

Specialized Section on Standardization of Fresh Fruit and Vegetables

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REVISION OF UNECE STANDARDS

Apples

This document presents the proposals by the OECD Working Group on the brochure for apples.

STANDARD FFV-50

concerning the marketing and
commercial quality control of

APPLES

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NOTE

Working Party on Agricultural Quality Standards

The commercial quality standards developed by the UNECE Working Party on Agricultural Quality Standards help facilitate international trade, encourage high-quality production, improve profitability and protect consumer interests. United Nations standards are used by Governments, producers, traders, importers and exporters, and other international organizations. They cover a wide range of agricultural products, including fresh fruit and vegetables, dry and dried produce, seed potatoes, meat, cut flowers, eggs and egg products.

Any member of the United Nations can participate, on an equal footing, in the activities of the Working Party. For more information on agricultural standards, please visit our website <www.unece.org/trade/agr>.

The present revised Standard for Apples is based on document ECE/TRADE/C/WP.7/2008/5, adopted by the Working Party at its sixty-fourth session.

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Please contact the following address with any comments or enquiries:

Agricultural Standards Unit
Trade and Timber Division
United Nations Economic Commission for Europe
Palais des Nations
Geneva 10, CH-1211, Switzerland
Tel: +41 22 917 1366
Fax: +41 22 917 0629
e-mail: agristandards@unece.org

STANDARD FFV-50
concerning the marketing
and commercial quality control of

APPLES

I. DEFINITION OF PRODUCE

This standard applies to apples of varieties (cultivars) grown from *Malus domestica* Borkh. to be supplied fresh to the consumer, apples for industrial processing being excluded.

II. PROVISIONS CONCERNING QUALITY

The purpose of the standard is to define the quality requirements of apples at the export-control stage after preparation and packaging.

However, if applied at stages following export, products may show in relation to the requirements of the standard:

- a slight lack of freshness and turgidity
- for products graded in classes other than the “Extra” Class, a slight deterioration due to their development and their tendency to perish.

The holder/seller of products may not display such products or offer them for sale, or deliver or market them in any manner other than in conformity with this standard. The holder shall be responsible for observing such conformity.

A. Minimum requirements

In all classes, subject to the special provisions for each class and the tolerances allowed, the apples 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
- free from damage caused by pests affecting the flesh
- free from serious watercore; with the exception of Fuji and their mutants

Justification: Watercore in Fuji and its mutants is accepted in all stages of marketing and all classes. Thus the standard should allow this, while reflecting that in other varieties watercore is a defect affecting the conservation of the fruits. Therefore, the footnote referring to Fuji and watercore is deleted in section II.B Minimum maturity requirements.

- free of abnormal external moisture
- free of any foreign smell and/or taste.

The development and condition of the apples must be such as to enable them:

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

B. Minimum maturity requirements

The apples must be sufficiently developed, and display satisfactory ripeness.

The development and state of maturity of the apples must be such as to enable them to continue their ripening process and to reach the degree of ripeness required in relation to the varietal characteristics.¹

In order to verify the minimum maturity requirements, several parameters can be considered (e.g. morphological aspect, taste, firmness and refractometric index).

C. Classification

Apples are classified in three classes, as defined below:

(i) “Extra” Class

Apples in this class must be of superior quality. In shape, size and colouring they must be characteristic of the variety² and the stalk must be intact.

Apples must express the following minimum surface colour characteristic of the variety:

- ¾ of total surface red coloured in case of colour group A
- ½ of total surface mixed red coloured in case of colour group B
- 1/3 of total surface slightly red coloured, blushed or striped in case of colour group C.

Justification: The minimum requirements on surface colour are transferred from the annex to the main part of the standard.

The flesh must be perfectly sound.

They must be free from defects, with the exception of very slight superficial defects, provided these do not affect the general appearance of the fruit, the quality, the keeping quality and presentation in the package:

- very slight skin defects

¹ Due to varietal characteristics of the Fuji variety and its mutants concerning maturity at harvest, radial watercore is permitted providing it is contained within the vascular bundles of each fruit.

² Varieties marked with colour group A, B or C in the list annexd to this standard have to respect the provisions on minimum surface colour as set out in the relevant class.

- very slight russeting³ such as
 - brown patches that may not go outside the stem cavity and may not be rough and/or
 - slight isolated traces of russeting.

Justification: The minimum requirements on russeting are transferred from the annex to the main part of the standard.

(ii) ***Class I***

Apples in this class must be of good quality. In shape, size and colouring they must be characteristic of the variety.²

Apples must express the following minimum surface colour characteristic of the variety:

- 1/2 of total surface red coloured in case of colour group A
- 1/3 of total surface mixed red coloured in case of colour group B
- 1/10 of total surface slightly red coloured, blushed or striped in case of colour group C.

The flesh must be perfectly sound.

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

- a slight defect in shape
- slight defects in colouring
- slight bruising not exceeding 1 cm² in area and not discoloured
- slight skin defects, which must not extend over more than:
 - 2 cm in length for defects of elongated shape
 - 1 cm² of the total surface area for other defects, with the exception of scab (*Venturia inaequalis*), which must not extend over more than 0.25 cm², cumulative, in area
- slight russeting³ such as
 - brown patches that may go slightly beyond the stem or pistil cavities but may not be rough and/or
 - thin net-like russeting not exceeding 1/5 of the total fruit surface and not contrasting strongly with the general colouring of the fruit and/or
 - dense russeting not exceeding 1/20 of the total fruit surface, while
 - thin net-like russeting and dense russeting taken together may not exceed a maximum of 1/5 of the total surface of the fruit.

The stalk may be missing, provided the break is clean and the adjacent skin is not damaged.

³ Varieties marked with "R" in the annex are exempt from the provisions on russeting.

(iii) **Class II**

This class includes apples that do not qualify for inclusion in the higher classes but satisfy the minimum requirements specified above.²

Apples must express the following minimum surface colour characteristic of the variety:

- 1/4 of total surface red coloured in case of colour group A
- 1/10 of total surface mixed red coloured in case of colour group B
- -- of total surface slightly red coloured, blushed or striped in case of colour group C.

Proposal: With regard to simplification, the minimum requirements on surface colour should be deleted for Class II. The defined limits are more than disappointing with respect to the varieties concerned.

The flesh must be free from major defects.

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

- defects in shape
- defects in colouring
- slight bruising not exceeding 1.5 cm² in area which may be slightly discoloured
- skin defects, which must not extend over more than:
 - 4 cm in length for defects of elongated shape
 - 2.5 cm² total surface area for other defects, with the exception of scab (*Venturia inaequalis*), which must not extend over more than 1 cm², cumulative, in area.
- slight russeting³ such as
 - brown patches that may go beyond the stem or pistil cavities and may be slightly rough and/or
 - thin net-like russeting not exceeding 1/2 of the total fruit surface and not contrasting strongly with the general colouring of the fruit and/or
 - dense russeting not exceeding 1/3 of the total fruit surface while
 - thin net-like russeting and dense russeting taken together may not exceed a maximum of 1/2 of the total surface of the fruit.

III. PROVISIONS CONCERNING SIZING

Size is determined either by the maximum diameter of the equatorial section or by weight.

For all varieties and for all classes the minimum size is 60 mm, if measured by diameter, or 90 g, if measured by weight. Fruit of smaller sizes may be accepted, if the Brix level of the produce is greater than or equal to 10.5° Brix and the size is not smaller than 50 mm or 70 g.

To ensure uniformity in size:

(a) For fruit sized by diameter, the difference in diameter between fruit in the same package shall be limited to:

- 5 mm for “Extra” Class fruit and for Classes I and II fruit packed in rows and layers⁴
- 10 mm for Class I fruit packed loose in the package or in consumer packages.⁵

(b) For fruit sized by weight:

- For “Extra” Class and Class I apples packed in rows and layers, the difference in weight between the lightest and the heaviest fruit in the same package shall be limited to:

Range (g)	Weight difference (g)
70-90	15 g
91-135	20 g
136-200	30 g
201-300	40 g
> 301	50 g

- For Class I fruit packed loose in the package or in consumer packages, the difference in weight between the heaviest and the lightest fruit shall be limited to:

Range (g)	Uniformity (g)
70-135	35
136-300	70
> 301	100

There is no sizing uniformity requirement for Class II fruit packed loose in the package or in consumer packages.

IV. PROVISIONS CONCERNING TOLERANCES

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

⁴ However, for apples of the varieties Bramley's Seedling (Bramley, Triomphe de Kiel) and Horneburger, the difference in diameter may amount to 10 mm.

⁵ However, for apples of the varieties Bramley's Seedling (Bramley, Triomphe de Kiel) and Horneburger, the difference in diameter may amount to 20 mm.

A. Quality tolerances**(i) “Extra” Class**

A total tolerance of 5 per cent, by number or weight, of apples not satisfying the requirements of the class but meeting those of Class I is allowed. Within this tolerance not more than 0.5 per cent in total may consist of produce satisfying the requirements of Class II quality.

(ii) Class I

A total tolerance of 10 per cent, by number or weight, of apples not satisfying the requirements of the class but meeting those of Class II is allowed. Within this tolerance not more than 1 per cent in total may consist of produce neither satisfying the requirements of Class II quality nor the minimum requirements. Produce affected by rotting or any other deterioration rendering it unfit for consumption is excluded.

(iii) Class II

A total tolerance of 10 per cent, by number or weight, of apples satisfying neither the requirements of the class nor the minimum requirements is allowed. Produce affected by rotting or any other deterioration rendering it unfit for consumption is excluded.

Within this tolerance, a maximum of 2 per cent, by number or weight, of fruit is allowed which shows the following defects:

- serious attacks of cork (bitter pit) or watercore
- slight damage or unhealed cracks
- very slight traces of rot
- presence of internal feeding pests and/or damage to the flesh caused by pests.

B. Size tolerances

For all classes: a total tolerance of 10 per cent, by number or weight, of apples not satisfying the requirements as regards sizing is allowed. This tolerance may not be extended to include produce with a size:

~~—— 5 mm below the minimum diameter, when size is determined by diameter~~
~~—— 10 g below the minimum weight, when size is determined by weight.~~
below the minimum sizes indicated in Section III.

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

The contents of each package must be uniform and contain only apples of the same origin, variety, quality, and size (if sized) and the same degree of ripeness.

In the case of the “Extra” Class, uniformity also applies to colouring.

However, a mixture of apples of distinctly different varieties may be packed together, in a sales unit⁶, provided they are uniform in quality and, for each variety concerned, in origin.

Justification: The wording related to mixtures of varieties is aligned to the Standard Layout.

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

~~Uniformity of variety and origin are not required for apples in consumer packages of a net weight not exceeding 5 kg.~~

B. Packaging

The apples must be packed in such a way as to protect the produce properly. In particular, consumer packages of a net weight exceeding 3 kg shall be sufficiently rigid to ensure proper protection of the produce.

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 the printing or labelling has been done with non-toxic ink or glue.

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

Packages must be free of all foreign matter.

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:

A. Identification

Packer)	Name and physical address (e.g. street/city/region/postal code and,
and/or)	if different from the country of origin, the country) or
Dispatcher/shipper)		a code mark officially recognized by the national authority ⁸ .

⁶ The sales unit should be designed to be purchased in its entirety.

⁷ According to the Geneva Protocol, footnote 2, “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, and the code mark should be preceded by the ISO 3166 (alpha) country/area code of the recognizing country, if not the country of origin.

B. Nature of produce

- “Apples”, if the contents are not visible from the outside
- Name of the variety. In the case of ~~consumer packages~~sales units containing a mixture of apples of different varieties, names of the different varieties.

C. Origin of produce

- Country of origin and, optionally, district where grown, or national, regional or local place name. In the case of ~~consumer packages~~sales units containing a mixture of distinctly different varieties of apples of different origins, the indication of each country of origin shall appear next to the name of the variety concerned.

D. Commercial specifications

- Class
- Size, or for fruit packed in rows and layers, number of units.

If identification is by the size, this should be expressed:

- (a) for produce subject to the uniformity rules, as minimum and maximum diameters or minimum and maximum weight;
- (b) for produce not subject to the uniformity rules, the diameter or weight of the smallest fruit in the package followed by “and over” or equivalent denomination or, if appropriate, the diameter or weight of the largest fruit in the package.

E. Official control mark (optional)

Published 2002⁹
Last revised 2008

⁹ The text of the standard for apples was previously part of a combined standard for apples and pears (FFV-01), published in 1960 and revised in 1996 and 2000. The OECD Scheme for the Application of International Standards for Fruit and Vegetables has published an explanatory illustrated brochure on the application of that standard. The publication may be obtained from the OECD bookshop at: www.oecdbookshop.org.

Colour group	A	B	C
	total surface area of red colouring characteristic of the variety	total surface area of mixed red colouring characteristic of the variety	total surface area of slightly red coloured, blushed or striped characteristic of the variety
Class Extra	3/4	1/2	1/3
Class I	1/2	1/3	1/10
Class II	1/4	1/10	—

2. — Russeting criteria for apples

R = Variety for which russeting is a characteristic of the skin and not a defect if it corresponds to the typical appearance of the variety.

For varieties not marked with an “R” in the list below, russeting is allowed within the following limits

	Extra	I	II	Tolerances for Class II
(i) Brown patches	not outside the stem cavity	may go slightly beyond the stem or pistil cavities	may go beyond the stem or pistil cavities	fruit not seriously detracting from the appearance and condition of the package
	not rough	not rough	slightly rough	
(ii) Russeting		Maximum surface area of the fruit permitted		
thin net-like russeting (not contrasting strongly with the general colouring of the fruit)	slight and isolated traces of russeting not altering the general appearance of the fruit or of the package	1/5	1/2	fruit not seriously detracting from the appearance and condition of the package
Heavy	None	1/20	1/3	fruit not seriously detracting from the appearance and condition of the package
Cumulative defects				

<p>(with the exception of brown patches which are excluded from these cumulative defects) In no case may thin russeting and heavy russeting taken together exceed a maximum of:</p>		<p>1/5</p>	<p>1/2</p>	<p>fruit not seriously detracting from the appearance and condition of the package</p>
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3.——Size criteria for apples

~~L= Large fruited variety~~