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Working Party on Standardization of
Perishable Produce and Quality Development

Meeting of Experts on Co-ordination of
Standardization of Fresh Fruit and Vegetables
(Forty-fourth session, 9 to 13 November 1998, Geneva)

Item 4 (g) of the Provisional Agenda

CONSIDERATION OF PROPOSALS TO REVISE THE STANDARD FOR
CITRUS FRUIT

Note by the Secretariat

The following document contains the revised working document reflecting the changes introduced to the Standard by the forty-third session of the Meeting of Experts. Amendments are underlined. Deletions are crossed out.

UN/ECE STANDARD FFV-14

concerning the marketing and commercial
quality control of

CITRUS FRUIT

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

I. DEFINITION OF PRODUCE

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. f.
- limes of varieties (cultivars) grown from the species *Citrus latifolia* (Tanaka) which is a large fruited acid lime known also as Bearss, Persian, Tahiti and its hybrids.
- satsumas, clementines, and other mandarines of varieties (cultivars) grown from the species *Citrus reticulata* (Blanco) and its hybrids.
- oranges of varieties (cultivars) grown from the species *Citrus sinensis* (L.) Osbeck
- grapefruits of the varieties (cultivars) grown from the species *Citrus paradisi* (Macf.) and its hybrids (including Oroblanco)
- pummelos (Shaddock) of varieties (cultivars) grown from the species *Citrus grandis* (L.) Osbeck and its hybrids
- kumquats of varieties (cultivars) grown from the species *Fortunella margarita* (Lour.) Swingle and *Fortunella japonica* (Thunb.) Swingle and their hybrids (including limequats).

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
- sound; produce affected by rotting or deterioration such as to make it unfit for consumption is excluded
- clean, practically free of any visible foreign matter
- practically free from pests
- practically free from damage caused by pests
- free of damage caused by low temperature or frost
- free of signs of internal shrivelling or granulation ~~caused by frost~~
- free of bruising
- free of all abnormal external moisture
- free of any foreign smell and/or taste
- pipless in the case of limes.

The citrus fruit must have been carefully picked and have reached an appropriate degree of development and ripeness account being taken of the 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.

B. Maturity requirements and colouring

Maturity of citrus fruit is defined by ~~one or more~~ of the following parameters specified for each species below:

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

The degree of colouring shall be such that, following normal development, the citrus fruit reach their colour typical of the variety (special conditions applicable to each class) at their destination point.
~~account being taken of the time of picking, the growing area and the duration of transport.~~

Citrus fruit meeting the following ripeness requirements may be "degreened". This treatment is permitted only if it is carried out according to best handling practice or the method prescribed by the administrative authorities in each country and the natural organoleptic characteristics of the fruit are not modified. ~~It shall be carried out in the manner prescribed by the administrative authorities in each country:~~

Lemons

- Minimum juice content: 20 %
Verdelli and Primofiore lemons: 25 %
Other lemons
- Colouring: must be typical of the variety. However, fruits with a light green colour are allowed provided they satisfy the minimum requirements as to juice content, ~~account being taken of the time of picking and of the growing area.~~ Verdelli lemons may be green but not dark green.

Limes

- Minimum juice content: 45 % 1/
- 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: 35 %
- Minimum sugar/acid ratio: 6.0:1
- Colouring: must be typical of the variety on at least two-thirds of the surface of the fruit.

Oranges

- Minimum juice content: 35 %
- Minimum sugar/acid ratio: 6.0:1
for pigmented oranges 5.5:1

1/ Reservation of USA 42%.

- Colouring: must be typical of the variety. However, ~~a tolerance of~~ fruits with light green colour are allowed, provided it does not exceed one-fifth of the total surface of the fruit ~~account being taken of the variety and of the time of picking.~~ 2/

Grapefruit and its hybrids

- Minimum juice content: 35 %
- Minimum sugar content (TSS): 9 % for Oroblanco
- 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; ~~account being taken of the time of picking and of the growing area.~~

Pummelos (Shaddock)

- Minimum sugar content (TSS): 8.0 %
- Colouring: must be typical of the variety on at least two-thirds of the surface of the fruit ~~account being taken of the variety and of the time of picking.~~

Kumquats

- Colouring: must be typical of the variety. However, fruits with light green colour are allowed, provided it does not exceed half of the total surface of the fruit ~~account being taken of the time of picking and of the growing area.~~

Limequats

- Minimum juice content: 45 %
- Colouring: must be typical of the variety. However, fruits may be green; ~~account being taken of the time of picking and of the growing area.~~

2/ Green (but not dark green) oranges are allowed provided their maturity requirements conform with the following parameters :

- minimum juice content: 38%
- minimum sugar/acid ratio: 6.5:1.

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, ~~having regard to the time of picking and to the area in which they are grown.~~

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 discoloration due to rust mite, melanoses and, other blemishes not exceeding one-fifth of the total surface of the fruit, in the case of grapefruit and its hybrids (Codex, USA)]
- slight skin defects occurring during the formation of the fruit, such as silver scurfs, russets, etc. [not exceeding 1 cm², in the case of limes (Codex)]
- slight healed defects due to a mechanical cause such as hail damage, rubbing, damage from handling, etc.

(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:

- defects in shape
- defects in colouring
- [slight skin discoloration due to rust mite, melanoses and, other blemishes not exceeding two-fifths of the total surface of the fruit, in the case of grapefruit and its hybrids (Codex, USA)]
- rough skin
- [skin defects occurring during the formation of the fruit, such as silver scurfs, russets, etc. not exceeding 2 cm², in the case of limes (Codex)]
- slight healed defects due to a mechanical cause such as hail damage, rubbing, damage from handling, etc.
- superficial healed skin alterations
- 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, except for kumquats where size is determined by the length of the fruit.

A. Minimum size

Fruits of less than the following minimum dimensions are excluded:

Lemons	45 mm (diameter)
Limes	42 mm (diameter)
Satsumas, other mandarin varieties and their hybrids	45 mm (diameter)
Clementines	35 mm (diameter)
Oranges	53 mm (diameter)
Grapefruit and its hybrids	70 mm (diameter)
Pummelos	110 mm (diameter)
Kumquats	25 mm (length)
Limequats	25 mm (diameter)

B. Size scales

The scales of sizes are as follows:

Lemons		Limes	
Size Code	Diameter in mm	Size Code	Diameter in mm
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, other mandarin
varieties and their hybrids**

Oranges

Size Code	Diameter in mm	Size Code	Diameter in mm
<u>1</u>	<u>78 and above</u>	0	<u>85 and above</u>
<u>2</u>	<u>67 - 78</u>	1	87 - 100
<u>3</u>	<u>63 - 74</u>	2	74 - 96
<u>4</u>	<u>58 - 69</u>	3	81 - 92
<u>5</u>	<u>54 - 64</u>	4	77 - 88
<u>6</u>	<u>50 - 60</u>	5	73 - 84
<u>7</u>	<u>46 - 56</u>	6	70 - 80
<u>8 3/4</u>	<u>43 - 52</u>	7	67 - 76
<u>9</u>	<u>41 - 48</u>	8	64 - 73
<u>10</u>	<u>39 - 46</u>	9	62 - 70
<u>11</u>	<u>37 - 44</u>	10	60 - 80
<u>12</u>	<u>35 - 42</u>	11	58 - 66
		12	56 - 63
		13	53 - 60

3/ Size below 45mm refer only to clementines.

Grapefruit and its hybrids		Pummelos	
Size Code	Diameter in mm	Size Code	Diameter in mm
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	110 - 118
8	73 - 85		
9	70 - 80		

C. Uniformity

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

- (i) For kumquats and limequats, all fruit must comply with the minimum size requirements only.
- (ii) For fruit arranged in regular layers in the package the maximum difference between the smallest and the largest fruit must not exceed the following maxima:

	Size Code	<u>Maximum difference</u> between fruit in the same package
Lemons and limes	1 – 7	7 mm
Satsumas, clementines,	1 – 4	9 mm
other mandarin varieties and	5 – 6	8 mm
their hybrids	7 – 10	7 mm
Oranges	1 – 2	11 mm
	3 – 6	9 mm
	7 – 13	7 mm

- (iii) For fruit in bulk in a transport vehicle:
- either all fruit must comply with the minimum size requirements which is for Class II only, or
 - the maximum difference between the smallest and the largest fruit in the same package must not exceed the range obtained by grouping three consecutive sizes in the size scale.

- (iv) For fruit in individual packages for direct sale to the consumer made up by weight, the maximum difference between the smallest and the largest fruit in the same package must not exceed the range obtained by grouping three consecutive sizes in the size scale.

IV. PROVISIONS CONCERNING TOLERANCES

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

A. Quality tolerances

(a) "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.

(b) 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.

(c) 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 packages or the transport documents is allowed.

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

Lemons	43 mm (diameter)
Limes	40 mm (diameter)
Satsumas, other mandarin varieties and their hybrids	43 mm (diameter)
Clementines	34 mm (diameter)
Oranges	50 mm (diameter)
Grapefruit and its hybrids	67 mm (diameter)
Pummelos	98 mm (diameter)
Kumquats	24 mm (length)
Limequats	24 mm (diameter)

V. PROVISIONS CONCERNING PRESENTATION

A. Uniformity

The contents of each package, or lot for produce presented in bulk, must be uniform and contain only citrus fruit of the same origin, variety or commercial type, quality, size (if sized), colouring and appreciably of the same degree of ripeness and development.

The visible part of the contents of the package, or lot for produce presented in bulk, must be representative of the entire contents.

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.

If the fruit are wrapped, thin, dry, new and odourless 4/ paper must be used.

4/ 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.

Packages, or lots for produce presented in bulk, 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 the package ~~in accordance with the size scales in closed or open packages~~. This presentation is compulsory for the "Extra" Class except for kumquats and limequats.
- (b) not arranged in packages in accordance with the size scale or in bulk in transport vehicle with a maximum difference between fruit amounting to the sum of three consecutive sizes in the size scales. This presentation is only allowed for Classes I and II.
- (c) in bulk in a transport vehicle, with no requirement other than minimum size.
- (d) in individual packages for direct sale to the consumer of a weight less than 5 kg either made up by number or by weight of fruit.

~~The use of any substance tending to modify the natural characteristics of the citrus fruit, especially its taste or smell⁴, is prohibited.~~

VI. PROVISIONS CONCERNING MARKING

Each package 5/ must bear the following particulars, in letters grouped on the same side, legibly and indelibly marked, and visible from the outside.

For citrus fruit transported in bulk these particulars must appear on a document accompanying the goods, and attached in a visible position inside the transport vehicle.

5/ 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.

A. Identification

- Packer) Name and address or
and/or) officially issued or
Dispatcher) accepted code mark. 6/

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 (where applicable) is compulsory ~~in all cases~~
- Name of the variety, for oranges
- Name of the type:
 - for lemons: ~~possibly~~ 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: the indication „pink“ or „red“ where appropriate.

C. Origin of produce

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

6/ The national legislation of a number of European 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.

D. Commercial specifications

- Class
- Size code for fruit presented in accordance with the size scale or the upper and the lower limiting size code in the case of three consecutive sizes of the size scale
- Number of fruit, in case of fruit arranged in layers in the package
- Net weight for Kumquats and Limequats

~~(iii) Where appropriate, mention of the preserving agents or other chemical substance used, where such use is compatible with the regulations of the importing country.~~

~~- Degreening: In the case where it appears that, because of the use of a degreening process, the percentages admitted for fruit having lost their button are likely to be exceeded, the Control Service will mention the term "degreening" or "degreened fruit" on the document accompanying the produce, where appropriate.~~

E. Official control mark (optional)

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The UN/ECE Standard for Citrus Fruit

has led to an explanatory brochure published by the OECD Scheme