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REVISION OF UNECE STANDARDS

INSHELL ALMONDS

Transmitted by Spain

Note by the secretariat: The document contains a new proposal prepared by the rapporteur (Spain) including comments from other delegations. The changes to the last version have been indicated as follows: New text is reproduced in bold and underlined, deleted text is crossed out. Text still under discussion has been put in square brackets.

The main points for discussion in Geneva are

- Definition of types (soft, semi-soft, hard?).
- Sizing (whether to include a minimum size, around 18 mm of diameter).
- Marking of sizing (in case of sizing by count per ounce or 100 g, no obligation to translate this values to mm).
- Tolerances(by count or by weight?).
- Tolerances(confirmation of values put into square brackets).

REVISED UN/ECE STANDARD
concerning the marketing and commercial quality control of

INSHELL ALMONDS

moving in international trade between and to
UN/ECE member countries

I. DEFINITION OF PRODUCE

This standard applies to sweet inshell almonds of varieties (cultivars) grown from *Prunus amygdalus* Batsch, syn. *Prunus dulcis* (Mill.) D.A. Webb, from which the fleshy hull (epicarp and mesocarp) has been removed, intended for direct consumption. It does not apply to inshell almonds intended to be cracked or for further industrial processing, or for use in the food industry. It does not apply either to fresh inshell almonds marketed with his attached hull.

Inshell almonds are classified into three ~~commercial~~ types according to the hardness of the shell, as defined below : [1]

- Soft type: inshell almonds which can be easily cracked with the fingers.
- [Semi-soft type: inshell almonds which need a nutcracker to be cracked.]
- [Hard type: inshell almonds which can be cracked only with a hammer or similar devices.]
- **[Semi-soft or Semi-hard type: inshell almonds which need a nutcracker or similar devices to be cracked.]**

II. PROVISIONS CONCERNING QUALITY

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

A. Minimum requirements

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

(a) Characteristics of the shell :

- intact; slight cracks and superficial damage are not considered as a defect;[2]

[1] *Other denominations commonly used in international trade are accepted, as are "Paper type" or "Mollares" for the Soft type, and "Fitas" or "Semi-mollares" for the Semi-soft[or Semi-hard] type.*

[2] *Small outer parts of the shell may be missing, provided that the kernel is protected.*

- sound; free from defects likely to affect the natural keeping quality of the inshell almond; free from gum;
- clean, practically free of any visible foreign matter; **free of adhering dirt or soil;**
- dry; free of abnormal external moisture;
- free from residues of **adhering** hull;
- free of damage caused by pests;
- free from blemishes or discoloration rendering them unfit for consumption; [3]
- well formed; the shell is not noticeably misshapen;

(b) Characteristics of the kernel:

- sufficiently dry to ensure keeping quality;
- sweet; bitter almonds are excluded;
- intact;
- sound; kernels affected by rotting or deterioration rendering them unfit for consumption are excluded; free from gum and brown spot;
- clean, practically free of any visible foreign matter;
- sufficiently developed; empty shells and shrunken or shrivelled kernels are to be excluded; [4]
- free from insects or mites whatever their stage of development;
- free of damage caused by pests;
- free from blemishes and discoloration rendering them unfit for consumption;
- free from mould;
- free from rancidity;
- free of foreign smell and/or taste.

Inshell almonds must be harvested when fully ripe.

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

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

[3] *The almond shell may be brushed and bleached, provided that the treatment applied does not affect the quality of the kernel and it is permitted by the regulations of the importing country.*

[4] *Twin or double kernels are not considered as a defect.*

(ii) Moisture content

Inshell almonds shall have a moisture content not greater than 10.0 per cent for the whole nut, and [7.0 percent] for the almond kernel. [5]

B. Classification

Inshell almonds are classified in three classes defined below:

(i) ***"Extra Class"***

Inshell almonds in this class must be of superior quality. They must be characteristic of the variety or of the group of varieties of similar characteristics[6] indicated on the marking,[7] and belong to either the soft ~~commercial~~ type or the semi-soft [or semi-hard] type.

They must be free from defects with the exception of very slight superficial defects provided these do not affect the general appearance of the produce, the quality, keeping quality and presentation in the package.

(ii) ***Class I***

Inshell almonds in this class must be of good quality. They must be of similar characteristics,[6] and belong to either the soft ~~commercial~~ type or the semi-soft [or semi-hard] type.

Slight superficial defects of the shell and slight defects in shape or development may be allowed provided these do not affect the general appearance of the produce, the quality, keeping quality and presentation in the package.

(iii) ***Class II***

This class includes inshell almonds which do not qualify for inclusion in the higher classes but satisfy the minimum requirements specified in part A. [They can belong to either the soft, semi-soft or semi-hard] or hard ~~commercial~~ types]. Mixtures of ~~commercial~~ types are not allowed.

Superficial defects of the shell and defects in shape or development may be allowed, provided the inshell almonds retain their essential characteristics as regards the quality, keeping quality and presentation.

III. PROVISIONS CONCERNING SIZING

Inshell almonds ~~are~~ **shall be** either sized or screened. Sizing or screening is compulsory for Extra Class, but

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[5] *The moisture content is determined by one of the methods given in Annex I of this document. The laboratory reference method shall be used in cases of dispute.*

[6] *Similar characteristics means that the inshell almonds in each lot are similar in shape and appearance, and reasonably uniform in degree of hardness of the shell.*

[7] *The reference to a variety or group of varieties is mandatory in "Extra Class", and optional in Class I and Class II.*

optional for Class I and Class II.

Sizing and screening are determined by the maximum diameter of the equatorial section of the shell, by means of round-holed or elongated-holed screens. In addition to this system, other optional sizing and screening systems can by used, such as those based in the number of inshell almonds per 100 g or per ounce (28,3495 g). ~~provided that the equivalent size or screen in mm would be expressed in the marking~~.

(i) Sizing is expressed by an interval defined by a maximum and minimum size in millimetres, which must not exceed 2 mm of difference. **When a range in count is specified, the inshell almonds shall be fairly uniform in size, and the average count shall be within the range specified.** [8]

(ii) ~~Screening is expressed by a reference to a minimum size in millimetres, followed by the words "and above" or "and plus", or by a reference to a maximum size in millimetres, preceded or followed by the words "under" or "and less". For produce presented to the final consumer under the specification screened, the reference "under" or "and less" is not allowed.~~

Screening is expressed by a reference to a minimum size, in millimetres, followed by the words "and plus" or other equivalent wording, or by a reference to a maximum number of inshell almonds by 100 g or by ounce, followed by the words "and less" or other equivalent wording.

Alternatively, screening could be expressed by a reference to a maximum size, in millimetres, followed by the words "and less" or other equivalent wording, or by a reference to a minimum number of inshell almonds by 100 g or by ounce, followed by the words "and plus" or other equivalent wording. For produce presented to the final consumer under the specification «screened», this alternative reference is not allowed.

IV. PROVISIONS CONCERNING TOLERANCES

Tolerances in respect of quality and size are allowed in each package for produce not satisfying the requirements of the class indicated.

[8] ***Fairly uniform in size means that, in a representative sample, the weight of 10 per cent, by count, of the largest inshell almonds shall not exceed 1,5 times the weight of the 10 per cent, by count, of the smallest inshell almonds.***

A. Quality tolerances

Defects allowed [9]	Tolerances allowed (per cent of defective fruit by [count]) [a]		
	Extra	**Class I**	**Class II**
(a) Total tolerances for shells not satisfying the minimum requirements, of which no more than:	5	10	15
- almonds shells with adhering husk and/or affected by blemishes or discoloration, damaged by pests, rotting or deterioration	1	3	5
(b) Total tolerances for kernels not satisfying the minimum requirements, of which no more than:	[8]	10	15
- bitter almonds and kernels having bad smell or taste	1	3	4
- shrunken or shrivelled, not sufficiently developed kernels and empty nuts	[3]	[5]	10
- rancid, rotten, mouldy and damaged by insects or other pests [b] [c] [of which mouldy no more than:]	2 [0,5]	5 [1]	7 [2]
(c) Other defects (not included in total tolerances):			
- loose shells and shell fragments (by weight) [a]	1	2	3
- dust and foreign matter (by weight) [a]	0.25	0.25	0.25

[a] *All tolerances are calculated by count, except those for loose shells and shell fragments, and dust and foreign matter, which are calculated by weight, with regard to the total inshell weight basis.*

[b] *Living pests are inadmissible in any class.*

[c] *Kernels affected by gum or brown spot are subject to the total tolerance for kernels.*

There is a maximum tolerance of 5 per cent, by count, in Extra Class and Class I, and 10 per cent in Class II, of inshell almonds belonging to a different ~~commercial~~ type **than the type specified on the marking.** ~~from the same local production area.~~

When a variety or a group of varieties is indicated in the marking, there is a maximum tolerance of 10 per cent, by count, for Extra Class and Class I, and 20 per cent for Class II, of inshell almonds belonging to ~~different~~ **other** varieties.

[9] *Standard definitions of the defects are listed in Annex II.*

B. Mineral impurities

Ashes insoluble in acid must not exceed 1g/kg.

C. Size tolerances

For all classes, when applicable**, in case of sizing or screening by diameter in millimetres**, a maximum tolerance of 15 per cent, by count, of inshell almonds not conforming to the size or screen indicated on the marking is allowed.

When sizing or screening by the number of almond kernels per 100 g or per ounce, no tolerance for counts above or below the specified range or screen shall be allowed.

V. PROVISIONS CONCERNING PRESENTATION

A. Uniformity

The contents of each package must be uniform and contain only sweet inshell almonds of the same origin, crop year, quality and commercial type, and, when applicable, variety or group of varieties and size.

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

B. Packaging

Inshell 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 that the printing or labelling has been done with non-toxic ink or glue.

Packages must be free of all foreign matter.

C. Presentation

Inshell almonds must be presented in bags or solid containers. All consumer packages within each package must be of the same weight.

VI. PROVISIONS CONCERNING MARKING

Each package[10] must bear the following particulars in letters grouped on the same side, legibly and indelibly marked and visible from the outside:

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[10] *Consumer packages for direct sale to the consumer shall not be subject to these marking provisions but shall conform to national requirements of the importing country. However the markings referred to shall in any event be shown on the transport packaging containing such package units.*

A. Identification

Packer	)	Name and address or
and/or	)	officially issued or
Dispatcher	)	accepted code mark [11]

B. Nature of produce

- "Inshell almonds" or "Almonds in the shell"
- ~~Commercial~~ Type
- Variety or group of varieties (optional in Class I and Class II)

C. Origin of produce

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

D. Commercial specifications

– Class;

– Size or screen expressed in millimetres [12] (optional in Class I and Class II);

  – **the minimum and the maximum diameters, or**

  – **the minimum diameter followed by the "and plus" or other equivalent wording, or**

  – **the maximum diameter, followed by the words "and less" or other equivalent wording.**

– Net weight, or (optional or at the request of the importing country) number of consumer packages, followed by the net unit weight in the case of transport packages containing such units.

– Crop year (optional); mandatory according to the legislation of the importing country.

– "Best before" followed by the date (optional)

E. Official control mark (optional)

[11] *The national legislation of a number of European countries requires the explicit declaration of the name and address. In the case where a code mark is used, the reference "packer and/or dispatcher" (or equivalent abbreviations) has to be indicated in close connection with the code mark.*

[12] *Or count per 100 g or per ounce~~, provided that the equivalent size or screen in mm is expressed~~.*

ANNEX II

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 ± 2º 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 105º 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 ± 2º 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 Ras 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. [13]

8. Precision

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

[13] 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.

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 III

DEFINITIONS OF TERMS AND DEFECTS FOR INSHELL ALMONDS

Bitter almond:	almond kernel with a characteristic bitter taste produced by amygdalin, a natural compound of bitter almond varieties.
Double or twin:	almond kernel of characteristic shape, with one side flat or concave, as a consequence of the development of two kernels in the same shell.
Clean:	practically free from plainly visible adhering dirt or other foreign material.
Well formed:	the shell is not noticeably misshapen and, when appropriate, its shape concords with the varietal characteristics.
Empty nut:	closed almond shell containing no kernel (aborted kernel).
Loose shell and shell fragments:	half or split empty shell, and fragments of almond shell or almond hull.
Sufficiently developed:	almond kernel of normal shape, without aborted or dried out portions; shrunken and shrivelled kernels are not sufficiently developed.
Shrunken or shrivelled:	almond kernel which is extremely flat and wrinkled, or with desiccated, dried out or tough portions, when the affected portion represents more than one quarter of the kernel.
Adhering hull:	residues of hull adhered on the surface of the shell, affecting in aggregate more than 5 per cent of the shell surface; the presence of lesser portions of hull are not considered as a defect.
Mould:	mould filaments visible to the naked eye, either on the shell or on the kernel.
Rancidity:	oxidation of lipids or free fatty acid production giving a characteristic disagreeable flavour.
Rotten:	significant decomposition or decay caused by the action of micro-organisms or other biological processes, normally accompanied by changes in texture and/or colour.
Insect or pest damage:	visible damage or contamination caused by insects, mites, rodents or other animal pests, including the presence of dead insects, insect debris or excreta.
Living pests:	presence of living pests (insects, mites or others) at any stage of development (adult, nymph, larva, egg, etc.).
Gummy:	resinous appearing substance on the surface of the shell or on the kernel, covering in aggregate an area more than the equivalent of a circle of 6 mm in diameter.

Brown spot:	slightly depressed brown spots on the almond kernel, affecting or not the endosperm, either single or multiple, caused by the sting of insects, as the box elder bug (Leptocoris trivittatus Say), covering in aggregate an area more than the equivalent of a circle of 3 mm in diameter.
Blemish and discoloration (on shells):	apparent and spread stains or grey, dark or black discoloration contrasting with the natural colour of the shell, affecting in aggregate more than one quarter of the surface of the shell; it is not considered as a defect the **normal** colour variations between the shells **of one lot.**
Blemish and discoloration (on kernels):	apparent and spread stains, other than gum and brown spot, or severe dark or black discoloration contrasting with the natural colour of the kernel skin, affecting in aggregate more than one quarter of the surface of the almond kernel; it is not considered as a defect the **normal** colour variations between the kernels **of one lot**.
Abnormal external moisture:	presence of water, moisture or condensation directly on the surface of the product.
Foreign smell and/or taste:	any odour or taste that is not characteristic of the product.
Foreign matter:	any visible and/or apparent matter or material, including dust, not usually associated with the product, except mineral impurities.