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## Unshelled pine nuts — Specification

*Pignons non décortiqués — Specifications*



Reference number  
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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.

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 7911 was prepared by Technical Committee ISO/TC 34, *Agricultural food products*, Sub-Committee SC 43, *Dry and dried fruits and vegetables*.

Annexes A, B and C form an integral part of this International Standard.

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## Unshelled pine nuts — Specification

### 1 Scope

This International Standard specifies requirements for unshelled pine nuts, obtained from the cones of the stone pine tree (*Pinus pinea* Linnaeus), for human consumption.

It applies to unshelled pine nuts obtained from cones which have been dried in the sun, or in special ovens. It is not applicable to roasted, salted or any other type of processed pine nuts, or to pine nuts obtained by burning of the cones.

### 2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this International Standard 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 565:1990, *Test sieves — Metal wire cloth, perforated metal plate and electroformed sheet — Nominal sizes of openings*.

ISO 2591-1:1988, *Test sieving — Part 1: Methods using test sieves of woven wire cloth and perforated metal plate*.

ISO 3310-1:1990, *Test sieves — Technical requirements and testing — Part 1: Test sieves of metal wire cloth*.

ISO 3310-2:1990, *Test sieves — Technical requirements and testing — Part 2: Test sieves of perforated metal plate*.

ISO 6756:1984, *Decorticated stone pine nuts — Specification*.

### 3 Definitions

For the purposes of this International Standard, the following definitions apply.

**3.1 pest-infested unshelled pine nuts:** Nuts damaged externally or internally by insect infestation and/or infestation by other animal pests.

**3.2 rodent-damaged unshelled pine nuts:** Nuts damaged by rodents.

**3.3 spoiled unshelled pine nuts:** Rancid, fermented, mouldy or rotten nuts, or nuts stained by reddish or black spots.

**3.4 seed powder:** A brown powder formed naturally in the cone and adhering to the shell surface of the nut.

**3.5 nuts having external defects:** Broken, split, pest-infested or mouldy nuts, or nuts covered with seed powder.

**3.6 nuts having internal defects:** Nuts having undeveloped, rancid, rotten, fermented, mouldy, soft, brittle or pest-infested kernels or no kernels in the shell (empty nuts), or which have kernels with foreign odour or taste or reddish-black stains.

**3.7 crop year:** Year of harvest of unshelled pine nuts.

**3.8 new crop (of unshelled pine nuts):** The crop harvested in the previous year.

**3.9 old crop (of unshelled pine nuts):** The crop harvested in the year before the previous year.

**3.10 moisture content of the kernels of unshelled pine nuts:** Conventionally, the loss in mass determined under the operating conditions specified in annex C of this International Standard, or by using the entrainment method specified in ISO 6756.

## 4 Description and general requirements

Unshelled pine nuts are the dried fruits of *Pinus pinea* Linnaeus. The nuts shall be sound, clean and intact (nuts with small cracks on the shell are not considered to be broken). The shell or the nut shall not have seed powder adhering to it, and shall not have abnormal moisture on it. Pine nuts shall have the characteristic shape and colour according to their type and origin. The kernels of the pine nuts shall be sound, and normally and fully developed. Old crop shall not be mixed into new crop.

## 5 Specific requirements

### 5.1 Grading

Unshelled pine nuts may be graded according to their type, origin and size.

### 5.2 Odour and taste

The odour and taste of the kernels of unshelled pine nuts shall be characteristic of the nut. The kernels shall be free from foreign odour and taste.

### 5.3 Freedom from living insects, other animal pests, etc.

Unshelled pine nuts shall be free from living insects and/or other animal pests 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 may be necessary in any particular case. If the magnification exceeds  $\times 10$ , this fact shall be stated in the test report.

### 5.4 External and internal defects

The proportion of unshelled pine nuts having external and internal defects shall not exceed the value given in table 1 for the relevant grade.

### 5.5 Extraneous matter

The proportion of extraneous matter, such as dust, sand, stones, dirt, pieces of shell or cone, or any other foreign matter among or on the unshelled pine nuts shall not exceed the value given in table 1 for the relevant grade.

### 5.6 Colour

The shell colour of unshelled pine nuts should be reddish brown and characteristic according to the type of pine nut.

## 5.7 Moisture content

The moisture content of the kernels of unshelled pine nuts shall not exceed 10 % (m/m).

Table 1 — Requirements according to grade

| Grade | External defects<br>% (by number)<br>max. | Internal defects<br>% (by number)<br>max. | Extraneous matter<br>% (m/m)<br>max. |
|-------|-------------------------------------------|-------------------------------------------|--------------------------------------|
| Extra | 1                                         | 4                                         | 0,05                                 |
| I     | 2                                         | 6 <sup>1)</sup> , 8 <sup>2)</sup>         | 0,10                                 |
| II    | 3                                         | 8 <sup>1)</sup> , 10 <sup>2)</sup>        | 0,15                                 |

1) New crop.  
2) Old crop.

## 6 Sizing

Unshelled pine nuts may be graded into three sizes according to the maximum diameter of their equatorial section, determined by means of a screen with circular openings (see table 2).

Table 2 — Sizes for unshelled pine nuts

| Size   | Reference | Diameter of nut (mm) |
|--------|-----------|----------------------|
| Small  | S         | < 7,5                |
| Medium | M         | 7,5 to 9,5           |
| Large  | L         | ≥ 9,5                |

## 7 Test methods

Test samples of unshelled pine nuts for conformity of the product to the requirements given in table 1 using the test method specified in annex A. Determine the size (see table 2) in accordance with annex B. Determine the moisture content (5.7) in accordance with annex C or the entrainment method specified in ISO 6756.

## 8 Packing and marking

### 8.1 Packing

Unshelled pine nuts shall be packed in clean and sound containers made of a material such as wood, cardboard, jute, etc., which does not affect the product. If wooden boxes are used, they shall be lined with a suitable paper. The size of packages or sacks shall be subject to agreement between the

purchaser and the vendor, but in any case the mass of containers shall not be more than 100 kg gross.

If jute sacks are used and the gross mass is indicated, the tare shall not in any circumstances exceed

- a) 2,5 % for sacks 50 kg and over,
- b) 3 % for sacks from 25 kg to 50 kg, or
- c) 3,5 % for sacks less than 25 kg.

If wooden or cardboard boxes are used, the mass of unshelled pine nuts shall be indicated as net mass.

## 8.2 Marking

The containers or boxes shall be marked or labelled with the following particulars:

- a) name of the product and the trade-mark or brand-name, if any;
- b) name and address of the producer or packer;
- c) grade and size;
- d) batch or code number;
- e) net mass (or gross mass), depending on the method of packing or at the request of the importing country;
- f) producing country;
- g) any other marking required by the purchaser, such as the year of harvest and date of packing (if known);
- h) reference to this International Standard.

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## Annex A (normative)

### Determination of extraneous matter, external defects and internal defects

#### A.1 Principle

Visual inspection of a test portion of unshelled pine nuts and physical separation of the extraneous matter. Visual inspection of part of the test portion for external defects. Cracking of the nuts used for counting of external defects, and visual inspection for internal defects.

#### A.2 Procedure

##### A.2.1 Extraneous matter

Weigh, to the nearest 0,01 g, a test portion of about 300 g and spread it out on a clean white surface. Carefully separate the extraneous matter among or on the nuts by hand or by using tweezers.

Weigh, to the nearest 0,01 g, the separated extraneous matter.

##### A.2.2 External defects

Weigh, to the nearest 0,01 g, about 100 g of the test portion which is free from extraneous matter (A.2.1). Count the nuts and record the number. Separate the nuts having external defects (see 3.5) and count them.

##### A.2.3 Internal defects

Use all the nuts examined for external defects (A.2.2). Break them carefully one by one using a nutcracker or hammer. Separate the nuts having internal defects and count them.

Retain the sound nuts for determination of the moisture content (see annex C).

#### A.3 Expression of results

##### A.3.1 Extraneous matter

The extraneous matter content, expressed as a percentage by mass, is equal to

$$\frac{m_1}{m_0} \times 100$$

where

$m_0$  is the mass, in grams, of the test portion;  
 $m_1$  is the mass, in grams, of the extraneous matter.

Give the result to one decimal place.

##### A.3.2 External defects

The proportion, expressed as a number percentage, of nuts having external defects is equal to

$$\frac{n_1}{n_0} \times 100$$

where

$n_0$  is the total number of nuts in the part of the test portion used for the test;  
 $n_1$  is the number of nuts having external defects.

Give the result to one decimal place.

##### A.3.3 Internal defects

The proportion, expressed as a number percentage, of nuts having internal defects is equal to

$$\frac{n_2}{n_0} \times 100$$

where

$n_0$  is the total number of nuts in the part of the test portion used for the test;  
 $n_2$  is the number of nuts having internal defects.

Give the result to one decimal place.

## Annex B (normative)

### Determination of sizes

#### B.1 Principle

Hand sieving of a test portion of unshelled pine nuts to separate nuts of different size ranges, and determination of the proportion of nuts in the different ranges.

#### B.2 Apparatus

**B.2.1 Test sieves**, preferably two different single test sieves having openings of nominal size 9,5 mm and 8 mm, in accordance with ISO 565.

The test sieving medium shall comply with ISO 3310-1 or ISO 3310-2, as appropriate.

The test sieves shall be round with a nominal diameter of 300 mm, complying with the requirements given in ISO 3310-1 or ISO 3310-2, as appropriate.

The requirements concerning marking, preparation, maintenance and accessories given in ISO 2591-1 are obligatory.

#### B.3 Procedure

##### B.3.1 Test portion

In order to obtain reliable results, it is necessary to sieve at least 300 g of test sample.

##### B.3.2 Method of sieving

The test sieving shall be carried out in accordance with ISO 2591-1.

##### B.3.3 End-point of sieving

For unshelled pine nuts, the end-point of the sieving process may be taken to be the moment when the number of nuts passing through the sieve in 1 min is zero. The nuts remaining on the sieve are then checked one by one in longwise position without applying force. Those that pass through the apertures are included in the passing fraction (under-size). Those that do not pass become the residue (oversize).

##### B.3.4 Evaluation of results

###### B.3.4.1 Weighing and calculation

Carry out the weighing and calculation in accordance with ISO 2591-1.

###### B.3.4.2 Repeatability

At least two determinations shall be carried out.

## Annex C (normative)

### Determination of moisture content

#### C.1 Introduction

The entrainment method specified in ISO 6756 may also be used.

#### C.2 Principle

Heating and drying of a test portion of pine nut kernels at a temperature of  $103\text{ }^{\circ}\text{C} \pm 2\text{ }^{\circ}\text{C}$  at atmospheric pressure.

#### C.3 Apparatus

Usual laboratory apparatus and, in particular, the following.

**C.3.1 Electric oven**, having effective ventilation and capable of being maintained at  $103\text{ }^{\circ}\text{C} \pm 2\text{ }^{\circ}\text{C}$ .

**C.3.2 Dish with lid**, made of corrosion-resistant metal or of glass, with at least  $18\text{ cm}^2$  effective surface (for example, minimum diameter 50 mm) and 25 mm to 30 mm deep.

**C.3.3 Desiccator**, containing an effective desiccant.

**C.3.4 Analytical balance**.

#### C.4 Sample

Use as the sample the sound pine nut kernels found in the determination of internal defects (see A.2.3).

#### C.5 Preparation of the test sample

Weigh, to the nearest 0,01 g, approximately 10 g of sound decorticated kernels from the sample (C.4), and break them by hand or cut them, using a razor blade or laboratory knife, into small pieces as quickly as possible, and in any case within 5 min, so that the greatest dimension of the particles does not exceed about 3 mm.

#### C.6 Procedure

##### C.6.1 Test portion

Weigh the dried empty dish and lid (C.3.2). Immediately place in it a test portion comprising approximately half of the test sample (C.5). Cover the dish with its lid and weigh to the nearest 0,001 g.

##### C.6.2 Determination

Place the dish (C.3.2) containing the test portion, with the lid alongside, in the oven (C.3.1) at  $103\text{ }^{\circ}\text{C} \pm 2\text{ }^{\circ}\text{C}$ . Keep it there for 6 h. Do not open the oven during this period. At the end of this period, remove the dish, cover it immediately with its lid and place it in the desiccator (C.3.3). After cooling to ambient temperature (approximately 30 min to 40 min), weigh it, still covered, to the nearest 0,001 g.

##### C.6.3 Number of determinations

Carry out two determinations on test portions treated individually from the same test sample. The cutting into pieces and weighing operations for each determination shall be carried out as rapidly as possible, and in any case within 5 min.

#### C.7 Expression of results

The moisture content, expressed as a percentage by mass, is equal to

$$\frac{m_1 - m_2}{m_1 - m_0} \times 100$$

where

- $m_0$  is the mass, in grams, of the empty dish and its lid;
- $m_1$  is the mass, in grams, of the dish, its lid and the test portion before oven drying;
- $m_2$  is the mass, in grams, of the dish, its lid and the test portion after oven drying.

Take as the result the arithmetic mean of the two determinations, expressed to one decimal place.

**C.8 Test report**

The test report shall specify the method used and the result obtained. It shall also mention all operating details not specified in this annex, or regarded

as optional, together with details of any incidents which may have influenced the result.

The test report shall include all information necessary for the complete identification of the sample.

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