



**United States
Department of
Agriculture**

**Agricultural
Marketing
Service**

**Fruit and
Vegetable
Division**

**Processed
Products
Branch**

United States Standards for Grades of Frozen Concentrated Apple Juice

Effective date May 15, 1975

This is the first issue, of the United States Standards for Grades of Frozen Concentrated Apple Juice published in the **FEDERAL REGISTER** of March 25, 1975 (40 FR 13195) to become effective May 15, 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 fruit 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:

Chief, Processed Products Branch
Fruit and Vegetable Division, AMS
U.S. Department of Agriculture
P.O. Box 96456, Rm. 0709, So. Bldg.
Washington, D.C. 20090-6456

United States Standards for Grades of Frozen Concentrated Apple 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.

§52.6321 Product description.

Frozen concentrated apple juice is prepared from the unfermented, unsweetened, unacidified liquid obtained from the first pressing of properly prepared, sound, clean, mature, fresh apples, and/or parts thereof by good commercial processes. The juice is clarified and concentrated to at least 22.9 degrees Brix. The apple juice concentrate so prepared, with or without the addition of ingredients permissible under the Federal Food, Drug, and Cosmetic Act, is packed and frozen in accordance with good commercial practice and maintained at temperatures necessary for the preservation of the product.

§52.6322 Brix requirements.

Brix value of the finished concentrate shall not be less than the following for the respective dilution factor of frozen concentrated apple juice:

Dilution Factor	Minimum Brix Value of Concentrate (Degrees)
1 plus 1	22.9
2 plus 1	33.0
3 plus 1	42.2
4 plus 1	50.8
5 plus 1	58.8
6 plus 1	66.3
7 plus 1	73.3

§52.6323 Grades.

- (a) **U.S. Grade A or U.S. Fancy** is the quality of frozen concentrated apple juice which, when reconstituted according to **§52.6325 (b)**, has the following attributes:
- (1) Good color and clarity;
 - (2) Is practically free from defects;
 - (3) Very good flavor and aroma; and

- (4) Scores not less than 90 points when scored in accordance with the scoring system outlined in this subpart.
- (b) **U.S. Grade B or U.S. Choice** is the quality of frozen concentrated apple juice which, when reconstituted according to **§52.6325 (b)**, has at least the following attributes:
 - (1) reasonably good color and clarity;
 - (2) Is reasonably free from defects;
 - (3) Good flavor and aroma; and
 - (4) Scores not less than 80 points when scored in accordance with the scoring system outlined in this subpart.
- (c) **Substandard** is the quality of frozen concentrated apple juice that fails to meet the requirements of U.S. Grade B.

§52.6324 Recommended fill of container.

Recommended fill of container is not incorporated in the grades of the finished product since the fill of the container, as such, is not a factor of quality for the purposes of these grades. It is recommended that the container be filled with frozen concentrated apple juice to not less than 90 percent of the capacity of the container.

§52.6325 Ascertaining the grade.

- (a) The grade of frozen concentrated apple juice is ascertained by considering, in conjunction with the requirements of the respective grade, the respective ratings for the factors 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 which may be given such factors are:

Factors	Points
Color and clarity	20
Defects	20
Flavor and aroma	60
Total score	100

- (b) The scores for the factors of color and clarity, defects, and flavor and aroma are determined immediately after reconstituting according to label directions or other appropriate directions.

§52.6326 Ascertaining the rating for the factors which are scored.

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

§52.6327 Color and clarity.

- (a) **"A" classification.** Frozen concentrated apple juice which has a good color and clarity may be given a score of 18 to 20 points. **Good color and clarity** means that the color, of the frozen concentrated apple juice after reconstitution, is bright and transparent and of a light golden appearance, but not darker than USDA Honey Color Standards **White** designation.
- (b) **"B" classification.** Frozen concentrated apple juice which has a reasonably good color and clarity may be given a score of 16 or 17 points. **Reasonably good color and clarity** means the color, of the frozen concentrated apple juice after reconstitution, is slightly dull or slightly turbid; may be light golden to light amber in appearance but not darker than USDA Honey Color Standards **Light Amber** designation. Frozen concentrated apple juice 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).
- (c) **"SStd" classification.** Frozen concentrated apple juice that is dull, turbid or otherwise fails the requirements of U.S. Grade B may be given a score of 0 to 15 points and shall not be graded above Substandard, regardless of the total score for the product (this is a limiting rule).

§52.6328 Defects.

- (a) **General.** The factor of defects refers to the degree of freedom from sediment or other residues, dark specks, or any other defects which affect the appearance or palatability of the product.

- (b) **"A" classification.** Frozen concentrated apple juice which is practically free from defects may be given a score of 18 to 20 points. **Practically free from defects** means that the frozen concentrated apple juice after reconstitution may have a slight amount of sediment or residue of an amorphous nature; may have not more than a trace of dark specks or of sediment or residue of a non-amorphous nature, or any other defects: **Provided**, that all defects present do not more than slightly affect the appearance or palatability of the product.
- (c) **"B" classification.** Frozen concentrated apple juice which is reasonably free from defects may be given a score of 16 or 17 points. **Reasonably free from defects** means that the frozen concentrated apple juice after reconstitution may have a slight amount of sediment or residue of an amorphous or non-amorphous nature, of dark specks, or of any other defects: **Provided**, that all defects present do not materially affect the appearance or palatability of the product. Frozen concentrated apple juice 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).
- (d) **"SStd" classification.** Frozen concentrated apple juice which fails to meet the requirements for U.S. Grade B may be given a score of 0 to 15 points and shall not be graded above Substandard, regardless of the total score for the product (this is a limiting rule).

§52.6329 Flavor and aroma.

- (a) **General.** The factor of flavor and aroma refers to the degree of excellence and palatability of a distinct apple juice flavor and aroma typical of apple juice that has been properly processed.
- (b) **"A" classification.** Frozen concentrated apple juice which has a very good flavor and aroma may be given a score of 54 to 60 points. **Very good flavor and aroma** means that the frozen concentrated apple juice after reconstitution has a fine, distinct fruity flavor and bouquet, that is free from astringent flavors, flavors due to overripe apples, oxidation, caramelization, or ground or musty flavors, and is free from objectionable flavors or objectionable aromas of any kind; and in addition, meets the following requirement:

Brix-Acid Ratio	Minimum	21:1
	Maximum	53:1

- (c) **"B" classification.** Frozen concentrated apple juice which has a good flavor and aroma may be given a score of 48 to 53 points. **Good flavor and aroma** means that the frozen concentrated apple juice after reconstitution has a normal flavor and bouquet, may be slightly astringent; or may be slightly affected by overripe apples, oxidation, caramelization, or ground or musty flavors, but is free from objectionable flavors or objectionable aromas of any kind; and, in addition, meets the following requirement:

Brix-Acid Ratio	Minimum	18:1
	Maximum	60:1

Frozen concentrated apple juice 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).

- (d) **"SStd" classification.** Frozen concentrated apple juice that fails to meet the requirements of U.S. Grade B may be given a score of 0 to 47 points and shall not be graded above Substandard, regardless of the total score for the product (this is a limiting rule).

§52.6330 Explanation of terms.

- (a) **Brix** means soluble solids of the concentrated apple juice as 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 sugar or other substances. The Brix of frozen concentrated apple juice may be determined by any other method which gives equivalent results.
- (b) **Acid** means grams of acid (calculated as malic acid) per 100 grams of concentrated juice determined by titration with a standard sodium hydroxide solution, using phenolphthalein as an indicator or any other satisfactory indicator and using an acid factor of 0.067.
- (c) **Brix-Acid ratio** means the ratio of the Brix of the concentrated juice in degrees Brix to the grams of acid (calculated as malic acid) per 100 grams of concentrated juice.

- (d) The USDA Honey Color Standards, referenced in §52.6327, and information concerning procurement and use is available from:

Chief, Processed Products Branch
 Fruit and Vegetable Division, AMS
 U.S. Department of Agriculture
 P.O. Box 96456, Rm. 0709, So. Bldg.
 Washington, D.C. 20090-6456

§52.6331 Ascertaining the grade of a lot.

The grade of a lot of frozen concentrated apple 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 through 52.83).

§52.6332 Score sheet.

Size and kind of container			
Container mark or identification			
Label			
Net contents (fluid ounces)			
Brix (degrees)			
Acid (malic grams/100 grams)			
Brix-Acid ratio			
Factors		Score Points	
Color and clarity	20	"A"	18-20
		"B"	16-17 <u>1/</u>
		"SStd"	0-15 <u>1/</u>
Defects	20	"A"	18-20
		"B"	16-17 <u>1/</u>
		"SStd"	0-15 <u>1/</u>
Flavor and aroma	<u>60</u>	"A"	54-60
		"B"	48-53 <u>1/</u>
		"SStd"	0-47 <u>1/</u>
Total Score		100	
Grade			

1/ Indicates limiting rule.

Effective date. These grade standards, which are the first issue by the Department for frozen concentrated apple juice, shall become effective May 15, 1975.

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Administrator
Agricultural Marketing Service

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