

**ISO/FDIS 7927-2:2023(E)**

Date: 2023-02-22

ISO/TC 34/SC 7

Secretariat: BIS-India

**Spices and condiments — Fennel seed, whole or ground — Part 2:  
Sweet fennel seed specification (*Foeniculum vulgare* var.  
*panmorium*)**

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Phone: + 41 22 749 01 11  
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Published in Switzerland.

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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 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](http://www.iso.org/directives)).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see [www.iso.org/patents](http://www.iso.org/patents)).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see [www.iso.org/iso/foreword.html](http://www.iso.org/iso/foreword.html).

This document was prepared by Technical Committee ISO/TC 34, *Food products*<sup>1</sup>, Subcommittee SC7SC 7, *Spices, culinary herbs and condiments*.

This first edition, along with ISO 7927-1:—<sup>1</sup>, cancels and replaces ISO 7927-1:1987, which has been technically revised.

The main changes are as follows:

- definitions for “foreign matter” and “extraneous matter” have been added in accordance with ISO 927;
- a requirement for Fenchone content has been introduced to distinguish bitter fennel from sweet fennel;
- the requirements for moisture content and volatile oil content for ground bitter fennel have been modified.

A list of all parts in the ISO 7927 series can be found on the ISO website.

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](http://www.iso.org/members.html).

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<sup>1</sup> Under preparation.

## Introduction

Whole sweet fennel is the dried fruit of *Foeniculum vulgare* var. *panmorium*, commonly called “sweet fennel seed”, and occurs as oblong cylindrical in shape, straight or slightly curved and deeply furrowed. The colour of sweet fennel in whole form should be light greenish-yellow to relatively green, and in ground form should be light green to relatively yellowish.

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# Spices and condiments — Fennel seed, whole or ground — Part 2: Sweet fennel seed specification (*Foeniculum vulgare* var. *panmorium*)

## 1 Scope

This document specifies requirements for sweet fennel seed (*Foeniculum vulgare* var. *panmorium*), whole ~~and/or~~ ground.

Recommendations relating to storage and transport conditions are given in Annex A.

ISO 7927-1 specifies requirements for bitter fennel seed.

NOTE Although, botanically speaking, the product is a “fruit”, the term “seed” is in common commercial use.

## 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 927, *Spices and condiments — Determination of extraneous matter and foreign matter content*

ISO 928, *Spices and condiments — Determination of total ash*

ISO 930, *Spices and condiments — Determination of acid-insoluble ash*

ISO 939, *Spices and condiments — Determination of moisture content*

ISO 948, *Spices and condiments — Sampling*

ISO 1208, *Spices and condiments — Determination of filth*

ISO 2825, *Spices and condiments — Preparation of a ground sample for analysis*

ISO 6571, *Spices, condiments and herbs — Determination of volatile oil content (hydrodistillation method)*

ISO 11024-1, *Essential oils — General guidance on chromatographic profiles — Part 1: Preparation of chromatographic profiles for presentation in standards*

ISO 11024-2, *Essential oils — General guidance on chromatographic profiles — Part 2: Utilization of chromatographic profiles of samples of essential oils*

## 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**  
**sweet fennel**  
dried fruit of *Foeniculum vulgare* var. *panmorium*, in whole, broken or ground form

**3.2**  
**foreign matter**  
matter visible to the naked eye or with a maximum 10 times magnifying power that is not part of the species to which the spice or herb belongs

Note 1 to entry: The origin of macro foreign matter can be non-animal (e.g. stem, stones, straw, visible moulds, mineral, plastic) or animal (e.g. excreta, insects, ~~and~~ insect-defiled product) foreign matter.

**3.3**  
**extraneous matter**  
matter visible to the naked eye or with a maximum 10 times magnifying power that is species waste belonging to the plant to which the spice or herb belongs

Note 1 to entry: Macro extraneous matter can be floral waste.

## 4 Requirements

### 4.1 Odour and flavour

Sweet fennel seed, whole or ground, shall have a characteristic odour and an aromatic flavour characteristic of the spice. It shall be free from mustiness and other foreign flavours.

The Fenchone content of the product shall not be more than 5 ~~(%-%)~~ (mass fraction), when determined using ISO 11024 ~~(Part 1)~~ and ISO 11024 ~~(Part 2)~~.

### 4.2 Freedom from insects, moulds, etc.

Sweet fennel seed, whole or ground, shall be free from living insects and moulds, and shall be practically free from dead insects, insect fragments and rodent contamination visible to the naked eye (corrected, if necessary, for abnormal vision) or with such magnification as can be necessary in any particular case. If the magnification exceeds  $\times 10$ , this fact shall be stated in the test report.

In case of dispute, contamination in ground fennel shall be determined by the method specified in ISO 1208.

### 4.3 Extraneous matter in whole fennel

The proportion of extraneous matter in whole sweet fennel, when determined by the method described in ISO 927, shall not exceed 0,5 ~~-%-%~~ (mass fraction).

Extraneous matter includes straw or chaff, stalks, ~~and~~ stems from ~~plants~~ species to which the spice or herb belongs.

### 4.4 Foreign matter

#### 4.4.1 Foreign matter from animals

The product shall be free from rodent and other excreta, whole insects and parts (dead or alive, including mites and psocids), larvae, mouldy material and insect-defiled products when determined by the method specified in ISO 927.



#### 4.4.2 Foreign matter from non-animals

The product shall not contain non-animal foreign matter exceeding 0,5 % (mass fraction), when determined by the method specified in ISO 927.

For final consumption, the products shall be free from foreign matter, when determined by the method specified in ISO 927.

#### 4.5 Defective seeds in whole fennel

The proportion of defective seeds in whole sweet fennel shall not exceed the values given in Table 1, according to the grade.

Defective seeds include:

- seeds which are damaged split, broken or which have been bored or attacked by weevils or other insects;
- seeds which have not developed properly, or which are shrivelled or have been discoloured or blackened.

**Table 1 — Grading of whole sweet fennel**

| Grade | Defective seeds<br>% (mass fraction) max. |
|-------|---|
| 1     | 3,0                                       |
| 2     | 5,0                                       |
| 3     | 9,0                                       |

#### 4.6 Chemical requirements

##### 4.6.1 Whole sweet fennel

Whole sweet fennel shall conform to the requirements given in Table 2.

**Table 2 — Chemical requirements for whole sweet fennel**

| Characteristics  | Requirement | Method of test |
|--|-------------|----------------|
| Moisture content, % (mass fraction) max.                 | 12,0        | ISO 939        |
| Total ash, % (mass fraction) on dry basis, max.          | 10,0        | ISO 928        |
| Acid-insoluble ash, % (mass fraction) on dry basis, max. | 2,0         | ISO 930        |
| Volatile oil content, ml/100 g on dry basis, min.        | 1,0         | ISO 6571       |

##### 4.6.2 Ground sweet fennel

Ground sweet fennel shall conform to the requirements given in Table 3.

Ground sweet fennel shall pass completely through a sieve of nominal size of openings 500 µm.

**Table 3 — Chemical requirements for ground sweet fennel**

| Characteristics  | Requirement | Method of test |
|--|-------------|----------------|
| Moisture content, % (mass fraction) max.                 | 10,0        | ISO 939        |
| Total ash, % (mass fraction) on dry basis, max.          | 10,0        | ISO 928        |
| Acid-insoluble ash, % (mass fraction) on dry basis, max. | 2,0         | ISO 930        |
| Volatile oil content, ml/100 g on dry basis, min.        | 0,8         | ISO 6571       |

## 5 Sampling

Sample the sweet fennel, whole or ground, by the method specified in ISO 948.

## 6 Methods of test

Samples of sweet fennel, whole or ground, shall be tested for conformity with the requirements of this document by the methods of test referred to in 4.2 and 4.3, and Tables 2 and 3.

The ground sample for analysis shall be prepared in accordance with ISO 2825.

## 7 Packaging and marking

### 7.1 Packaging

The containers used for packing the dried sweet fennel, whole or ground, shall be impermeable to air, such as cases, plywood or fibre board boxes, or sacks. They shall be clean, sound and made of a material that does not affect the product and which protects it from moisture and bright light.

The product shall be loosely packed. The containers used for packing shall be lined with paper to facilitate loose packing.

### 7.2 Marking

#### 7.2.1 Whole sweet fennel

The container shall be marked or labelled with the following:

- a) name, form and grade of the product (botanical name and type of presentation);
- b) trade name or trademark, if any;
- c) name and address of producer and/or packer;
- d) producing country;
- e) batch or code number;
- f) the year of harvest and date of packaging;
- g) shelf life of the product or best-before date;
- h) net mass;