

Supelco®

1.01807.0001

1.01807.0007

Spectroquant® Chloride 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

Cell	Measuring range	Number of determinations
50 mm	0.10 - 5.00 mg/l Cl⁻	100

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

3. Applications

Sample material:

Groundwater and surface water
Drinking water and mineral water
Industrial water
Wastewater and percolating water
This test is **not suited** for seawater.

4. Influence of foreign substances

This was checked individually in solutions containing 2.50 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⁺	1	Hg²⁺	0.2
Al ³⁺	500	I⁻	0.1
Br⁻	0.2	K ⁺	1000
Ca ²⁺	1000	Mg ²⁺	200
Cd ²⁺	500	Mn ²⁺	500
CN⁻	0.1	NH ₄ ⁺	1000
CO ₃ ²⁻	200	Ni ²⁺	200
Cr ³⁺	50	NO ₂ ⁻	20
Cr₂O₇²⁻	2	Pb ²⁺	1000
Cu ²⁺	200	PO ₄ ³⁻	100
F ⁻	20	S²⁻	0.1
Fe ³⁺	100	Zn ²⁺	200
		EDTA	500
		Free chlorine	0.1
		Anionic Surfactants ¹⁾	100
		Cationic Surfactants²⁾	1
		Nonionic Surfactants ³⁾	50
		H ₂ O ₂	50
		Na-acetate	0.05 %
		NaNO ₃	0.5 %
		Na ₂ SO ₄	0.05 %

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 Cl-1
1 bottle of reagent Cl-2
1 AutoSelector

Other reagents and accessories:

MQuant® 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
Water for analysis EMSURE®, Cat. No. 116754
Chloride standard solution CRM, 1.00 mg/l Cl, Cat. No. 133010
Chloride standard solution CRM, 2.50 mg/l Cl, Cat. No. 133011

Pipettes for pipetting volumes of 0.20 and 10 ml
Rectangular cells 50 mm (2 pcs), Cat. No. 114944

6. Preparation

- Analyze immediately after sampling.
- The pH must be within the range 3 - 11.**
Adjust, if necessary, with dilute ammonia solution or nitric acid.
- Filter turbid samples.

7. Procedure

	Measuring sample	Blank (only 1x per series)	
Reagent Cl-1	0.20 ml	0.20 ml	Pipette into separate test tubes.
Pretreated sample (15 - 40 °C)	10 ml	-	Add with pipette into a test tube and mix.
Distilled water ¹⁾ (15 - 40 °C)	-	10 ml	Add with pipette into the second test tube and mix.
Reagent Cl-2	0.20 ml	0.20 ml	Add with pipette and mix.

Leave to stand for 10 min (reaction time), then fill the measurement sample and the blank into two separate 50-mm cells and measure in the photometer.

¹⁾ It is recommended to use water for analysis EMSURE®, Cat. No. 116754.

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. 1.5.
- 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, the chloride standard solutions CRM (see section 5) 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.
- The contents of the test tubes and of the cells as well as the test reagents must not be run off with the wastewater!**
Information on disposal can be obtained at www.disposal-test-kits.com.

Merck KGaA, 64271 Darmstadt, Germany,
Tel. +49(0)6151 72-2440
www.sigmaaldrich.com/photometry

EMD Millipore Corporation, 400 Summit Drive
Burlington MA 01803, USA, Tel. +1-978-715-4321
Sigma-Aldrich Canada Co. or Millipore (Canada) Ltd.
2149 Winston Park, Dr. Oakville, Ontario, L6H 6J8
Phone: +1 800-565-1400

