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**Seme oljne repice - Določevanje glukozinolatov - 2. del: Rentgenska spektrometrijska metoda (ISO 9167-2:1994)**

Rapeseed - Determination of glucosinolates content - Part 2: Method using X-ray fluorescence spectrometry (ISO 9167-2:1994)

Rapssamen - Bestimmung des Glucosinolatgehaltes - Teil 2: Verfahren mit Röntgenfluoreszenzanalyse (ISO 9167-2:1994)

Graines de colza - Dosage des glucosinolates - Partie 2: Méthode par spectrométrie de fluorescence aux rayons X (ISO 9167-2:1994)

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**Ta slovenski standard je istoveten z: EN ISO 9167-2:1997**

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**ICS:**

67.200.20      Oljnice      Oilseeds

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EUROPEAN STANDARD

EN ISO 9167-2

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English version

**Rapeseed - Determination of glucosinolates  
content - Part 2: Method using X-ray fluorescence  
spectrometry (ISO 9167-2:1994)**

Graines de colza - Dosage des glucosinolates -  
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fluorescence aux rayons X (ISO 9167-2:1994)

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Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CEN member.

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## CEN

European Committee for Standardization  
Comité Européen de Normalisation  
Europäisches Komitee für Normung

Central Secretariat: rue de Stassart, 36 B-1050 Brussels

## Foreword

The text of the International Standard from Technical Committee ISO/TC 34 "Agricultural food products" of the International Organization for Standardization (ISO) has been taken over as an European Standard by Technical Committee CEN/TC 307 "Oilseeds, vegetable and animal fats and oils and their by-products - Methods of sampling and analysis", 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of an identical text or by endorsement, at the latest by July 1997, and conflicting national standards shall be withdrawn at the latest by July 1997.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

## Endorsement notice

The text of the International Standard ISO 9167-2:1997 has been approved by CEN as a European Standard without any modification.

NOTE: Normative references to International Standards are listed in annex ZA (normative).

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**Annex ZA (normative)****Normative references to international publications  
with their relevant European publications**

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

| <u>Publication</u> | <u>Year</u> | <u>Title</u>   | <u>EN</u>  | <u>Year</u> |
|--------------------|-------------|--|------------|-------------|
| ISO 664            | 1990        | Oilseeds - Reduction of laboratory sample to test sample         | EN ISO 664 | 1995        |
| ISO 665            | 1977        | Oilseeds - Determination of moisture and volatile matter content | EN ISO 665 | 1995        |

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INTERNATIONAL  
STANDARD

**ISO**  
**9167-2**

First edition  
1994-10-01

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**Rapeseed — Determination of  
glucosinolates content —**

**Part 2:**

Method using X-ray fluorescence  
spectrometry

<https://standards.iteh.ai/catalog/standards/sist/1d06b886-ae8a-4767-8eb0-b01ed0a8e376/sist-en-iso-9167-2-1998>  
*Graines de colza — Dosage des glucosinolates —*

*Partie 2: Méthode par spectrométrie de fluorescence aux rayons X*



Reference number  
ISO 9167-2:1994(E)

**ISO 9167-2:1994(E)****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.

Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

International Standard ISO 9167-2 was prepared by Technical Committee ISO/TC 34, *Agricultural food products*, Subcommittee SC 2, *Oleaginous seeds and fruits*.

ISO 9167 consists of the following parts, under the general title *Rapeseed — Determination of glucosinolates content*:

- Part 1: *Method using high-performance liquid chromatography*
- Part 2: *Method using X-ray fluorescence spectrometry*

Annexes A and B of this part of ISO 9167 are for information only.

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# Rapeseed — Determination of glucosinolates content —

## Part 2: Method using X-ray fluorescence spectrometry

### 1 Scope

This part of ISO 9167 specifies a rapid method for the determination of the total glucosinolate content of rapeseed using X-ray fluorescence spectrometry (XRF).

It is applicable to seeds with a normal protein content from 19 % to 23 %. For seeds with a protein content outside this range, account should be taken of the total protein content in the calculation of the total glucosinolate content (see reference [4]).

#### NOTES

- ISO 9167-1 specifies a method using high-performance liquid chromatography (HPLC) which enables the content of different glucosinolates to be determined individually.
- When applied to immature seed or to seed that has been badly stored, for example under damp and warm conditions, the results obtained by the XRF method and by the HPLC method (ISO 9167-1) may not agree as closely as when applied to normal rapeseed. The HPLC method should be taken as the reference method.

### 2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this part of ISO 9167. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this part of ISO 9167 are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO

maintain registers of currently valid International Standards.

ISO 664:1990, *Oilseeds — Reduction of laboratory sample to test sample.*

ISO 665:1977, *Oilseeds — Determination of moisture and volatile matter content.*

### 3 Definition

For the purposes of this part of ISO 9167, the following definition applies.

**3.1 total glucosinolate content:** The total sulfur content minus those amounts that are bound in proteins or single glucosinolates that cannot be determined by direct reference methods, divided by the average stoichiometric number of sulfur atoms occurring in the glucosinolate fraction typical of *Brassica* species.

### 4 Principle

Determination of total sulfur content in ground and compressed rapeseed by X-ray fluorescence spectroscopy. Calculation of the glucosinolate content by comparison with values of reference samples with a certified sulfur content.

### 5 Materials

**5.1 Whole rapeseed reference materials,** three samples, each with a certified sulfur content.