



**United States
Department of
Agriculture**

**Agricultural
Marketing
Service**

**Fruit and
Vegetable
Division**

**Processed
Products
Branch**

United States Standards for Grades of Tomato Sauce

Effective date November 17, 1994

This is the second issue of the United States Standards for Grades of Tomato Sauce published in the **FEDERAL REGISTER** October 18, 1994 (59 FR 52624) to become effective November 17, 1994. This issue supersedes the first issue, as amended, which has been in effect since October 21, 1960.

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 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 Tomato Sauce

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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.

§52.2371 Product description.

Tomato sauce is the concentrated product prepared from the liquid extracted from mature, sound, whole tomatoes; the sound residue from preparing such tomatoes for canning; the residue from partial extraction of juice; reconstituted or remanufactured tomato paste; or any combination of these ingredients to which is added salt and spices. One or more nutritive sweetening ingredients, a vinegar or vinegars, onion, garlic, or other vegetable flavoring ingredients may be added. The food is preserved by heat sterilization (canning), refrigeration, or freezing. When sealed in a container to be held at ambient temperatures, it is so processed by heat, before or after sealing, as to prevent spoilage. The refractive index of the tomato sauce at 20 degrees Celsius is not less than 1.3455.

§52.2372 Definitions of terms.

- (a) **Color** means the amount of red in the tomato sauce as determined by comparing the color of the product with that produced by spinning a combination of the following Munsell color discs:

Disc 1-Red (5R 2.6/13) (glossy finish);
Disc 2-Yellow (2.5YR 5/12) (glossy finish);
Disc 3-Black (N1) (glossy finish); and
Disc 4-Gray (N4) (mat finish).

Any other method or device approved by the USDA which gives equivalent results may be used.

- (1) **Good color** means the color typical of tomato sauce that contains as much or more red than that produced by spinning the specified Munsell color discs in the following combinations or an equivalent of such composite color:

65 percent of the area of Disc 1;
21 percent of the area of Disc 2; and
14 percent of the area of Disc 3 or Disc 4, or 7 percent of the area of Disc 3 and 7 percent of the area of Disc 4, whichever most nearly matches the reflectance of the tomato sauce.

- (2) **Reasonably good color** means the color typical of tomato sauce that contains as much or more red than that produced by spinning the specified Munsell color discs in the following combinations or an equivalent of such composite color:

53 percent of the area of Disc 1;
28 percent of the area of Disc 2; and
19 percent of the area of either Disc 3 or 4, or 9½ percent of the area
of Disc 3 and 9½ percent of the area of Disc 4, whichever most nearly
matches the reflectance of the tomato sauce.

(b) **Consistency** means the resistance of the tomato sauce to deformation or resistance to flow i.e., apparent viscosity and the tendency to hold its liquid portion in suspension.

(1) **Good consistency** means the tomato sauce is not excessively stiff, and flows not less than 4.0 cm nor more than 12.0 cm in 30 seconds at 20 degrees Celsius in the Bostwick consistometer. After placing a tablespoon of tomato sauce on a shallow tray and observing the separation of free liquid for 2 minutes, there shall be no more than 5 mm (3/16 in) separation. The higher consistency tomato sauce will receive the higher score points.

(2) **Reasonably good consistency** means the tomato sauce is not excessively stiff, flows less than 4.0 cm but not less than 3.0 cm or flows more than 12.0 cm but not more than 15.0 cm in 30 seconds at 20 degrees Celsius in the Bostwick consistometer. After placing a tablespoon of tomato sauce on a shallow tray and observing the separation of free liquid for 2 minutes, there shall be no more than 10 mm (3/8 in) separation. Within these two ranges, tomato sauce approaching "good consistency" will receive the higher score points.

(c) **Defects** mean the degree of freedom from defects such as dark brown or black specks, whole seeds, tomato peel, core material or other similar substances. The specific requirements for defects are included in Table I of Section 52.2375. This factor is evaluated by observing a layer of 100 g (3.5 oz) of product which is spread over a smooth white surface area of at least 968 sq cm (150 sq in).

(1) **Practically free** of defects means that any defects present in the sauce do not exceed the requirements for "practically free" in Table I of Section 52.2375.

(2) **Reasonably free** of defects means that any defects present in the sauce do not exceed the requirements for "reasonably free" in Table I of Section 52.2375.

(d) Finish.

- (1) Good finish** means that the product is evenly comminuted, has uniform, smooth texture, and is free from lumps.
- (2) Poor finish** means that the product fails to meet the definition of "good finish."

(e) Flavor and odor means the flavor and odor characteristic of tomato sauce produced from good quality ingredients that have been properly processed.

- (1) Good flavor and odor** means a good distinct flavor and odor characteristic of good quality ingredients. Such flavor and odor is free from scorching or any other objectionable flavor or odor.
- (2) Reasonably good flavor and odor** means a flavor and odor characteristic of the ingredients in which there may be slight traces of undesirable flavor, such as scorched, bitter, or astringent flavor, but is free from objectionable off-flavors and odors.

§52.2373 Fill of container.

Except for frozen tomato sauce and tomato sauce packaged in individual serving-size packages containing 56.7 grams (2 ounces) or less, each container of tomato sauce shall be filled as full as practicable without impairment of quality and shall occupy not less than 90 percent of the capacity of the container.

§52.2374 Ascertaining the grade and factors of quality.

The grade of tomato sauce is ascertained by considering the factor of finish, which is not scored, and the ratings for the factors of color, consistency, defects, and flavor and odor, which are scored. 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 for each factor is:

| Factors | Points |
|-----------------------|--------|
| Color | 25 |
| Consistency | 25 |
| Defects | 25 |
| Flavor and odor | 25 |
| Total score | 100 |

§52.2375 Allowances for defects.

TABLE I
ALLOWANCES FOR GRADE FACTORS

| Factors: | U.S. Grade A | U.S. Grade B |
|---|---|---|
| Finish | Good ^{1/} | Good ^{1/} |
| Color | Good | Reasonably good |
| Score | 21 - 25 points | 17 - 20 points |
| Consistency | Good | Reasonably good |
| Centimeters (Bostwick) | 4.0 - 12.0 | 3.0 to less than 4.0 or more than 12.0 but less than 15.0 |
| Separation of free liquid | Equal to or less than 5 mm (3/16 in) | More than 5 mm but equal to or less than 10 mm (3/8 in) |
| Score | 22 - 25 points | 18 - 21 points |
| Defects ^{2/} | Practically free | Reasonably free |
| Pieces of peel ^{3/} exceeding 5 mm/100 g (3.5 oz) and Dark specks exceeding 1.0 mm (1/32 in) | Combined total of 15 pieces of peel and dark brown or black specks; no dark brown or black specks exceed 3.2 mm (1/8 in). | Combined total of 36 pieces of peel and dark brown or black specks; not more than 2 dark brown or black specks exceed 3.2 mm, no dark brown or black specks exceed 6.5 mm (1/4 in). |
| Whole seeds/2.835 kg (100 oz): | 1 | 5 |
| Overall appearance: | Not materially affected | Not seriously affected |
| Score | 21 - 25 points | 18 - 20 points |
| Flavor and odor | Good | Reasonably good |
| Score | 21 - 25 points | 17 - 20 points |
| Total minimum score | 85 points | 70 points ^{4/} |

^{1/} Evenly comminuted; smooth uniform texture.

^{2/} Except for whole seeds, based on 100 grams (3.5 oz) of diluted well-mixed product at 8.0 to 9.0 percent tomato soluble solids (TSS). Whole seeds, based on 2.835 kg (100 oz) of product at 8.0 to 9.0 TSS if at least one whole seed(s) is found in a sample.

^{3/} Measured without unrolling.

^{4/} Tomato sauce which fails to meet the quality of U.S. Grade B shall be classified as "Substandard."

§52.2376 Sample unit sizes.

- (a) The sample unit size is the amount of product specified to be used for inspection in 7 CFR 52.38, Table III.
- (b) For Number 10 can size or larger, an optional sample unit size of 900 g (approximately 32 oz) per container is permitted.

§52.2377 Determining the grade of a lot.

The grade of a lot of tomato sauce covered by these standards is determined by the procedures found 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).

Dated: October 11, 1994

/s/ Lon Hatamiya
Administrator