



**United States
Department of
Agriculture**

**Agricultural
Marketing
Service**

**Fruit and
Vegetable
Division**

**Processed
Products
Branch**

United States Standards for Grades of Frozen Leafy Greens

Effective date January 29, 1987

This is the second issue, as amended, of the United States Standards for Grades of Frozen Leafy Greens, published in the **FEDERAL REGISTER** of December 30, 1986 (51 FR 46992) to become effective January 29, 1987. This issue supersedes the second issue, which has been in effect since October 12, 1983.

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 Frozen Leafy Greens

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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.

§52.1371 Product description.

Frozen leafy greens means the frozen product prepared from the clean, sound, succulent leaves and stems of any one of the plants listed under § 52.1372 by sorting, trimming, washing, blanching, and properly draining. The product is processed by freezing and maintained at temperatures necessary for its preservation. Any functional, optional ingredient(s) permissible under the Federal Food, Drug, and Cosmetic Act may be used to acidify and/or season the product.

§52.1372 Types.

- (a) Beet greens.
- (b) Collards.
- (c) Dandelion greens.
- (d) Endive.
- (e) Kale.
- (f) Mustard greens.
- (g) Spinach.
- (h) Swiss chard.
- (i) Turnip greens.
- (j) Any other "market accepted" leafy green.

§52.1373 Styles.

- (a) **Leaf** consists substantially of the leaf, cut or uncut, with or without adjoining portion of the stem.
- (b) **Chopped** consists of the leaf with or without adjoining portion of the stem that has been cut into small pieces less than approximately 20 mm (0.78 in) in the longest dimension but not comminuted to a pulp or a puree.
- (c) **Pureed** consists of the leaf with or without adjoining portion of the stem that has been comminuted to a pulp or a puree.

§52.1374 Definitions of terms.

In these U.S. standards, unless otherwise required by the context, the following terms shall be construed, respectively, to mean:

- (a) Acceptable Quality Level (AQL)** means the maximum percent of defective units or the maximum number of defects per hundred units of product that, for the purpose of acceptance sampling, can be considered satisfactory as a process average.
- (b) Blemished** means any unit affected by discoloration or other means to the extent that the appearance or eating quality is adversely affected. For leafy greens other than leaf style spinach, each 4 cm² in leaf style or each 2 cm² in chopped and pureed styles (aggregate area measurement) is counted as one defect. In leaf style spinach only, each 6 cm² is counted as one defect.
- (c) Character** (other than pureed style).

 - (1) Good character** means:

 - (i)** The frozen spinach is tender upon cooking.
 - (ii)** The frozen leafy greens, other than spinach, may be slightly tough upon cooking.
 - (2) Reasonably good character** means:

 - (i)** The frozen spinach is reasonably tender upon cooking.
 - (ii)** The frozen leafy greens, other than spinach, may be moderately tough upon cooking.
 - (3) Poor character** means the frozen leafy greens fail the requirements for **reasonably good character**.
- (d) Defect** (or defective) means any nonconformance of a unit(s) of product from a specified requirement of a single characteristic.
- (e) Extraneous vegetable material (EVM).**

 - (1) Group I** - Green, fine, tender string-like blades and stems of grass and weeds.

(2) **Group II** - Green, coarse grass and weeds.

(3) **Group III** - Grass and weeds other than green.

(f) **Flavor and odor. Normal flavor and odor** means the frozen product is free from objectionable flavors and odors of any kind after cooking.

(g) **Root crown** means the solid area of the leafy green plant between the root and attached leaves or clusters of leaves.

(h) **Root stub** means any portion of the root whether or not leaves are attached.

(i) **Sample unit** means the amount of product to be used for grading. It may be:

(1) the entire contents of a container;

(2) a portion of the contents of a container;

(3) a combination of the contents of two or more containers;

(4) a portion of unpacked product.

(j) **Seed head** means the seed bearing portion of the leafy green plant that is longer than 2.5 cm (1 in) or that is objectionable in appearance.

(k) **Stem material** (in leaf and chopped styles of spinach only) means the portion of the plant located between the stalk or root crown and the point of attachment to the leaf.

(l) **Unit** means any whole or portion of a leaf or stem from the leafy green plant.

§52.1375 Recommended sample unit sizes.

(a) **Leaf style** - 300 g (10.6 oz).

(b) **Chopped style** - 75 g (2.65 oz).

(c) **Pureed style** - 75 g (2.65 oz).

§52.1376 Grades.

(a) **U.S. Grade A** is the quality of frozen leafy greens that:

- (1) **Meets** the following prerequisites in which the leafy greens:
- (i) Have similar varietal characteristics;
 - (ii) Have a good overall brightness as a mass;
 - (iii) Have a normal flavor and odor;
 - (iv) Have a good character (other than pureed style);
 - (v) May have stem material (leaf style spinach only) that does not exceed an AQL of 20.0;
 - (vi) May have stem material (chopped style spinach only) that slightly affects the appearance or eating quality;
 - (vii) May have blemished areas that do not exceed an AQL of 20.0.
- (2) Is within the limits for defects as classified in Table I and specified in Table II.

(b) U.S. Grade B is the quality of frozen leafy greens that:

- (1) **Meets** the following prerequisites in which the leafy greens:
- (i) Have similar varietal characteristics;
 - (ii) Have a fairly good overall brightness as a mass;
 - (iii) Have a normal flavor and odor;
 - (iv) Have a reasonably good character (other than pureed style);
 - (v) May have stem material (leaf style spinach only) that does not exceed an AQL of 25.0;
 - (vi) May have stem material (chopped style spinach only) that materially affects the appearance or eating quality;
 - (vii) May have blemished areas that do not exceed an AQL of 40.0.

(2) Is within the limits for defects as classified in Table I and specified in Table II.

(c) **Substandard** is the quality of frozen leafy greens that fails to meet the requirements of U.S. Grade B.

§52.1377 Factors of quality.

The grade of frozen leafy greens is based on meeting the requirements for the following quality factors:

(a) **Prerequisite quality factors:**

- (1) Varietal characteristics;
- (2) Brightness;
- (3) Flavor and odor;
- (4) Character (other than pureed style);
- (5) Stem material (leaf and chopped styles of spinach only);
- (6) Blemished.

(b) **Classified quality factors:**

- (1) Root crowns (leaf style only);
- (2) Root stubs (leaf style only);
- (3) Seed heads (leaf style only);
- (4) Extraneous vegetable material.

§52.1378 Classification of defects.

All defects are classified as minor, major, severe, or critical. Each **X** in Table I represents **one (1) defect**.

Table I
Classification of Defects

Quality Factor	Defects	Classification			
		Minor	Major	Severe	Critical
LEAF STYLE					
Root crowns	Each piece			X	
Root stubs	Each piece				X
Seed heads	Each piece			X	
Extraneous vegetable material	Group I (each 2.5 cm increment)	X			
	Group II (each 2.5 cm increment)		X		
	Group III (each 2.5 cm increment)				X
CHOPPED; PUREED STYLES					
Extraneous vegetable material <u>1/</u>	Group I (each 1.3 cm increment)	X			
	Group II (each 1.3 cm increment)		X		
	Group III (each 1.3 cm increment)				X

1/ Includes root crown, root stub and seed head material.

§52.1379 Tolerance for defects.

Table II
(ALL STYLES)

	Total <u>1/</u>	Major	Severe	Critical
Grade A: AQL <u>2/</u>	15.0	6.5	2.5	0.4
Grade B: AQL <u>2/</u>	25.0	12.5	6.5	1.5

1/ Total = Minor + Severe + Critical.

2/ AQL expressed as defects per hundred units.

§52.1380 Sample size.

The sample size to determine meeting the requirements of these standards shall be as specified in the **Regulations Governing Inspection and Certification of Processed Fruits and Vegetables, Processed Products Thereof, and Certain Other Processed Food Products** (7 CFR 52.1-52.83) for lot grading and on-line grading, as applicable.

§52.1381 Quality requirements.

- (a) Lot grading.** A lot of frozen leafy greens is considered as meeting the requirements for quality if:

 - (1)** The prerequisite requirements specified in §52.1376 are met; and
 - (2)** The Acceptable Quality Levels (AQL) in Table II are not exceeded.
- (b) On-line grading.** A portion of production is considered as meeting the requirements for quality if:

 - (1)** The prerequisite requirements specified in §52.1376 are met; and
 - (2)** The Acceptable Quality Levels (AQL) in Table II are not exceeded.
- (c) Single sample unit.** Each single sample unit submitted for quality evaluation will be treated individually and is considered as meeting the requirements for quality if:

 - (1)** The prerequisite requirements specified in §52.1376 are met; and
 - (2)** The Acceptable Quality Levels (AQL) in Table II are not exceeded.

Dated: December 18, 1986.

/s/
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Marketing Program