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Perishable Produce and Quality Development

Specialized Section on Standardization of
Dry and Dried Produce (Fruit)

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REVISION OF UN/ECE STANDARDS

UNSHELLED PISTACHIO NUTS

Note by the Secretariat

At the last meeting of the Specialized Section it was agreed to review the UN/ECE Standards for Unshelled Pistachio Nuts because the present text no longer reflected current production and trade practices. In this document the present UN/ECE standard is reproduced.

UN/ECE STANDARD DF-09
concerning the marketing and commercial
quality control of

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

I. DEFINITION OF PRODUCE

This standard applies to unshelled pistachio nuts from varieties (cultivars) grown from Pistachio (*Pistacia vera L.*), from which the protective pericarp has been removed and which are intended for direct consumption. For processed pistachio nuts the quality requirements indicated in this standard will apply with regard to processing characteristics.

II. PROVISIONS CONCERNING QUALITY

The purpose of the standard is to define the quality requirements of unshelled pistachio nuts 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, the unshelled pistachio nuts must be:
 - (a) **Characteristics of the shell**
 - intact; slight superficial damage is not considered as a defect
 - sound, free from defects likely to affect the natural keeping quality of the fruit
 - clean, practically free of any visible foreign matter provided that the edible part of the fruit is protected
 - dry; free from abnormal external moisture
 - free of residues of pericarp
 - either naturally split or split mechanically.
 - (b) **Characteristics of the kernel**
 - intact
 - sound; produce affected by rotting or deterioration such as to make it unfit for consumption, is excluded
 - sufficiently developed
 - free from living insects or any other living animal pests
 - free from visible damage by insects, mites or other parasites

- free from mould
- free from rancidity or foreign smell and/or taste.

The condition of the unshelled pistachio nuts must be such as to enable them:

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

(ii) **Moisture content**

The unshelled pistachio nut kernels shall have a moisture content of not greater than 6.5 per cent.^{1 2}

B. Classification

Unshelled pistachio nuts are classified in three classes defined below:

(i) ***"Extra" class***

Pistachio nuts in this class must be of superior quality. They must be of normal shape and characteristic of the variety and/or commercial type. They must be practically free from defects with the exception of very slight superficial defects provided that these do not affect the general appearance of the produce, the quality, the keeping quality or its presentation in the package.

(ii) ***Class I***

Pistachio nuts in this class must be of good quality. They must be characteristic of the variety and/or commercial type. Slight defects may be allowed provided that these do not affect the general appearance of the produce, the quality, the keeping quality or its presentation in the package.

(iii) ***Class II***

This class includes unshelled pistachio nuts which do not qualify for inclusion in the higher classes but which satisfy the minimum requirements specified above. Defects may be allowed provided that the unshelled pistachio nuts retain their essential characteristics as regards general appearance, quality, keeping quality and presentation.

¹ *Reservation by Germany and the Netherlands for a maximum level of 6.0 per cent moisture.*

² *The methods described in Annex I of this document will be used to determine the moisture content. The reference method would be the Laboratory Method in the case of dispute.*

III. PROVISIONS CONCERNING SIZING

Sizing of unshelled pistachio nuts is compulsory for produce in "EXTRA" Class and is determined by the maximum diameter of the equatorial section which is determined by means of a screen with circular perforations, or the number of pistachio nuts per 100/grammes according to the following table:

	Diameters (mm) ^a		Number of pistachio nuts per 100 g ^a	
	Round ^b	Long ^b	Round ^b	Long ^b
Very large (V.L.)	12 and above	11 and above	Up to 77	Up to 92
Large (L.)	11-12	10-11	77 - 88	92 - 112
Medium (M.)	10-11	9-10	89 - 109	113 - 138
Small (S.)	9-10	8-9	Over 109	Over 138

^a *By screened or weighed pistachio nuts is meant pistachio nuts whose maximum diameter or number respectively is over or under a stated figure.*

^b *Pistachio nuts are divided according to their variety as:*

a) round

b) long.

IV. PROVISIONS CONCERNING TOLERANCES

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

A. Quality tolerances

Permitted defects ^a	Tolerances allowed (per cent of defective fruit by number or by weight)		
	Extra	Class I	Class II
Total tolerances for kernel and shell defects:	5	10	15
Shell defects			
- Stained shells ^b	2	3	4
- Laterally split shells	1	4	6
- Cracks, traces of pericarp, blemishes	1	2	3
- Unsplit shells	2	3	5
Kernels defects:			
- Not fully developed, shrivelled and stained kernels	3	6	10
- Rancid, decay, having a foreign smell or taste, damage by insects ^{c 3}	1	1.5	3
- Mould ^{3 4}	0.5	0.5	1
- Empty nuts	1	3	5
- Foreign matter	0.2	0.2	0.2

^a Standard definitions of the defects are listed in Annex II attached to this standard.

^b These tolerances would not count toward the global tolerances.

^c For pistachio nuts of the old crop, these tolerances are increased to 2.5 per cent and 4 per cent respectively in Class I and Class II, provided that the marking indicates the crop year. Not more than 0.25 per cent by weight of nuts containing dead insects or parts of dead insects.

B. Mineral impurities

³ *The national legislations of Germany and of Switzerland do not permit tolerances for produce affected by mould or the presence of live or dead insects.*

⁴ *Reservation of Poland that the tolerance for mould should be 0.5 per cent regardless of the class.*

Not greater than lg/kg.

C. Size Tolerances

For all classes of screened pistachio nuts, 5 per cent by weight or count may be of a size different from the size laid down.

V. PROVISIONS CONCERNING PRESENTATION

A. Uniformity

The contents of each package (or lot for produce presented in bulk) must be uniform and contain only pistachio nuts of the same origin, quality and size (if sized).

The visible part of the contents of the package (or lot for produce presented in bulk) must be representative of the entire contents. For "Extra class" and Class I the produce must be of the same variety and/or commercial type.

B. Packaging

Unshelled pistachio nuts 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 paper or stamps bearing trade specifications is allowed provided the printing or labelling has been done with non-toxic ink or glue.

Packages must be free of all foreign matter.

VI. PROVISIONS CONCERNING MARKING

Each 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 ⁵

⁵ *The national legislation of a number of European countries requires the explicit declaration of the name and address.*

B. Nature of the produce

- Unshelled Pistachio Nuts.

C. Origin of the produce

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

D. Commercial specifications

- class
- commercial type or variety
- type as "round" or "long"
- size (if sized)
- crop year (optional).

E. Official control mark (optional)

Adopted 1990

ANNEX I DETERMINATION OF THE MOISTURE CONTENT

METHOD I - LABORATORY REFERENCE METHOD

1. Principle

Determination of the moisture content of dried fruits by loss of mass after drying at a temperature of 103°C ($\pm 2^\circ\text{C}$) in a temperature-controlled oven at ambient pressure for 6 hours.

2. Apparatus

- 2.1 Ceramic mortar with appropriate pestle or food chopper.
- 2.2 Analytical balance assensitive to 1 mg.
- 2.3 Cylindrical, flat-bottomed glass or metal containers, 12cm in diameter and 5cm in depth, provided with well-fitting lids.
- 2.4 Electrically heated temperature-controlled oven with good natural ventilation, regulated so that the temperature is maintained at 103°C ($\pm 2^\circ\text{C}$).
- 2.5 Desiccator containing an effective desiccant (e.g. calcium chloride) and provided with a metal plate which allows the containers to cool rapidly.

3. Preparation of the sample

Shell the sample if required and crush the kernels in the mortar, or chop them finely, to obtain fragments of 2-4mm across.

4. Test portion and determination

- 4.1 Dry the containers and their lids in the oven for at least 2 hours and transfer to the desiccator. Allow the containers and lids to cool to room temperature.
- 4.2 Carry out the determination on 4 test portions of approximately 50g each.
- 4.3 Weigh the empty container and lid to the nearest 0.001g (M_0).
- 4.4 Weigh approximately 50g of the test material into the container to the nearest 0.001g. Spread the material all over the base of the container, seal the container quickly with the lid and weigh the whole (M_1). Perform these operations as quickly as possible.

- 4.5 Place the open containers, with their lids beside them, in the oven. Close the oven and allow to dry for 6 hours. Open the oven, quickly cover the containers with their individual lids, and place them in the desiccator to cool. After cooling to ambient temperature, weigh the covered dish to the nearest 0.01g (M_2).
- 4.6 The moisture content of the sample, as percentage by mass is given by the expression:

$$\text{Moisture content} = \frac{M_1 - M_2}{M_1 - M_0} \times 100$$

- 4.7 Report the average value obtained from the four determinations.

METHOD II - RAPID METHOD

1. Principle

Determination of the moisture content using a measuring instrument based on the principle of electrical conductivity. The measuring instrument must be calibrated against the laboratory method.

2. Apparatus

- 2.1 Ceramic mortar with appropriate pestle or food chopper.
- 2.2 Measuring instrument based on the principle of electrical conductivity.

3. Determination

- 3.1 Fill the glass with the substance to be examined (previously ground in the mortar) and tighten the press until a constant pressure is obtained.
- 3.2 Read the values of the scale.
- 3.3 After each determination, clean the glass thoroughly with a spatula, stiff bristled brush paper napkin, or compressed air pump.

ANNEX II
DEFINITIONS OF TERMS USED IN THE STANDARD FOR
UNSHELLED PISTACHIO NUTS

- Defects of the shell:** any defect affecting the shell but not the kernel (blemishes, cracks, traces of pericarp etc.).
- Unsplit shells:** pistachio shells which are not split open, but contain a fully developed kernel.
- Defects of the kernel:** any defect adversely affecting the appearance and edibility of the kernel.
- Fully developed:** the condition of pistachio in which the kernel has developed fully.
- Shrivelled:** kernel which is seriously shrunken, wrinkled and tough.
- Rancid:** oxidation of lipids producing a disagreeable flavour. An oily appearance of the flesh does not necessarily indicate a rancid condition.
- Foreign smell or taste:** any odour or flavour that is not characteristic of the product.
- Damage by insects or attacked by rodents:** visible damage by insects or rodents, or the presence of dead insects or insect debris.
- Mould:** Mould filaments visible to the naked eye.
- Empty nuts:** the condition of pistachio in which the kernel is not developed.
- Foreign matter:** any matter or material not usually associated with the product.
- Decay:** significant decomposition caused by the action of micro-organisms.
- Clean:** practically free from plainly visible adhering dirt or other extraneous matter.
- Stained Shell:** when an aggregate amount of brown to dark brown discolouration affects more than one-fourth of the total shell surface or more than one half of one side of the shell.
- Mineral impurities:** acid insoluble ash.