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English Version

Oilseeds - Determination of oil content by the Randall extraction method (ISO/TS 21296:2026)

Graines oléagineuses - Détermination de la teneur en
huile par la méthode d'extraction Randall (ISO/TS
21296:2026)

Ölsaaten - Bestimmung des Ölgehalts mittels des
Randall-Extraktionsverfahrens (ISO/TS 21296:2026)

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European foreword

This document (CEN ISO/TS 21296:2026) has been prepared by Technical Committee ISO/TC 34 "Food products" in collaboration with 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.

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Endorsement notice

The text of ISO/TS 21296:2026 has been approved by CEN as CEN ISO/TS 21296:2026 without any modification.



**Technical
Specification**

ISO/TS 21296

**Oilseeds — Determination of oil
content by the Randall extraction
method**

*Graines oléagineuses — Détermination de la teneur en huile par
la méthode d'extraction Randall*

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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 document 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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This document was prepared by Technical Committee ISO/TC 34, *Food products*, Subcommittee SC 2, *Oleaginous seeds and fruits and oilseed meals*, in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 307, *Oilseeds, vegetable and animal fats and oils and their by-products — Methods of sampling and analysis*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

This document is an alternative method for the determination of oil content in oilseeds. In case of dispute or any conflicts, ISO 659 remains the reference method.

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Oilseeds — Determination of oil content by the Randall extraction method

1 Scope

This document specifies a method using automated Randall extraction for the determination of the hexane extract (or light petroleum extract), called the “oil content”, of oilseeds used as industrial raw materials.

The procedure for sunflower seed is different from those for other seeds as it includes an additional moisture content determination after the seed has been ground to prepare the test sample.

If required, the pure seeds and the impurities can be analysed separately. In the case of groundnuts, the pure seeds, the total fines, the non-oleaginous impurities and the oleaginous impurities can be analysed separately.

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.

ISO 658, *Oilseeds — Determination of content of impurities*

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

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

3 Terms and definitions

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

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

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <https://www.electropedia.org/>

3.1

hexane extract

“oil content”

all the substances extracted under the operating conditions specified in this document, expressed as a percentage by mass of the product as received, or on the cleaned seed

Note 1 to entry: On request, it may be expressed relative to the dry matter.

4 Principle

Oil is extracted from a test portion, with hexane or light petroleum as a solvent, in an automated Randall extractor. The test portion is submerged in boiling solvent prior to rinsing in cold solvent, reducing the time needed for extraction. After extraction, the solvent is evaporated and recovered by condensation. The resulting oil content is determined gravimetrically after drying (see [Figure 1](#)).