Supelco®

1.17961.0001

RQeasy Nitrate Test 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-naph-thyl)-ethylene-diamine to form a red-violet azo dye that is determined reflectometrically.

2. Measuring range and number of determinations

Measuring range [1]	Number of determinations
5 - 250 mg/l NO_3^- **1.1 - 56.5 mg/l NO_3-N**	50

[1] 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 **only conditionally suited** for seawater (false-low readings).

4. Influence of foreign substances

This was checked individually in solutions with 100 and 0 mg/l 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 %					
Al^{3+}	1000	**Fe^{2+}**	**10**	EDTA	1000
Ascorbate	1000	**Fe^{3+}**	**10**	**Anionic surfactants [2]**	**10**
BO_3^{3-}	1000	K^+	1000	**Cationic surfactants [3]**	**10**
Ca^{2+}	1000	Mg^{2+}	1000	Nonionic surfactants [4]	1000
Citrate	1000	Mn^{2+}	1000	**H_2O_2**	**10**
Cl^-	500	**NO_2^-**	**0.5 [1]**	Na_2SO_4	1 %
CO_3^{2-}	1000	Oxalate	1000		
Cr^{3+}	100	PO_4^{3-}	1000		
CrO_4^{2-}	**10**	**SO_3^{2-}**	**10**		
Cu^{2+}	**1**	Tartrate	1000		

[1] In case of higher concentrations, elininate nitrite ions acc. to section 6.
[2] tested with Na-dodecyl sulfate
[3] tested with N-cetylpyridinium chloride
[4] 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

Other reagents:
MQuant® Nitrite Test, Cat. No. 110007, measuring range 2 - 80 mg/l NO_2^- (0.6 - 24 mg/l NO_2-N)
Amidosulfuric acid for analysis EMSURE®, Cat. No. 100103
MQuant® Nitrate Test, Cat. No. 110020, measuring range 10 - 500 mg/l NO_3^- (2.3 - 113 mg/l NO_3-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 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 neccessary, eliminate interfering nitrite ions: Add 5 drops of a 10 % aqueous amidosulfuric acid solution to 5 ml of sample (pH < 10) and shake several times.
- Check the nitrate content with the MQuant® Nitrate Test.
  Samples containing more than 250 mg/l NO_3^- 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 greater than 12, adjust to approx. 3 - 5 with tartaric acid.

7. Procedure

Observe the manual for the reflectometer RQeasy Nitrat.
Stored reaction time: 60 sec

Press the ⏻ button and first check that the three-digit code number printed on the tube label matches that shown on the display (see the manual for the instrument for further details).

As soon as the **test-strip symbol** starts to flash, gently press the part of the strip adapter facing the display and insert the test strip all the way into the adapter with the reaction zone facing down (blank-value measurement). [1]

As soon as the **drop symbol** starts to flash and the reaction time (60 sec) is shown, remove the strip from the adapter, press either the ▲ or ▼ arrow button to start the reaction time, and - **this is imperative** - **at the same time** immerse the reaction zone of the strip in the pretreated sample (**15 - 30 °C**) **for 2 sec**.

Carefully allow excess liquid to run off via the long edge of the strip onto an absorbent paper towel and **immediately** insert the strip all the way into the strip adapter with the reaction zone facing down. [1]

After the end of the reaction time, read off the result from the display in mg/l NO_3^-.

The result is automatically stored.

[1] Do **not** move the test strip during the measurement!

Notes on the measurement:

- Serial measurements are not possible with this instrument, which must be switched on anew for every further 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 250 mg/l NO_3^- is obtained. **This must then be multiplied by the corresponding dilution factor.**

8. Conversions

Units **required** =	units **given**	x conversion factor
mg/l NO_3-**N**	**mg/l NO_3^-**	0.226
mg/l NO_3^-	mg/l NO_3-**N**	4.43

9. Method control

To check test strips, measurement device, and handling (it is recommended prior to each measurement series):
Dilute the nitrate standard solution with distilled water to 50 mg/l NO_3^- and analyze as described in section 7.
Additional notes see under **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 test-strip zone thoroughly with distilled water or ethanol.

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