



**United States  
Department of  
Agriculture**

**Agricultural  
Marketing  
Service**

**Fruit and  
Vegetable  
Division**

**Processed  
Products  
Branch**

# **United States Standards for Grades of Concentrated Tomato Juice**

**Effective date February 25, 1970**

This is the first issue, as amended, of the United States Standards for Grades of Concentrated Tomato Juice published in the **FEDERAL REGISTER** of February 25, 1970, (25 FR 6669) to become effective February 25, 1970. This issue supersedes the first issue, which have been in effect since July 15, 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 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:

Chief, Processed Products Branch  
Fruit and Vegetable Division, AMS  
U.S. Department of Agriculture  
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## United States Standards for Grades of Concentrated Tomato Juice

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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.

**§52.5201 Product description.**

**Concentrated tomato juice** means the product prepared from clean, sound, whole tomatoes of the red or reddish varieties as such product is defined in the Standard of Identity for Tomato Concentrate (21 CFR 155.191) issued pursuant to the Federal Food, Drug, and Cosmetic Act. The product contains not less than 20 percent but less than 24 percent of natural tomato soluble solids. When packed in hermetically sealed containers, it is sufficiently processed by heat, before or after dealing, to assure preservation of the product.

**§52.5202 Grades of concentrated tomato juice.**

- (a) U.S. Grade A or U.S. Fancy** is the quality of concentrated tomato juice that, when properly reconstituted, has a good color; has a good consistency; is practically free from defects; has a good flavor; and scores not less than 85 points when scored in accordance with the scoring system outlined in this subpart: **Provided**, That the reconstituted tomato juice may have only a fairly good color, scoring not less than 25 points and a fairly good consistency, if the total score is not less than 85 points.
- (b) U.S. Grade C or U.S. Standard** is the quality of concentrated tomato juice that, when properly reconstituted, has a fairly good color; has a fairly good consistency; is fairly free from defects; has a fairly good flavor; and scores not less than 70 points when scored in accordance with the scoring system outlined in this subpart.
- (c) Substandard** is the quality of concentrated tomato juice that fails to meet the requirements of U.S. Grade C.

**§52.5203 Recommended fill of container.**

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 of concentrated tomato juice be filled as full as practicable without impairment of quality, and that the product occupy not less than 90 percent of the capacity of the container.

**§52.5204 Ascertaining the grade of a sample unit.**

In addition to considering other requirements outlined in the standards, the quality factors of color, consistency, defects, and flavor are evaluated by applying appropriate criteria to the reconstituted tomato juice prepared by thoroughly mixing the concentrated tomato juice with three volumes of water. The relative importance of each factor is expressed numerically on the scale of 100. The maximum number of points that may be given for each such factor is:

Factors:	Points
Color .....	30
Consistency .....	15
Defects .....	15
Flavor .....	<u>40</u>
Total Score .....	100

**§52.5205 Color.**

**(a) General.**

**(1)** The amount of red in the reconstituted tomato juice is 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 (2.5 YR· 5/12) (glossy finish).
- Disc 3-Black (N1) (glossy finish).
- Disc 4-Grey (N4) (mat finish).

**(2)** Such comparison is to be made under a diffused light source of approximately 250 foot-candle intensity and having a spectral quality approximating that of daylight under a moderately overcast sky, and a color temperature of 7500 degrees Kelvin  $\pm$ 200 degrees. With the light source directly over the disc and product, observation is made at an angle of 45 degrees from a distance of about 24 inches from the product.

**(b) "A" classification.** Concentrated tomato juice that, when reconstituted properly, has a good color may be given a score of 26 to 30 points. **Good color** means a color that is typical of canned tomato juice, made from well ripened red tomatoes, which has been properly prepared and properly processed. Such color contains as much red as, or more red than, that produced by spinning the specified Munsell color discs in the following combinations: 65 percent of the area of Disc 1; 21 percent of the area of Disc 2; 14 percent of the area of Disc 3 or of 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 product.

- (c) **"C" classification.** If the reconstituted tomato juice has a fairly good color a score of 23 to 25 points may be given. Concentrated tomato juice that scores 23 or 24 points for color shall not be graded above U.S. Grade C, regardless of the total score for the product (this is a partial limiting rule). **Fairly good color** means a color that is typical of canned tomato juice. To score 25 points for color the reconstituted juice shall contain as much red as, or more red than, that produced by spinning the specified Munsell color discs in the following combinations: 59 percent of the area of Disc 1; 24-1/2 percent of the area of Disc 2; 16-1/2 percent of the area of either Disc 3 or Disc 4, or 8-1/4 percent of the area of Disc 3 and 8-1/4 percent the area of Disc 4, whichever most nearly matches the reflectance of the product. To score 23 or 24 points for color the reconstituted tomato juice shall contain as much red as, or more red than, that produced by spinning the specified Munsell color discs in the following combinations: 53 percent of the area of Disc 1; 28 percent of the area of Disc 2; 19 percent of the area of either Disc 3 or Disc 4, or 9-1/2 percent of the area of Disc 3 and 9-1/2 percent of the area of Disc 4, whichever most nearly matches the reflectance of the product.
- (d) **"SStd" classification.** Concentrated tomato juice that fails to meet the requirements of paragraph (c) of this section may be given a score of 0 to 22 points and shall not be graded above Substandard, regardless of the total score for the product (this is a limiting rule).

**§52.5206 Consistency.**

- (a) **General.** This factor has reference to the viscosity of the reconstituted juice. The tendency of the insoluble solids to separate, leaving practically clear liquid at the top is also to be noted in this connection.
- (b) **"A" classification.** Concentrated tomato juice that, when properly reconstituted, has a good consistency may be given a score of 13 to 15 points. **Good consistency** means that the reconstituted tomato juice flows readily; has a normal amount of insoluble tomato solids in suspension; and that there is little tendency for such solids to settle out.
- (c) **"C" classification.** If the concentrated tomato juice has a fairly good consistency a score of 10 to 12 points may be given. **Fairly good consistency** means that the reconstituted tomato juice flows readily; has a normal amount of insoluble tomato solids in suspension; and that there is not a marked tendency for such solids to settle out.
- (d) **"SStd" classification.** Concentrated tomato juice that fails to meet the requirements of paragraph (c) of this section may be given a score of 0 to 9 points and shall not be graded above Substandard, regardless of the total score for the product (this is a limiting rule).

**§52.5207 Defects.**

- (a) **General.** The factor of defects refers to the degree of freedom from defects, such as dark specks or scale-like particles, seeds, particles of seed, tomato peel, core material, or other similar substances.
- (b) **"A" classification.** Concentrated tomato juice that is practically free from defects may be given a score of 13 to 15 points. **Practically free from defects** means that any defects present in the reconstituted juice do not more than slightly affect the appearance or drinking quality of the juice.
- (c) **"C" classification.** If the concentrated tomato juice is fairly free from defects a score of 10 to 12 points may be given. Concentrated tomato juice that falls into this classification shall not be graded above U.S. Grade C, regardless of the total score for the product (this is a limiting rule). **Fairly free from defects** means that any defects present in the reconstituted juice may be noticeable, but are not so large, so numerous or of such contrasting color as to seriously affect the appearance or drinking quality of the juice.
- (d) **"SStd" classification.** Concentrated tomato juice that fails to meet the requirements of paragraph (c) of this section may be given a score of 0 to 9 points and shall not be graded above Substandard, regardless of the total score for the product (this is a limiting rule).

**§52.5208 Flavor.**

- (a) **"A" classification.** Concentrated tomato juice that possesses a good flavor may be given a score of 33 to 40 points. **Good flavor** means a distinct canned tomato juice flavor and odor characteristic of good quality tomatoes. To score in this classification the flavor of the reconstituted juice shall not be adversely affected by stems, leaves, crushed seeds, cores, immature tomatoes, or the effects of improper trimming or processing.
- (b) **"C" classification.** If the reconstituted tomato juice possesses only a fairly good flavor a score of 27 to 32 points may be given. Concentrated tomato juice that falls into this classification shall not be graded above U.S. Grade C, regardless of the total score for the product (this is a limiting rule). **Fairly good flavor** means a characteristic canned tomato juice flavor. To score in this classification the flavor of the reconstituted juice may be affected adversely, but not seriously so, by stems, leaves, crushed, seeds, cores, immature tomatoes, or the effects of improper trimming or processing.
- (c) **"SStd" classification.** Concentrated tomato juice that fails to meet the requirements of paragraph (b) of this section may be given a score of 0 to 26 points and shall not be graded above Substandard, regardless of the total score for the product (this is a limiting rule).

**§52.5209    Ascertaining the grade of a lot.**

The grade of a lot of concentrated tomato juice 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 to 52.83).

**§52.5210    Score sheet for concentrated tomato juice.**

Type of container .....			
Container size .....			
Label .....			
Code .....			
Volume .....			
Vacuum (inches) .....			
Natural tomato soluble solids (percent) .....			
Factors		Score Points	
Color .....	30	(A) 26-30 (C) <sup>1</sup> 23-25 (SStd) <sup>2</sup> 0-22	
Consistency .....	15	(A) 13-15 (C) 10-12 (SStd) <sup>2</sup> 0-09	
Defects .....	15	(A) 13-15 (C) <sup>2</sup> 10-12 (SStd) <sup>2</sup> 0-09	
Flavor .....	<u>40</u>	(A) 33-40 (C) <sup>2</sup> 27-32 (SStd) <sup>2</sup> 0-26	
Total Score .....	100		
Grade .....			

<sup>1</sup> Indicates partial limiting rule.

<sup>2</sup> Indicates limiting rule.

The U.S. Standards for grades as hereby amended shall become effective on the date of publication in the Federal Register and thereupon will supersede:

U.S. Standards for Grades of Concentrated Tomato Juice which have been in effect since July 15, 1960.

Dated: February 17, 1970.

/s/  
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G.R. Grange,  
Deputy Administrator,  
Marketing Services.

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