Supelco®

1.17244.0001

Spectroquant®

Cobalt Cell Test

Co

1. Method

Cobalt(II) ions react with Nitroso-R salt to form a orange-red complex that is determined photometrically.

2. Measuring range and number of determinations

Measuring range	Number of determinations
0.05 - 2.00 mg/l Co	25

For programming data for selected photometers / spectrophotometers see www.sigmaaldrich.com/photometry.

3. Applications

This test measures only cobalt(II) ions. Samples must be decomposed by digestion before undissolved or complex-bound cobalt or cobalt that is present in an organometallic compound can be measured (see section 6).

Sample material:
Groundwater, surface water, and seawater
Drinking water
Wastewater and percolating water

4. Influence of foreign substances

This was checked individually in solutions containing 1 and 0 mg/l Co. 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 %					
Al^{3+}	500	Mg^{2+}	1000	**EDTA**	**0,1**
Ca^{2+}	1000	Mn^{2+}	500	Anionic surfactants [1]	100
Cd^{2+}	1000	NH_4^+	1000	Cationic surfactants [2]	1000
CN^-	**10**	**Ni^{2+}**	**1**	Nonionic surfactants [3]	2.5 %
CO_3^{2-}	1000	**NO_2^-**	**10**	Na-acetate	5 %
Cr^{3+}	**10**	Pb^{2+}	100	NaCl	10 %
CrO_4^{2-}	**10**	PO_4^{3-}	1000	$NaNO_3$	10 %
Cu^{2+}	**0.1**	**S^{2-}**	**10**	Na_2SO_4	20 %
F^-	1000	SCN^-	1000	$Na_2B_4O_7$	5 %
Fe^{3+}	**1**	**SO_3^{2-}**	**10**		
Hg^{2+}	**1**	Zn^{2+}	100		

[1] tested with Na-dodecyl sulfate
[2] tested with N-cetyl-N,N,N-trimethylammonium bromide
[3] tested with Triton® X-100

5. Reagents and auxiliaries

Please note the warnings on the packaging materials!

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 Co-1K
25 reaction cells
1 sheet of round stickers for numbering the cells

Other reagents and accessories:
Nitric acid 65 % for analysis EMSURE®, Cat. No. 100456
Spectroquant® Crack Set 10C, Cat. No. 114688
+ thermoreactor
or
Spectroquant® Crack Set 10, Cat. No. 114687
+ empty cells 16 mm with screw caps (25 pcs), Cat. No. 114724
+ thermoreactor
MQuant® Cobalt Test, Cat. No.110002,
measuring range 10 - 1000 mg/l Co
MQuant® Universal indicator strips pH 0 - 14, Cat. No. 109535
Sodium hydroxide solution 1 mol/l Titripur®, Cat. No. 109137
Nitric acid Titrisol® for 1 mol/l, Cat. No. 109966
Cobalt standard solution Certipur®, 1000 mg/l Co, Cat. No. 170313

Pipettes for pipetting volumes of 0.50 and 5.0 ml

6. Preparation

- Analyze immediately after sampling. Otherwise preserve with nitric acid 65 % (1 ml nitric acid per 1 l of sample solution).
- Undissolved or complex-bound cobalt or cobalt that is present in an organometallic compound can be determined after pretreatment of the sample using one of the Spectroquant® Crack Sets.
- Check the cobalt content with the MQuant® Cobalt Test. Samples containing more than 2.00 mg/l Co must be diluted with distilled water **prior to** digestion.
- **The pH must be within the range 2.5 - 7.5.** Adjust, if necessary, with sodium hydroxide solution or nitric acid.
- Filter turbid samples.

7. Procedure

Pretreated sample (**10 - 40 °C**)	5.0 ml	Pipette into a reaction cell, close the cell, and mix.
Reagent Co-1K	0.50 ml	Add with pipette, close the cell, and mix.
Leave to stand for 10 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 approx. 4.8.
- The color of the measurement solution remains stable for at least 60 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 cobalt standard solution containing 1.00 mg/l Co 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**.
For quality and batch certificates for Spectroquant® test kits see the website, where you will find all data in production control, that are determined in accordance with ISO 8466-1 and DIN 38402 A51.

9. Notes

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

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