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Department of  
Agriculture**

**Agricultural  
Marketing  
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**Fruit and  
Vegetable  
Programs**

**Fresh  
Products  
Branch**

# **United States Standards for Grades of Grapefruit (Texas and States other than Florida, California and Arizona)**

**Effective September 5, 2003**

# United States Standards for Grades of Grapefruit (Texas and States other than Florida, California, and Arizona) <sup>1</sup>

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## **Grades**

- 51.620 U.S. Fancy.
- 51.621 U.S. No. 1.
- 51.622 U.S. No. 1 Bright.
- 51.623 U.S. No. 1 Bronze.
- 51.624 U.S. Combination.
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- 51.650 Very serious damage.

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<sup>1</sup>Compliance with the provisions of these standards shall not excuse failure to comply with the provisions of the Federal Food, Drug and Cosmetic Act, or with applicable State laws and regulations.

51.651 Diameter.

51.652 Classification of defects.

**Metric Conversion Table**

51.653 Metric conversion table.

**Grades**

**§51.620 U.S. Fancy.**

"U.S. Fancy" consists of grapefruit which meet the following requirements:

(a) Basic requirements:

(1) Discoloration:

(i) Not more than one-tenth of the surface, in the aggregate, may be affected by discoloration.

(See §51.638.)

(2) Firm;

(3) Mature;

(4) Similar varietal characteristics;

(5) Smooth texture;

(6) Well formed; and,

(7) Well colored.

(b) Free from:

(1) Ammoniation;

(2) Bruises;

(3) Buckskin;

(4) Cuts not healed;

(5) Skin breakdown;

(6) Decay;

(7) Growth cracks;

(8) Scab;

(9) Sprayburn; and,

(10) Wormy fruit.

(c) Not injured by:

(1) Green spots;

(2) Oil spots;

(3) Scale;

(4) Scars; and,

(5) Thorn scratches.

(d) Not damaged by any other cause.

(e) For tolerances see §51.628.

**§51.621 U.S. No. 1.**

"U.S. No. 1" consists of grapefruit which meet the following requirements:

(a) Basic requirement:

(1) Discoloration:

(i) Not more than one-half of the surface, in the aggregate, may be affected by discoloration.

(See §51.638.)

(2) Firm;

(3) Mature;

- (4) Similar varietal characteristics;
- (5) Fairly well colored;
- (6) Fairly smooth texture; and,
- (7) Fairly well formed.
- (b) Free from:
  - (1) Bruises;
  - (2) Cuts not healed;
  - (3) Caked melanose;
  - (4) Growth cracks;
  - (5) Sprayburn;
  - (6) Decay; and,
  - (7) Wormy fruit.
- (c) Not damaged by any other cause.
- (d) For tolerances see §51.628.

**§51.622 U.S. No. 1 Bright.**

The requirements for this grade are the same as for U.S. No. 1 except that no fruit may have more than one-tenth of its surface, in the aggregate, affected by discoloration.

- (a) For tolerances see §51.628.

**§51.623 U.S. No. 1 Bronze.**

The requirements for this grade are the same as for U.S. No. 1 except that all fruit must show some discoloration. Not less than the number of fruits required in §51.628, Tables I and II, shall have more than one-half of their surface, in the aggregate, affected by discoloration. The predominating discoloration on these fruits shall be of rust mite type.

- (a) For tolerances see §51.628.

**§51.624 U.S. Combination.**

"U.S. Combination" consists of a combination of U.S. No. 1 and U.S. No. 2 grapefruit:

**Provided,** That the number of U.S. No. 2 fruits specified in §51.628, Tables I and II, are not exceeded.

**§51.625 U.S. No. 2.**

"U.S. No. 2" consists of grapefruit which meet the following requirements:

- (a) Basic requirements:
  - (1) Discoloration:
    - (i) Not more than two-thirds of the surface, in the aggregate, may be affected by discoloration. (See §51.638.)
  - (2) Fairly firm;
  - (3) Mature;
  - (4) Similar varietal characteristics;
  - (5) May be slightly colored;
  - (6) Not more than slightly misshapen; and,
  - (7) Not more than slightly rough texture.
- (b) Free from:
  - (1) Bruises;
  - (2) Cuts not healed;
  - (3) Growth cracks;

- (4) Decay; and,
- (5) Wormy fruit.
- (c) Not seriously damaged by any other cause.
- (d) For tolerances see §51.628.

**§51.626 U.S. No. 2 Russet.**

The requirements for this grade are the same as for U.S. No. 2 except that not less than the number of fruits required in §51.628, Tables I and II, shall have more than two-thirds of their surface, in the aggregate, affected by discoloration.

- (a) For tolerances see §51.628.

**§51.627 U.S. No. 3.**

"U.S. No. 3" consists of grapefruit which meet the following requirements:

- (a) Basic requirements:

- (1) Mature;
- (2) Similar varietal characteristics;
- (3) May be misshapen;
- (4) May be slightly spongy;
- (5) May have rough texture;
- (6) Not seriously lumpy or cracked; and,
- (7) May be poorly colored.
- (i) Not more than 25 percent of the surface may be of a solid dark green color.
- (b) Free from:
  - (1) Cuts not healed;
  - (2) Decay; and,
  - (3) Wormy fruit.
- (c) Not very seriously damaged by any other cause.
- (d) For tolerances see §51.628.

**Tolerances**

**§51.628 Tolerances.**

In order to allow for variations incident to proper grading and handling in each of the foregoing grades, based on sample inspection, the number of defective or off-size specimens in the individual sample, and the number of defective or off-size specimens in the lot, shall be within the limitations specified in Tables I and II. No tolerance shall apply to wormy fruit.

**TABLE I--SHIPPING POINT<sup>1</sup>**  
**(A) FOR 1 THROUGH 20 SAMPLES**

Factor	Grades	AL <sup>2</sup>	Number of 33 - count samples <sup>3</sup>																			
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Acceptance numbers (maximum permitted) <sup>4</sup>																						
Decay.	U.S. Fancy. U.S. No. 1. U.S. Combination. U.S. No. 2.	1	0	0	0	1	<sup>5</sup> 1	2	2	2	2	<sup>5</sup> 2	2	2	3	3	3	<sup>5</sup> 3	3	4	4	4
	U.S. No. 3.	1	0	1	<sup>5</sup> 1	1	2	<sup>5</sup> 2	2	3	3	<sup>5</sup> 3	3	4	4	4	<sup>5</sup> 4	5	5	5	<sup>5</sup> 5	5
Very serious damage including decay.	U.S. Fancy. U.S. No. 1. U.S. Combination. U.S. No. 2.	4	3	5	7	8	10	11	13	14	16	17	18	20	21	23	24	25	27	28	30	32
Total defects including decay and very serious damage.	U.S. Fancy. U.S. No. 1. U.S. No. 2. U.S. No. 3.	5	5	9	12	16	19	22	25	28	31	34	37	40	44	46	49	52	55	58	61	64
	U.S. Combination (U.S. No. 2's permitted).	21	18	33	47	62	76	90	104	119	133	147	161	174	188	202	216	230	244	257	271	285
Off-size.		7	5	9	12	16	19	22	25	28	31	34	37	40	44	46	49	52	55	58	61	64
Discoloration.	U.S. No. 1. U.S. No. 1 Bright. U.S. No. 2. U.S. Combination.	7	5	9	12	16	19	22	25	28	31	34	37	40	44	46	49	52	55	58	61	64
Acceptance numbers (minimum required) <sup>4</sup>																						
	U.S. No. 1 Bronze. U.S. No. 2 Russet.	0	2	4	8	11	14	18	21	25	28	32	36	39	43	47	50	53	57	61	64	68

See footnotes at end of table.

**(B) FOR 21 THROUGH 40 SAMPLES**

Factor	Grades	AL <sup>2</sup>	Number of 33 - count samples <sup>3</sup>																			
			21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
Acceptance numbers (maximum permitted) <sup>4</sup>																						
Decay.	U.S. Fancy. U.S. No. 1. U.S. Combination. U.S. No. 2.	1	4	4	<sup>5</sup> 4	4	4	5	5	5	5	5	<sup>5</sup> 5	5	5	6	6	6	6	6	<sup>5</sup> 6	6
	U.S. No. 3.	1	5	6	6	6	<sup>5</sup> 6	6	7	7	7	<sup>5</sup> 7	7	8	8	8	<sup>5</sup> 8	8	9	9	9	9
Very serious damage including decay.	U.S. Fancy. U.S. No. 1. U.S. Combination. U.S. No. 2.	4	32	34	35	36	38	39	40	42	43	44	45	47	48	49	51	52	53	54	56	57
Total defects including decay and very serious damage.	U.S. Fancy. U.S. No. 1. U.S. No. 2. U.S. No. 3.	5	67	70	73	76	79	82	84	87	90	93	96	99	102	105	107	110	113	116	119	122
	U.S. Combination (U.S. No. 2's permitted).	21	298	312	326	339	353	367	380	394	408	421	435	449	462	476	489	503	517	530	544	557
Off-size.		7	67	70	73	76	79	82	84	87	90	93	96	99	102	105	107	110	113	116	119	122
Discoloration.	U.S. No. 1. U.S. No. 1 Bright. U.S. No. 2. U.S. Combination.	7	67	70	73	76	79	82	84	87	90	93	96	99	102	105	107	110	113	116	119	122
Acceptance numbers (minimum required) <sup>4</sup>																						
	U.S. No. 1 Bronze. U.S. No. 2 Russet.	0	72	76	80	84	88	92	96	99	103	107	110	114	118	122	126	130	134	137	141	145

<sup>1</sup>Shipping point, as used in these standards, means point of origin of the shipment in the production area or at port of loading for ship stores or overseas shipments, or in the case of shipments from outside the continental United States, the port of entry into the United States.

<sup>2</sup>AL -- Absolute limit permitted in individual 33-count sample.

<sup>3</sup>Same size 33-count.

<sup>4</sup>Acceptance number -- maximum or minimum of defective or off-size fruit permitted.

<sup>5</sup>Preferred number of samples for this acceptance number.

**TABLE II --EN ROUTE OR AT DESTINATION**

Factor	Grades	AL <sup>1</sup>	Number of 33 - count samples <sup>2</sup>																			
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Acceptance numbers (maximum permitted) <sup>3</sup>																						
Decay.	All.	3	2	3	4	5	6	7	8	9	10	11	12	13	<sup>4</sup> 13	14	15	16	17	18	<sup>4</sup> 18	19
Very serious damage other than decay.	U.S. Fancy. U.S. No. 1. U.S. No. 2. U.S. Combination.	4	3	5	7	8	10	11	13	14	16	17	18	20	21	23	24	25	27	28	30	31
Total defects including very serious damage other than decay.	U.S. Fancy. U.S. No. 1. U.S. No. 2. U.S. No. 3.	5	5	9	12	16	19	22	25	28	31	34	37	40	44	46	49	52	55	58	61	64
	U.S. Combination (U.S. No. 2's permitted).	21	18	33	47	62	76	90	104	119	133	147	161	174	188	202	216	230	244	257	271	28
Off-size.		7	5	9	12	16	19	22	25	28	31	34	37	40	44	46	49	52	55	58	61	64
Discoloration.	U.S. No. 1. U.S. No. 1 Bright. U.S. No. 2. U.S. Combination.	7	5	9	12	16	19	22	25	28	31	34	37	40	44	46	49	52	55	58	61	64
Acceptance numbers (minimum required) <sup>3</sup>																						
	U.S. No. 1 Bronze. U.S. No. 2 Russet.	0	2	4	8	11	14	18	21	25	28	32	36	39	43	47	50	53	57	61	64	68

<sup>1</sup> Absolute limit permitted in individual 33-count sample.

<sup>2</sup> Sample size -- 33-count.

<sup>3</sup> Acceptance number -- maximum or minimum number of defective or off-size fruit permitted.

<sup>4</sup> Preferred number of samples for this acceptance number.



**Sample for Grade or Size Determination**

**§51.629 Sample for grade or size determination.**

Each sample shall consist of 33 grapefruit. When individual packages contain at least 33 grapefruit, the sample is drawn from one package; when individual packages contain less than 33 grapefruit, a sufficient number of adjoining packages are opened to form a 33-count sample. When practicable, at point of packaging, the sample may be obtained from the grading belt or bins after sorting has been completed.

**Standard Pack**

**§51.630 Standard pack.**

(a) Fruits shall be fairly uniform in size, unless specified as uniform in size. When packed in approved containers, fruit shall be arranged according to the approved and recognized methods.

(b) "Fairly uniform in size" means that not more than the number of fruits permitted in §51.628, Tables I and II, are outside the ranges of diameters given in Table III.

**Table III -- 7/10 Bushel Carton**

Pack Size/Number of Grapefruit	Diameter in inches	
	Minimum	Maximum
18	4-15/16	5-9/16
23	4-5/16	5
27	4-2/16	4-12/16
32	3-15/16	4-8/16
36	3-13/16	4-5/16
40	3-10/16	4-2/16
48	3-9/16	3-14/16
56	3-5/16	3-10/16

(c) "Uniform in size" means that not more than the number of fruits permitted in §51.628, Tables I and II, vary more than the following amounts:

(1) 32 size and smaller -- not more than six-sixteenths inch in diameter; and,

(2) 27 size and larger -- not more than nine-sixteenths inch in diameter.

(d) In order to allow for variations, other than sizing, incident to proper packing, not more than 5 percent of the packages in any lot may fail to meet the requirements of standard pack.

**Definitions**

**§51.631 Mature.**

"Mature" shall have the same meaning currently assigned that term in the laws and regulations of the State in which the grapefruit is grown; or as the definition of such term may hereafter be amended.

**§51.632 Similar varietal characteristics.**

"Similar varietal characteristics" means that the fruits in any container are similar in color and shape.

**§51.633 Well colored.**

"Well colored" means that the fruit is yellow in color with practically no trace of green color.

**§51.634 Firm.**

"Firm" means that the fruit is not soft, or noticeably wilted or flabby, and the skin is not spongy or puffy.

**§51.635 Well formed.**

"Well formed" means that the fruit has the shape characteristic of the variety.

**§51.636 Smooth texture.**

"Smooth texture" means that the skin is thin and smooth for the variety and size of the fruit.

**§51.637 Injury.**

"Injury" means any specific defect described in §51.652, Table IV; or an equally objectionable variation of any one of these defects, any other defect, or any combination of defects, which slightly detracts from the appearance, or the edible or marketing quality of the fruit.

**§51.638 Discoloration.**

"Discoloration" means russetting of light shade of golden brown caused by rust mite or other means. Lighter shades of discoloration caused by smooth or fairly smooth, superficial scars or other means may be allowed on a greater area, or darker shades may be allowed on a lesser area, provided no discoloration caused by speck type melanose or other means may detract from the appearance of the fruit to a greater extent than the shade and amount of discoloration allowed in the grade.

**§51.639 Fairly well colored.**

"Fairly well colored" means that except for a 1-inch circle in the aggregate of green color, the yellow color predominates over the green color on that part of the fruit which is not discolored.

**§51.640 Fairly well formed.**

"Fairly well formed" means that the fruit may not have the shape characteristic of the variety but is not elongated or pointed or otherwise deformed.

**§51.641 Fairly smooth texture.**

"Fairly smooth texture" means that the skin is not materially rough or coarse and that the skin is not thick for the variety.

**§51.642 Damage.**

"Damage" means any specific defect described in §51.652, Table IV; or an equally objectionable variation of any one of these defects, any other defect, or any combination of defects, which materially detracts from the appearance, or the edible or marketing quality of the fruit.

**§51.643 Fairly firm.**

"Fairly firm" means that the fruit may be slightly soft, but not bruised, and the skin is not spongy or puffy.

**§51.644 Slightly misshapen.**

"Slightly misshapen" means that the fruit is not of the shape characteristic of the variety but is not appreciably elongated or pointed or otherwise deformed.

**§51.645 Slightly rough texture.**

"Slightly rough texture" means that the skin is not smooth or fairly smooth but is not excessively rough or excessively thick, or materially ridged, grooved or wrinkled.

**§51.646 Serious damage.**

"Serious damage" means any specific defect described in §51.652, Table IV; or an equally objectionable variation of any one of these defects, any other defect, or any combination of defects, which seriously detracts from the appearance, or the edible or marketing quality of the fruit.

**§51.647 Slightly colored.**

"Slightly colored" means that, except for a 2-inch circle in the aggregate of green color, the portion of the fruit surface which is not discolored shows some yellow color.

**§51.648 Misshapen.**

"Misshapen" means that the fruit is decidedly elongated, pointed or flat sided.

**§51.649 Slightly spongy.**

"Slightly spongy" means that the fruit is puffy or slightly wilted but not flabby.

**§51.650 Very serious damage.**

"Very serious damage" means any specific defect described in §51.652, Table IV; or an equally objectionable variation of any one of these defects, any other defect, or any combination of defects, which very seriously detracts from the appearance, or the edible or marketing quality of the fruit.

**§51.651 Diameter.**

"Diameter" means the greatest dimension measured at right angles to a line from stem to blossom end.

§51.652 Classification of defects.

**TABLE IV**

Factor	Injury	Damage	Serious Damage	Very Serious Damage
Ammoniation-----	-----	Not occurring as light speck type.	Scars are cracked or dark and aggregating more than a circle 3/4 inch in diameter on a 70 size grapefruit.	Aggregating more than 25 percent of the surface.
Buckskin-----	-----	Aggregating more than a circle 1-1/4 inches in diameter on a 70 size grapefruit.	Aggregating more than 25 percent of the surface.	Aggregating more than 50 percent of the surface.
Caked melanose-----	-----	-----	Aggregating more than a circle 1 inch in diameter on a 70 size grapefruit.	Aggregating more than 25 percent of the surface.
Dryness or mushy condition-	-----	Affecting all segments more than 1/4 inch at stem end, or the equivalent of this amount, by volume, when occurring in other portions of the fruit.	Affecting all segments more than 1/2 inch at stem end, or the equivalent of this amount, by volume, when occurring in other portions of the fruit.	Affecting all segments more than 3/4 inch at stem end, or the equivalent of this amount, by volume, when occurring in other portions of the fruit.
Green spots or oil spots-----	More than slightly affecting appearance.	Aggregating more than a circle 1 inch in diameter on a 70 size grapefruit.	Aggregating more than 1 - 1/2 inches in diameter on a 70 size grapefruit.	
Hail-----	Not well healed, or aggregating more than a circle 3/8 inch in diameter on a 70 size grapefruit.	Not well healed, or aggregating more than a circle 1/2 inch in diameter on a 70 size grapefruit.	Not well healed, or aggregating more than a circle 5/8 inch in diameter on a 70 size grapefruit.	Not well healed, or aggregating more than a circle 1 inch in diameter on a 70 size grapefruit.
Scab-----	-----	Materially detracts from the shape or texture, or aggregating more than a circle 3/4 inch in diameter on a 70 size grapefruit.	Seriously detracts from the shape or texture, or aggregating more than a circle 1 inch in diameter on a 70 size grapefruit.	Aggregating more than 25 percent of the surface.

Scale-----	More than a few adjacent to the "button" at the stem end, or more than 6 scattered on other portions of the fruit.	Blotch aggregating more than a circle 3/4 inch in diameter, or occurring as a ring more than a circle 1-1/4 inches in diameter on a 70 size grapefruit.	Blotch aggregating more than a circle 1 inch in diameter, or occurring as a ring more than a circle 1-1/2 inches in diameter on a 70 size grapefruit.	Aggregating more than 25 percent of the surface.
Skin breakdown-----	-----	Aggregating more than a circle 3/8 inch in diameter on a 70 size grapefruit.	Aggregating more than a circle 5/8 inch in diameter on a 70 size grapefruit.	Aggregating more than a circle 1-1/4 inches in diameter on a 70 size grapefruit.
Scars-----	Depressed, not smooth, or detracts from appearance more than the amount of discoloration permitted in the grade.	Very deep or very rough aggregating more than a circle 1/2 inch in diameter; deep or rough aggregating more than 1 inch in diameter; slightly rough or of slight depth aggregating more than 10 percent of fruit surface. All areas based on a 70 size grapefruit.	Very deep or very rough aggregating more than a circle 1 inch in diameter; deep or rough aggregating more than 5 percent of the fruit surface; slight depth or slightly rough aggregating more than 15 percent of fruit surface. All areas based on a 70 size grapefruit.	Very deep or very rough or unsightly that appearance is very seriously affected.
Sprayburn-----	-----	-----	Hard or aggregating more than a circle 1-1/4 inches in diameter on a 70 size grapefruit.	Aggregating more than 25 percent of the surface.
Sunburn-----	-----	Skin is flattened, dry, darkened, or hard, aggregating more than 25 percent fruit surface.	Skin is hard, fruit is decidedly one-sided, aggregating more than one-third of fruit surface.	Aggregating more than 50 percent of fruit surface.
Sprouting-----	-----	More than 6 seeds are sprouted, including not more than 1 sprout extending to the rind, remainder average not over 1/4 inch in length.	More than 6 seeds are sprouted, including not more than 2 sprouts extending to the rind, remainder average not over 1/2 inch in length.	More than 6 seeds are sprouted, including not more than 3 sprouts extending to the rind, remainder average not over 3/4 inch in length.

Thorn scratches-----	Not well healed, or more unsightly than discoloration permitted in the grade.	Not well healed, hard concentrated thorn injury aggregating more than a circle 3/4 inch in diameter, or slight scratches aggregating more than a circle 1 inch in diameter. All areas based on a 70 size grapefruit.	Not well healed, hard concentrated thorn injury aggregating more than a circle 7/8 inch in diameter, or slight scratches aggregating more than a circle 1-1/4 inches in diameter. All areas based on a 70 size grapefruit.	Aggregating more than 25 percent of the surface.
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**Metric Conversion Table**  
**§51.653 Metric conversion table.**

Inches		Millimeters (mm)
1/4	..... equals	.... 6.4
3/8	..... equals	.... 9.5
1/2	..... equals	... 12.7
9/16	..... equals	... 14.3
5/8	..... equals	.. 15.9
3/4	..... equals	... 19.1
7/8	..... equals	... 22.2
1	..... equals	... 25.4
1-1/4	..... equals	... 31.8
1-1/2	..... equals	... 38.1
3	..... equals	... 76.2
3-2/16	..... equals	... 79.4
3-6/16	..... equals	... 85.7
3-8/16	..... equals	... 88.9
3-10/16	..... equals	... 92.1
3-13/16	..... equals	... 96.8
3-14/16	..... equals	... 98.4
3-15/16	..... equals	.. 100.0
4-2/16	..... equals	.. 104.8
4-5/16	..... equals	.. 109.5
4-8/16	..... equals	.. 114.3
4-12/16	..... equals	.. 120.7
5	..... equals	.. 127.0