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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.service-test-kits.com.

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 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.

Concentrations of foreign substances in mg/l or %					
Ag ⁺	5	Cu ²⁺	500	NH ₄ ⁺	1000
Al ³⁺	100	F ⁻	100	Ni	100
Br ⁻	5	Fe ³⁺	250	NO ₂ ⁻	100
Ca ²⁺	1000	Hg ²⁺	10	Pb ²⁺	500
Cd ²⁺	500	I ⁻	10	PO ₄ ³⁻	100
CN ⁻	0.5	K ⁺	1000	S ²⁻	0.5 ¹⁾
Cr ³⁺	500	Mg ²⁺	500	SiO ₃ ²⁻	1000
Cr ₂ O ₇ ²⁻	250	Mn ²⁺	1000	Zn ²⁺	500
				Free chlorine	10
				Surfactants ²⁾	1000
				Na-acetate	1 %
				NaNO ₃	20 %
				Na ₂ SO ₄	1 %

¹⁾ In cases of higher concentrations, eliminate sulfide ions by adding hydrogen peroxide (1 drop of Perhydro[®] 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 % H₂O₂ (Perhydro[®]) for analysis EMSURE[®], Cat. No. 107209
MColorpHast[™] Universal indicator strips pH 0 - 14, Cat. No. 109535
Ammonia solution 25 % for analysis EMSURE[®], Cat. No. 105432
Nitric acid Titrisol[®] for 1 mol/l, Cat. No. 109966
Spectroquant[®] CombiCheck 10, Cat. No. 114676 or
Spectroquant[®] CombiCheck 20, Cat. No. 114675

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 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 30 min. (After 60 min the measurement value would have increased by 5 %.)

8. Analytical quality assurance

recommended before each measurement series

Spectroquant[®] CombiCheck 10 or 20 can be used for this purpose.

These articles contain a **standard solution** with 25 mg/l Cl⁻ (CombiCheck 10) or, respectively, 60 mg/l Cl⁻ (CombiCheck 20) for checking the photometric measurement system (test reagents, measurement device, handling) and the mode of working and also an **addition solution** for determining sample-dependent interferences (matrix effects).

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 Cl ⁻)	± 1.3
Coefficient of variation of the method (%)	± 2.1
Confidence interval (mg/l Cl ⁻)	± 3
Number of lots	31

Characteristic data of the procedure:

Sensitivity: Absorbance 0.010 A corresponds to (mg/l Cl ⁻)	1
Accuracy of a measurement value (mg/l Cl ⁻)	max. ± 5

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

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.

