

1.14564.0001

Spectroquant® Sulfate Cell Test



USEPA equivalent for wastewater

1. Method

Sulfate ions react with barium ions to form slightly soluble barium sulfate. The resulting turbidity is measured in the photometer (turbidimetric method).

The method is analogous to EPA 375.4, APHA 4500-SO₄²⁻ E, and ASTM D516-16.

2. Measuring range and number of determinations

Measuring range	Number of determinations
100 - 1000 mg/l SO ₄ ²⁻	25

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

3. Applications

Sample material:

Groundwater and surface water, seawater
Drinking water and mineral water
Wastewater
Nutrient solutions for fertilization
Soils after appropriate sample pretreatment
Water for concrete in the construction industry

4. Influence of foreign substances

This was checked individually in solutions containing 500 and 0 mg/l SO₄²⁻. 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 ⁺	10	Hg ²⁺	1000	S ₂ O ₃ ²⁻	100	EDTA	1000
Al ³⁺	1000	Mg ²⁺	1000	Zn ²⁺	1000	Hydrazine	1000
Ca ²⁺	1000	Mn ²⁺	1000			Anionic surfactants	100
Cd ²⁺	1000	NH ₄ ⁺	1000			Cationic surfactants	500
CN ⁻	1000	Ni ²⁺	1000			Nonionic surfactants	1000
CO ₃ ²⁻	1000	NO ₂ ⁻	1000			Na-acetate	10 %
Cr ³⁺	100	Pb ²⁺	100			NaCl	10 %
Cr ₂ O ₇ ²⁻	250	PO ₄ ³⁻	1000			NaNO₃	0.5 %
Cu ²⁺	1000	S²⁻	50				
F ⁻	1000	SiO ₃ ²⁻	1000				
Fe ³⁺	1000	SO ₃ ²⁻	250				

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 SO₄-1K
25 reaction cells
1 sheet of round self-adhesive stickers for numbering the cells

Other reagents and accessories:

MQuant® Sulfate Test, Cat. No. 1.10019, measuring range <200 - >1600 mg/l SO₄²⁻
MQuant® Universal indicator strips pH 0 - 14, Cat. No. 1.09535
Sodium hydroxide solution 1 mol/l Titripur®, Cat. No. 1.09137
Hydrochloric acid 1 mol/l Titripur®, Cat. No. 1.09057
Membrane filters 0.45 µm
Spectroquant® CombiCheck 20, Cat. No. 1.14675
Sulfate standard solution CRM, 125 mg/l SO₄²⁻, Cat. No. 1.25051
Sulfate standard solution CRM, 400 mg/l SO₄²⁻, Cat. No. 1.25052
Sulfate standard solution CRM, 800 mg/l SO₄²⁻, Cat. No. 1.25053

Pipettes for pipetting volumes of 1.0 and 5.0 ml

6. Preparation

- Analyze immediately after sampling.
- Check the sulfate content with the MQuant® Sulfate Test. Samples containing more than 1000 mg/l SO₄²⁻ must be diluted with distilled water.
- The pH must be within the range 2 - 10.** Adjust, if necessary, with sodium hydroxide solution or hydrochloric acid.
- Filter turbid samples through a 0.45 µm membrane filter.

7. Procedure

Pretreated sample (20 - 40 °C)	1.0 ml	Pipette into a reaction cell and mix.
Reagent SO ₄ -1K	1 level green microspoon (in the cap of the SO ₄ -1K bottle)	Add, close the cell tightly, and shake vigorously until the reagent is completely dissolved.

Leave to stand for exactly 2 min (reaction time), then measure the sample in the photometer.

Notes on the measurement:

- For turbidimetric measurement the cells must be clean. Wipe, if necessary, with a clean dry cloth.
- The pH of the measurement solution must be within the range 1.0 - 2.0.

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 sulfate standard solutions CRM (see section 5) or Spectroquant® CombiCheck 20 can be used. Besides a **standard solution** with 500 mg/l SO₄²⁻, CombiCheck 20 also contains 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.
- Information on disposal can be obtained at www.disposal-test-kits.com.**

