Supelco®

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Spectroquant®

Chloride Cell Test

Cl^-

1. Method

Chloride ions react with mercury(II) thiocyanate to form slightly dissociated mercury(II) chloride. The thiocyanate released in the process in turn reacts with iron(III) ions to form red iron(III) thiocyanate that is determined photometrically.
The method is analogous to EPA 325.1 and APHA 4500-Cl^- E.

2. Measuring range and number of determinations

Measuring range	Number of determinations
5 - 125 mg/l Cl^-	25

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

3. Applications

Sample material:
Groundwater, surface water, and seawater (after dilution)
Drinking water and mineral water
Industrial water
Wastewater and percolating water

4. Influence of foreign substances

This was checked individually in solutions containing 70 and 0 mg/l Cl^-. 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^+	**5**	Cu^{2+}	500	NH_4^+	1000	**Free chlorine**	**10**
Al^{3+}	100	F^-	100	Ni^{2+}	100	Surfactants [2]	1000
Br^-	**5**	Fe^{3+}	250	NO_2^-	100	Na-acetate	1 %
Ca^{2+}	1000	**Hg^{2+}**	**10**	Pb^{2+}	500	$NaNO_3$	20 %
Cd^{2+}	500	**I^-**	**10**	PO_4^{3-}	100	Na_2SO_4	1 %
CN^-	**0.5**	K^+	1000	**S^{2-}**	**0.5** [1]		
Cr^{3+}	500	Mg^{2+}	500	SiO_3^{2-}	1000		
$Cr_2O_7^{2-}$	250	Mn^{2+}	1000	Zn^{2+}	500		

[1] In cases of higher concentrations, eliminate sulfide ions by adding hydrogen peroxide (1 drop of Perhydrol® per 10 ml of sample).

[2] tested with nonionic, cationic, and anionic surfactants

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

Other reagents and accessories:
Hydrogen peroxide 30 % H_2O_2 (Perhydrol®) for analysis EMSURE®, Cat. No. 1.07209
MQuant® Universal indicator strips pH 0 - 14, Cat. No. 1.09535
Ammonia solution 25 % for analysis EMSURE®, Cat. No. 1.05432
Nitric acid Titrisol® for 1 mol/l, Cat. No. 1.09966
Spectroquant® CombiCheck 10, Cat. No. 1.14676
Spectroquant® CombiCheck 20, Cat. No. 1.14675
Chloride standard solution CRM, 10.0 mg/l Cl, Cat. No. 1.32229
Chloride standard solution CRM, 50 mg/l Cl, Cat. No. 1.32230

Pipettes for pipetting volumes of 0.50 and 1.0 ml

6. Preparation

- Analyze immediately after sampling.
- **The pH must be within the range 1 - 12.**
  Adjust, if necessary, with dilute ammonia solution or nitric acid.
- Filter turbid samples.

7. Procedure

Reagent Cl-1K	0.50 ml	Pipette into a reaction cell, close the cell, and mix.
Pretreated sample (**10 - 30 °C**)	1.0 ml	Add with pipette, close the cell, and mix.
Measure the sample **immediately** 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. 1.
- **The color of the measurement solution remains stable for only a short time.** A non-immediate measurement yields false-high readings.

8. Analytical quality assurance

recommended before each measurement series
To check the photometric measurement system (test reagent, measurement device, handling) and the mode of working, the chloride standard solutions CRM (see section 5) or Spectroquant® CombiCheck 10 and 20 can be used. Besides a **standard solution** with 25 mg/l Cl (CombiCheck 10) or, respectively, 60 mg/l Cl (CombiCheck 20), these articles also contain an **addition solution** for determining sample-dependent interferences (**matrix effects**).
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.
- **The test reagents must not be run off with the wastewater! Information on disposal can be obtained at www.disposal-test-kits.com.**

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