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NSAI Standards

Irish Standard
I.S. EN 17264:2019

Foodstuffs - Determination of elements and their chemical species - Determination of aluminium by inductively coupled plasma mass spectrometry (ICP-MS)

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This document is based on:	*Published:*
EN 17264:2019	2019-09-11

This document was published under the authority of the NSAI and comes into effect on:	ICS number:
2019-09-29	67.050
	NOTE: If blank see CEN/CENELEC cover page

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 17264

September 2019

ICS 67.050

English Version

Foodstuffs - Determination of elements and their chemical species - Determination of aluminium by inductively coupled plasma mass spectrometry (ICP-MS)

Produits alimentaires - Dosage des éléments et de leurs espèces chimiques - Dosage de l'aluminium par spectrométrie de masse avec plasma à couplage inductif (ICP-MS)

Lebensmittel - Bestimmung von Elementen und ihren Verbindungen - Bestimmung von Aluminium mittels Massenspektrometrie mit induktiv gekoppeltem Plasma (ICP-MS)

This European Standard was approved by CEN on 28 July 2019.

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European foreword

This document (EN 17264:2019) 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of an identical text or by endorsement, at the latest by March 2020, and conflicting national standards shall be withdrawn at the latest by March 2020.

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1 Scope

This document specifies a method for the determination of aluminium in food by inductively coupled plasma mass spectrometry (ICP-MS) after pressure digestion. This method was validated for infant formula, wheat noodle, cheese, liver, beetroot and cocoa powder at mass fractions in the range of 1 mg/kg to 200 mg/kg. At concentrations above 200 mg/kg, digestion temperatures higher than 220 °C can be necessary to recover the aluminium as completely as possible.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 elements and their chemical species - General considerations and specific requirements*

EN 13805, *Foodstuffs - Determination of trace elements - Pressure digestion*

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

3 Terms and definitions

No terms and definitions are listed in this document.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— IEC Electropedia: available at http://www.electropedia.org/

— ISO Online browsing platform: available at https://www.iso.org/obp

4 Principle

Aluminium is determined quantitatively by ICP-MS after digestion of the sample with nitric acid (with addition of water in case of foods with low water content) according to the pressure digestion process described in EN 13805 but without the use of hydrofluoric acid. The digestion conditions are chosen in such a way that even for samples with aluminium compounds of low solubility (e.g. silicates, oxides) low findings are kept to a minimum.

5 Reagents

The mass concentration of aluminium shall be low enough in the reagents and water not to affect the results.

All reagents shall be of analytical grade, i.e. pro analysi, p.a. or similar unless otherwise specified.

Use water conforming to grade 2 of EN ISO 3696.

5.1 Nitric acid, mass fraction w = at least 65 %, density = 1,4 g/ml.

5.2 Aluminium stock solution, with a certified mass concentration ρ = 1 000 mg/l.

5.3 Rhodium stock solution, ρ = 1 000 mg/l as internal standard.

The internal standard shall be free from aluminium impurities and shall be present in the sample in negligibly small amounts only.

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