



**Economic and Social
Council**

Distr.
GENERAL

TRADE/WP.7/GE.1/2004/25/Add.7
9 August 2004

ORIGINAL: ENGLISH

ECONOMIC COMMISSION FOR EUROPE

COMMITTEE FOR TRADE, INDUSTRY AND
ENTERPRISE DEVELOPMENT

Working Party on Agricultural Quality Standards

Specialized Section on Standardization of
Fresh Fruit and Vegetables

Fiftieth session

Geneva, 10-14 May 2004

REPORT OF THE FIFTIETH SESSION

Revised UNECE Standard for Citrus Fruit

Addendum 7

Note by the secretariat: The Specialized Section on Standardization of Fresh Fruit and Vegetables proposes the following text to the Working Party for adoption as a revised UNECE Standard for Citrus Fruit. In the proposal the text concerning oranges with more than one-fifth green colour (Section II B.) that is in trial period until November 2004 has been aligned with the Codex standard for oranges that was recently adopted by the Codex Alimentarius Commission.

The text is based on the existing recommendation (as available at www.unece.org/trade/agr/standard), the Codex standard for oranges and TRADE/WP.7/GE.1/2004/25.

UNECE STANDARD FFV-14
concerning the marketing and commercial
quality control of

CITRUS FRUIT

I. DEFINITION OF PRODUCE¹

This standard applies to the following fruit, classified as "citrus fruit", to be supplied fresh to the consumer, citrus fruit for industrial processing being excluded:

- lemons of varieties (cultivars) grown from the species *Citrus limon* (L.) Burm.
- limes of varieties (cultivars) grown from the species *Citrus latifolia* (Yu. Tanaka) Tanaka which is a large fruited acid lime known also as Bears, Persian, Tahiti and its hybrids.
- mandarins (*Citrus reticulata* Blanco), including satsumas (*Citrus unshiu* Marcow.), clementines (*Citrus clementina* hort. ex Tanaka), common mandarins (*Citrus deliciosa* Ten.) and tangerines (*Citrus tangerina* hort. ex Tanaka) grown from these species and its hybrids.
- oranges of varieties (cultivars) grown from the species *Citrus sinensis* (L.) Osbeck
- grapefruit of the varieties (cultivars) grown from the species *Citrus paradisi* Macfad. and its hybrids.
- pummelos or Shaddock of varieties (cultivars) grown from the species *Citrus maxima* (Burm.) Merr. and their hybrids.

II. PROVISIONS CONCERNING QUALITY

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

A. Minimum requirements

In all classes, subject to the special provisions for each class and the tolerances allowed, the citrus fruit must be:

- intact
- free of bruising and/or extensive healed over cuts
- sound; produce affected by rotting or deterioration such as to make it unfit for consumption is excluded

¹ Information on botanical names taken from the GRIN database see www.ars-grin.gov.

- clean practically free of any visible foreign matter
- practically free from pests
- practically free from damage caused by pests
- free of signs of internal shrivelling
- free of damage caused by low temperature or frost
- free of abnormal external moisture
- free of any foreign smell and/or taste.

The citrus fruit must have been carefully picked and have reached an appropriate degree of development and ripeness account being taken of criteria proper to the variety, the time of picking and the growing area.

The development and state of ripeness of the citrus fruit must be such as to enable them:

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

Citrus fruit meeting this ripeness requirement may be "degreened". This treatment is permitted only if the other natural organoleptic characteristics are not modified.

B. Minimum maturity requirements

Maturity of citrus fruit is defined by the following parameters specified for each species below:²

1. minimum juice content
2. minimum total soluble solids content (TSS), i.e. minimum sugar content
3. colouring.

The degree of colouring shall be such that, following normal development the citrus fruit reach the colour typical of the variety at their destination point.

Lemons

Minimum juice content	
Verdelli and Primofiore lemons	20%
Other lemons	25%
Colouring	
Must be typical of the variety. However fruit with a green (but not dark green) colour are allowed provided they satisfy the minimum requirements as to juice content.	

² *Reservation of Israel: The parameter of sugar/acid ratio should be included in the standard*

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Limes

Minimum juice content	
	42%
Colouring	
Must be typical of the variety on at least two-thirds of the total fruit surface. The fruit should be green but may show discolouring (yellow patches) up to 30% of its surface.	

Satsumas, clementines, other mandarin varieties and their hybrids

Minimum juice content	
Satsumas, other mandarin varieties and their hybrids	33%
Clementines	40%
Colouring	
Must be typical of the variety on at least one-third of the surface of the fruit.	

Oranges³

Minimum juice content	
Blood oranges	30%
Navels group	33%
Other varieties	35%
Colouring	
Must be typical of the variety. However, fruit with light green colour not exceeding one-fifth of the total surface area of the fruit are allowed, provided they satisfy the minimum requirements as to juice content mentioned above..	
Oranges produced in areas with high temperatures and high relative humidity conditions during the developing period having a green colour exceeding one-fifth of the surface area of the fruit are allowed provided they satisfy the minimum requirements as to juice content mentioned below.	
Minimum juice content (for oranges with more than one-fifth green colour)	
Mosambi, Sathgudi and Pacitan	33%
Other varieties	45%

³ *Reservation of Israel: A minimum sugar/acid ratio of 6.0:1 for oranges and 5.5:1 for pigmented oranges should be included in the standard.*

Grapefruit and its hybrids

Minimum juice content	
	33%
Minimum sugar content (TSS)	
Oroblanco	9%
Colouring	
Must be typical of the variety. However, fruit with a greenish colour (green in Oroblanco) are allowed, provided they satisfy the minimum requirements as to juice content.	

Pummelos (Shaddock) and their hybrids

Minimum sugar content (TSS)	
	8%
Colouring	
Must be typical of the variety on at least two-thirds of the surface of the fruit.	

C. Classification

Citrus fruit are classified in three classes defined below:

(i) "Extra" Class

Citrus fruit in this class must be of superior quality. In shape, external appearance, development and colouring they must be characteristic of the variety and/or commercial 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, the keeping quality and presentation in the package.

(ii) Class I

Citrus fruit in this class must be of good quality. They must be characteristic of the variety and/or commercial type.

The following slight defects, however, may be allowed, provided these do not affect the general appearance of the produce, the quality, the keeping quality and presentation in the package:

- slight defect in shape
- slight defect in colouring
- slight skin defects occurring during the formation of the fruit, such as silver scurfs, russets, etc.
- slight healed defects due to a mechanical cause such as hail damage, rubbing, damage from handling, etc.

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(iii) Class II

This class includes citrus fruit which do not qualify for inclusion in the higher classes but satisfy the minimum requirements specified above.

The following defects may be allowed, provided the citrus fruit retain their essential characteristics as regards the quality, the keeping quality and presentation:

- defect in shape
- defect in colouring
- skin defects occurring during the formation of the fruit, such as silver scurfs, russets, etc.
- healed defects due to a mechanical cause such as hail damage, rubbing, damage from handling, etc.
- superficial healed skin alterations
- rough skin
- slight and partial detachment of the pericarp for oranges (which is allowed for satsumas, clementines, and other mandarin varieties and their hybrids).

III. PROVISIONS CONCERNING SIZING

Size is determined by the maximum diameter of the equatorial section of the fruit.

A. Minimum size

Fruit of less than the following minimum sizes are excluded:

Lemons	45 mm
Limes	42 mm
Satsumas, other mandarin varieties and their hybrids	45 mm
Clementines	35 mm
Oranges	53 mm
Grapefruit and its hybrids	70 mm
Pummelos and their hybrids	100 mm

B. Size scales

Lemons		Limes	
Size Code	Diameter in mm	Size Code	Diameter in mm
0	79 - 90		
1	72 - 83	1	58 - 67
2	68 - 78	2	53 - 62
3	63 - 72	3	48 - 57
4	58 - 67	4	45 - 52
5	53 - 62	5	42 - 49
6	48 - 57		
7	45 - 52		

Satsumas, clementines, and other mandarin varieties and their hybrides		Oranges	
Size Code	Diameter in mm	Size Code	Diameter in mm
1 - XXX	78 and above	0	92 – 110
1 - XX	67 - 78	1	87 – 100
1 or 1 - X	63 - 74	2	84 – 96
2	58 - 69	3	81 – 92
3	54 - 64	4	77 – 88
4	50 - 60	5	73 – 84
5	46 - 56	6	70 – 80
6 ⁴	43 - 52	7	67 – 76
7	41 - 48	8	64 – 73
8	39 - 46	9	62 – 70
9	37 - 44	10	60 – 68
10	35 - 42	11	58 – 66
		12	56 – 63
		13	53 – 60

Grapefruit and its hybrids		Pummelos and their hybrids	
Size Code	Diameter in mm	Size Code	Diameter in mm
0	>139	0	>170
1	109 – 139	1	156 – 170
2	100 – 119	2	148 – 162
3	93 – 110	3	140 – 154
4	88 – 102	4	132 – 146
5	84 – 97	5	123 – 138
6	81 – 93	6	116 – 129
7	77 – 89	7	100 – 118
8	73 – 85		
9	70 – 80		

Citrus fruit may be packed by count. In this case, provided the size uniformity required by the standard is retained, the size range in the package may fall outside a single size code, but within two adjacent codes.

C. Uniformity

Uniformity in size is achieved by the above mentioned size scales, unless otherwise stated as follows:

- (i) For fruit arranged in regular layers in the package, including unit consumer packages, the maximum difference between the smallest and the largest fruit, within a single size code or, in the case of citrus fruit packed by count, within two adjacent codes, must not exceed the following maxima:

⁴ *Sizes below 45 mm refer only to clementines.*

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	Size Code	Maximum difference between fruit in the same package in mm
Lemons	0 – 7	7
Limes	1 – 5	7
Satsumas, clementines, other mandarin varieties and their hybrids	1–XXX - 4	9
	5 - 6	8
	7 – 10	7
Oranges	0 - 2	11
	3 - 6	9
	7 – 13	7

(ii) For fruit not arranged in regular layers in packages and in individual rigid packages for direct sale to the consumer, the difference between the smallest and the largest fruit in the same package must not exceed the range of the appropriate size code in the size scale or, in the case of citrus fruit packed by count, the range in mm of one of the two adjacent consecutive size codes concerned.

(iii) For fruit in bulk bins and fruit in individual non-rigid (nets, bags,...) packages for direct sale to the consumer, the difference between the smallest and the largest fruit in the same package must not exceed the range obtained by grouping three consecutive sizes codes in the size scale.

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

(i) *"Extra" Class*

5 per cent, by number or weight, of citrus fruit not satisfying the requirements of the class, but meeting those of Class I or, exceptionally, coming within the tolerances of that class.

(ii) *Class I*

10 per cent by, number or weight, of citrus fruit not satisfying the requirements of the class, but meeting those of Class II- or, exceptionally, coming within the tolerances of that class.

(iii) *Class II*

10 per cent by, number or weight, of citrus fruit satisfying neither the requirements of the class, nor the minimum requirements, with the exception of produce affected by rotting or any other deterioration rendering it unfit for consumption. Within this tolerance, a maximum of 5 per cent is allowed of fruit showing slight superficial unhealed damage, dry cuts or soft and shrivelled fruit.

B. Size tolerances

For all classes and types of presentation: 10 per cent, by number or weight, of citrus fruit corresponding to the size immediately below and/or above that (or those, in the case of the combination of three sizes) mentioned on the package is allowed.

In any case, the tolerance of 10 per cent applies only to fruit not smaller than the following minima:

Lemons	43 mm
Limes	40 mm
Satsumas, other mandarin varieties and their hybrids	43 mm
Clementines	34 mm
Oranges	50 mm
Grapefruit and its hybrids	67 mm
Pummelos and their hybrids	98 mm

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

The contents of each package must be uniform and contain only citrus fruit of the same origin, variety or commercial type, quality, and size, and appreciably of the same degree of ripeness and development.

In addition, for the "Extra" Class, uniformity in colouring is required.

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

Sales packages of a net weight not exceeding 3 kilogrammes may contain mixtures of citrus fruit of different species, provided they are uniform in quality and, for each species concerned, they are uniform in origin, variety or commercial type and size, and appreciably of the same degree of ripeness and development.

B. Packaging

The citrus fruit 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.

Stickers individually affixed on the produce shall be such that, when removed, they neither leave visible traces of glue, nor lead to skin defects.

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If the fruit are wrapped, thin, dry, new and odourless⁵ paper must be used.

The use of any substance tending to modify the natural characteristics of the citrus fruit, especially its taste or smell⁵, is prohibited.

Packages must be free of all foreign matter. However, a presentation where a short (not wooden) twig with some green leaves adheres to the fruit is allowed.

C. Presentation

The citrus fruit may be presented:

- (a) arranged in regular layers in packages.
- (b) not arranged in regular layers in packages or in bulk bins. This type of presentation is only allowed for Classes I and II.
- (c) in individual packages for direct sale to the consumer of a weight less than 5 kg either
 - made up by number of fruit or
 - made up by weight of fruit.

VI. PROVISIONS CONCERNING MARKING

Each package⁶ 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 ⁷

B. Nature of produce

- Name of the species if the produce is not visible from the outside, except for satsumas, clementines, other mandarin varieties and their hybrids for which the name of the species or variety is compulsory.
- Name of the variety, for oranges.

⁵ *The use of preserving agents or any other chemical substance liable to leave a foreign smell on the skin of the fruit is permitted where it is compatible with the regulations of the importing country.*

⁶ *Package units of produce prepacked for direct sale to the consumer shall not be subject to these marking provisions but shall conform to the national requirements. However, the markings referred to shall in any event be shown on the transport packaging containing such package units.*

⁷ *The national legislation of a number of countries requires the explicit declaration of the name and address. However, 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.*

- Name of the type:
 - for lemons: the indication "Verdelli" and "Primofiore" where appropriate,
 - for clementines: the indication "Clementines, pipless", "Clementines" (1 to 10 pips), "Clementines with pips" (more than 10 pips) where appropriate,
 - for grapefruit and its hybrids: the indication "pink" or "red" where appropriate,
 - for pummelos and their hybrids: the indication "pink" or "red" where appropriate.
- In case of sales packages containing a mixture of citrus fruit of different species, the names of the different species shall appear in addition to the details listed above.

C. Origin of produce

- Country of origin and, optionally, district where grown, or national, regional or local place name.
- In the case of sales packages containing a mixture of citrus fruit of different species of different origins, the indication of each country of origin shall appear next to the name of the species concerned.

D. Commercial specifications

- Class.
- Size code (or, when fruit packed by count fall under two adjacent codes, size codes or minimum and maximum diameter in mm) for fruit presented in accordance with the size scale or the lower and the upper limiting size code in the case of three consecutive sizes of the size scale.
- Size code (or, when fruit packed by count fall under two adjacent codes, size codes or minimum and maximum diameter in mm) and number of fruit, in the case of fruit arranged in layers in the package.
- Where appropriate, mention of the preserving agents or other chemical substance used, where such use is compatible with the regulations of the importing country.⁸

E. Official control mark (optional)

Published 1963
Revised 1992, 2000, 2003, 2004

⁸ *Reservation from Chile.*