

Irish Standard I.S. EN ISO 16634-2:2016

Food products - Determination of the total nitrogen content by combustion according to the Dumas principle and calculation of the crude protein content - Part 2: Cereals, pulses and milled cereal products (ISO 16634-2:2016)

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#### I.S. EN ISO 16634-2:2016

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### **National Foreword**

I.S. EN ISO 16634-2:2016 is the adopted Irish version of the European Document EN ISO 16634-2:2016, Food products - Determination of the total nitrogen content by combustion according to the Dumas principle and calculation of the crude protein content - Part 2: Cereals, pulses and milled cereal products (ISO 16634-2:2016)

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## EUROPEAN STANDARD NORME EUROPÉENNE

# EN ISO 16634-2

# EUROPÄISCHE NORM

June 2016

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Supersedes CEN ISO/TS 16634-2:2009

**English Version** 

### Food products - Determination of the total nitrogen content by combustion according to the Dumas principle and calculation of the crude protein content - Part 2: Cereals, pulses and milled cereal products (ISO 16634-2:2016)

Produits alimentaires - Détermination de la teneur en azote total par combustion selon le principe Dumas et calcul de la teneur en protéines brutes - Partie 2: Céréales, légumineuses et produits céréaliers de mouture (ISO 16634-2:2016) Lebensmittelerzeugnisse - Bestimmung des Gehaltes an Gesamtstickstoff mit dem Verbrennungsverfahren nach Dumas und Berechnung des Gehaltes an Rohprotein - Teil 2: Getreide, Hülsenfrüchte und gemahlene Getreideerzeugnisse (ISO 16634-2:2016)

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### **European Foreword**

This document (EN ISO 16634-2:2016) has been prepared by Technical Committee ISO/TC 34 "Food products" in collaboration with Technical Committee CEN/TC 338 "Cereal and cereal products" the secretariat of which is held by AFNOR.

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of an identical text or by endorsement, at the latest by December 2016, and conflicting national standards shall be withdrawn at the latest by December 2016.

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#### **Endorsement notice**

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# INTERNATIONAL STANDARD

ISO 16634-2

First edition 2016-05-15

Food products — Determination of the total nitrogen content by combustion according to the Dumas principle and calculation of the crude protein content —

### Part 2: Cereals, pulses and milled cereal products

Produits alimentaires — Détermination de la teneur en azote total par combustion selon le principe Dumas et calcul de la teneur en protéines brutes —

Partie 2: Céréales, légumineuses et produits céréaliers de mouture



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### Foreword

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The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see <a href="https://www.iso.org/directives">www.iso.org/directives</a>).

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For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: Foreword - Supplementary information

The committee responsible for this document is ISO/TC 34, *Food products*, Subcommittee SC 4, *Cereals and pulses*.

This first edition cancels and replaces ISO/TS 16634-2:2009, which has been technically revised.

ISO 16634 consists of the following parts, under the general title, *Food products* — *Determination of the total nitrogen content by combustion according to the Dumas principle and calculation of the crude protein content*:

- Part 1: Oilseeds and animal feeding stuffs
- Part 2: Cereals, pulses and milled cereal products

### Introduction

For a long time, the Kjeldahl method has been the most frequently used method for the determination of the protein content of food products. In recent years, the Dumas method has gained importance compared to the Kjeldahl method because it is faster and does not use dangerous chemicals. Although the principles of the two methods are different, both measure the nitrogen content of the product. Nitrogen content can be converted into protein content by using an appropriate factor. The value of this factor varies depending on the relative amounts of different proteins and their amino-acid composition in a given product.

Neither the Dumas nor the Kjeldahl method distinguishes between protein and non-protein nitrogen. In most cases, results obtained by the Dumas method are slightly higher than those of the Kjeldahl method. This is because the Dumas method measures almost all of the non-protein nitrogen, whereas the Kjeldahl method measures only a part of it.

Taking into consideration that the protein content of a product calculated by both methods only approximates to the true value, it is a matter of discretion which one is accepted. The best solution is to use a second factor for the elimination of the systematic error caused by the non-protein nitrogen content of the different products.

However, this second factor has to be determined for each product like the existing factors which indicate the ratio of the protein content to the nitrogen content.

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### Food products — Determination of the total nitrogen content by combustion according to the Dumas principle and calculation of the crude protein content —

### Part 2: Cereals, pulses and milled cereal products

### 1 Scope

This part of ISO 16634 specifies a method for the determination of the total nitrogen content and the calculation of the crude protein content of cereals, pulses and milled cereal products.

This method, like the Kjeldahl method (see References [1] and [6]), does not distinguish between protein nitrogen and non-protein nitrogen. For the calculation of the protein content, various conversion factors are used (see 3.2).

### 2 Normative references

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

ISO 712, Cereals and cereal products — Determination of moisture content — Reference method

ISO 6540, Maize — Determination of moisture content (on milled grains and on whole grains)

ISO 24557, Pulses — Determination of moisture content — Air-oven method

### 3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

### 3.1

### nitrogen content

mass fraction of the total nitrogen

Note 1 to entry: Determined by the procedure specified in this part of ISO 16634.

Note 2 to entry: The mass fraction is expressed as a percentage.

#### 3.2

#### crude protein content

nitrogen content (3.1) multiplied by a factor

Note 1 to entry: A 5,7 factor is generally used for cereals for human food (such as wheat, rye and their milled products) and 6,25 for malting barley and cereals for feed and other products falling within the scope of this part of ISO 16634.

Note 2 to entry: The factors for calculation of the crude protein content from the total nitrogen content are derived from the Kjeldahl method, which is the reference method for the determination of total nitrogen content.



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