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MQuant™

Cobalt Test

Co

1. Method

Cobalt(II) ions react with thiocyanate ions to form a blue complex. The cobalt concentration is measured **semiquantitatively** by visual comparison of the reaction zone of the test strip with the fields of a color scale.

2. Measuring range and number of determinations

Measuring range / color-scale graduation	Number of determinations
10 - 30 - 100 - 300 - **1000 mg/l Co^{2+}**	100

3. Applications

This test measures only cobalt(II) ions.

Sample material:
Wastewater
Electroplating-bath solutions
Ores

4. Influence of foreign substances

This was checked in solutions with 0 and 100 mg/l Co^{2+}. 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					
Al^{3+}	1000	Fe^{3+}	3500 [1]	Ni^{2+}	1000
Ba^{2+}	1000	**$[Fe(CN)_6]^{4-}$**	**10**	NO_2^-	250
Ca^{2+}	1000	**$[Fe(CN)_6]^{3-}$**	**10**	NO_3^-	1000
Cd^{2+}	1000	Hg^+	300 [1]	Pb^{2+}	1000
Cl^-	1000	K^+	1000	PO_4^{3-}	1000
CN^-	**1**	Mg^{2+}	1000	Sn^{2+}	1000
CrO_4^{2-}	1000	MnO_4^-	1000	SO_3^{2-}	1000
Cu^{2+}	1000 [1]	Na^+	1000	SO_4^{2-}	1000
Fe^{2+}	1000	NH_4^+	1000	Zn^{2+}	1000

5. Reagents and auxiliaries

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

Package contents:
Tube containing 100 test strips

Other reagents:
MColorpHast™ Universal indicator strips pH 0 - 14, Cat. No. 109535
Sodium acetate anhydrous for analysis EMSURE®, Cat. No. 106268
Sulfuric acid 0.5 mol/l TitriPUR®, Cat. No. 109072
Potassium fluoride for analysis EMSURE®, Cat. No. 104994
Sodium thiosulfate pentahydrate for analysis EMSURE®, Cat. No. 106516
Sodium chloride for analysis EMSURE®, Cat. No. 106404
Cobalt standard Titrisol® for 1000 mg/l Co^{2+}, Cat. No. 109986

6. Preparation

- Samples containing more than 1000 mg/l Co^{2+} must be diluted with distilled water.
- **The pH must be within the range 1 - 7.** If necessary, buffer the sample with sodium acetate or, respectively, adjust the pH with sulfuric acid.

7. Procedure

Immerse the reaction zone of the test strip in the pretreated sample (**15 - 25 °C**) **for 1 sec**.

Shake off excess liquid from the strip and **after 15 sec** determine with which color field on the label the color of the reaction zone coincides most exactly.

Read off the corresponding result in mg/l Co^{2+}.

Notes on the measurement:

- In the event that the reaction zone of the test strip assumes a color other than yellow to green, **wait 2 min** and recompare with the color scale. If the reaction zone then still shows another color, this is due to an interference by foreign substances. This can be prevented by the addition of appropriate masking agents.

Color of the reaction zone	Cause	Masking agent [1]
brown	>3500 mg/l Fe^{3+}	Potassium fluoride
brown	>1000 mg/l Cu^{2+}	Sodium thiosulfate
grey	>300 mg/l Hg^+	Sodium chloride

[1] To 5 ml of sample add 1 spatula-tip of the masking agent and shake to dissolve. Subsequently determine the cobalt concentration anew.

- The color of the reaction zone may continue to change after the specified reaction time has elapsed. This must not be considered in the measurement.
- If the color of the reaction zone 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 1000 mg/l Co^{2+} is obtained.

  Concerning the result of the analysis, the dilution (see also section 6) must be taken into account:

Result of analysis = measurement value x dilution factor

8. Method control

To check test strips and handling:
Dilute the cobalt standard with distilled water to 100 mg/l Co^{2+} and analyze as described in section 7.
Additional notes see under **www.qa-test-kits.com**.

9. Note

Reclose the tube containing the test strips immediately after use.

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