/l or %					
Ag⁺	1	F⁻¹⁾	1	PO₄³⁻	500
Cd²⁺	500	Fe³⁺	100	S²⁻	100
CN⁻	1000	Mn²⁺	500	Sn²⁺	10
Co²⁺	50	NH₄⁺	500	SO₃²⁻	1000
Cr³⁺	50	NO₂⁻	50	Zn²⁺	500
Cr₂O₇²⁻	5	OCN⁻	500		
Cu²⁺	1	Pb²⁺	500		

¹⁾ Fluoride can be removed by fuming off with sulfuric acid 95 - 97 % (**Wear eye protection!**) (application see the website).

²⁾ EDTA can be destroyed with Spectroquant® Crack Set 10 or Spectroquant® Crack Set 10C.

³⁾ tested with nonionic, cationic, and anionic surfactants

5. Reagents and auxiliaries

The test reagents are stable up to the date stated on the pack when stored closed at +15 to +25 °C.

Package contents:

25 reaction cells
1 bottle of reagent Al-1K
1 bottle of reagent Al-2K
1 sheet of round stickers for numbering the cells

Other reagents and accessories:

Sulfuric acid 95 - 97 % for analysis EMSURE®, Cat. No. 100731
Spectroquant® Crack Set 10, Cat. No. 114687 or
Spectroquant® Crack Set 10C, Cat. No. 114688
MColorpHast™ Universal indicator strips pH 0 - 14, Cat. No. 109535
MColorpHast™ pH-indicator strips pH 5.0 - 10.0, Cat. No. 109533
Sodium hydroxide solution 1 mol/l TitriPUR®, Cat. No. 109137
Sulfuric acid 0.5 mol/l TitriPUR®, Cat. No. 109072
Aluminium standard solution CertiPUR®, 1000 mg/l Al, Cat. No. 119770
Hydrochloric acid 25 % for analysis EMSURE®, Cat. No. 100316
2-Propanol for analysis EMSURE®, Cat. No. 109634

Pipettes for pipetting volumes of 0.25 and 6.0 ml

6. Preparation

- **The glassware must be free from surfactants!** It is thus recommended to leave it to stand filled with alcoholic hydrochloric acid (25 ml of hydrochloric acid 25 % + 75 ml of 2-propanol) for several hours and subsequently rinse it thoroughly with distilled water.
- Analyze immediately after sampling.
- **The pH must be within the range 3 - 10.**
Adjust, if necessary, with sodium hydroxide solution or sulfuric acid.
- Filter turbid samples.

7. Procedure

Pretreated sample (15 - 25 °C)	6.0 ml	Pipette into a reaction cell and mix.
Reagent Al-1K	1 level blue microspoon (in the cap of the Al-1K bottle)	Add, close the cell tightly, and shake vigorously until the reagent is completely dissolved.
Reagent Al-2K	0.25 ml	Add with pipette and mix.
Leave to stand for 5 min (reaction time), then measure the sample in the photometer.		

Notes on the measurement:

- For photometric measurement the cells must be clean.
Wipe, if necessary, with a clean dry cloth.
- Measurement of turbid solutions yields false-high readings.
- The pH of the measurement solution must be within the range 5.5 - 6.0.
- The color of the measurement solution remains stable for 15 min after the end of the reaction time stated above.

8. Analytical quality assurance

recommended before each measurement series

To check the photometric measurement system (test reagents, measurement device, handling) and the mode of working, a dilute aluminium standard solution containing 0.25 mg/l Al can be used.

Sample-dependent interferences (matrix effects) can be determined by means of standard addition.

Additional notes see under www.qa-test-kits.com.

Characteristic quality data:

In the production control, the following data were determined in accordance with ISO 8466-1 and DIN 38402 A51:

Standard deviation of the method (mg/l Al)	± 0.007
Coefficient of variation of the method (%)	± 2.3
Confidence interval (mg/l Al)	± 0.02
Number of lots	9

Characteristic data of the procedure:

Sensitivity: Absorbance 0.010 A corresponds to (mg/l Al)	0.004
Accuracy of a measurement value (mg/l Al)	max. ± 0.03

For quality and batch certificates for Spectroquant® test kits see the website.

9. Notes

- Reclose the reagent bottles immediately after use.
- **Information on disposal can be obtained at www.disposal-test-kits.com.**

