Supelco®

1.14413.0001

MQuant®

Aluminium Test

Al

1. Method

Determination with color-card comparator
In weakly acidic, acetate-buffered solution aluminium ions react with chromazurol S to form a blue compound. Due to the intrinsic orange coloration of the reagent blank, the measurement solution is orange-red to red in color. The aluminium concentration is measured **semiquantitatively** by visual comparison of the color of the measurement solution with the color fields of a color card.

2. Measuring range and number of determinations

Measuring range / color-scale graduation	Number of determinations
0.07 - 0.12 - 0.20 - 0.35 - 0.50 - 0.65 - **0.80 mg/l Al**	185

3. Applications

Sample material:
Groundwater and surface water, seawater
Drinking water and mineral water
Waters from aquaculture
Boiler and boiler feed water, cooling water
Industrial and process water
Wastewater and percolating water
Electroplating wastewater
Swimming-pool water

4. Influence of foreign substances

This was checked individually in solutions containing 0.5 and 0 mg/l Al. The determination is not yet interfered with up to the concentrations of foreign substances given in the table. Cumulative effects were not checked; such effects can, however, not be excluded.

Concentrations of foreign substances in mg/l or %							
Ag^+	**1**	**F^-** [1]	**1**	PO_4^{3-}	100	**EDTA** [2]	**0 %**
Cd^{2+}	1000	Fe^{3+}	100	S^{2-}	100	**Surfactants** [3]	**0 %**
CN^-	1000	Mn^{2+}	100	**Sn^{2+}**	**10**	NaCl	5 %
Co^{2+}	50	NH_4^+	1000	SO_3^{2-}	1000	$NaNO_3$	5 %
Cr^{3+}	**10**	NO_2^-	150	Zn^{2+}	100	Na_2SO_4	5 %
$Cr_2O_7^{2-}$	**10**	OCN^-	1000				
Cu^{2+}	**0.1**	**Pb^{2+}**	**10**				

[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:
1 bottle of reagent Al-1
1 bottle of reagent Al-2
2 bottles of reagent Al-3
1 graduated 5-ml plastic syringe
1 graduated 3-ml plastic syringe
2 test tubes with screw caps (in comparator block)
1 color card

Other reagents:
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
MQuant® Universal indicator strips pH 0 - 14, Cat. No. 109535
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

Refill pack:
Cat. No. 118452
Aluminium Test
Refill pack for 118386 and 114413
(Reagents **without technical accessories** for the number of determinations stated in section 2)

6. Preparation

- **The test tubes must be free from surfactants!** It is thus recommended to leave them to stand filled with alcoholic hydrochloric acid (25 ml of hydrochloric acid 25 % + 75 ml of 2-propanol) for several hours and subsequently rinse them 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

Open the box and set up with both test tubes **on the left**.
Slide the comparator block all the way to the left, so that the end holding the test tubes protrudes laterally over the bottom part of the box.
Unfold the color card and insert it, colored end first, into the slit at the lower **right-hand** edge of the box.

	Measurement sample tube nearer to the tester (**A**)	**Blank** tube farther from the tester (**B**)	
Pretreated sample (**15 - 40 °C**)	5 ml	5 ml	Inject into the test tube with the syringe.
Reagent Al-1	1 level blue microspoon (in the cap of the Al-1 bottle)	-	Add, close the tube, and shake **vigorously until the reagent is completely dissolved**.
Reagent Al-2	1.2 ml	-	Add with the second syringe, close the tube, and mix.
Reagent Al-3	4 drops [1]	-	Add, close the tube, and mix.
Leave to stand for 7 min (reaction time).			

Slide the color card through to the left until the closest possible color match is achieved between the two open test tubes when viewed from above.
Read off the result in mg/l Al from the color card at the lower right-hand edge of the comparator block within the bottom part of the box.

[1] **Hold the bottle vertically while adding the reagent!**

Notes on the measurement:

- The color of the measurement solution remains stable for 15 min after the end of the reaction time stated above.
- Turbidity in the measurement solution makes the color comparison more difficult.
- If the color of the measurement solution is equal to or more intense than the darkest color on the scale, repeat the measurement using **fresh**, diluted samples until a value of less than 0.80 mg/l Al is obtained.
  Concerning the result of the analysis, the dilution must be taken into account:

Result of analysis = measurement value x dilution factor

8. Method control

To check test reagents, measurement device, and handling:
Dilute the aluminium standard solution with distilled water to 0.20 mg/l Al and analyze as described in section 7.
Additional notes see under **www.qa-test-kits.com**.

9. Notes

- Reclose the reagent bottles immediately after use.
- Rinse the test tubes and the syringes **with distilled water only**.
- **Information on disposal can be obtained at www.disposal-test-kits.com.**

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