



**United States  
Department of  
Agriculture**

**Agricultural  
Marketing  
Service**

**Fruit and  
Vegetable  
Division**

**Processed  
Products  
Branch**

# **United States Standards for Grades of Canned Applesauce**

**Effective date March 11, 1982**

This is the fifth issue of the United States Standards for Grades of Canned Applesauce published in the **FEDERAL REGISTER** of February 9, 1982 (47 FR 5877) to become effective March 11, 1982. This issue supersedes the fourth issue, as amended, which has been in effect since March 11, 1982.

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. grade 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 issued 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 Applesauce

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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). |

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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.

**§52.331 Identity.**

**Canned applesauce** is the product represented as defined in the Standards of Identity for Canned Applesauce (21 CFR 145.110) issued pursuant to the Federal Food, Drug, and Cosmetic Act.

**§52.332 Color Types.**

**(a) Natural Color.**

- (1)** Canned applesauce in which the color of the finished product is derived wholly from the apple ingredient.
- (2)** When a spice or spices have been added, consideration is given to the color, if any, imparted by the added spice or spices.

**(b) Artificially colored.** Canned applesauce in which the color of the finished product is derived from an artificial coloring substance as permitted in the Federal Food and Drug definitions and Standards of Identity.

**§52.333 Flavor types.**

**(a) Natural flavor.** Natural flavored canned applesauce is the product in which the flavor is derived from the apple ingredient and other permitted additives exclusive of flavorings or spices.

**(b) Flavored.** Flavored canned applesauce is the product in which the flavor is derived substantially from an added flavoring ingredient, including artificial flavorings.

**(c) Spiced.** Spiced canned applesauce is the product in which the flavor is derived substantially from the added spice or spices.

**§52.334 Types of pack.**

**(a) Unsweetened.** Canned applesauce prepared without the addition of nutritive carbohydrate sweeteners. The product shall test not less than 9 degrees Brix.

**(b) Sweetened.** Canned applesauce with nutritive carbohydrate sweeteners added.

**§52.335 Styles.**

- (a) **Regular (or comminuted).** Canned applesauce in which the apple ingredient has been comminuted into granular particles.
- (b) **Chunk (or chunky).** Canned applesauce in which the apple ingredient has been chopped into small pieces.

**§52.336 Definitions of terms.**

- (a) **Absence of defects** means the degree of freedom from particles of seeds, discolored apple particles, peel, carpel tissue, stamens, and other objectionable particles.
- (b) **Brix** means the percent, by weight, of natural apple soluble solids and added sweetener, if any, corrected to 20° C (68° F).
- (c) **Carpel tissue** means the tough, sometimes hard and sharp tissue from the center portion (core) of the apple surrounding the seed cavity.
- (d) **Color** means the color typical of the variety of varieties used in other than "spice flavored" or "artificially colored."
- (e) **Consistency** means the flow characteristic of the product and the degree of separation of free liquid.
- (f) **Discolored apple particles** mean apple particles that are discolored by bruise or other means to the extent that they do not blend well with the normal color of the product and are noticeable.
- (g) **Finish** means the following: the texture and tenderness of the apple particles; the evenness of the division of apple particles in regular (or comminuted) style; and the proportion of chunks or pieces of apples in relation to fine apple particles in chunk (or chunky) style.
- (h) **Flavor** means the degree of excellence of the natural flavor and aroma of the apple ingredient; the apparent relationship of the acidity to sweetness; the freedom from undesirable flavor; and with respect to flavored and spiced types, the flavor balance of the apple ingredient in relation to the added flavor of spice ingredient(s).
- (i) **Peel** means apple peel that does not blend well with the normal color of the product and is noticeable or that is tough whether or not it is visually noticeable.

- (j) **Seed particles** mean whole seeds or pieces of seed and portion of the core of the apple.
- (k) **Stamen** means the dark hairlike substance from the blossom end of the apple.

**§52.337 Grades.**

- (a) **U.S. Grade A** is the quality of canned applesauce that:
  - (1) Meets the applicable requirements of Table I or Table II; and
  - (2) Scores not less than 90 points.
- (b) **U.S. Grade B** is the quality of canned applesauce that:
  - (1) Meets the applicable requirements of Table I or Table II; and
  - (2) Scores not less than 80 points.
- (c) **Substandard** is the quality of canned applesauce that fails to meet the requirements for U.S. Grade B.

**§52.338 Fill of container.**

The fill of container is not incorporated in the grades of the finished product, since fill of container is not a factor of quality for the purposes of these standards. The standard of fill of container as specified in the Standard of Fill of Container for Canned Applesauce [21 CFR 145.110 (c)] issued under the Federal Food, Drug, and ;Cosmetic Act, is a fill of not less than 90 percent of the total capacity of the container [21 CFR 130.12(b)]; except that in the case of glass containers having a total capacity of 192 mL (6.5 fl oz) or less, the fill is not less than 85 percent.

**§52.339 Recommended sample unit size.**

The sample unit size for evaluating the factors of absence of defects and consistency is the amount of applesauce required to fill level full a cylinder measuring 7.6 cm (3 in) inside diameter and 8.3 cm (3.25 in) high.

**§52.340 Determining the grade.**

- (a) The grade of canned applesauce is determined by considering the respective ratings for the factors of color, consistency, absence of defects, finish, and flavor.

- (b) The relative importance of each factor that is scored is expressed numerically on the scale of 0 to 100 points. The maximum number of points that may be given each factor is:

| <b>Factors:</b>    | <b>Points</b> |
|--------------------|---------------|
| Color              | 20            |
| Consistency        | 20            |
| Absence of defects | 20            |
| Finish             | 20            |
| Flavor             | 20            |
| Total score        | 100           |

**§52.341 Determining the rating for each factor.**

The essential variations within each factor that is scored are so described that the value may be determined for each factor and expressed numerically. The numerical range within each factor is inclusive (for example, "18 to 20 points" means, 18, 19, or 20 points).

**TABLE I**  
**REGULAR (or COMMINUTED)**

| Factors  | Grade A  | Grade B  |
|--|--|--|
| <b>COLOR:</b>  |  |  |
| Natural:   | Bright, practically uniform, typical of variety or varieties used, no discoloration due to oxidation or scorching. | Dull, reasonably uniform, typical of variety or varieties used. Slightly brown, slightly pink, or slightly grey. |
| Spice flavored:  | Characteristic of the color imparted by added spice, free from discoloration due to oxidation or scorching.        | The color imparted by added spice may be slightly affected by pink or grey color, but is not off color.          |
| Artificially colored:                                      | Bright and distinct.   | Reasonably bright and distinct.  |
| <b>SCORE POINTS:</b>                                       | 18 - 20  | 16 - 17  |
| <b>CONSISTENCY:</b>  |  |  |
| Product flow:  | Not more than 6.5 cm (2.5 in)  | Not more than 8.5 cm (3.3. in)   |
| Free liquid:   | Not more than 0.7 cm (0.3 in)  | Not more than 1 cm (0.4 in)  |
| <b>SCORE POINTS:</b>                                       | 18 - 20  | 16 - 17  |
| <b>ABSENCE OF DEFECTS:</b>                                 |  |  |
| Dark stamens:  | Not more than 3  | Not more than 5  |
| Seed particles, discolored apple particles, carpel tissue: | Not more than 0.5 cm <sup>2</sup> (0.08 in <sup>2</sup> ) Total but,   | Not more than 1.0 cm <sup>2</sup> (0.16 in <sup>2</sup> ) Total but  |
| Medium and dark colored particles                          | Not more than 0.25 cm <sup>2</sup> (0.04 in <sup>2</sup> )   | Not more than 0.5 cm <sup>2</sup> (0.08 in <sup>2</sup> )  |
| <b>SCORE POINTS:</b>                                       | 18 - 20  | 16 - 17  |
| <b>FINISH:</b>   |  |  |
|  | Evenly divided, not lumpy, pasty or salvy.   | Evenly divided, slightly salvy or pasty.   |
| <b>SCORE POINTS:</b>                                       | 18 - 20  | 16 - 17  |
| <b>FLAVOR:</b>   |  |  |
|  | Good natural sugar-acid balance.   | Reasonably good natural sugar-acid balance.  |
| Unsweetened:   | Slightly tart or slightly bland.<br>Free from astringent flavor.   | Moderately tart, may be bland, slightly astringent flavor.   |
| Sweetened:   | Slightly tart to sweet. Free from astringent flavor.   | May be tart, not excessively sweet, slightly astringent.   |
| Spice flavored:  | Flavor is distinct and characteristic of the added spice(s) or flavoring(s) but not strong.                        | Flavor derived from added flavoring(s) or spice(s) may be slightly weak or strong but not objectionable.         |
| <b>SCORE POINTS:</b>                                       | 18 - 20  | 16 - 17  |
| <b>TOTAL SCORE:</b>  | 90 - 100   | 80 - 89  |
| <b>ANALYTICAL:</b>   |  |  |
| Brix - Unsweetened:  | Not less than 9.0 degrees.   | Not less than 9.0 degrees.   |
| Brix - Sweetened:  | Not less than 15.5 degrees   | Not less than 14.5 degrees.  |



**TABLE II**  
**Chunk or Chunky**

| Factors  | Grade A   | Grade B  |
|--|---|--|
| <b>COLOR:</b>  |   |  |
| Natural:   | Bright, practically uniform, typical of variety or varieties used, no discoloration due to oxidation or scorching.                                    | Dull, reasonably uniform, typical of variety or varieties used. Slightly brown, slightly pink, or slightly grey.                                   |
| Spice flavored:  | Characteristic of the color imparted by added spice, free from discoloration due to oxidation or scorching.   | The color imparted by added spice may be slightly affected by pink or grey color, but is not off color.  |
| Artificially colored:                                      | Bright and distinct.  | Reasonably bright and distinct.  |
| <b>SCORE POINTS:</b>                                       | 18 - 20   | 16 - 17  |
| <b>CONSISTENCY:</b>  |   |  |
| Product flow:  | Not more than 7.5 cm (2.95 in)  | Not more than 9.5 cm (3.75 in)   |
| Free liquid:   | Slight amount.  | Moderate amount.   |
| <b>SCORE POINTS:</b>                                       | 18 - 20   | 16 - 17  |
| <b>ABSENCE OF DEFECTS:</b>                                 |   |  |
| Dark stamens:  | Not more than 3   | Not more than 5  |
| Seed particles, discolored apple particles, carpel tissue: | Not more than 0.5 cm <sup>2</sup> (0.08 in <sup>2</sup> ) Total but,  | Not more than 1.0 cm <sup>2</sup> (0.16 in <sup>2</sup> ) Total but,   |
| Medium and dark colored particles                          | Not more than 0.25 cm <sup>2</sup> (0.04 in <sup>2</sup> )  | Not more than 0.5 cm <sup>2</sup> (0.08 in <sup>2</sup> )  |
| <b>SCORE POINTS:</b>                                       | 18 - 20   | 16 - 17  |
| <b>FINISH:</b>   |   |  |
|  | High proportion of apple chunks. Any fine apple particles present, do no more than moderately affect the appearance or eating quality of the product. | Fairly high proportion of apple chunks. Any fine apple particles present, do not seriously affect the appearance or eating quality of the product. |
| <b>SCORE POINTS:</b>                                       | 18 - 20   | 16 - 17  |
| <b>FLAVOR:</b>   |   |  |
|  | Good natural sugar-acid balance.  | Reasonably good natural sugar-acid balance.  |
| Unsweetened:   | Slightly tart or slightly bland. Free from astringent flavor.   | Moderately tart, may be bland, slightly astringent flavor.   |
| Sweetened:   | Slightly tart to sweet. Free from astringent flavor.  | May be tart, not excessively sweet, slightly astringent.   |
| Spice flavored:  | Flavor is distinct and characteristic of the added spice(s) or flavoring(s) but not strong.   | Flavor derived from added flavoring(s) or spice(s) may be slightly weak or strong but not objectionable.   |
| <b>SCORE POINTS:</b>                                       | 18 - 20   | 16 - 17  |
| <b>TOTAL SCORE:</b>  | 90 - 100  | 80 - 89  |
| <b>ANALYTICAL:</b>   |   |  |
| Brix - Unsweetened:  | Not less than 9.0 degrees.  | Not less than 9.0 degrees.   |
| Brix - Sweetened:  | Not less than 15.5 degrees.   | Not less than 14.5 degrees.  |

**§52.343 Soluble solids determination.**

The soluble solids content of canned applesauce is the soluble solids as determined by the refractometric method prescribed in "Official Methods of Analysis of the Association of Official Analytical Chemists," except that no correction is made for water-insoluble solids. The soluble solids are expressed as "degrees Brix".

**§52.344 Determining the grade of a lot.**

The grade of a lot of canned applesauce 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 Processed Food Products" (7 CFR 52.1 through 52.83).

**§52.345 Score sheet for canned applesauce.**

| Size and kind of container:<br>Container mark or identification:<br>Label:<br>Net weight (oz/g/kg):<br>Brix (degrees):<br>Style:<br>Vacuum (in inches): |     |              |                   |
|---|-----|--------------|-------------------|
| FACTORS   |     | SCORE POINTS |                   |
| Color   | 20  | "A"          | 18 - 20           |
|   |     | "B"          | 16 - 17 <u>1/</u> |
|   |     | "SStd"       | 0 - 15 <u>2/</u>  |
| Consistency   | 20  | "A"          | 18 - 20           |
|   |     | "B"          | 16 - 17 <u>1/</u> |
|   |     | "SStd"       | 0 - 15 <u>2/</u>  |
| Absence of Defects  | 20  | "A"          | 18 - 20           |
|   |     | "B"          | 16 - 17 <u>1/</u> |
|   |     | "SStd"       | 0 - 15 <u>2/</u>  |
| Finish  | 20  | "A"          | 18 - 20           |
|   |     | "B"          | 16 - 17 <u>1/</u> |
|   |     | "SStd"       | 0 - 15 <u>2/</u>  |
| Flavor  | 20  | "A"          | 18 - 20           |
|   |     | "B"          | 16 - 17 <u>1/</u> |
|   |     | "SStd"       | 0 - 15 <u>2/</u>  |
| Total   | 100 |              |                   |
| <b>Grade:</b>   |     |              |                   |

- 1/ May not be graded above Grade B.
- 2/ May not be graded above Substandard

Done at Washington, D.C. on: February 3, 1982

/s/  
 William T. Manley  
 Deputy Administrator  
 Marketing Program Operations