

Foodstuffs - Determination of nitrate and/or nitrite content - Part 4: Ion-exchange chromatographic (IC) method for the determination of nitrate and nitrite content of meat products

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EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

<p>Käesolev Eesti standard EVS-EN 12014-4:2005 sisaldab Euroopa standardi EN 12014-4:2005 ingliskeelset teksti.</p> <p>Käesolev dokument on jõustatud 22.06.2005 ja selle kohta on avaldatud teade Eesti standardiorganisatsiooni ametlikus väljaandes.</p> <p>Standard on kättesaadav Eesti standardiorganisatsioonist.</p>	<p>This Estonian standard EVS-EN 12014-4:2005 consists of the English text of the European standard EN 12014-4:2005.</p> <p>This document is endorsed on 22.06.2005 with the notification being published in the official publication of the Estonian national standardisation organisation.</p> <p>The standard is available from Estonian standardisation organisation.</p>
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<p>Käsitlusala:</p> <p>This European Standard specifies an ion-exchange chromatographic method for the determination of the nitrate and nitrite contents of meat products and has been validated for different meat products with a nitrate content of 50 mg/kg to 300 mg/kg as nitrate ion and a nitrite content of approximately 40 mg/kg as nitrite ion.</p>	<p>Scope:</p> <p>This European Standard specifies an ion-exchange chromatographic method for the determination of the nitrate and nitrite contents of meat products and has been validated for different meat products with a nitrate content of 50 mg/kg to 300 mg/kg as nitrate ion and a nitrite content of approximately 40 mg/kg as nitrite ion.</p>
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Võtmesõnad: agricultural products, chromatography, determination, food inspection, food products

English version

**Foodstuffs - Determination of nitrate and/or nitrite content - Part
4: Ion-exchange chromatographic (IC) method for the
determination of nitrate and nitrite content of meat products**

Produits alimentaires - Détermination de la teneur en
nitrates et/ou en nitrites - Partie 4: Détermination par
chromatographie ionique (CI) de la teneur en nitrates et en
nitrites dans les produits à base de viande

Lebensmittel - Bestimmung des Nitrat- und/oder
Nitritgehaltes - Teil 4: Ionenchromatographisches
Verfahren (IC) für die Bestimmung des Nitrat- und
Nitritgehaltes in Fleischerzeugnissen

This European Standard was approved by CEN on 1 April 2005.

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, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.



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Foreword

This European Standard (EN 12014-4:2005) has been prepared by Technical Committee CEN/TC 275 "Food analysis - Horizontal methods", the secretariat of which is held by DIN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by November 2005, and conflicting national standards shall be withdrawn at the latest by November 2005.

This document supersedes ENV 12014-4:1998.

This series *Foodstuffs - Determination of nitrate and/or nitrite content* consist of the following parts:

Part 1: General considerations;

Part 2: HPLC/IC method for the determination of nitrate content of vegetables and vegetable products;

Part 3: Spectrometric determination of nitrate and nitrite content of meat products after enzymatic reduction of nitrate to nitrite;

Part 4: Ion-exchange chromatographic (IC) method for the determination of nitrate and nitrite content of meat products;

Part 5: Enzymatic determination of nitrate content of vegetable-containing food for babies and infants;

Part 7: Continuous flow method for the determination of nitrate content of vegetables and vegetable products after Cadmium reduction.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

1 Scope

This European Standard specifies an ion-exchange chromatographic method for the determination of the nitrate and nitrite contents of meat products and has been validated for different meat products with a nitrate content of 50 mg/kg to 300 mg/kg as nitrate ion and a nitrite content of approximately 40 mg/kg as nitrite ion.

NOTE Validation data obtained from interlaboratory studies show that this method may also be applied to the determination of nitrate in vegetables and baby food, see [1], [2]. Furthermore, the method may be applied for the determination of nitrite in meat products having a nitrite content greater than 40 mg/kg.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN ISO 3696, *Water for analytical laboratory use – Specification and test methods (ISO 3696:1987)*

3 Principle

Nitrate and nitrite are extracted from the test sample with hot water. The aqueous solution is treated with acetonitrile to remove any interfering substance. The nitrate and nitrite contents of the solution are then determined by ion-exchange chromatography (IC) and ultraviolet (UV) detection at a wavelength of 205 nm.

4 Reagents

4.1 General

During the analysis, unless otherwise stated, use only reagents of recognized analytical grade and water of at least grade 3 according to EN ISO 3696. When preparing solutions, the purities of the reagents available shall be taken into account.

4.2 Acetonitrile

4.3 Glycerol

4.4 Lithium hydroxide, anhydrous, or lithium hydroxide monohydrate

4.5 Boric acid, having a mass fraction of 99 %

4.6 Hydrochloric acid, $c(\text{HCl}) = 1,8 \text{ mol/l}^{1)}$

Dilute 15 ml of hydrochloric acid of $\rho_{20}(\text{HCl}) = 1,18 \text{ g/ml}$ in a 100 ml volumetric flask to the mark with water and mix.

4.7 Hydrochloric acid, $c(\text{HCl}) \approx 0,1 \text{ mol/l}$

Dilute 5 ml of hydrochloric acid (4.6) in a 100 ml volumetric flask to the mark with water and mix.

1) c is the substance concentration