

Supelco®

1.10020.0001
1.10020.0002**MQuant®
Nitrate Test****NO₃⁻****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)-ethylene-diamine to form a red-violet azo dye. The nitrate concentration is measured **semiquantitatively** by visual comparison of the reaction zone of the test strip with the fields of a color scale.

Each strip also features a second reaction zone (**alert zone**), the color of which changes in the presence of nitrite ions.

2. Measuring range and number of determinations

Measuring range / color-scale graduation ¹⁾	Number of determinations
10 - 25 - 50 - 100 - 250 - 500 mg/I NO₃⁻	25 (Cat. No. 1.10020.0002)
2.3 - 5.6 - 11 - 23 - 56 - 113 mg/I NO₃⁻	or 100 (Cat. No. 1.10020.0001)

¹⁾ for conversion factors see section 8

3. Applications

The determination can be performed not only in liquid samples, but also on moist surfaces of e.g. freshly cut fruit and vegetables (see section 7).

Sample material:

Groundwater, well water, 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
Soils and fertilizers after appropriate sample pretreatment
This test is **only conditionally suited** for sea-water (false-low readings).

4. Influence of foreign substances

This was checked individually in solutions with 50 and 0 mg/I NO₃⁻. 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/I					
Ag ⁺	50	Fe ³⁺	250	NO ₂ ⁻	2 ¹⁾
Al ³⁺	1000	[Fe(CN) ₆] ⁴⁻	100	Pb ²⁺	1000
Ba ²⁺	1000	[Fe(CN) ₆] ³⁻	100	PO ₄ ³⁻	1000
Ca ²⁺	1000	Hg ²⁺	50	S ²⁻	25
Cl ⁻	1000	Hg ²⁺	100	SCN ⁻	100
CN ⁻	1000	K ⁺	1000	SO ₃ ²⁻	500
Co ²⁺	1000	Mg ²⁺	1000	SO ₄ ²⁻	1000
CrO ₄ ²⁻	20	Mn ²⁺	1000	S ₂ O ₃ ²⁻	250
Cu ²⁺	1000	MnO ₄ ⁻	10	Zn ²⁺	1000
Fe ²⁺	500	Ni ²⁺	1000		

¹⁾ In case of higher concentrations, eliminate nitrite ions acc. to section 7.

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 25 test strips
(Cat. No. 1.10020.0002)
or
tube containing 100 test strips
(Cat. No. 1.10020.0001)

Other reagents:

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
Amidosulfuric acid for analysis EMSURE®,
Cat. No. 100103
Nitrate standard solution Certipur®, 1000 mg/I
NO₃⁻, Cat. No. 119811

6. Preparation

- Extract solid sample materials by an appropriate method.
- Samples containing more than 500 mg/I NO₃⁻ 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

Immerse **both reaction zones** of the test strip in the pretreated sample (**15 - 25 °C**) **for 1 sec.**

Shake off excess liquid from the strip and **after 1 min** determine with which color field on the label the color of the NO₃⁻ reaction zone coincides most exactly.

If the NO₂⁻ alert zone changes color see "Notes on the measurement".

Read off the corresponding result in mg/I NO₃⁻ or NO₃-N.

Determination on vegetable surfaces:

Cut plant material (e.g. fruit, vegetables, potatoes) with a knife, lightly press the reaction zone of the test strip on the moist surface for **1 - 10 sec**, and **after 1 min** compare with the color scale.

Notes on the measurement:

- The color of the reaction zone may continue to change after the specified reaction time has elapsed. This must not be considered in the measurement.
 - If necessary (discolouration of the alert zone), 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. Subsequently repeat the nitrate measurement.
 - If the color of the reaction zone is equal to or more intense than the darkest color on the scale, repeat the measurement using **fresh**, diluted samples until a value of less than 500 mg/I NO₃⁻ 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

- It is recommended to treat the measurement results obtained on moist surfaces only as guideline values.**

8. Conversions

Units required = units given x conversion factor		
mg/I NO ₃ -N	mg/I NO ₃ ⁻	0.226
mg/I NO ₃ ⁻	mg/I NO ₃ -N	4.43

9. Method control

To check test strips and handling:
Dilute the nitrate standard solution with distilled water to 250 mg/I NO₃⁻ and analyze as described in section 7.
Additional notes see under **www.qa-test-kits.com**.

10. Note

Reclose the tube containing the test strips immediately after use.

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