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Working Party on Standardization of
Perishable Produce and Quality Development

Specialized Section on Coordination of
Standardization of Fresh Fruit and Vegetables
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REPORT OF THE FORTY-SIXTH SESSION

Addendum 3

Note by the secretariat

This document contains the UN/ECE Recommendation for Citrus Fruit (FFV-14) as revised by the Specialized Section. Additions/Changes are underlined and deletions crossed out.

The Specialized Section stresses that it will continue to work on a solution for maturity requirements and green skinned oranges but this work might take some time.

The Specialized Section is of the opinion that good progress has been made on the standard and that the compromise reached is a significant amelioration compared to the standard in force.

The Specialized Section recommends to the Working Party to adopt this text as a revised UN/ECE standard.

FFV-14: Citrus Fruit

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 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 f.
- limes of varieties (cultivars) grown from the species *Citrus latifolia* (Yu. Tan.) Tan. which is a large fruited acid lime known also as Bearss, Persian, Tahiti and its hybrids.
- mandarines (*Citrus reticulata* Blanco), including satsumas (*Citrus unshiu* Marcow.), clementines (*Citrus clementina* Hort. ex Tan.), common ~~other~~ mandarines (*Citrus deliciosa* Ten.) of varieties (cultivars) grown from the species ~~*Citrus reticulata* (Blanco) and tangerines (*Citrus tangerina* Hort. ex Tan.)~~ grown from these species and its hybrids.
- oranges of varieties (cultivars) grown from the species *Citrus sinensis* (L.) Osb. ~~(Osbeck)~~
- grapefruits of the varieties (cultivars) grown from the species *Citrus paradisi* Macf. ~~(Macf.)~~ and its hybrids ~~(including Oroblanco).~~
- pummelos or Shaddock (Shaddock) of varieties (cultivars) grown from the species *Citrus maxima* (Burm.) Merr. ~~*grandis* (L.) Osbeck~~ and its 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:

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

- 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
- 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 all 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.

~~Furthermore, the degree of colouring shall be such that, following normal development, the citrus fruit reach their normal variety colour (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 this ripeness requirement may be "degreened". This treatment is permitted only if the other natural organoleptic characteristics are not modified. It shall be carried out in the manner prescribed by the administrative authorities in each country and under their supervision.

~~The citrus fruit must be free of signs of internal shrivelling and of bruising or extensive healed over cuts.~~

B. Maturity requirements

~~(minimum content in comparison with the total weight of the fruit – extraction by means of a hand press):~~

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 their colour typical of the variety at their destination point.

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

FFV-14: Citrus Fruit

Lemons

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

Limes

- Minimum juice content: 42 %³
- 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

Satsumas other mandarin varieties and their hybrids:	33%
Clementines and Elandales :	40%

- Colouring: must be typical of the variety on at least one-third of the surface of the fruit.

Oranges²

Thomson Navel and Tarocco:	30%
Washington Navel:	33%
Other varieties:	35%

- Colouring:³ must be typical of the variety. However, fruits with light green colour are

³ ~~Reservation of Chile, USA 42%.~~

² 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.

³ Reservation of Belgium, Denmark, Germany, ~~Israel~~, Netherlands, Slovakia, Sweden and United Kingdom:

Green skinned oranges should be allowed provided their maturity requirements conform with the following parameters:

- minimum juice content: 38 %

- minimum sugar/acid ratio: 6.5:1

allowed, provided it does not exceed one-fifth of the total surface of the fruit.

Grapefruits

- 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 meet with the minimum requirements as to juice content..

Pummelos (Shaddock)

- 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.

FFV-14: Citrus Fruit

(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
- rough skin
- 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
- 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

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)

B. Size scales

The scales of sizes are as follows:

Lemons		Limes	
Size Code	Diameter in mm	Size Code	Diameter in mm
0	83 and above 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 hybrids ⁴		Oranges	
Size Code	Diameter in mm	Size Code	Diameter in mm
1 - XXX	78 and above		
1 - XX	67 - 78		
1 - X	63 - 74	0	100 and above 92 - 110
+	63 and above	1	87 - 100
2	58 - 69	2	84 - 96
3	54 - 64	3	81 - 92
4	50 - 60	4	77 - 88
5	46 - 56	5	73 - 84
6 ⁵	43 - 52	6	70 - 80
7	41 - 48	7	67 - 76
8	39 - 46	8	64 - 73
9	37 - 44	9	62 - 70
10	35 - 42	10	60 - 68
		11	58 - 66
		12	56 - 63
		13	53 - 60

⁴ ~~For satsumas, clementines, and other mandarin varieties and their hybrids, of more than 63 mm in diameter, the classification is as follows:~~

~~Nº 1 X 63 - 74~~
~~Nº 1 XX 67 - 78~~
~~Nº 1 XXX 78 and above~~

⁵ Size below 45 mm refer only to clementines.

FFV-14: Citrus Fruit

Grapefruit and its hybrides		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 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	Maximum difference between fruit in the same package in mm
Lemons	0 - 7	7 mm
Lemons and Limes	1 - 7 1 - 5	7 mm
Satsumas, clementines, monreals , other mandarin varieties and their hybrides	1 - 4 5 - 6 7 - 10	9 mm 8 mm 7 mm
Oranges	1 - 2 0 - 2 3 - 6 7 - 13	11 mm 9 mm 7 mm

- (ii) For fruit in bulk the maximum size 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.
- (ii) For fruit not arranged in regular layers in packages and fruit in individual packages for direct sale to the consumer made up by number of fruit, the difference between the smallest and the largest fruit in the same package must not exceed the range of the appropriate size grade in the size scale.

- (iii) For fruit in bulk bins and fruit in individual packages for direct sale to the consumer made up by weight of fruit, the maximum size difference between the smallest and the largest fruit in the same lot or 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

(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 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)

FFV-14: Citrus Fruit

Grapefruit and its hybrids	67 mm (diameter)
Pummelos	98 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, 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, 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 odourless⁶ paper must be used.

The use of any substance tending to modify the natural characteristics of the citrus fruit, especially its taste or smell⁶, is prohibited.

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~~ packages. ~~This presentation is compulsory for the "Extra" Class.~~
- (b) ~~not arranged in packages in accordance with the size scales or in bulk with a maximum~~

⁶ *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.*

~~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.~~

- (b) not arranged in regular layers in packages or in bulk bins. This type of presentation is only allowed for Classes I and II.
- (e) ~~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.~~
- (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.
- (i) ~~When the individual packages are made up by number of fruit, the size scales are compulsory for all classes.~~
- (ii) ~~When the individual packages are made up by weight of fruit, the size scales are not compulsory with a maximum difference between fruit not exceeding the range obtained by grouping three consecutive sizes in the size scales.~~

VI. PROVISIONS CONCERNING MARKING

Each package⁷ 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.

A. Identification

Packer)	Name and address or
and/or)	officially issued or
Dispatcher)	accepted code mark ⁸

⁷ *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.*

⁸ *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.*

FFV-14: Citrus Fruit

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.
- Name of the variety, for oranges
- 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: 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.

D. Commercial specifications

- Class
- Size code for fruit presented in accordance with the size scale or the ~~upper and the lower~~ lower and the upper limiting size code in the case of three consecutive sizes of the size scale
- Size code 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.⁹
- ~~"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