National Standards Authority of Ireland

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ICS 67.050

FOODSTUFFS - DETERMINATION OF TRACE ELEMENTS - DETERMINATION OF IODINE BY ICP-MS (INDUCTIVELY COUPLED PLASMA MASS SPECTROMETRY)

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English Version

Foodstuffs - Determination of trace elements - Determination of iodine by ICP-MS (inductively coupled plasma mass spectrometry)

Produits alimentaires - Dosage des éléments traces - Dosage de l'iode par spectrométrie d'émission avec plasma induit par haute fréquence et spectromètre de masse (ICP-SM)

Lebensmittel - Bestimmung von Elementspuren - Bestimmung von Iod mit der ICP-MS (Massenspektrometrie mit induktiv gekoppeltem Plasma)

This European Standard was approved by CEN on 21 January 2007.

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Foreword

This document (EN 15111:2007) 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of an identical text or by endorsement, at the latest by September 2007, and conflicting national standards shall be withdrawn at the latest by September 2007.

This document supersedes CEN/TS 15111:2005.

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

1 Scope

This European Standard specifies an extraction method for the determination of iodine compounds in foodstuffs by inductively coupled plasma mass spectrometry (ICP-MS).

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 13804, *Foodstuffs — Determination of trace elements — Performance criteria, general considerations and sample preparation*

3 Principle

Iodine compounds are extracted with a strong alkaline reagent at elevated temperature. After removing un-dissolved components, the nebulized solution is atomized and ionized in an inductively coupled argon plasma. The ions are extracted from the plasma by a system of sampler and skimmer cones, separated in a mass spectrometer on the basis of their mass/charge ratio and determined using a pulse counting detector system.

WARNING — The use of this European Standard may involve hazardous materials, operations and equipment. This European Standard does not purport to address all the safety problems associated with its use. It is the responsibility of the user of this European Standard to establish appropriate safety and health practices and determine the applicability or regulatory limitations prior to use.

4 Reagents

4.1 General

The concentration of iodine in the reagents and water used shall be low enough not to affect the results of the determination, e.g. different qualities of TMAH are available. It is important to check, that the iodine content is low enough for the analysis.

4.2 Tetramethylammonium hydroxide (TMAH = $(CH_3)_4N^+OH^-$) solution,

mass concentration ρ = 250 g/l, (mass fraction w = 25 %), suitable for trace analysis with an iodine content of less than 1 μg/l.

4.3 Diluted tetramethylammonium hydroxide (TMAH) solution

Dilute TMAH solution for preparing the zero member compensation and calibration solutions, with a concentration to suit that of the sample solution (see 7.3).

Prepare a 0,5 % TMAH solution by diluting 1,0 ml of TMAH solution (4.2) to 50 ml with water.

4.4 Stock solutions

4.4.1 General

Commercial stock solutions may be used as an alternative to the solutions described below.