

UNECE STANDARD FFV-50

concerning the marketing and
commercial quality control of

APPLES

2017 EDITION



UNITED NATIONS
New York and Geneva, 2017

NOTE

Working Party on Agricultural Quality Standards

The commercial quality standards developed by the Working Party on Agricultural Quality Standards of the United Nations Economic Commission for Europe (UNECE) help facilitate international trade, encourage high-quality production, improve profitability and protect consumer interests. UNECE 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 Standard for Apples is based on document ECE/CTCS/WP.7/2017/21 reviewed and adopted by the Working Party at its seventy-third session and editorial changes adopted during an inter-sessional approval procedure in February 2018.

Aligned with the Standard Layout (2017)

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UNECE 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 for apples 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/seller 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 watercore¹;
- 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:

¹ Varieties marked with “V” in the annex are exempt from the provisions on serious watercore.

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

B. Maturity requirements

The development and state of maturity of the apples must be such as to enable them to continue their ripening process and to reach a satisfactory degree of ripeness.

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. They must be characteristic of the variety² and the stalk must be intact.

Apples must express the following minimum surface colour characteristic of the variety³:

- 3/4 of total surface red coloured in case of colour group A;
- 1/2 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;
- no minimum colour requirement in case of colour group D.

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 produce, the quality, the keeping quality and presentation in the package:

- very slight skin defects;
- very slight russeting⁴, such as;
 - brown patches that may not go outside the stem cavity and may not be rough and/or,
 - slight isolated traces of russeting.

(ii) Class I

Apples in this class must be of good quality. They must be characteristic of the variety¹.

² A non-exhaustive list of varieties providing a classification on colouring and russeting is set out in the annex to this standard.

³ Reservation by the United States: For “Extra” Class and Class I, due to differences in its national legislation that allow different colour requirements.

⁴ Varieties marked with “R” in the annex are exempt from the provisions on russeting.

Apples must express the following minimum surface colour characteristic of the variety²:

- 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;
- no minimum colour requirement in case of colour group D.

The flesh must be perfectly sound.

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:

- a slight defect in shape;
- a slight defect in development;
- 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 russetting³, such as:
 - brown patches that may go slightly beyond the stem or pistil cavities but may not be rough and/or;
 - thin net-like russetting not exceeding 1/5 of the total fruit surface and not contrasting strongly with the general colouring of the fruit and/or;
 - dense russetting not exceeding 1/20 of the total fruit surface, while;
 - thin net-like russetting and dense russetting 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.

(iii) Class II

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

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 development;
- 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.

The minimum size shall be 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 equal to or greater than 10.5° Brix and the size is not smaller than 50 mm or 70 g.

To ensure uniformity in size, the range in size between produce in the same package shall not exceed⁵:

- (a) For fruit sized by diameter:
- 5 mm for “Extra” Class fruit and for Classes I and II fruit packed in rows and layers⁶;
 - 10 mm for Class I fruit packed in sales packages or loose in the package.⁷
- (b) For fruit sized by weight:
- For “Extra” Class and Class I and II fruit packed in rows and layers:

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

⁵ Reservation by the United States: Due to differences in the national legislation that allows the uniformity by diameter up to 12.5 mm for all apples irrespective of their size and/or class.

⁶ However, for apples of the varieties Bramley's Seedling (Bramley, Triomphe de Kiel) and Horneburger, the difference in diameter may amount to 10 mm.

⁷ However, for apples of the varieties Bramley's Seedling (Bramley, Triomphe de Kiel) and Horneburger, the difference in diameter may amount to 20 mm.

<i>Range (g)</i>	<i>Weight difference (g)</i>
> 300	50

- For Class I fruit packed in sales packages or loose in the package:

<i>Range (g)</i>	<i>Weight difference (g)</i>
70-135	35
136-300	70
> 300	100

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

Varieties of miniature apples, marked with an “M” in the Annex to this standard, are exempted from the sizing provisions. These miniature varieties must have a minimum Brix level of 12°.

IV. Provisions concerning tolerances

At all marketing stages, tolerances in respect of quality and size shall be allowed in each lot for produce not satisfying the requirements of the class indicated.

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 satisfying neither the requirements of Class II quality nor the minimum requirements, or of produce affected by decay.

(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. Within this tolerance not more than 2 per cent in total may consist of produce affected by decay.

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 or more below the minimum diameter;
- 10 g or more below the minimum weight.

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 package, provided they are uniform in quality and, for each variety concerned, in origin. However, in case of those mixtures uniformity in size is not required.

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

B. Packaging

The apples must be packed in such a way as to protect the produce properly. In particular, sales 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. Information lasered on single fruit should not lead to flesh or skin defects.

Packages must be free of all foreign matter.

VI. Provisions concerning marking

Each package⁸ must bear the following particulars, in letters grouped on the same side, legibly and indelibly marked, and visible from the outside.

⁸ These marking provisions do not apply to sales packages presented in packages. However, they do apply to sales packages (pre-packages) presented individually.

A. Identification

Packer and/or dispatcher/exporter:

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 authority⁹ if the country applying such a system is listed in the UNECE database.

B. Nature of produce

- "Apples" if the contents are not visible from the outside.
- Name of the variety. In the case of a mixture of apples of distinctly different varieties, names of the different varieties.

The name of the variety can be replaced by a synonym. A trade name¹⁰ can only be given in addition to the variety or the synonym.

- In the case of mutants with varietal protection, this variety name can replace the basic variety name. In case of mutants without varietal protection, this mutant name can only be indicated in addition to the basic variety name.
- "Miniature variety", where appropriate.

C. Origin of produce

- Country of origin¹¹ and, optionally, district where grown, or national, regional or local place name.
- In the case of 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;

⁹ 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.

¹⁰ A trade name can be a trademark for which protection has been sought or obtained or any other commercial denomination.

¹¹ The full or a commonly used name should be indicated.

(b) optionally, for produce not subject to the uniformity rules, as 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)

Adopted 1960

Last revised 2017

Aligned with the Standard Layout 2017

The OECD Scheme for the Application of International Standards for Fruit and Vegetables has published an explanatory illustrated brochure on the application of this standard. The publication may be obtained from the OECD bookshop at: www.oecdbookshop.org.

Annex

Non-exhaustive list of apple varieties providing a classification on colouring and russeting¹²

Some of the varieties listed in the following may be marketed under names for which trademark protection has been sought or obtained in one or more countries. Names believed by the United Nations to be varietal names are listed in the first column. Other names by which the United Nations believes the variety may be known are listed in the second and third columns. None of these three columns is intended to include trademarks. References to known trademarks have been included in the fourth column for information only. The presence of any trademarks in the fourth column does not constitute any licence or permission to use that trademark – such licence must come directly from the trademark owner. In addition, the absence of a trademark in the fourth column does not constitute any indication that there is no registered/pending trademark for such a variety. For labeling requirements please refer to section VI of the standard.¹³

Legend:

M = miniature variety

R = russet variety

V = watercore

* = mutant without varietal protection but linked to a registered/protected trademark; mutants not marked with the asterisk are protected varieties.

¹² Fruits of varieties that are not part of the list must be graded according to their varietal characteristics. Coloured varieties as well as those showing a characteristic russeting should be included in the list to provide information about the varietal characteristics. The update of the list may be requested through the Specialized Section for the Standardization of Fresh Fruit and Vegetables.

¹³ Some of the varietal names listed in the first column may indicate varieties for which patent protection has been obtained in one or more countries. Such proprietary varieties may only be produced or traded by those authorized by the patent holder to do so under an appropriate licence. The United Nations takes no position as to the validity of any such patent or the rights of any such patent-holder or its licensee regarding the production or trading of any such variety.

The United Nations endeavoured to ensure that no trademark names are listed in columns 1, 2 and 3 of the table. However, it is the responsibility of any trademark owner to notify the United Nations promptly if a trademark name has been included in the table and to provide the United Nations (see address below) with an appropriate varietal, or generic name for the variety, as well as adequate evidence ownership of any applicable patent or trademark regarding such variety so that the list can be amended. Provided that no further information is needed from the trademark holder, the Working Party on Agricultural Quality Standards will change the list accordingly at the session following receipt of the information. The United Nations takes no position as to the validity of any such trademarks or the rights of any such trademark owners or their licensees.

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<i>Variety</i>	<i>Mutant</i>	<i>Synonyms</i>	<i>Trademarks</i>	<i>Colour Group</i>	<i>Additional specifications</i>
African Red			African Carmine TM	B	
Akane		Tohoku 3, Primerouge		B	
Alkmene		Early Windsor		C	
Alwa				B	
Amasya				B	
Ambrosia			Ambrosia [®]	B	
Annurca				B	
Ariane			Les Naturianes [®]	B	
Arlet		Swiss Gourmet		B	R
AW 106			Sapora [®]	C	
Belgica				B	
Belle de Boskoop		Schone van Boskoop, Goudreinette		D	R
	Boskoop rouge	Red Boskoop, Roter Boskoop, Rode Boskoop		B	R
	Boskoop Valastrid			B	R
Berlepsch		Freiherr von Berlepsch		C	
	Berlepsch rouge	Red Berlepsch, Roter Berlepsch		B	
Braeburn				B	
	Hidala		Hillwell [®]	A	
	Joburn		Aurora TM , Red Braeburn TM , Southern Rose TM	A	
	Lochbuie Red Braeburn			A	
	Mahana Red Braeburn		Redfield [®]	A	
	Mariri Red		Eve TM , Aporo [®]	A	
	Royal Braeburn			A	
Bramley's Seedling		Bramley, Triomphe de Kiel		D	
Cardinal				B	
Caudle			Cameo [®] , Camela [®]	B	
	Cauflight		Cameo [®] , Camela [®]	A	
CIV323			Isaaq [®]	B	
CIVG198			Modi [®]	A	

<i>Variety</i>	<i>Mutant</i>	<i>Synonyms</i>	<i>Trademarks</i>	<i>Colour Group</i>	<i>Additional specifications</i>
Civni			Rubens ®	B	
Collina				C	
Coop 38			Goldrush ®, Delisdor ®	D	R
Coop 39			Crimson Crisp ®	A	
Coop 43			Juliet ®	B	
Coromandel Red		Corodel		A	
Cortland				B	
Cox's Orange Pippin		Cox Orange, Cox's O. P.		C	R
Cripps Pink			Pink Lady ®, Flavor Rose ®	C	
	Lady in Red		Pink Lady®	B	
	Rosy Glow		Pink Lady ®	B	
	Ruby Pink			B	
Cripps Red			Sundowner ™, Joya ®	B	
Dalinbel			Antares ®	B	R
Delblush			Tentation ®	D	
Delcorf			Delbarestivale ®	C	
	Celeste			B	
	Bruggers Festivale		Sissired ®	A	
	Dalili		Ambassy ®	A	
	Wonik *		Appache ®	A	
Delcoros			Autento ®	A	
Delgollune			Delbard Jubilé ®	B	
Delicious ordinaire		Ordinary Delicious		B	
Discovery				C	
Dykmanns Zoet				C	
Egremont Russet				D	R
Elise		De Roblos, Red Delight		A	
Elstar				C	
	Bel-El		Red Elswout ®	C	
	Daliest		Elista ®	C	
	Daliter		Elton ™	C	
	Elshof			C	
	Elstar Boerekamp		Excellent Star ®	C	
	Elstar Palm		Elstar PCP ®	C	
	Goedhof		Elnica ®	C	
	Red Elstar			C	
	RNA9842		Red Flame ®	C	

<i>Variety</i>	<i>Mutant</i>	<i>Synonyms</i>	<i>Trademarks</i>	<i>Colour Group</i>	<i>Additional specifications</i>
	Valstar			C	
	Vermuel		Elrosa ®	C	
Empire				A	
Fiesta		Red Pippin		C	
Fresco			Wellant ®	B	R
Fuji				B	V
	Aztec		Fuji Zhen ®	A	V
	Brak		Fuji Kiku ® 8	B	V
	Fuji Fubrax		Fuji Kiku ® Fubrax	B	V
	Fuji Supreme			A	V
	Heisei Fuji		Beni Shogun ®	A	V
	Raku-Raku			B	V
Gala				C	
	Baigent		Brookfield ®	A	
	Bigigalaprim		Early Red Gala ®	B	
	Fengal		Gala Venus	A	
	Gala Schnico		Schniga ®	A	
	Gala Schnico Red		Schniga ®	A	
	Galaval			A	
	Galaxy		Selekta ®	B	
	Gilmac		Neon ®	A	
	Imperial Gala			B	
	Jugala			B	
	Mitchgla		Mondial Gala ®	B	
	Natali Gala			B	
	Regal Prince		Gala Must ®	B	
	Royal Beaut			A	
	Simmons		Buckeye ® Gala	A	
	Tenroy		Royal Gala ®	B	
Gloster				B	
Golden 972				D	
Golden Delicious		Golden		D	
	CG10 Yellow Delicious		Smothere ®	D	
	Golden Delicious Reinders		Reinders ®	D	
	Golden Parsi		Da Rosa ®	D	
	Leratess		Pink Gold ®	D	
	Quemoni		Rosagold ®	D	
Goldstar			Rezista Gold Granny ®	D	

<i>Variety</i>	<i>Mutant</i>	<i>Synonyms</i>	<i>Trademarks</i>	<i>Colour Group</i>	<i>Additional specifications</i>
Gradigold			Golden Supreme TM , Golden Extreme TM	D	
Gradiyel			Goldkiss [®]	D	
Granny Smith				D	
	Dalivair		Challenger [®]	D	
Gravensteiner		Gravenstein		D	
Hokuto				C	
Holsteiner Cox		Holstein		C	R
Honeycrisp			Honeycrunch [®]	C	
Horneburger				D	
Idared				B	
	Idaredest			B	
	Najdared			B	
Ingrid Marie				B	R
James Grieve				D	
Jonagold				C	
	Early Jonagold		Milenga [®]	C	
	Dalyrian			C	
	Decosta			C	
	Jonagold Boerekamp		Early Queen [®]	C	
	Jonagold Novajo	Veulemanns		C	
	Jonagored		Morren's Jonagored [®]	C	
	Jonagored Supra		Morren's Jonagored [®] Supra [®]	C	
	Red Jonaprince		Wilton's [®] , Red Prince [®]	C	
	Rubinstar			C	
	Schneica	Jonica		C	
	Vivista			C	
Jonathan				B	
Karmijn de Sonnaville				C	R
La Flamboyante			Mairac [®]	B	
Laxton's Superb				C	R
Ligol				B	
Lobo				B	
Lurefresh			Red Love [®] Era [®]	A	
Lureprec			Red Love [®] Circe [®]	A	
Luregust			Redlove [®] Calypso	A	

<i>Variety</i>	<i>Mutant</i>	<i>Synonyms</i>	<i>Trademarks</i>	<i>Colour Group</i>	<i>Additional specifications</i>
			®		
Luresweet			Redlove ® Odysso ®	A	
Maigold				B	
Maribelle			Lola ®	B	
McIntosh				B	
Melrose				C	
Milwa			Diwa ®, Junami ®	B	
Moonglo				C	
Morgenduft		Imperatore		B	
Mountain Cove			Ginger Gold ™	D	
Mutsu		Crispin		D	
Newton				C	
Nicogreen			Greenstar ®	D	
Nicoter			Kanzi ®	B	
Northern Spy				C	
Ohrin		Orin		D	
Paula Red				B	
Pinova			Corail ®	C	
	RoHo 3615		Evelina ®	B	
Piros				C	
Plumac			Koru ®	B	
Prem A153			Lemonade ®, Honeymoon ®	C	
Prem A17			Smitten ®	C	
Prem A280			Sweetie™	B	
Prem A 96			Rocket ™	B	M
Rafzubin			RubINETTE ®	C	
	Rafzubex		RubINETTE ® Rosso	A	
Rajka			Rezista Romelike ®	B	
Red Delicious		Rouge Américaine		A	
	Campur		Red Chief ®	A	
	Erovan		Early Red One ®	A	
	Evasni		Scarlet Spur ®	A	
	Stark Delicious			A	
	Starking			C	
	Starkrimson			A	
	Starkspur			A	
	Topred			A	

<i>Variety</i>	<i>Mutant</i>	<i>Synonyms</i>	<i>Trademarks</i>	<i>Colour Group</i>	<i>Additional specifications</i>
	Trumdor		Oregon Spur Delicious ®	A	
Reine des Reinettes		Gold Parmoné, Goldparmäne		C	V
Reinette Grise du Canada		Graue Kanadarenette, Renetta Canada		D	R
Rome Beauty		Belle de Rome, Rome, Rome Sport		B	
Rubin				C	
Rubinola				B	
Šampion		Shampion, Champion, Szampion		B	
	Reno 2			A	
	Šampion Arno	Szampion Arno		A	
Santana				B	
Sciearly			Pacific Beauty ™	A	
Scifresh			Jazz ™	B	
Sciglo			Southern Snap ™	A	
Scilate			Envy ®	B	
Sciray		GS48		A	
Scired			Pacific Queen ™	A	R
Sciros			Pacific Rose ™	A	
Senshu				C	
Spartan				A	
Stayman				B	
Summerred				B	
Sunrise				A	
Sunset				D	R
Suntan				D	R
Sweet Caroline				C	
Topaz				B	
Tydemán's Early Worcester		Tydemán's Early		B	
Tsugaru				C	
UEB32642			Opal ®	D	
Worcester Pearmain				B	
York				B	
Zari				B	