

1.16971.0001

1.16995.0001

## Reflectoquant® Nitrate Test $\text{NO}_3^-$

### 1. Method

Nitrate ions are reduced to nitrite ions by a reducing agent. In the presence of an acidic buffer, these nitrite ions react with an aromatic amine to form a diazonium salt, which in turn reacts with N-(1-naphthyl)-ethylenediamine to form a red-violet azo dye that is determined reflectometrically.

### 2. Measuring range and number of determinations

Cat. No.	Measuring range <sup>1)</sup>	Number of determinations
116995	3 - 90 mg/l $\text{NO}_3^-$	50
	0.7 - 20.3 mg/l $\text{NO}_3\text{-N}$	
116971	5 - 225 mg/l $\text{NO}_3^-$	50
	1.1 - 50.8 mg/l $\text{NO}_3\text{-N}$	

<sup>1)</sup> for conversion factors see section 8

### 3. Applications

#### Sample material:

Groundwater, wellwater, and drinking water  
Spring water and mineral water  
Industrial water, wastewater, percolating water  
Aquarium water  
Pressed plant and fruit juices  
Food and animal fodder after appropriate sample pretreatment (**applications see the website**)  
Soils and fertilizers after appropriate sample pretreatment (**applications see the website**)  
This test is **not suited** for seawater (false-low readings of approx. -70 %).

### 4. Influence of foreign substances

This was checked individually in solutions with nitrate concentrations from the middle of the respective measuring range and with 0 mg/l  $\text{NO}_3^-$ . 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 %			
$\text{Al}^{3+}$	1000	$\text{Fe}^{2+}$	10
Ascorbate	1000	$\text{Fe}^{3+}$	10
$\text{BO}_3^{3-}$	1000	$\text{K}^+$	1000
$\text{Ca}^{2+}$	1000	$\text{Mg}^{2+}$	1000
Citrate	1000	$\text{Mn}^{2+}$	1000
$\text{Cl}^-$	500	$\text{NO}_2^-$	0.5 <sup>1)</sup>
$\text{CO}_3^{2-}$	1000	Oxalate	1000
$\text{Cr}^{3+}$	100	$\text{PO}_4^{3-}$	1000
$\text{CrO}_4^{2-}$	10	$\text{SO}_3^{2-}$	10
$\text{Cu}^{2+}$	1	Tartrate	1000
		EDTA	1000
		<b>Anionic surfactants<sup>2)</sup></b>	<b>10</b>
		<b>Cationic surfactants<sup>3)</sup></b>	<b>10</b>
		Nonionic surfactants <sup>4)</sup>	1000
		$\text{H}_2\text{O}_2$	10
		$\text{Na}_2\text{SO}_4$	1 %

<sup>1)</sup> In case of higher concentrations, eliminate nitrite ions acc. to section 6.

<sup>2)</sup> tested with Na-dodecyl sulfate

<sup>3)</sup> tested with N-cetylpyridinium chloride

<sup>4)</sup> tested with polyvinylpyrrolidone

### 5. Reagents and auxiliaries

The test strips are stable up to the date stated on the pack when stored closed at +2 to +8 °C.

#### Package contents:

Tube containing 50 test strips  
1 bar-code strip

#### Other reagents:

MQuant® Nitrite Test, Cat. No. 110007, measuring range 2 - 80 mg/l  $\text{NO}_2^-$  (0.6 - 24 mg/l  $\text{NO}_2\text{-N}$ )

Amidosulfuric acid for analysis EMSURE®, Cat. No. 100103

MQuant® Nitrate Test, Cat. No. 110020, measuring range 10 - 500 mg/l  $\text{NO}_3^-$  (2.3 - 113 mg/l  $\text{NO}_3\text{-N}$ )

MQuant® Universal indicator strips pH 0 - 14, Cat. No. 109535

Sodium acetate anhydrous for analysis

EMSURE®, Cat. No. 106268

L(+)-Tartaric acid for analysis EMSURE®,

Cat. No. 100804

Nitrate standard solution Certipur®, 1000 mg/l

$\text{NO}_3^-$ , Cat. No. 119811

### 6. Preparation

- Extract solid sample materials by an appropriate method (applications see the website).
- Check the nitrite content with the MQuant® Nitrite Test.

If necessary, eliminate interfering nitrite ions: To 5 ml of sample (pH < 10) add 5 drops of a 10 % aqueous amidosulfuric acid solution and shake several times.

- Check the nitrate content with the MQuant® Nitrate Test.

Samples containing more than 90 mg/l  $\text{NO}_3^-$  (Cat. No. 116995) or 225 mg/l  $\text{NO}_3^-$  (Cat. No. 116971) must be diluted with distilled water.

- The pH must be within the range 1 - 12.

If the pH is lower than 1, buffer the sample with sodium acetate; if it is greater than 12, adjust to approx. 3 - 5 with tartaric acid.

### 7. Procedure

Observe the manual for the reflectometer.

The following applies to the Nitrate Test:

#### Measurement procedure A

Stored reaction time: 60 sec

Press the START button of the reflectometer and - **this is imperative - at the same time** immerse **both reaction zones** of the test strip in the pre-treated sample (**15 - 30 °C**) for **2 sec**.

Allow excess liquid to run off via the long edge of the strip onto an absorbent paper towel for **1 sec**.

Approx. 10 sec before the end of the reaction time, insert the strip all the way into the strip adapter with the reaction zones facing the display.

After the end of the reaction time, read off the result from the display in mg/l  $\text{NO}_3^-$ . The result is automatically stored.

#### Notes on the measurement:

- If the measurement value exceeds the measuring range (HI is shown on the display), repeat the measurement using **fresh**, diluted samples until a value of less than 90 mg/l  $\text{NO}_3^-$  (Cat. No. 116995) or 225 mg/l  $\text{NO}_3^-$  (Cat. No. 116971) is obtained.

Concerning the result of the analysis, the dilution (see also section 6) must be taken into account:

Result of analysis = measurement value x dilution factor

- If the test strip is inserted into the adapter after the reaction time has expired, renewed depression of the START button may produce a false result.

### 8. Conversions

Units required =	units given	x	conversion factor
mg/l $\text{NO}_3\text{-N}$	mg/l $\text{NO}_3^-$		0.226
mg/l $\text{NO}_3^-$	mg/l $\text{NO}_3\text{-N}$		4.43

### 9. Method control

To check test strips, measurement device, and handling (recommended before each measurement series):

Dilute the nitrate standard solution with distilled water to 30 mg/l  $\text{NO}_3^-$  (Cat. No. 116995) or 50 mg/l  $\text{NO}_3^-$  (Cat. No. 116971) and analyze as described in section 7.

Additional notes see under [www.qa-test-kits.com](http://www.qa-test-kits.com).

### 10. Notes

- Reclose the tube containing the test strips immediately after use.
- At the end of each workday, cleanse the strip adapter thoroughly with distilled water or ethanol.

