



**United States
Department of
Agriculture**

**Agricultural
Marketing
Service**

**Fruit and
Vegetable
Division**

**Processed
Products
Branch**

United States Standards for Grades of Canned Grapefruit and Orange for Salad

Effective date January 11, 1984

This is the fourth issue, as amended, of the United States Standards for Grades of Canned Grapefruit and Orange for Salad published in the **FEDERAL REGISTER** of January 11, 1984 (49 FR 1333) to become effective January 11, 1984. This issue supersedes the third issue, which has been in effect since April 8, 1975.

Voluntary U.S. grade standards are issued under the authority of the Agricultural Marketing Act of 1946, which provides for the development of official U.S. grades to designate different levels of quality. These grade standards are available for use by producers, suppliers, buyers, and consumers. As in the case of other standards for grades of processed fruits and vegetables, these standards are designed to facilitate orderly marketing by providing a convenient basis for buying and selling, for establishing quality control programs, and for determining loan values.

The standards also serve as a basis for the inspection and grading of commodities by the Federal inspection service, the only activity authorized to approve the designation of U.S. grades as referenced in the standards, as provided under the Agricultural Marketing Act of 1946. This service, available as on-line (in-plant) or lot inspection and grading of all processed fruit and vegetable products, is offered to interested parties, upon application, on a fee-for-service basis. The verification of some specific recommendations, requirements, or tolerances contained in the standards can be accomplished only by the use of on-line inspection procedures. In all instances, a grade can be assigned based on final product factors or characteristics.

In addition to the U.S. grade standards, grading manuals or instructions for inspection of several processed fruits and vegetables are available upon request for a nominal fee. These manuals or instructions contain detailed interpretations of the grade standards and provide step-by-step procedures for grading the product.

Grade standards are issues by the Department after careful consideration of all data and views submitted, and the Department welcomes suggestions which might aid in improving the standards in future revisions. Comments may be submitted to, and copies of standards and grading manuals obtained from:

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United States Standards for Grades of Canned Grapefruit and Orange for Salad

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Authority: Agricultural Marketing Act of 1946, Secs. 203, 205, 60 Stat. 1087, as amended, 1090, as amended (7 U.S.C. 1622, 1624).

Note: 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.

§52.1251 Product description.

Canned grapefruit and orange for salad, commonly known as canned citrus salad, is prepared from sound, mature grapefruit (*Citrus paradisi* Macfadyen) and sound, mature oranges of the orange group (*Citrus sinensis*). The fruit ingredients have been washed, segmented or sliced, and cored; and seeds and major portions of tough membrane have been removed. The product is packed with a suitable packing media which may be water, fruit juice, nutritive carbohydrate sweeteners, artificial sweeteners, or any other safe and suitable ingredients permissible under the Federal Food, and Drug, and Cosmetic Act. The product is sufficiently processed by heat to assure preservation in hermetically or aseptically sealed containers.

§52.1252 Styles.

- (a) Segmented.
- (b) Mixed segmented and sliced.

§52.1253 Grades.

- (a) **U.S. Grade A** is the quality of canned grapefruit and orange for salad that:
 - (1) Has a drained weight of orange fruit is not less than 37-1/2 percent nor more than 60 percent of the drained weight of the product;
 - (2) Has an average drained weight of not less than 53 percent of water capacity of the container, of which not less than 65 percent by weight of each fruit ingredient consists of practically whole units;
 - (3) Has a good color;
 - (4) Is practically free from defects;
 - (5) Has a good character;
 - (6) Has a good flavor and odor; and
 - (7) Scores not less than 90 points when scored in accordance with the scoring system outlined in this subpart.

- (b) **U. S. Grade B** is the quality of canned grapefruit and orange for salad that:
- (1) Has a drained weight of orange fruit that is not less than 32-1/2 percent nor more than 60 percent of the drained weight of the product;
 - (2) Has an average drained weight of not less than 53 percent of the water capacity of the container, of which not less than 50 percent by weight of each fruit ingredient consists of practically whole units;
 - (3) Has a reasonably good color;
 - (4) Is reasonably free from defects;
 - (5) Has a reasonably good character;
 - (6) Has a reasonably good flavor and odor; and
 - (7) Scores not less than 80 points when scored in accordance with the scoring system outlined in this subpart.
- (c) **U.S. Broken** is the quality of canned grapefruit and orange for salad that:
- (1) Has a drained weight of orange fruit that is not less than 32-1/2 percent nor more than 60 percent of the drained weight of the product;
 - (2) Has an average drained weight of not less than 53 percent of the water capacity of the container, of which not less than 50 percent by weight of each fruit ingredient consists of practically whole units;
 - (3) Has a reasonably good color;
 - (4) Is reasonably free from defects;
 - (5) Has a reasonably good character;
 - (6) Has a reasonably good flavor and odor; and
 - (7) Scores not less than 70 points when scored in accordance with the scoring system outlined in this subpart.
- (d) **Substandard** is the quality of canned grapefruit and orange for salad that fails to meet the requirements of U. S. Grade B and U. S. Broken.

§52.1254 Liquid media and Brix measurements.

- (a) Brix requirements for liquid media in canned grapefruit and orange for salad are not incorporated in the grades of the finished product since sirup or any other liquid medium, as such, is not a factor of quality for the purposes of these grades. It is recommended that the product, when packed in sirup, meet the following Brix measurements, as applicable, for the respective designation:

Designations	Brix Measurement
Heavy sirup	18° or more.
Light sirup	16° or more, but less than 18°.
Slightly sweetened water	12° or more, but less than 16°.

- (b) These recommendations are not applicable to the canned product packed in water, orange juice, fruit juice, or with artificial sweeteners.

- (c) The densities of the packing media, as listed in this section, are measured on the refractometer, expressed as percent by weight sucrose (degrees Brix) with correction for temperature to the equivalent at 20° C. (68°F.), but without correction for invert sugars or other substances. The degrees Brix of the packing media may be determined by any other method which gives equivalent results.
- (d) Brix determination is made on the packing media 15 days or more after the grapefruit and orange for salad is canned or on the blended homogenized slurry of the comminuted entire contents of the container if canned for less than 15 days.

§52.1255 Fill of container.

The recommended fill of container is not incorporated in the grades of the finished product since fill of container, as such, is not a factor of quality for the purposes of these grades. It is recommended that each container be filled as full as practicable with grapefruit and orange for salad without impairment of quality and that the product and packing media occupy not less than 90 percent of the total capacity of the container.

Total capacity of the container means the maximum weight of distilled water, at 20 degrees C. (68 degrees F.) which the sealed container will hold.

§52.1256 Minimum drained weights.

- (a) **General.** The minimum drained weight requirements for the various container sizes are listed in Table I. The drained weight of the grapefruit and orange for salad is not less than 53 percent of the water capacity of the container.
- (b) **Definitions.**
 - (1) Sample average - the average of all the drained weights of the sample containers representing a lot.
 - (2) \bar{X}_d a specified minimum sample average drained weight.
 - (3) LL lower limit for individual container drained weights.

- (c) **Method for determining drained weight.** The drained weight of canned grapefruit and orange for salad is determined by emptying the contents of the container upon a U. S. Standard No. 8 circular sieve of proper diameter containing 8 meshes to the inch (square openings 0.0937 inch (2.38 mm) ± 3 percent) so as to distribute the product evenly over the sieve. Without shifting the product, incline the sieve at an angle of approximately 17° to 20° to facilitate drainage and allow to drain for 2 minutes. The weight of drained grapefruit and orange salad is the weight of the sieve and product less the weight of the dry sieve. A sieve 8 inches in diameter is used if the contents of the container is less than 3 pounds and a sieve 12 inches in diameter is used if the contents of the container is 3 pounds or more.
- (d) **Compliance with drained weight requirements.** A lot of canned grapefruit and orange for salad is considered as meeting the minimum drained weight requirements when the following criteria are met:
- (1) The sample average meets the specified minimum sample average drained weight (designated as \bar{X}_d Table I); and
 - (2) The number of containers which fail to meet the minimum drained weight for individual containers (designated as n Table I) does not exceed the applicable acceptance number specified in Table II.

Table I - Minimum Drained Weights

Container Designation	\bar{X}_d	LL
	Ounces	Ounces
8Z (211 x 304)	4.60	4.25
No. 303 (303 x 406)	8.95	8.50
No. 3 Cyl. (404 x 700)	27.40	26.30

Table II - Single Sampling Plans and Acceptance Numbers

Sample Size (No. of sample containers)	3	6	13	21	29	38	48	60
Acceptance Numbers	0	1	2	3	4	5	6	7

§52.1257 Sample unit size.

Compliance with requirements for factors of quality is based on a sample unit comprised of the entire contents of one container, irrespective of container size.

§52.1258 Determining the grade of a sample unit.

- (a) **General.** The grade of a sample unit of canned grapefruit and orange for salad is determined by considering the factor of flavor and odor which is not scored; the ratings for the factors of wholeness, color, defects, and character which are scored; the total score; and the limiting rules which may be applicable.
- (b) **Factors rated by score points.** The relative importance of each factor which is scored is expressed numerically on the scale of 100. The maximum number of points that may be given each factor are:

<u>Factors</u>	<u>Points</u>
Wholeness	25
Color	25
Defects	25
Character	<u>25</u>
Total	100

(c) **Definitions.**

- (1) **Percentage of orange fruit** means the drained weight of the orange ingredient multiplied by 100 and divided the drained weight of the total fruit ingredients. Compliance with this requirement shall be based on the sample average (average of all sample units representing a lot): **Provided**, that the weight of drained orange fruit in no single container is less than 25 percent or more than 75 percent of the drained fruit in such container. It is recommended that the number of orange units be not less than the number of grapefruit units.
- (2) **Good flavor and odor** means that the product has a distinct and normal flavor and odor typical of canned grapefruit and orange for salad and is free from objectionable flavosr and objectionable odors of any kind.

- (3) **Reasonably good flavor and odor** means that the product may be lacking in good flavor and odor but is free from objectionable flavors and objectionable odors of any kind.

§52.1259 Determining the rating for the factors which are scored.

The essential variations within each factor which is scored are so described that the value may be determined for each factor and expressed numerically. The numerical range within each factor which is scored is inclusive (for example, **23 to 25 points** means 23, 24, or 25 points).

§52.1260 Wholeness.

- (a) **General.** A **practically whole unit** means:
- (1) A fruit segment or slice that is substantially intact and retains its apparent original conformation; or
 - (2) A portion of a segment or slice that is not less than 75 percent of its apparent size.
- (b) **"A" classification.** Sample units of canned grapefruit and orange salad that consist of not less than 65 percent by weight of each drained fruit ingredient in practically whole units may be given a score of 21 to 25 points.
- (c) **"B" classification.** Sample units of canned grapefruit and orange for salad that consists of less than 65 percent but not less than 40 percent by weight of either or both of the drained fruit ingredients in practically whole units may be given a score of 17 to 20 points. In addition the sample average (average of all sample units representing a lot) shall not be less than 50 percent by weight in practically whole units. Sample unit of canned grapefruit and orange for salad that fall into this classification shall not be graded above U. S. Grade B, regardless of the total score for the product. (This is a limiting rule.)
- (d) **"Broken" classification.** Sample units of canned grapefruit and orange for salad that individually consist of less than 40 percent by weight of either or both of the drained fruit ingredients in practically whole units, or average (average of all sample units) less than 50 percent by weight of either or both of the drained fruit ingredients in practically whole units may be given a score of 0 to 16 points. Sample units of canned grapefruit and orange for salad that fall into this classification shall not be graded above U. S. Broken, regardless of the total score for the product. (This is a limiting rule.)

§52.1261 **Color.**

- (a) **"A" classification.** Canned grapefruit and orange for salad that has a good color may be given a score of 23 to 25 points. **Good color** means that:
- (1) With respect to the grapefruit, a practically uniform, bright, typical color free from any noticeable tinge of amber; and
 - (2) With respect to the orange fruit, a practically uniform, bright, typical orange color.
- (b) **"B" classification.** Canned grapefruit and orange for salad that has a reasonably good color may be given a score of 21 or 22 points. Canned grapefruit and orange for salad that falls into this classification shall not be graded above U. S. Grade B, regardless of the total score for the product. (This is a limiting rule.) **Reasonably good color** means that:
- (1) With respect to the grapefruit, at least a fairly bright color which may be variable but is not off-color for any reason; and
 - (2) With respect to the orange fruit, at least a fairly bright, typical orange color which may be variable.
- (c) **"SStd" classification.** Canned grapefruit and orange for salad that fails to meet the requirements of paragraph (b) of this section may be given a score of 0 to 20 points and shall not be graded above Substandard, regardless of the total score for the product. (This is a limiting rule.)

§52.1262 **Defects.**

- (a) **General.** The factor of defects refers to the degree of freedom from extraneous vegetable material, from seeds, from portions of albedo, from portions of tough membrane, from damaged units, and from other similar defects.
- (1) **Extraneous vegetable material** means, portions of leaves, small pieces of peel, and other similar material that is harmless.
 - (2) **Seed** means any seed or any portion thereof, whether or not fully developed, that measures more than 3/16 inch in any dimension.
 - (3) **Large seed** means any seed or any portion thereof, whether or not fully developed, that measures more than 3/8 inch in any dimension.
 - (4) **Damaged unit** means any grapefruit or orange unit or portion thereof that is damaged by lye peeling, by discoloration, or by similar injury or that is otherwise damaged to such an extent that the appearance or eating quality of the unit is materially affected.

- (b) **"A" classification.** Canned grapefruit and orange for salad that is practically free from defects may be given a score of 23 to 25 points. **Practically free from defects** means that:
- (1) All defects present, whether or not specifically defined or listed in this section, do not more than slightly affect the appearance or edibility of the product; and
 - (2) The defects that may be present in a sample unit and in the entire sample do not exceed the allowance specified in Table III.
- (c) **"B" classification.** Canned grapefruit and orange for salad that is reasonably free from defects may be given a score 21 to 22 points. Canned grapefruit and orange for salad that falls into this classification shall not be graded above U. S. Grade B, regardless of the total score for the product. (This is a limiting rule.) **Reasonably free from defects** means that:
- (1) All defects present, whether or not specifically defined or listed in this section, may materially, but not seriously, affect the appearance or edibility of the product; and
 - (2) The defects that may be present in a sample unit and in the entire sample do not exceed the allowances specified in Table IV.
- (d) **"SStd" classification.** Canned grapefruit and orange for salad that fails to meet the requirements of paragraph (c) of this section may be given a score of 0 to 20 points and shall not be graded above Substandard, regardless of the total score for the product. (This is a limiting rule.)

**Table III - Allowances for Defects in Canned Grapefruit and Orange for Salad
U.S. Grade A**

Defects	8Z (211 x 304)		No. 303 (303 x 406)		No. 3 Cyl. (404 x 700)	
	Sample Unit	Sample Average	Sample Unit	Sample Average	Sample Unit	Sample Average
	Maximum		Maximum		Maximum	
Extraneous vegetable material	1 piece	0.25 piece	1 piece	0.50 piece	1 piece	0.75 piece
Seeds and large seeds	Total of 3 seeds including not more than 1 large seed.	1.6 seeds including not more than 0.4 large seed.	Total of 4 seeds including not more than 2 large seeds.	3.2 seeds including not more than 0.8 large seed.	Total of 10 seeds including not more than 3 large seeds.	.....
Albedo and tough membrane	1 square inch	1/2 square inch	2 square inches	1 square inch	5 square inches	4 square inches
Damaged units	1/4 ounce	.....	1/2 ounce	.....	1-1/2 ounces	.....
-Total- All defects specified above and/or any other defects that may be present	Cumulative Effect - does not more than slightly affect the appearance or eating quality of the product.					

**Table IV - Allowances for Defects in Canned Grapefruit and Orange for Salad
U.S. Grade B**

Defects	8Z (211 x 304)		No. 303 (303 x 406)		No. 3 Cyl. (404 x 700)	
	Sample Unit	Sample Average	Sample Unit	Sample Average	Sample Unit	Sample Average
	Maximum		Maximum		Maximum	
Extraneous vegetable material	2 pieces	0.50 piece	2 pieces	0.75 piece	2 pieces	1 piece
Seeds and large seeds	Total of 6 seeds including not more than 2 large seeds.	4.8 seeds including not more than 1.2 large seeds.	Total of 12 seeds including not more than 3 large seeds.	9.6 seeds including not more than 2.4 large seeds.	Total of 20 seeds including not more than 5 large seeds.	.....
Albedo and tough membrane	1-1/2 square inches	3/4 square inch	3 square inches	2 square inch	7-1/2 square inches	6 square inches
Damaged units	3/4 ounce	.....	1-1/2 ounces	.....	4 ounces	.....
-Total- All defects specified above and/or any other defects that may be present	Cumulative Effect - may materially, but not seriously, affect the appearance or eating quality of the product.					

§52.1263 Character.

- (a) **General.** The factor of character refers to the structure and condition of the cells of the grapefruit and orange and reflects the maturity of the fruits.
- (b) **"A" classification.** Canned grapefruit and orange for salad that has a good character may be given a score of 23 to 25 points. **Good character** means that the grapefruit and orange units are moderately firm and fleshy; that the units or portions thereof have a juicy, cellular structure free from dry cells, or **ricey** cells, or fibrous cells that materially affect the appearance or eating quality of the product.
- (c) **"B" classification.** Canned grapefruit and orange for salad that has a reasonably good character may be given a score of 21 to 22 points. Canned grapefruit and orange for salad that falls into this classification shall not be graded above U. S. Grade B, regardless of the total score for the product. (This is a limiting rule.) **Reasonably good character** means that the grapefruit and orange units may be affected, but not seriously so, by dry cells, **ricey** cells or fibrous cells that detract from the appearance or eating quality of the product.
- (d) **"SStd" classification.** Canned grapefruit and orange for salad that fails to meet the requirements of paragraph (c) of this section may be given a score of 0 to 20 points and shall not be graded above Substandard, regardless of the total score for the product. (This is a limiting rule.)

§52.1264 Determining the grade of a lot.

The grade of a lot of canned grapefruit and orange for salad covered by these standards is determined by the procedures set forth in the Regulations Governing Inspection and Certification of Processed Fruits and Vegetables, Processed Products Thereof, and Certain Other Food Products (7 CFR 52.1 through 52.83).

Done at Washington, D.C., on January 5, 1984.

/s/ _____

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Deputy Administrator
Marketing Programs Operations