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Interested committees:

Title: Draft BS EN ISO 16634-2 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 cereal coproducts.

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Introduction

This draft standard is based on national and international discussions. Your comments on this draft are invited and will assist in the preparation of the consequent standard.

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Submission of Comments

- **Annotated drafts are not acceptable and will be rejected.**
- All comments should be submitted online at <https://standardsdevelopment.bsigroup.com/>. You will need to register in order to comment.

Template for comments and secretariat observations

Date: xx/xx/20xx	Document: ISO/DIS xxxx
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1	2	(3)	4	5	(6)	7
MB	Clause No./ Subclause No./Annex (e.g. 3.1)	Paragraph/ Figure/Table/Note	Type of comment	Comment (justification for change) by the MB	Proposed change by the MB	Secretariat observations on each comment submitted
	3.1	Definition 1	ed	Definition is ambiguous and needs clarifying.	Amend to read '...so that the mains connector to which no connection...'	
	6.4	Paragraph 2	te	The use of the UV photometer as an alternative cannot be supported as serious problems have been encountered in its use in the UK.	Delete reference to UV photometer.	



DRAFT International Standard

ISO/DIS 16634-2

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 cereal coproducts

ICS: 67.050; 67.060

This document has not been edited by the ISO Central Secretariat.

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Contents

Page

Foreword	iv
Introduction	v
1 Scope	1
2 Normative references	1
3 Terms and definitions	1
4 Principle	2
5 Reagents	2
6 Apparatus	3
7 Sampling	3
8 Preparation of the test sample	4
9 Procedure	4
9.1 General	4
9.2 Test portion	4
9.3 Control of oxygen supply	4
9.4 Calibration	5
9.5 Determination	5
9.6 Detection and data processing	5
10 Calculation and expression of results	6
10.1 Calculation	6
10.1.1 Nitrogen content	6
10.1.2 Crude protein content	6
10.2 Expression of results	6
11 Precision	6
11.1 Interlaboratory tests	6
11.2 Repeatability	7
11.3 Reproducibility	7
11.4 Critical difference	7
11.4.1 Comparison of two groups of measurements in the same laboratory	7
11.4.2 Comparison of two groups of measurements in two different laboratories	7
11.5 Uncertainty	8
12 Test report	8
Annex A (informative) Flowchart for a basic Dumas apparatus	9
Annex B (informative) Equipment calibration	10
Annex C (informative) Results of interlaboratory tests	12
Bibliography	19

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

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 www.iso.org/directives).

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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 edition cancels and replaces ISO/TS 16634-2:2016, 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 cereal coproducts*

Main modifications of this version are the following:

- Clarification of the scope, in particular for cereal coproducts;
- Introduction of Argon as a carrier gas;
- Introduction of near infrared spectroscopy to determine moisture content;
- Clarification of the grinding device's check;
- Clarification of the nitrogen-free compound used for blank during the control of oxygen supply;
- Clarification of the use of the correction factor F_c ;
- Expression of results;
- Removal of [Annex B](#) presenting schematic diagrams of some apparatus.

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 environment-friendly. 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.

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 cereal coproducts

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 cereal coproducts (e.g. wheat flour, wheat starch, peas proteins, wheat gluten, semolina).

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 712-1, *Cereals and cereal products — Determination of moisture content — Part 1: 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*

ISO 12099, *Animal feeding stuffs, cereals and milled cereal products — Guidelines for the application of near infrared spectrometry*

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 expressed as a percentage

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

3.2 crude protein content

nitrogen content (3.1) multiplied by a factor

Note 1 to entry: A factor of 5,7 is used for wheat, rye, and their coproducts (e.g., flour, semolina). A factor of 6,25 is applied to all other cereals, pulses, and cereal coproducts within the scope of this document.