

Supelco®

1.14394.0001

## Spectroquant® Sulfite Cell Test

SO<sub>3</sub><sup>2-</sup>

### 1. Method

In neutral solution sulfite ions react with 2,2'-dinitro-5,5'-dithiodibenzoic acid (Ellman's reagent) to form an organic thiosulfate. This reaction results in the release of a thiol that is determined photometrically.

### 2. Measuring range and number of determinations

Measurement in	Measuring range		Number of determinations
	mg/l SO <sub>3</sub> <sup>2-</sup>	mg/l SO <sub>2</sub>	
reaction cell	<b>1.0 - 20.0</b>	<b>0.8 - 16.0</b>	25
50-mm rectangular cell	0.05 - 3.00	0.04 - 2.40	

For programming data for selected photometers / spectrophotometers see [www.service-test-kits.com](http://www.service-test-kits.com).

### 3. Applications

#### Sample material:

Groundwater, drinking water, and surface water  
Boiler water and boiler feed water  
Wastewater, especially from the cellulose and textile industry, from the electroplating industry, and from the photographic industry  
Food after appropriate sample pretreatment  
This test is **not suited** for seawater.

### 4. Influence of foreign substances (measuring range 1.0 - 20.0 mg/l SO<sub>3</sub><sup>2-</sup>)

This was checked individually in solutions containing 10 and 0 mg/l SO<sub>3</sub><sup>2-</sup>. 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 <sup>+</sup>	1	Cu <sup>2+</sup>	100	NO <sub>2</sub> <sup>-</sup>	500
Al <sup>3+</sup>	10	F <sup>-</sup>	1000	Pb <sup>2+</sup>	100
Ca <sup>2+</sup>	100	Fe <sup>3+</sup>	25	PO <sub>4</sub> <sup>3-</sup>	1000
Cd <sup>2+</sup>	100	Hg <sup>2+</sup>	0.1	S <sup>2-</sup>	0.1
CN <sup>-</sup>	10	Mg <sup>2+</sup>	500	SiO <sub>3</sub> <sup>2-</sup>	1000
CO <sub>3</sub> <sup>2-</sup>	1000	Mn <sup>2+</sup>	100	S <sub>2</sub> O <sub>3</sub> <sup>2-</sup>	1
Cr <sup>3+</sup>	10	NH <sub>4</sub> <sup>+</sup>	1000	Zn <sup>2+</sup>	100
Cr <sub>2</sub> O <sub>7</sub> <sup>2-</sup>	10	Ni <sup>2+</sup>	100	EDTA	1000
				Hydrazine	100
				Surfactants <sup>1)</sup>	500
				Na-acetate	20 %
				NaCl	20 %
				NaNO <sub>3</sub>	20 %
				Na <sub>2</sub> SO <sub>4</sub>	20 %

<sup>1)</sup> tested with nonionic, cationic, and anionic surfactants

### 5. Reagents and auxiliaries

Please note the warnings on the packaging materials!

#### Store the pack protected from light!

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 SO<sub>3</sub><sup>2-</sup>-1K  
25 reaction cells  
1 sheet of round stickers for numbering the cells

#### Other reagents and accessories:

MQuant® Sulfite Test, Cat. No. 110013, measuring range 10 - 400 mg/l SO<sub>3</sub><sup>2-</sup>  
MQuant® Universal indicator strips pH 0 - 14, Cat. No. 109535  
Sodium hydroxide solution 1 mol/l Titripur®, Cat. No. 109137  
Sulfuric acid 0.5 mol/l Titripur®, Cat. No. 109072  
Water for analysis EMSURE®, Cat. No. 116754  
Sodium sulfite anhydrous for analysis EMSURE®, Cat. No. 106657

Pipette for a pipetting volume of 3.0 ml  
Pipette for a pipetting volume of 7.0 ml  
Rectangular cells 50 mm (2 pcs), Cat. No. 114944

### 6. Preparation

- Analyze immediately after sampling.
- Check the sulfite content with the MQuant® Sulfite Test. Samples containing more than 20.0 mg/l SO<sub>3</sub><sup>2-</sup> must be diluted with distilled water.
- The pH must be within the range 4 - 9.** Adjust, if necessary, with sodium hydroxide solution or sulfuric acid.
- Filter turbid samples.

### 7. Procedure

#### Measuring range 1.0 - 20.0 mg/l SO<sub>3</sub><sup>2-</sup>:

Reagent SO <sub>3</sub> <sup>2-</sup> -1K	1 level grey microspoon (in the cap of the SO <sub>3</sub> <sup>2-</sup> -1K bottle)	Place into a reaction cell, close the cell tightly, and shake <b>thoroughly until the reagent is completely dissolved.</b>
Pretreated sample (10 - 30 °C)	<b>3.0 ml</b>	Add with pipette, close the cell tightly, and mix.
<b>Leave to stand for 2 min (reaction time)</b> , then measure the sample in the photometer.		

#### Measuring range 0.05 - 3.00 mg/l SO<sub>3</sub><sup>2-</sup>:

	Measurement sample	Blank (only 1x per series)	
Reagent SO <sub>3</sub> <sup>2-</sup> -1K	1 level grey microspoon (in the cap of the SO <sub>3</sub> <sup>2-</sup> -1K bottle)	1 level grey microspoon (in the cap of the SO <sub>3</sub> <sup>2-</sup> -1K bottle)	Place into a <b>reaction cell</b> , close the cell tightly, and shake <b>thoroughly until the reagent is completely dissolved.</b>
Pretreated sample (10 - 30 °C)	<b>7.0 ml</b>	-	Add with pipette, close cell tightly, and mix.
Distilled water <sup>1)</sup> (10 - 30 °C)	-	<b>7.0 ml</b>	Add with pipette, close the cell tightly, and mix.
<b>Leave to stand for 2 min (reaction time)</b> , then fill the measurement sample and the blank into <b>two separate 50-mm rectangular cells</b> , select method number <sup>2)</sup> , and measure in the photometer.			

<sup>1)</sup> It is recommended to use water for analysis, Cat. No. 116754.

<sup>2)</sup> Refer to the respective photometer manual for the corresponding method number.

#### 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 within the range 6.5 - 7.5.
- 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 (measuring range 1.0 - 20.0 mg/l SO<sub>3</sub><sup>2-</sup>)

recommended before each measurement series

To check the photometric measurement system (test reagents, measurement device, handling) and the mode of working, a freshly prepared sulfite standard solution containing 12.5 mg/l SO<sub>3</sub><sup>2-</sup> (application see the website) 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](http://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](http://www.disposal-test-kits.com).**

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