

UNECE STANDARD DF-05
concerning the marketing and commercial
quality control of

UNSHELLED SWEET ALMONDS
moving in international trade between and to
UNECE member countries

I. DEFINITION OF PRODUCE

This standard applies to unshelled sweet almonds from varieties (cultivars) grown from *Prunus amygdalu B.* (*Prunus Communis*), without the pericarp, which are intended for direct consumption.

II. PROVISIONS CONCERNING QUALITY

The purpose of the standard is to define the quality requirements of sweet almonds at the export control stage, after preparation and packaging.

A. Minimum requirements

Unshelled sweet almonds should be harvested when fully ripe.

- (i) In all classes subject to the special provisions for each class and the tolerances allowed, the almonds must be:

(a) Characteristics of the shell

- sound
- clean
- whole (outer parts of the shell may be missing provided that the edible part is protected)
- free from gum
- dry
- without traces of pericarp or other matter.

The shell must not be black. Shells may be whitened provided that the treatment applied does not affect the quality of the kernels and that it is permitted by the regulations of the importing country.

(b) Characteristics of the kernel

- sweet
- sound and, in particular, free of any trace of damage by parasites and free from living insects and other living animal pests.

The condition of the almonds must be such as to enable them

- to withstand normal transport and handling, and
- to arrive in a satisfactory condition at the place of destination.

(ii) Moisture content

The almonds shall have a moisture content of not greater than 9 per cent.¹

B. Classification

Unshelled sweet almonds are graded according to quality into two classes as follows:

- (i) **Class "I"**
Almonds in this class must belong to soft - or semi-soft - shelled varieties.²
- (ii) **Class "II"**
Almonds in this class must belong to soft - semi-soft or hard-shelled varieties.

III. PROVISIONS CONCERNING TOLERANCES

Tolerances in respect of quality shall be allowed in each package for produce not satisfying the requirements of the class indicated.

¹ *The moisture content is determined by one of the methods given in Annex I.*

² *Soft-shelled almonds: almonds which can be cracked with the fingers. Semi-soft- shelled almonds: almonds which can be cracked with a nutcracker. Hard-shelled almonds: almonds which can be cracked only with a hammer.*

A. Quality tolerances

Permitted defect	Tolerances allowed (per cent of defective fruit by number or of fruit)	
	Class I	Class II
External defects	5	8
Almonds with a residue of a pericarp covering not more than one eighth of the surface	5	7
Internal defects		
Bitter almonds	2	3
Other internal defects	10	12

IV. PROVISIONS CONCERNING PRESENTATION**A. Uniformity**

The contents of each package must be uniform and contain only unshelled sweet almonds of the same class and of the same variety or similar varieties. However, a maximum of 5 per cent, by number of almonds, may belong to other varieties in class "I" and of 10 per cent in class "II".

The visible part of the contents of the package must be representative of the entire contents.

B. Packaging

Almonds must be packed in such a way as to protect the produce properly.

The materials used inside the package must be new, clean and of a quality such as to avoid causing any external or internal damage to the produce. The use of materials, particularly of paper or stamps bearing trade specifications is allowed provided the printing or labelling has been done with non-toxic ink or glue.

VI. PROVISIONS CONCERNING MARKING

Each package or compartmented package must bear the following particulars in letters grouped on the same side, legibly and indelibly marked and visible from the outside:

A. Identification

Packer)	Name and address or
and/or)	officially issued or
Dispatcher)	accepted code mark ³

Shipping mark (where applicable). The shipping mark must correspond with the shipping mark shown on the Bill of Lading.

B. Nature of produce

"Unshelled sweet almonds", if produce is not visible from the outside.

C. Origin of produce

Country of origin and, optionally, district where grown, or the national, regional or local place name.

D. Commercial Specifications

- Class
- commercial type: soft, semi-soft or hard (optional)
- size-grade (optional)
- weight (gross or net, at the request of the importing country).

E. Official control mark (optional)

This standard was first published in 1969
Reprinted 1983
Partially Revised 1991 (Standard Layout)
The UNECE Standard for Unshelled Sweet Almonds
has led to the development of an explanatory brochure published by the OECD Scheme
Inclusion of new Annex I 2002

³ *The national legislation of a number of European countries requires the explicit declaration of the name and address.*

ANNEX I
DETERMINATION OF THE MOISTURE CONTENT FOR DRY PRODUCE (NUTS)

METHOD 1 - LABORATORY REFERENCE METHOD

1. Scope and application

This reference method serves to determine the moisture and volatile matter content for both inshell nuts and shelled nuts (kernels).

2. Reference

This method is based on the method prescribed by ISO: ISO 665-2000 Oilseeds - Determination of moisture and volatile matter content.

3. Definition

Moisture content and volatile matter content for dry produce (inshell nuts and shelled nuts): loss in mass measured under the operating conditions specified in ISO 665-2000 for oilseeds of medium size (see point 7.3 of ISO 665-2000). The moisture content is expressed as mass fraction, in percent, of the mass of the initial sample.

For whole nuts, when moisture content is expressed both on the whole nut and on the kernel, in cases of dispute between the two values, the moisture content value of the whole nut takes precedence.

4. Principle

Determination of the moisture and volatile matter content of a test portion by drying at $103 \pm 2^\circ \text{C}$ in an oven at atmospheric pressure, until practically constant mass is reached.

5. Apparatus (see ISO 665-2000 for more details)

- 5.1 Analytical balance sensitive to 1 mg or better.
- 5.2 Mechanical mill.
- 5.3 3 mm round-holes sieve.
- 5.4 Glass, porcelain or non-corrosive metal containers, provided with well-fitting lids, allowing the test portion to be spread to about 0.2 g/cm^2 (approximately 5 mm height).
- 5.5 Electric oven with thermostatic control capable of being regulated between 101 and 105°C in normal operation.
- 5.6 Desiccator containing an effective desiccant.

6. Procedure

Follow the operating conditions as specified in ISO 665-2000 for oilseeds of medium size (point 7 and 7.3 of ISO 665-2000), but with the following specific modifications, concerning the preparation of the test sample.

Although ISO 665-2000 sets up one initial period of 3 hours in the oven set at $103 \pm 2^\circ \text{C}$, for nuts it is recommended one initial period of 6 hours.

6.a Determination of the moisture and volatile matter content of kernels:

For shelled nuts, homogenize the laboratory sample and take a minimum of 100 g of kernels as a test sample.

For inshell nuts, take a minimum of 200 g and, using a nutcracker or hammer, remove the shells and fragments or particles of shell, using the rest as a test sample. The kernel skin (cuticle or spermoderm) is included in the test sample.

Grind and sieve the test sample until the size of the particles obtained is no greater than 3 mm. During the grinding operation, care should be taken to avoid the production of a paste (oily flour), the overheating of the sample and the consequent loss of moisture content (for example, if using a mechanical food chopper, by successive very short grinding and sieving operations).

Spread evenly over the base of the vessel about 10 g of the ground product as a test portion, replace the lid, and weigh the whole vessel. Carry out two determinations on the same test sample.

6.b Determination of moisture and volatile matter content on whole nuts (shell plus kernel):

Homogenize the laboratory sample and take a minimum of 200 g of nuts as a test sample. Remove all the foreign matter (dust, stickers, etc.) from the test sample.

Grind the whole nuts using either a Rasse Mill, a Romer Mill or a Brabender apparatus or similar, without overheating the product.

Spread evenly over the base of the vessel about 15 g of the ground product as a test portion, replace the lid, and weigh the whole vessel. Carry out two determinations on the same test sample.

7. Expression of results and test report

Follow all the instructions as specified in ISO 665-2000 (point 9 and 11) for method of calculation and formulae, and for test report, without any modification.⁴

8. Precision

For conditions of repeatability and reproducibility apply specifications of ISO 665-2000 (point 10.2 and 10.3) for

⁴ *The main points specified are as follows:*

- *moisture and volatile matter content is expressed as mass fraction, in percent, of the mass of the initial sample.*
- *The result is the arithmetic mean of the two determinations; the difference between the two determinations should not exceed 0.2 % (mass fraction).*
- *The result has to be reported to one decimal place.*

soya beans.

METHOD 2: RAPID METHOD

1. Principle

Determination of the moisture content using a measuring apparatus based on the principle of loss of mass by heating. The apparatus should include a halogen or infra-red lamp and a built-in analytical balance, calibrated according to the laboratory method.

The use of apparatus based on the principle of electrical conductivity or resistance, as Moisture Meters, Moisture Testers and similar, is also allowed always at condition that the apparatus has to be calibrated according with the laboratory reference method for the tested product.

2. Apparatus

- 2.1 Mechanical mill or food chopper.
- 2.2 3 mm round-holes sieve (unless indicated otherwise by the instructions for use of the apparatus).
- 2.3 Halogen or infrared lamp with built-in analytical balance sensitive to 1 mg or better.

3. Procedure

- 3.1 Preparation of sample

Follow the same instructions as given for the laboratory reference method (points 6.a and 6.b), unless indicated otherwise by the instructions for use of the apparatus, particularly with regard to the diameter of the fragments.

- 3.2 Determination of moisture content

Carry out the determination on two test portions of approximately 5 to 10 g each, unless indicated otherwise by the instructions for use of the apparatus.

Spread the test portion over the base of the test receptacle, thoroughly cleaned in advance, and note the weight of the test portion to within 1 mg.

Follow the procedure indicated in the instructions for use of the apparatus for the product to be tested, in particular with regard to the adjusting of temperatures, the duration of the test and the recording of the weight readings.

4. Expression of results

4.1 Result

The result should be the arithmetic mean of the two determinations, provided that the conditions of repeatability (4.2) are satisfied. Report the result to one decimal place.

4.2 Repeatability

The difference in absolute value between the respective results of the two determinations performed simultaneously or one immediately after the other by the same operator, under the same conditions on identical test material, must not exceed 0.2%.

5. Test report

The test report must state the method used and the results obtained. The report must contain all information necessary for the full identification of the sample.

ANNEX II**TERMS RECOMMENDED FOR USE IN STANDARDS
FOR DRY AND DRIED FRUIT
AND DEFINITION OF DEFECTS****A. Defects of the shell in the case of unshelled dry fruit**

Defects which adversely affect the appearance, such as:

- blemishes
- staining, adhering dirt, adhering pericarp
- visible foreign matter
- broken shells
- insect damage
- mould.

B. Defects of the edible part***Superficial damage:***

Damage adversely affecting the appearance of the product, including blemishes, areas of discolouration, torn skin, sun-scald, and adhering pericarp.

Significant damage:

Damage which significantly affects the appearance or the keeping quality of the product, including embedded dirt, cracks, splits, abrasions, crushing, and lesions from any cause whatsoever.

Intrinsic defects:

Abnormalities which are uncharacteristic of mature properly handled fruit of a given variety, including immaturity, insufficient development, germinated and aborted fruit.

C. Various other defects

(from external causes)

Mould:

Mould filaments visible to the naked eye.

Fermentation:

Damage by fermentation to the extent that the characteristic appearance and/or flavour is substantially affected.

Decay:

Significant decomposition caused by the action of micro-organisms.

Insect damage:

Visible damage caused by insects and animal parasites, or the presence of dead insects or insect debris.

Foreign matter:

Any matter or material not usually associated with the product.

Extraneous vegetable material:

harmless vegetable matter associated with the fruit.

Rancidity:

Oxidation of lipids producing a disagreeable flavour.

Abnormal odour or flavour:

Any odour or flavour that is not characteristic of the product.

Heat damage:

Damage caused by excessive heat that affects the flavour, appearance or edibility of the fruit.

Broken fruit:

Fruit with more than one-third missing.

Pieces:

Less than one-third of a whole fruit.