

1.01632.0001

## Spectroquant® Monochloramine Test

### 1. Method

In the presence of a catalyst monochloramine (NH<sub>2</sub>Cl) reacts with thymol to form a blue indophenol derivative that is determined photometrically.

### 2. Measuring range and number of determinations

Cell mm	Measuring range			Number of determinations
	mg/l Cl <sub>2</sub>	mg/l NH <sub>2</sub> Cl	mg/l NH <sub>2</sub> Cl-N	
50	<b>0.050</b> - 2.000	<b>0.036</b> - 1.452	<b>0.010</b> - 0.395	150
20	0.13 - 5.00	0.09 - 3.63	0.03 - 0.99	
10	0.25 - <b>10.00</b>	0.18 - <b>7.26</b>	0.05 - <b>1.98</b>	

For programming data for selected photometers / spectrophotometers see [www.sigmaaldrich.com/photometry](http://www.sigmaaldrich.com/photometry).

### 3. Applications

#### Sample material:

Drinking water

Wastewater

Disinfectant solutions

This test is **not suited** for seawater.

### 4. Influence of foreign substances

This was checked individually in solutions containing 5 mg/l Cl<sub>2</sub>. 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 %					
Al <sup>3+</sup>	1000	Hg <sup>2+</sup>	100	EDTA	500
Ca <sup>2+</sup>	1000	Mg <sup>2+</sup>	100	<b>Primary amines<sup>1)</sup></b>	<b>0</b>
Cd <sup>2+</sup>	100	<b>Mn<sup>2+</sup></b>	<b>10</b>	<b>Secondary amines<sup>2)</sup></b>	<b>0</b>
<b>CN<sup>-</sup></b>	<b>1</b>	Ni <sup>2+</sup>	100	Triethanolamine	500
Cr <sup>3+</sup>	100	NO <sub>2</sub> <sup>-</sup>	100	Surfactants <sup>3)</sup>	500
Cr <sub>2</sub> O <sub>7</sub> <sup>2-</sup>	1000	Pb <sup>2+</sup>	1000	Na-acetate	10 %
<b>Cu<sup>2+</sup></b>	<b>10</b>	PO <sub>4</sub> <sup>3-</sup>	100	NaCl	10 %
<b>F<sup>-</sup></b>	<b>10</b>	SiO <sub>3</sub> <sup>2-</sup>	500	NaNO <sub>3</sub>	20 %
Fe <sup>3+</sup>	100	Zn <sup>2+</sup>	100	Na <sub>2</sub> SO <sub>4</sub>	20 %

Reducing agents interfere with the determination.

<sup>1)</sup> tested with methylamine

<sup>2)</sup> tested with dimethylamine

<sup>3)</sup> 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 MCA-1

1 bottle of reagent MCA-2

1 AutoSelector

#### Other reagents and accessories:

MQuant® Universal indicator strips pH 0 - 14, Cat. No. 1.09535

Sodium hydroxide solution 1 mol/l Titripur®, Cat. No. 1.09137

Sulfuric acid 0.5 mol/l Titripur®, Cat. No. 1.09072

Pipettes for pipetting volumes of 0.60 and 10 ml

Rectangular cells 10, 20, and 50 mm (2 of each), Cat. Nos. 1.14946, 1.14947, and 1.14944

### 6. Preparation

- Analyze immediately after sampling.
- The pH must be within the range 4 - 13.**  
Adjust, if necessary, with sodium hydroxide solution or sulfuric acid.
- Filter turbid samples.

### 7. Procedure

Pretreated sample ( <b>20 - 30 °C</b> )	10 ml	Pipette into a test tube.
Reagent MCA-1 ( <b>20 - 30 °C</b> )	0.60 ml	Add with pipette and mix.
<b>Leave to stand for 5 min (reaction time A).</b>		
Reagent MCA-2	4 drops <sup>1)</sup>	Add and mix.
<b>Leave to stand for 10 min (reaction time B)</b> , then fill the sample into the cell, and measure in the photometer.		

<sup>1)</sup> **Hold the bottle vertically while adding the reagent!**

#### Notes on the measurement:

- Certain photometers may require a blank** (preparation as per measurement sample, but with distilled water instead of sample).
- When using the 50-mm cell**, perform the measurement against a separately prepared blank (preparation as per measurement sample, but with distilled water instead of sample). Configure the photometer for blank 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.
- Monochloramine-free samples turn yellow on addition of reagent MCA-2.
- The pH of the measurement solution must be approx. 12.5.
- The color of the measurement solution remains stable for at least 60 min after the end of the reaction time B 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, a freshly prepared chlorine standard solution containing 5.00 mg/l Cl<sub>2</sub> (corresponds to 3.63 mg/l NH<sub>2</sub>Cl) (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 bottles immediately after use.
- Information on disposal can be obtained at [www.disposal-test-kits.com](http://www.disposal-test-kits.com).**

