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Interested committees:

Title: Draft BS EN 1787 Foodstuffs - Detection of irradiated food containing cellulose by ESR spectroscopy.

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- iii) requires additional national guidance or information

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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.

For international standards, comments will be reviewed by the relevant UK national committee before sending the consensus UK vote and comments to the international committee, which will then decide appropriate action. If the international standard is approved, it is usual for the text to be published as a British Standard.

For national standards, comments will be reviewed by the relevant UK national committee and the resulting standards published as a British Standard.

UK Vote

Please indicate whether you consider the UK should submit a negative (with supporting technical reasons) or positive vote on this draft. Please indicate if you are aware of any reason why this draft standard should not be published as a British Standard.

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	Commend (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.	

English Version

Foodstuffs - Detection of irradiated food containing cellulose by ESR spectroscopy

Produits alimentaires - Détection par spectroscopie
RPE d'aliments ionisés contenant de la cellulose

Lebensmittel - ESR-spektroskopischer Nachweis von
bestrahlten cellulosehaltigen Lebensmitteln

This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 275.

If this draft becomes a European Standard, CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

This draft European Standard was established by CEN 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 CEN-CENELEC Management Centre has the same status as the official versions.

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Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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European foreword

This document (prEN 1787:2019) has been prepared by Technical Committee CEN/TC 275 “Food analysis - Horizontal methods”, the secretariat of which is held by DIN.

This document will supersede EN 1787:2000.

The predecessor of this document was elaborated on the basis of a protocol developed following a concerted action supported by the Commission of European Union (XII C.5). Experts and laboratories from EU and EFTA countries, contributed jointly to the development of this protocol.

The changes between this document and the previous edition are as follows:

- The scope contains the information that it has been shown that false-positive results can appear when analysing bleached nuts.
- The clause on limitations was amended by the information that, having identified, that the method yields false positives with certain matrices (e.g. bleached nuts), it is in the responsibility of the analyst to ensure that the method is fit for purpose on the matrix on which it is applied.
- The clause on limitations was furthermore amended by the information that it has been shown that with nuts in shells (hazelnuts, walnuts, pistachio), a bleaching can lead to comparable positive signals which can be mixed up with radiation induced signals.
- The Figures A.5 to A.8 were included to show how figures from non-irradiated but bleached nutshells can be differentiated from irradiated shells from hazelnuts and walnuts.
- This new version was editorially updated according to current rules.

1 Scope

This document specifies a method for the detection of foods containing cellulose which have been treated with ionizing radiation, by analysing the electron spin resonance (ESR) spectrum, also called electron paramagnetic resonance (EPR) spectrum, of the food, see [1] to [13].

Interlaboratory studies have been successfully carried out with pistachio nut shells, [14] to [18], paprika powder [19] and [20] and fresh strawberries [21]. However, it has been shown that false-positive results can appear when analysing bleached nuts. For further information, see Clause 7 on limitations.

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 ISO 3696, *Water for analytical laboratory use - Specification and test methods (ISO 3696:1987)*

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 <http://www.iso.org/obp>

4 Principle

ESR spectroscopy detects paramagnetic centres (e.g. radicals). They are either due to irradiation, or to other compounds present. An intense external magnetic field produces a difference between the energy levels of the electron spins $m_s = +1/2$ and $m_s = -1/2$, leading to resonance absorption of an applied microwave beam in the spectrometer. ESR spectra are conventionally displayed as the first derivative of the absorption with respect to the applied magnetic field.

The field and frequency values depend on the experimental arrangements (sample size, sample holder and spectrometer specifications), while their ratio (i.e. g value) is an intrinsic characteristic of the paramagnetic centre and its local coordination. For further information, see [1] to [13].

Radiation treatment produces specific radicals which can be mostly detected in solid and dry parts of the food. The intensity of the signal obtained increases with the concentration of the paramagnetic compounds and thus with the applied dose.