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**ECONOMIC COMMISSION FOR EUROPE  
COMMITTEE ON TRADE**

Working Party on Agricultural Quality Standards  
Specialized Section on Standardization of Dry and Dried Produce

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Geneva, 23-27 June 2008  
Item 6 (a) of the provisional agenda

**NEW UNECE STANDARDS**

**MACADAMIA KERNELS**

Note by the secretariat<sup>(\*)</sup>

At its fifty-fourth session, the Specialized Section left the text of this Standard as work in progress. The delegations will discuss the definition of the produce to solve the question of covering the produce distributed in pieces. They will also revisit provisions concerning tolerances and presentation.

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<sup>(\*)</sup> The present document has been submitted after the official documentation deadline by the Trade and Timber Division due to resource constraints.

**UNECE STANDARD DDP-...**  
concerning the marketing and commercial quality control of  
**MACADAMIA KERNELS**

**I. DEFINITION OF PRODUCE**

This Standard applies to macadamia kernels of varieties (cultivars) grown from *Macadamia ternifolia*, *Macadamia tetraphylla*, *Macadamia ternifolia* Maiden & E. Betcher and their hybrids intended for direct consumption or for food when they are intended to be mixed with other products for direct consumption without further processing. It does not apply to macadamia kernels that are processed by salting, sugaring, flavouring or roasting, or intended for industrial processing.

Macadamia kernels may be presented in:

- (a) Whole
- (b) Mixture of whole and pieces
- (c) Pieces

**II. PROVISIONS CONCERNING QUALITY**

The purpose of the Standard is to define the quality requirements of macadamia kernels at the export-control stage, after preparation and packaging.

**A. Minimum requirements<sup>1</sup>**

**General provisions**

In all classes, subject to the special provisions for each class and the tolerances allowed, the macadamia kernel must display the following characteristics:

The kernel must be

- intact; however, slight superficial damage is not considered as a defect
- sound. Produce affected by rotting or deterioration such as to make it unfit for human consumption is excluded
- clean; practically free of any visible foreign matter

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<sup>1</sup> Definitions of terms and defects are listed in annex III of the Standard Layout – Recommended terms and definition of defects for standards of dry (Inshell Nuts and Nut Kernels) and dried produce <[http://www.unece.org/trade/agr/standard/dry/StandardLayout/StandardLayoutDDP\\_e.pdf](http://www.unece.org/trade/agr/standard/dry/StandardLayout/StandardLayoutDDP_e.pdf)>.

- sufficiently developed; no shrunken or shrivelled kernels that are extremely flat and wrinkled, or with desiccated, dried out or tough portions, affecting more than 25 per cent of the kernel
- free from blemishes, areas of discolouration or spread stains in pronounced contrast with the rest of the kernel, affecting in aggregate more than [25] per cent of the surface of the kernel
- well formed
- free from living pests, whatever their stage of development
- free from damage caused by pests, including the presence of dead insects and/or mites, their debris or excreta
- free from mould filaments visible to the naked eye
- free from rancidity
- free of abnormal external moisture
- free of foreign smell and/or taste.

The condition of the macadamia kernels must be such as to enable them:

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

## **B. Moisture content <sup>2</sup>**

The macadamia kernels shall have a moisture content not exceeding 1.5 per cent by weight.

## **C. Classification**

In accordance with the defects allowed in section “IV. Provisions concerning tolerances”, macadamia kernels are classified into the following classes:

### **Class I**

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<sup>2</sup> The moisture content is determined by one of the methods given in annex II of the Standard Layout – Determination of the moisture content for dry produce <[http://www.unece.org/trade/agr/standard/dry/StandardLayout/StandardLayout\\_DDP\\_e.pdf](http://www.unece.org/trade/agr/standard/dry/StandardLayout/StandardLayout_DDP_e.pdf)>. The Laboratory reference method shall be used in cases of dispute.

## Class II

The defects allowed must not affect the general appearance of the produce as regards quality, keeping quality and presentation in the package.

**III. PROVISIONS CONCERNING SIZING**

Sizing of macadamia kernels is optional. However, when sized, size is determined by the maximum diameter of the equatorial section of the whole nut or by widest diameter of the designated style size requirements.

**IV. PROVISIONS CONCERNING TOLERANCES**

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

**A. Quality tolerances**

Defects allowed	Tolerances allowed (percentage of defective kernels, by number or weight)	
	Class I	Class II
<b>(a) Tolerances for macadamia kernels not satisfying the minimum requirements:</b>  <b>of which no more than:</b>	<b>7</b>	<b>10</b>
- Not sufficiently developed, shrunken and shrivelled	3	5
- Mouldy	1	1
- Decay, rancid, rotten	1	2
- Loose extraneous material	1	2
- Insect infestation (not live)	1	2
- Off-odour or off-flavour by any cause	1	2
- Loose foreign material, including particles of shell	2	4
- Living pests	0	0
<b>(b) Other tolerances not included above</b>		
- Macadamia kernels belonging to other varieties/types than those indicated on the package	10	10

**B. Size tolerances**

Macadamia kernels are sized by screening and are specified in accordance with the style classifications based on weight. For macadamia kernels presented in pieces, there is a 7 per cent tolerance for pieces belonging to the adjacent styles.

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**V. PROVISIONS CONCERNING PRESENTATION****A. Uniformity**

The contents of each package must be uniform and contain only macadamia kernels of the same origin, quality, crop year (if indicated), size (if sized) and variety or commercial type (if indicated). The size uniformity of macadamia kernels in each package is based on the following style parameters:

1. Style I - (Wholes) shall consist of not less than 90 per cent whole kernels, with the remaining percentage consisting of pieces of which no more than 1 per cent will pass through a 6.25 mm (¼ inch) square opening.
2. Style II - (Wholes and halves) shall consist of at least 50 per cent whole kernels, with the remaining percentage consisting of pieces of which no more than 2 per cent will pass through a 7.8 mm (5/16 inch) square opening.
3. Style III - (Cocktail) shall consist of at least 90 per cent half or larger kernels, included therein at least 25 per cent whole kernels, with the remaining percentage consisting of pieces of which no more than 2 per cent will pass through a 6.25 mm (¼ inch) opening.
4. Style IV - (Halves and pieces) shall consist of at least 50 per cent half kernels, with the remaining percentage consisting of pieces with no more than 5 per cent larger than half kernels.
5. Style V - (Large diced) shall consist of units which are smaller than half kernels but of such size that no more than 5 per cent will pass through a 7.8 mm x 25 mm (5/16 inch x 1 inch) opening, included therein not more than 2 per cent that will pass through a 2.34 mm (3/32 inch) square opening.
6. Style VI - (Chips) shall consist of units of such size that at least 95 per cent will pass through a 7.8 mm x 25 mm (5/16 inch x 1 inch) opening but no more than 2 per cent will pass through a 3/32 inch square opening.
7. Style VII - (Bits and diced) shall consist of units which are smaller than half kernels and of such size that at least 95 per cent will pass through a 7.8 mm (5/16 inch) square opening but no more than 10 per cent will pass through a 2.34 mm (3/32 inch) square opening.

8. Style VIII - (Fines) shall consists of broken, chipped or chopped kernels of such size that all units will pass through a 6.25 mm (¼ inch) square opening and most will also pass through a 2.34 mm (3/32 inch) square opening.

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

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## **B. Packing**

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

The materials used inside the package must be 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 in accordance with the table of tolerances in section “IV. Provisions concerning tolerances”.

## **C. Presentation**

Macadamia kernels must be presented in bags or solid containers. All sales packages within each package must be of the same weight.

# **VI. PROVISIONS CONCERNING MARKING**

Each package<sup>3</sup> must bear the following particulars in letters grouped on the same side, legibly and indelibly marked and visible from the outside:

## **A. Identification**

Packer and/or Dispatcher: Name and physical address (e.g. street/city/region/postal code and, if different from the country of origin, the country) or a code mark officially recognized by the national authority<sup>4</sup>.

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<sup>3</sup> Package units of produce prepacked for direct sale to the consumer shall not be subject to these marking provisions, but shall conform to national requirements. However, the markings referred to shall in any event be shown on the transport packaging containing such package units.

<sup>4</sup> The national legislation of a number of countries requires the explicit declaration of the name and address. However, in cases where a code mark is used, the reference “packer and/or dispatcher” (or equivalent abbreviations) must be indicated in close connection with the code mark, and the code mark should be preceded by the ISO 3166 alpha country code of the recognizing country, if not the country of origin.

**B. Nature of produce**

- macadamia kernels
- name of the variety and/or commercial type (optional)
- type or style {according to the definitions of the standard}.

**C. Origin of produce**

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

**D. Commercial specifications**

- class
- size (if sized)/style classification
- crop year {optional}
- “Best before” followed by the date (optional).

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

**Annex I**

**DEFINITION OF TERMS AND DEFECTS FOR MACADAMIA KERNELS**

<i>Well-developed:</i>	Kernel is plump and not shrivelled or excessively soft.
<i>Clean:</i>	Kernel is practically free from dirt or other foreign material, or the general appearance of the lot is not more than appreciably affected by dirt or other foreign or extraneous substance.
<i>Dry:</i>	Kernel is free from surface moisture.
<i>Loose extraneous material:</i>	Any loose substance which will pass through a 3/32 inch square opening in Styles I, II, III and IV.
<i>Off-odour or off-flavour:</i>	The macadamia kernel possesses an odour or flavour which is not characteristic of the product, and which appreciably affects the eating quality of the kernel.
<i>Insect infestation:</i>	The presence of insect fragment, web or frass in the product.
<i>Loose foreign material:</i>	Any loose substance other than macadamia kernels which will not pass through a 1/16 inch square opening.
<i>Whole kernel:</i>	<ul style="list-style-type: none"><li>- A kernel that is not split or separated into halves.</li><li>- The kernel contour is not more than materially affected by a missing portion or portions.</li><li>- Not more than ¼ of the kernel is chipped off or missing.</li></ul>
<i>Half kernel:</i>	Approximately half of a whole kernel, with not more than 1/8 of its mass chipped off or missing.