

**Vee kvaliteet - Lämmastiksisalduse määramine
Kjeldahli meetodil - Meetod pärast seleeniga
mineraliseerimist**

Water quality - Determination of Kjeldahl nitrogen -
Method after mineralization with selenium

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

Käesolev Eesti standard EVS-EN 25663:1999 sisaldab Euroopa standardi EN 25663:1993 ingliskeelset teksti.

Standard on kinnitatud Eesti Standardikeskuse 11.01.2000 käskkirjaga ja jõustub sellekohase teate avaldamisel EVS Teatajas.

Standard on kättesaadav Eesti standardiorganisatsioonist.

This Estonian standard EVS-EN 25663:1999 consists of the English text of the European standard EN 25663:1993.

This standard is ratified with the order of Estonian Centre for Standardisation dated 11.01.2000 and is endorsed with the notification published in the official bulletin of the Estonian national standardisation organisation.

The standard is available from Estonian standardisation organisation.

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Descriptors: Water analysis, drinking water, waste water, water quality; water pollution, chemical analysis, determination of nitrogen, Kjeldahl method, mineralization, selenium.

English version

Water quality

Determination of Kjeldahl nitrogen

Method after mineralization with selenium

(ISO 5663:1984)

Qualité de l'eau; dosage de l'azote
Kjeldahl; méthode après minéralisation
au sélénium (ISO 5663:1984)

Wasserbeschaffenheit; Bestimmung des
Kjeldahl-Stickstoffs; Verfahren nach
Aufschluß mit Selen (ISO 5663:1984)

This European Standard was approved by CEN on 1993-09-10 and is identical to the ISO Standard as referred to.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Central Secretariat has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

CEN

European Committee for Standardization
Comité Européen de Normalisation
Europäisches Komitee für Normung

Central Secretariat: rue de Stassart 36, B-1050 Brussels

Foreword

In 1993, CEN/TC 230 'Water quality' decided to submit

ISO 5663:1984 Water quality; determination of Kjeldahl nitrogen; method after mineralization with selenium to the Unique Acceptance Procedure. The result was positive.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, and conflicting national standards withdrawn, by March 1994 at the latest.

In accordance with the CEN/CENELEC Internal Regulations, the following countries are bound to implement this European Standard:

Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

Endorsement notice

The text of the International Standard ISO 5663:1984 was approved by CEN as a European Standard without any modification.

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1 Scope and field of application

1.1 Substance determined

This International Standard specifies a method for the determination of nitrogen by a Kjeldahl-type method. Only trivalent negative nitrogen is determined. Organic nitrogen in the form of azide, azine, azo, hydrazone, nitrite, nitro, nitroso, oxime or semicarbazone is not determined quantitatively. Nitrogen may be incompletely recovered from heterocyclic nitrogen compounds.

1.2 Type of sample

This method is applicable to the analysis of raw, potable and waste waters.

1.3 Range

A Kjeldahl nitrogen content, ρ_N , of up to 10 mg, in the test portion may be determined. Using a 10 ml test portion, this corresponds to a sample concentration of up to $\rho_N = 1\,000$ mg/l.

1.4 Limit of detection

A practically determined (4 degrees of freedom) limit of detection, using a 100 ml test portion, is $\rho_N = 1$ mg/l.

1.5 Sensitivity

Using a 100 ml test portion, 1,0 ml of 0,02 mol/l hydrochloric acid is equivalent to $\rho_N = 2,8$ mg/l.

2 Reference

ISO 7150/1, *Water quality — Determination of ammonium — Part 1: Manual spectrometric method.*

3 Definition

For the purpose of this International Standard, the following definition applies:

Kjeldahl nitrogen: The content of organic nitrogen and ammoniacal nitrogen in a sample determined after mineralization.

It does not include nitrate and nitrite nitrogen, and does not necessarily include all organically bound nitrogen.

4 Principle

Mineralization of the sample to form ammonium sulfate, from which ammonia is liberated and distilled for subsequent determination by titration.

Conversion of the nitrogen compounds responding to the test to ammonium sulfate by mineralization of the sample with sulfuric acid, containing a high concentration of potassium sulfate in order to raise the boiling point of the mixture, in the presence of selenium which acts as a catalyst.¹⁾

Liberation of ammonia from the ammonium sulfate by the addition of alkali and distillation into boric acid/indicator solution.

Determination of ammonium ion in the distillate by titration with standard acid.

Alternatively, direct determination of ammonium ion in the mineralizate by spectrometry at 655 nm. (See clause 11.)

5 Reagents

During the analysis, use only reagents of recognized analytical grade, and only distilled water prepared as described in 5.1.

5.1 Water, ammonium-free, prepared by one of the following methods.

5.1.1 Ion exchange method

Pass distilled water through a column of strongly acidic cation exchange resin (in the hydrogen form) and collect the eluate in a glass bottle provided with a well-fitting glass stopper. Add about 10 g of the same resin to each litre of collected eluate for storage purposes.

1) Selenium has been selected as the catalyst in preference to mercury because of concern in many countries about the toxicity of mercury. However, the toxicity of selenium must not be overlooked. See 11.2 for a suggested procedure for removal of selenium from mineralization residues.