

Overview

The test is suitable for the photometric determination of Kjeldahl nitrogen.

The test is suitable for surface water, ground and drinking water and wastewater.

- Measuring range:
 - 1.00–32.0 mg/L TN_b (method 0671)
 - 1.00–16.0 mg/L NO₃-N (method 0672)
 - 1.00–16.0 mg/L TKN (method 0673)
- Number of tests: 20
- Wavelength for photometric determination: 345 nm
- Shelf life: 18 months
- Reaction time: 70 minutes
- Storage temperature: 20–25 °C
- Storage conditions: protected from sunlight, upright.

Method

For the simplified determination of total Kjeldahl nitrogen (TKN) the sample is decomposed oxidatively and the amount of total nitrogen (TN_b) is measured after reaction of the formed nitrate ions with 2,6-dimethylphenol. In the second step, the nitrate nitrogen (NO₃-N) content of the undigested sample is determined by an analogue procedure. The TKN value is calculated as the difference between TN_b and NO₃-N.

Interferences

The foreign materials shown here do not interfere with the test up to the indicated concentrations (in mg/L). The cumulative effect of different interfering ions has not been tested.

Data in mg/L:

- NO₂-N: 2
- COD: 500
- Cl⁻: 500

This method is not suitable for analyzing seawater.

Turbidities cause higher measurement values.

Nitrogen concentrations outside of the double measurement range can simulate measured values which are within the single measurement range and can be misinterpreted. Dilute the measured value expected from the sample beforehand in the measurement range indicated by the test. For waters of unknown concentration, testing should, for the sake of certainty, be performed with very different dilutions (1+9, 1+99) until the value found previously is confirmed from the last dilution. In the case of samples which consume large amounts of oxidants (such as for COD values > 500 mg/L O₂), there is a risk of incomplete decomposition. In these cases, the decomposition must be repeated with the previously diluted original sample.

Reagents and accessories

Contents of reagents set:

- 20 tubes A
- 20 tubes B
- 20 tubes C
- 4 reagent R1
- 2 reagent R1
- 1 NANOFIX compensation reagent

Required devices:

- MACHERY-NAGEL photometer
- MACHERY-NAGEL heating block
- Digital piston pipette 1–5 mL (REF 916909) with pipette tips (REF 916916)
- Digital piston pipette 200–1000 µL (REF 91671) with pipette tips (REF 91667)
- Tweezers for sampling NANOFIX capsules (REF 916114)

Standards

- NANOCNTROL Multistandard Sewage outflow 2 (REF 925010)

Sampling and preparation

See DIN EN ISO 5667-3-A 21.

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Quality control

The measurement of a blank value and a standard is recommended before every measuring series as quality control measure.

LOT-specific certificates are available at www.mn-net.com.

Procedure

Digestion (box A)

1. Open test tube A
2. Adjust to pH 5–9 prior to analysis.
3. Pipette 2 mL of sample into test tube
4. Add 2mL R1
5. Seal test tube and shake vigorously
6. Heat for 1 h at 100 °C or for 30 min at 120 °C
7. Take the tube from the heating block
8. Cool to room temperature
9. Add 1 NANOFIX compensation reagent
10. Seal test tube and shake vigorously

Analysis (box B and box C)

11. Open test tube B
12. Pipette 0.5 mL of solution A into test tube
13. Add 0.5 mL R2
14. Close cuvette and turn upside down 3 ×
15. Clean outside of test tube
16. Wait 10 min
17. Measure
18. Open test tube C
19. Adjust to pH 1–13 prior to analysis.
20. Pipette 0.25 mL of sample into test tube
21. Add 0.25 mL R2
22. Close cuvette and turn upside down 3 ×
23. Wait 10 min
24. Clean outside of test tube
25. Measure

Notes

When using other photometers, make sure measurements are possible in test tubes (16 mm OD) and calibrate the method.

Information regarding safety can be found on the box' label and in the safety data sheet. You can download the SDS from www.mn-net.com/SDS.

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