

Foodstuffs - Determination of nitrate and/or nitrite content of meat products - Part 3: Spectrometric determination of nitrate and nitrite content after enzymatic reduction of nitrate to nitrite

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EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

<p>Käesolev Eesti standard EVS-EN 12014-3:2005 sisaldab Euroopa standardi EN 12014-3:2005 ingliskeelset teksti.</p> <p>Käesolev dokument on jõustatud 15.07.2005 ja selle kohta on avaldatud teade Eesti standardiorganisatsiooni ametlikus väljaandes.</p> <p>Standard on kättesaadav Eesti standardiorganisatsioonist.</p>	<p>This Estonian standard EVS-EN 12014-3:2005 consists of the English text of the European standard EN 12014-3:2005.</p> <p>This document is endorsed on 15.07.2005 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 document specifies a spectrometric method for the determination of nitrate and nitrite content of meat products and has been validated for different meat products with a content of 9 mg/kg to 21 mg/kg nitrite calculated as sodium nitrite and 23 mg/kg to 48 mg/kg nitrate calculated as sodium nitrate.</p>	<p>Scope:</p> <p>This document specifies a spectrometric method for the determination of nitrate and nitrite content of meat products and has been validated for different meat products with a content of 9 mg/kg to 21 mg/kg nitrite calculated as sodium nitrite and 23 mg/kg to 48 mg/kg nitrate calculated as sodium nitrate.</p>
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Võtmesõnad: agricultural products, determination, food inspection, food products, interpretations

English version

**Foodstuffs - Determination of nitrate and/or nitrite content - Part
3: Spectrometric determination of nitrate and nitrite content of
meat products after enzymatic reduction of nitrate to nitrite**

Produits alimentaires - Détermination de la teneur en
nitrates et/ou en nitrites des produits carnés - Partie 3:
Détermination spectrométrique de la teneur en nitrates et
en nitrites après réduction enzymatique des nitrates en
nitrites

Lebensmittel - Bestimmung des Nitrat- und/oder
Nitritgehaltes - Teil 3: Spektralphotometrische Bestimmung
des Nitrat- und Nitritgehaltes in Fleischerzeugnissen nach
enzymatischer Reduktion von Nitrat zu Nitrit

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

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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.

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Foreword

This European Standard (EN 12014-3:2005) 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 12014-3:1998.

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.

This European Standard includes a Bibliography.

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 a spectrometric method for the determination of nitrate and nitrite content of meat products and has been validated for different meat products with a content of 9 mg/kg to 22 mg/kg nitrite calculated as sodium nitrite and 23 mg/kg to 48 mg/kg nitrate calculated as sodium nitrate.

NOTE Experiences have shown that the method is also applicable for total nitrite and nitrate content from 5 mg/kg up to 125 mg/kg calculated as sodium nitrite. For further information on applicability, see [1].

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

Nitrite in an aqueous extract of the test sample is treated with sulfanilamide and N-(1-naphthyl)-ethylenediamine dihydrochloride. The formed red compound is measured spectrometrically at a wavelength of 540 nm [2].

Nitrate in an aqueous extract of the analytical sample is converted into nitrite by nitrate reductase. This converted nitrite together with the nitrite which is already in the analytical sample reacts with sulfanilamide and N-(1-naphthyl)ethylenediamine dihydrochloride. The colour intensity of this resulting red compound is measured in a spectrometer at 540 nm. The nitrate content is calculated from the difference between the spectrometric measurements.

4 Reagents

4.1 General

During the analysis, unless otherwise stated, use only reagents and materials 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 Sodium hydroxide solution $c(\text{NaOH}) \approx 1 \text{ mol/l}^{1)}$

4.3 Carrez solution No. 1

Dissolve 150 g of potassium hexacyanoferrate(II), $\text{K}_4[\text{Fe}(\text{CN})_6] \cdot 3 \text{ H}_2\text{O}$ in water and dilute to 1 000 ml. Store the solution in a brown bottle and replace it every two months.

4.4 Carrez solution No. 2

Dissolve 230 g of zinc acetate, $\text{Zn}(\text{CH}_3\text{COO})_2 \cdot 2 \text{ H}_2\text{O}$, in water and dilute to 1 000 ml.

1) c is the substance concentration