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COMMITTEE FOR TRADE, INDUSTRY AND  
ENTERPRISE DEVELOPMENT

Working Party on Standardization of  
Perishable Produce and Quality Development

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

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Item 4(b) of the provisional agenda

**REVISION OF UN/ECE STANDARDS**

**DECORTICATED AND DECORTICATED PEELED PISTACHIO NUTS**

Note by the secretariat

At the last meeting of the Specialized Section it was agreed to review the UN/ECE Standard for Decorticated and Decorticated Peeled 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-10**  
relating to the marketing and commercial  
quality control of

**DECORTICATED, AND DECORTICATED PEELED PISTACHIO NUTS**  
moving in international trade between and to  
UN/ECE member countries

**I. DEFINITION OF PRODUCE**

This standard applies to decorticated and decorticated peeled pistachio nuts from varieties (cultivars) grown from *Pistacia vera L.* from which the protective pericarp has been removed. Decorticated and decorticated peeled pistachio nuts which are processed by salting, sugaring or roasting are excluded.

**II. PROVISIONS CONCERNING QUALITY**

The purpose of the standard is to define the quality requirements of decorticated and decorticated peeled 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 decorticated and decorticated peeled pistachio nuts must be:
- intact; the absence of a small part of the nut shall not be regarded as a defect<sup>1</sup>
  - sound: free from mould, rot, visible damage by insects and dead insects and insect debris
  - sufficiently developed
  - clean, practically free from any visible foreign matter
  - free from living insects or mites whatever their stage of development
  - dry; free of abnormal external moisture
  - free of foreign smell and/or taste
  - free from rancidity.

The condition of decorticated and decorticated peeled 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.

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<sup>1</sup> *Reservation of Turkey in favour of a definition of "broken" to be added to Annex II Definitions of Defects.*

(ii) **Moisture content**

Moisture content of decorticated and decorticated peeled pistachio nuts must not exceed 6.5 per cent.<sup>2 3</sup>

**B. Quality Classification**

Decorticated peeled pistachio nuts are classified as defined below:

**“Extra” class**

Decorticated peeled pistachio nuts must be of superior quality. They must be well developed, of normal shape and the inside longitudinal section must be of the colour specified with a tolerance of 5 per cent for other colours; i.e. "Extra Class Decorticated Peeled Green (Pink - Gulic, yellow or mixed colour).

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.

Decorticated pistachio nuts are classified into three quality classes as defined below and in the defect tolerances in Table I:

(i) **"Extra" class**

Decorticated pistachio nuts in this class must be of superior quality. They must be well developed, of normal shape and the inside longitudinal section must be according to colour 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**

Decorticated pistachio nuts in this class must be of good quality. They must be fairly well developed and normal in shape and the inside longitudinal section must be according to colour 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 decorticated pistachio nuts which do not qualify for inclusion in the higher classes but satisfy the minimum requirements specified above. However, some defects of development are allowed, as are slight defects, provided the decorticated

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<sup>2</sup> For determining the moisture content one of the methods described in Annex I shall be followed.

<sup>3</sup> Reservations by Germany and the Netherlands which are in favour of a maximum moisture content of 6.0 per cent.

pistachio nuts retain their essential characteristics as regards general appearance, quality, keeping quality and presentation.

### **C. Colour Classification**

- (i) ***Green***  
The inside longitudinal section must be green or dark green in colour. Not more than 25 per cent of kernels, by count, may display light green and/or yellow sections.
- (ii) ***Pink (Gulic)***  
The external appearance shall be pink colour and the inside longitudinal section must be light green in colour. Not more than 30 per cent of kernels, by count, may display yellow sections.
- (iii) ***Yellow***  
The inside longitudinal section of the kernel must display a predominately yellow colour. Not more than 25 per cent of kernels, by count, may display green and/or light green colour.
- (iv) ***Mixed Colour***  
Lots exceeding the above colour tolerance fall into this category which otherwise are subject to all quality requirements of Section II B.

### **III. PROVISIONS CONCERNING SIZING**

Decorticated and decorticated peeled pistachio nuts are not subject to sizing.

#### IV. PROVISIONS CONCERNING TOLERANCES

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

##### A. Quality Tolerances <sup>4</sup>

Defects	Tolerances allowed (per cent of defective fruit by weight)			
	Decorticated peeled	Decorticated		
	"Extra"	"Extra"	Class I	Class III
Total tolerances	8	8	10	15
Insufficiently developed	-	1.5	1.5	2.0
Shrivelled	6 <sup>b</sup>	4	4	5
Halved	20 <sup>c</sup>	1	2	3
Broken <sup>a</sup>	5	1	2	4
Foreign matter	-	0.1	0.1	0.2
Damaged by insects <sup>5</sup>	1	1	1.25	1.85
Visible mould <sup>5 6</sup>	0.5 <sup>5</sup>	0.5 <sup>5</sup>	0.5	1.0 <sup>7</sup>

<sup>a</sup> *Decorticated peeled pistachio halves are not considered as broken.*

<sup>b</sup> *Included within this tolerance, not more than 3 per cent of dark shrivelled kernels.*

<sup>c</sup> *20 per cent tolerances not included in total tolerance.*

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<sup>4</sup> *The delegate of Greece entered its reservation ad referendum on changes made in the quality tolerance table to provide it an opportunity to consult national trade representatives.*

<sup>5</sup> *National legislations of Germany and of Switzerland do not permit tolerances for produce affected by mould or rot or the presence of dead or living insects.*

<sup>6</sup> *Reservation of the Netherlands which is in favour of zero tolerance for mould in EXTRA class produce.*

<sup>7</sup> *Poland considers that the tolerance for visible mould should be 0.5 per cent in all classes.*

**B. Mineral impurities**

Not greater than 1 g/kg.

**V. PROVISIONS CONCERNING PRESENTATION**

**A. Uniformity**

The contents of each package must be uniform and contain only decorticated and decorticated peeled pistachio nuts of the same origin, type and quality. The visible part of the contents of the package must be representative of the entire contents.

**B. Packaging**

The decorticated and decorticated peeled pistachio nuts must be packed in such a way so 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 product. The use of materials, particularly of paper or stamps bearing trade specifications, is allowed provided the printing or labelling has been done with a non-toxic ink or glue.

Packages must be free of all foreign matter.

**C. Presentation**

The decorticated and decorticated peeled pistachio nuts must be packed in packages of 10.0, 12.5 or 25.0 kg maximum net weight packages.

These packages may contain pre-packages of the following net weights: 0.100; 0.125; 0.250; 0.500 or 1 kilogram. At the request of the importer other units of weight are allowed in order to take account of trade habits and legislation in force in importing countries. The pre-packages contained in the outer packages must be of the same weight and contain the same class of nuts.

**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 <sup>8</sup>

**B. Nature of the produce**

- Decorticated Pistachio Nuts; Decorticated Peeled 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**

- Type (Decorticated or Decorticated Peeled)
- Quality class and colour class
- crop year (optional)
- net weight, or the number of package units, followed by the net unit weight in the case of packages containing such units.

**E. Official control mark (optional)**

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<sup>8</sup> *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 DRIED FRUIT

#### METHOD I - LABORATORY REFERENCE METHOD <sup>9</sup>

##### 1. Definition

The moisture content of dried fruit is defined as being the loss of mass determined under the operating conditions described in this Annex.

##### 2. Principle

The principle of the method is the heating and drying of a sample of dried fruit at a temperature of 70 °C ± 1 °C at a pressure not exceeding 100 mm Hg.

##### 3. Apparatus

Usual laboratory apparatus not otherwise specified, and the following items:

- 3.1 Electrically-heated constant-temperature oven, capable of being controlled at 70 ° at a pressure of 100 mm Hg
- 3.2 Dishes with lids, of corrosion-resistant metal of about 8.5 cm in diameter
- 3.3 Mincer, either hand or mechanically operated
- 3.4 Desiccator, containing an effective desiccant
- 3.5 Analytical balance.

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<sup>9</sup> *This method is the same as that prescribed by the AOAC: Official Methods of Analysis, XIIIth edition, 1980, 22.013 - Moisture in dried Fruit, Official Final Action.*



#### 4. Procedure

##### 4.1 *Preparation of a sample*

Take approximately 50 g of dried fruit from the laboratory sample, and mince these twice with the mincer.

##### 4.2 *Test portion*

Place 2 g of finely divided asbestos<sup>10</sup> into the dish, tare the dish with its lid and the asbestos, dried beforehand. Weigh, to the nearest 0.01 g about 5 g of prepared sample.

##### 4.3 *Determination*

Moisten the sample and the asbestos thoroughly with a few ml of hot water. Mix the sample and the asbestos together with a spatula. Wash the spatula with hot water to remove the sample residues from it, letting the residues and the water fall into the dish.

Heat the open dish on a boiling-water bath (bain-marie) to evaporate the water to dryness. Then place the dish, with the lid alongside it into the oven and continue drying for six hours at 70 °C under a pressure not exceeding 100 mm Hg, during which time the oven should not be opened. During drying admit a slow current of air (about 2 bubbles per second) to the oven, the air having been dried by passing through H<sub>2</sub>SO<sub>4</sub>. The metal dish must be placed in direct contact with the metal shelf of the oven. After drying, remove the dish, cover it immediately with its lid and place it in the desiccator. After cooling to ambient temperature, weigh the covered dish to the nearest 0.01 g.

#### 5. Calculation and expression of results

The moisture content of the sample, as percentage by mass is given by the expression:

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

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<sup>10</sup>

*Dried sand which has previously been washed in hydrochloric acid and then rinsed thoroughly with water may be used in the place of the asbestos. Analysts using this technique should note that it is a deviation from the AOAC procedure, and should mention this in their report.*

**Where:**

$M_0$  is the mass of the empty dish with its lid and containing the asbestos, g.

$M_1$  is the mass of the dish with its lid, asbestos and test portion before drying, g.

$M_2$  is the mass of the dish with its lid after drying, g.

The results are expressed to one decimal place.

Duplicate determinations should agree to 0.2 per cent moisture.

**METHOD II - RAPID OR ROUTINE METHOD**

**1. Principle**

A rapid method based on the principle of electrical conductivity.

**2. Procedure**

- Moisture in Prunes and Raisins
- Moisture Meter Method
- Final Action

***Apparatus***

Dried fruit moisture tester meter - Type A series (DFA of California, PO Box 270A, Santa Clara, CA 95052); see Fig. 22.03 for elec. circuit.

### ***Determination***

Grind sample 3 times through food chopper, using cutter with 16 teeth. If testing hot fruit from processor, cool fruit as follows: Mix ca 60 g chopped solid CO<sub>2</sub> with fruit and then grind mixture three times before taking moisture reading. Pack ground sample into Bakelite cylinder with fingers, making certain that it is packed tightly around bottom electrode. Fill cylinder completely with tightly packed sample and level.

Lower top electrode and press it into sample until top electrode lever is against stop. Insert thermometer into ground sample until thermometer bulb is ca halfway between electrodes.

Select correct table for type and condition of fruit being tested (Table 22:01: natural or low moisture, tap 6 setting; Table 22:02: processed, tap 3 setting). Set switch (S2) to number given on table selected.

Plug tester into 110 v ac outlet and put switch to "on". (Red light indicates current). Keep push button down and turn dial so that meter needle moves toward 0. Adjust dial so that needle is at its lowest, or turning, point. After making fine adjustment of dial to meter 0 or turning point, read dial and then read thermometer.

### ***Use of Tables***

Choose temperature column of appropriate table nearest to sample temperature. Read down this column to figure closest to dial reading, then read across to "% Moisture" column.

### ***Example***

Examination of processed raisin sample gave following data: dial setting 76 and temperature 74°F, on tap 3. Looking down 74° column (Table 22:02), obtain 75.2 at 18.5% moisture and 78.4 at 19.0% moisture. Since reading is nearer to 18.5 than 19.0%, report sample as containing 18.5% moisture, or interpolate.

(Refs: JAOAC 52,858 (1969); 54,219 (1971); 55,202 (1972)).

DIAGRAM  
(SEE ECE/AGRI/116, ANNEX I)

**Explication :**

Item		Item	Value	Tolerance %	Power Rating, w
F1	Fuse 3AG 2A, 15v	R1	10K	1	1
S1	Push-button switch	R2	200K	1	1/2
L1	Néon light	R3	1K	1	1
T1	Isolating transformer 1-1, 120 v. 50 ma	R4	100K	1	1/2
PG1	Plug, 120 v	R5	40K	1	1/2
PG2	Plug to electrode	R6	20K	1	1/2
M1	Microammeter rectifier type 0-100 ma meter rectifier	R.7,R.10	3K	1	1
CR1	Rectifier F4 (5M2483)	R.8	2,5K	-	10
CR2	Rectifier F4 (5M2483)	R.9	5K	-	10
S2-2	Wafer 7-point tape switch	R.11	1,5K	10	1/2
		R.12	10K	±5	(wire- wound)

TABLES 22:01, 22:02  
(SEE ECE/AGRI/116, ANNEX I)

**ANNEX II****DEFINITIONS OF DEFECTS FOR  
DECORTICATED, AND  
DECORTICATED PEELED, PISTACHIO NUTS**

**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.

**Halved** Kernels separated longitudinally as two individual cotyledens.

**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.

**Insect damage** Visible damage by insects or animal parasites, or the presence of dead insects or insect debris.

**Mould** Mould filaments visible to the naked eye.

**Decay** Significant decomposition caused by the action of micro-organisms.

**Clean** Practically free from plainly visible adhering dirt or other extraneous matter.

**Mineral impurities** Acid insoluble ash.

**Foreign matter** Any matter or material not usually associated with the product.