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Programs

Processed
Products
Division

United States Standards for Grades of Frozen Okra

Effective November 16, 2011

This is the sixth issue of the United States Standards for Grades of Frozen Okra published in the **FEDERAL REGISTER** of October 17, 2011 (FR 64001) to become effective November 16, 2011. This issue supersedes the fifth issue which has been in effect since October 15, 1996.

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. They are also available on the internet at: <http://www.ams.usda.gov/processedinspection>. 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:

Director, Processed Products Division
Fruit and Vegetable Programs, AMS
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United States Standards for Grades of Frozen Okra

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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.

§ 52.1511 Product Description

Frozen okra is the product prepared from the clean, sound, succulent, and edible fresh pods of the okra plant (*Hibiscus esculentus*) of the green variety. The product may or may not be trimmed, is properly prepared, properly processed, and is then frozen and stored at temperatures necessary for preservation.

§52.1512 Styles

- (a) **Whole okra** consists of whole pods of any length which may possess an edible portion of the cap. The length of a whole pod is determined by measuring from the outermost point of the tip of the pod to the outermost point of the stem.
- (b) **Cut okra** is trimmed or untrimmed whole pods, which may possess an edible portion of the cap, and have been cut transversely into pieces of approximate uniform length. The length of a unit of cut okra is determined by measuring the longitudinal axis of the unit.

§ 52.1513 Definitions of Terms

- (a) **Acceptable Quality Level (AQL)** means the maximum percentage 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) **Appearance**
 - (1) **Good appearance** means that the units are bright and practically free of insignificant blemishes.

(2) **Reasonably good appearance** means that the units may be slightly dull and are reasonably free of insignificant blemishes.

(c) **Blemish**

(1) **Insignificant blemish** means any unit which is so affected by slight abnormalities, scars, discolorations, or other imperfections that it may affect the appearance slightly but does not affect the edibility of the unit. Insignificant blemishes are scored under appearance.

(2) **Minor blemish** means any unit which is so affected by discoloration or abnormalities that it materially affects the appearance or edibility of the unit. This includes trimmed or cut surfaces and pathological or insect injury.

(3) **Serious blemish** means any unit which is so affected by discoloration or abnormalities that it seriously affects the appearance or edibility of the unit. This includes trimmed or cut surfaces and pathological or insect injury.

(4) **Total blemished** means the sum of minor and seriously blemished units.

(d) **Character**

(1) **Good character (Grade A)** means the units are fleshy and tender and that the seeds are in the early stages of maturity.

(2) **Reasonably good character (Grade B)** means the units may have lost their fleshy texture to a considerable extent, the units are reasonably tender, and the seeds may have developed beyond the early stages of maturity.

- (3) **Substandard character (Sstd)** means the units fail to meet the requirements for reasonably good character.
- (e) **Color Defect**
- (1) **Minor color defect** means that the unit possesses a slightly dull color or slight yellowish green to brownish green cast or varies markedly from the overall color of the sample. Minor color defects do not more than slightly affect the appearance or eating quality of the unit.
- (2) **Noticeable yellow or brown color** means the unit possesses a noticeable yellow or brown color that materially affects the appearance or eating quality of the unit; but does not qualify as being "off color".
- (f) **Defect** means any nonconformance of a unit of product from a specified requirement of a single quality characteristic.
- (g) **Excessively trimmed** (whole style) means pods trimmed on both ends with pod tip removal affecting the overall appearance of the pod, and pods trimmed such that the longitudinal plane of the seed cavity is exposed.
- (h) **Extraneous Vegetable Material (EVM)** consists of leaves, similar harmless plant material, stem extending greater than 1/2 inch beyond the cap scar, and detached stem of any length.
- (i) **Flavor and odor**
- (1) **Good flavor and odor** means the product, before and after cooking, has a good distinctive flavor and odor, characteristic of young, tender okra, and is free from objectionable flavors or objectionable odors.

- (2) **Reasonably good flavor and odor** means the product, before and after cooking, has a reasonably good flavor and odor, which is characteristic of properly prepared and processed okra, and is free from objectionable flavors or objectionable odors.
- (j) **Hard, woody okra material** means any piece of pod, stem, or cap that is hard, brittle, or woody, is highly objectionable, and would seriously affect the eating quality of the unit.
- (k) **Inedible cap** means any cooked unit with attached portions of cap that are inedible. This material is objectionable; it lacks the characteristics of edible cap material and would seriously affect the eating quality of the unit.
- (l) **Mechanical damage** means pods or portions thereof that have been broken, mashed, split, shattered, or excessively trimmed, such that it noticeably affects the appearance or eating quality of the unit. Pods or portions thereof that have a portion of stem extending from 3/8 inch to not more than 1/2 inch beyond the cap scar.
- (m) **Misshapen units** are whole pods which are seriously deformed to the extent that the appearance or eating quality of the unit is noticeably affected.
- (n) **Pathological or insect injury** refers to any unit that possesses obvious pathological or insect damage that noticeably affects the appearance or eating quality of the unit.

(o) **Sample unit size** means the amount of product specified to be used for grading. For appearance, flavor, odor, varietal characteristics, and the presence of sand, grit, or silt determination, a sample unit is the entire contents of the container. For grading all other factors, a sample unit is 50 units each for whole style and 100 units each for cut style.

It may be:

- (1) The entire contents of a container;
- (2) A portion of the contents of a container; or
- (3) A combination of the contents of two or more containers.

(p) **Small piece**

(1) **Small piece** (whole style) means a piece of pod that is one-fourth or less the weight of the smallest whole pod in the sample unit.

(2) **Small piece** (cut style) means a piece of pod measured on the longitudinal axis of the unit that is 1/4 inch or less in length. The small pieces are aggregated to form a unit equal to the designated size of cut, or the average sized unit from the sample if no size is provided. Each aggregated unit is scored as a defect.

(q) **Stems** mean edible or inedible stem.

(r) **Tolerance** means the percentage of defective units allowed for each quality factor for a specified sample size.

(s) **Tough fiber** means any cooked unit that contains tough fibrous development of the pod material to the extent that the eating quality of the unit is materially affected.

- (t) **Unit** means an okra pod or any individual portion thereof.
- (u) **Sand, grit, or silt** means any particle of earthy material.

§ 52.1514 Grades

- (a) **U.S. Grade A** is the quality of frozen okra that:
 - (1) Meets the following prerequisites in which the okra:
 - (i) Have similar varietal characteristics;
 - (ii) Have a good flavor and odor;
 - (iii) Have a good appearance; and
 - (iv) Is free of sand, grit, or silt.
 - (2) Is within the limits for defects as specified in **§ 52.1516**, as applicable for the style.
- (b) **U.S. Grade B** is the quality of frozen okra that:
 - (1) Meets the following prerequisites in which the okra:
 - (i) Have similar varietal characteristics;
 - (ii) Have a reasonably good flavor and odor;
 - (iii) Have a reasonably good appearance; and
 - (iv) May have a trace amount of sand, grit, or silt.
 - (2) Is within the limits for defects as specified in **§ 52.1516**, as applicable for the style.
- (c) **Substandard (Sstd)** is the quality of frozen okra that fails the requirements of U.S. Grade B.

§ 52.1515 Factors of Quality

The grade of frozen okra is based on requirements for the following quality factors:

(a) Prerequisite Quality Factors

- (1) Varietal characteristics;
- (2) Flavor and odor;
- (3) Appearance; and
- (4) Absence of sand, grit, or silt.

(b) Classified Quality Factors

- (1) Extraneous vegetable material (EVM);
- (2) Seriously blemished;
- (3) Total blemished;
- (4) Noticeable yellow or brown units;
- (5) Total color defects (Minor & yellow or brown);
- (6) Mechanical damage;
- (7) Small pieces;
- (8) Misshapen (whole style);
- (9) Tough fiber including inedible cap;
- (10) Hard, woody okra material;
- (11) "B" Character; and
- (12) "Sstd" Character.

§ 52.1516 Allowances for Defects

Table I

Prerequisite Factors for Frozen Okra 1/

Factors	U.S. Grade A	U.S. Grade B
Varietal Characteristics	Similar	Similar
Flavor and Odor	Good	Reasonably Good
Appearance	Good	Reasonably Good
Sand, grit, or silt	None	Trace

1/ The sample unit size is the entire contents of a container.

**Table II
Frozen Okra, Whole Style
Acceptance Numbers for Specified Defects
U.S. Grade A (50 plan)**

Sample Units X Sample Unit Size			1 x 50	6 x 50	13 x 50	21 x 50	29 x 50
Units of Product			50 <u>2/</u>	300	650	1050	1450
Quality Factors	TOL.	AQL <u>1/</u>	Acceptance Numbers				
Extraneous Vegetable Material	4.0	2.9	3	13	26	39	53
Seriously blemished	2.0	1.3	2	7	13	20	26
Total blemished	6.0	4.6	5	20	39	60	80
Noticeable yellow or brown	1.0	0.612	1	4	7	10	14
Total color defects	10.0	8.2	7	33	65	101	137
Mechanical damage (includes broken, split, mashed & excessively trimmed pods)	10.0	8.2	7	33	65	101	137
Small pieces and misshapen	5.0	5.0	5	21	42	64	86
Tough fiber (including inedible caps)	4.0	2.9	3	13	26	39	53
Hard, woody okra material	0	0	0	0	0	0	0
"B" Character	10.0	8.2	7	33	65	101	137
"Sstd" Character	0	0	0	0	0	0	0

1/ AQL calculated from tolerance (TOL) at 650 units.

2/ Unofficial samples

Table III
Frozen Okra, Whole Style
Acceptance Numbers for Specified Defects
U.S. Grade B (50 plan)

Sample Units X Sample Unit Size			1 x 50	6 x 50	13 x 50	21 x 50	29 x 50
Units of Product			50 <u>2/</u>	300	650	1050	1450
Quality Factors	TOL.	AQL <u>1/</u>	Acceptance Numbers				
Extraneous Vegetable Material	6.0	4.6	5	20	39	60	80
Seriously blemished	4.0	2.9	3	13	26	39	53
Total blemished	12.0	10.1	8	39	78	122	165
Noticeable yellow or brown	6.0	4.6	5	20	39	60	80
Total color defects	20.0	17.6	13	63	130	205	279
Mechanical damage (includes broken, split, mashed & excessively trimmed pods)	20.0	17.6	13	63	130	205	279
Small pieces and misshapen	10.0	8.2	7	33	65	101	137
Tough fiber (including inedible caps)	8.0	6.4	6	26	52	80	108
Hard, woody okra material	1.0	0.612	1	4	7	10	14
"Sstd" Character	10.0	8.2	7	33	65	101	137

1/ AQL calculated from tolerance (TOL) at 650 units.

2/ Unofficial samples

Table IV
Frozen Okra, Cut Style
Acceptance Numbers for Specified Defects
U.S. Grade A (100 Plan)

Sample Units X Sample Unit Size			1 x 100	6 x 100	13 x 100	21 x 100	29 x 100
Units of Product			100 <u>2/</u>	600	1300	2100	2900
Quality Factors	TOL.	AQL <u>1/</u>	Acceptance Numbers				
Extraneous Vegetable Material	1.0	0.651	2	7	13	20	26
Seriously blemished	2.0	1.47	3	14	26	40	53
Total blemished	6.0	5.0	8	39	78	122	165
Noticeable yellow or brown	1.0	0.651	2	7	13	20	26
Total color defects	10.0	8.7	13	64	130	205	278
Small pieces (includes improperly or incompletely cut pieces, and mechanical damage)	12.0	10.6	15	76	156	246	334
Tough fiber (including inedible caps)	4.0	3.2	6	26	52	80	108
Hard, woody okra material	0	0	0	0	0	0	0
“B” Character	10.0	8.7	13	64	130	205	278
“Sstd” Character	0	0	0	0	0	0	0

1/ AQL calculated from tolerance (TOL) at 1300 units.

2/ Unofficial samples

Table V
Frozen Okra, Cut Style
Acceptance Numbers for Specified Defects
U.S. Grade B (100 Plan)

Sample Units X Sample Unit Size			1 x 100	6 x 100	13 x 100	21 x 100	29 x 100
Units of Product			100 <u>2/</u>	600	1300	2100	2900
Quality Factors	TOL.	AQL <u>1/</u>	Acceptance Numbers				
Extraneous Vegetable Material	2.0	1.47	3	14	26	40	53
Seriously blemished	4.0	3.2	6	26	52	80	108
Total blemished	12.0	10.6	15	76	156	246	334
Noticeable yellow or brown	6.0	5.0	8	39	78	122	165
Total color defects	20.0	18.3	24	125	261	414	565
Small pieces (includes improperly or incompletely cut pieces, and mechanical damage)	20.0	18.3	24	125	261	414	565
Tough fiber (including inedible caps)	8.0	6.8	11	51	104	162	220
Hard, woody okra material	1.0	0.651	2	7	13	20	26
"Sstd" Character	10.0	8.7	13	64	130	205	278

1/ AQL calculated from tolerance (TOL) at 1300 units.

2/ Unofficial samples

§ 52.1517 Sample Size

The sample size used to determine whether the requirements of these standards are met shall be as specified in the sampling plans and procedures 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).

§ 52.1518 Acceptance Criteria

(a) Lot inspection. A lot of frozen okra is considered as meeting the requirements for quality if:

- (1)** The prerequisite requirements specified in **§ 52.1516** Table I are met; and
- (2)** The Acceptable Quality Levels in Tables II, III, IV, and V of **§ 52.1516**, as applicable for the style, are not exceeded.

(b) Single sample unit. Each unofficial 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 **§ 52.1516** Table I are met; and
- (2)** The Acceptable Quality Levels in Tables II, III, IV, and V of **§ 52.1516**, as applicable for the style, are not exceeded.