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United States Standards for Grades of Frozen Onions

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Draft

This is the first issue of the United States Standards for Grades of Frozen Onions, to published in the **FEDERAL REGISTER** of XXXXXXXX to become effective XX-XX-XXXX

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 Onions

Effective Month XX,XXXX

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Authority: Agricultural Marketing Act of 1946, Sects. 203, 205, 60 Stat. 1087, as amended, 1090, as amended (7 U.S.C. 1622, 1627)

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.

§52.4072 Product description.

Frozen onions are the individually quick frozen product prepared from fresh, clean, sound, firm bulbs of the Grano, Sweet Spanish type, or other common commercial varieties, *Allium cepa*, which have been properly prepared, washed, blanched or unblanched then frozen in accordance with good commercial practice and maintained at temperatures necessary for the preservation of the product.

§52.4073 Styles.

- (a) **Whole** means whole stemmed, peeled bulbs of the sizes listed below:
 - (1) **Type I-** 7/8 inches (20mm) to 1-7/8 inch (48 mm) in diameter in the greatest dimension of the onion at right angles to a line running from the stem to the root.
 - (2) **Type II-** 3/8 inches (10 mm) to 7/8 inches (20mm) in diameter in the greatest dimension of the onion at right angles to a line running from the stem to the root.
- (b) **Strips** means stemmed, peeled bulbs which have been randomly cut lengthwise into narrow pieces ranging from 3/4 inches (19 mm) to 2.0 inches (51 mm) in length. The width may vary between 1/4 inches (6 mm) to 3/4 inch (19 mm).
- (c) **Diced** means cut, or chopped stemmed, peeled bulbs which have been cut randomly into approximate square pieces with a designated width ranging from 1/4 inch (6 mm) to one inch (25 mm) in width determined by the width or cross-section of the unit in the greatest cut dimension.
- (d) **Other**, means any style designated as other by style, description of the size, shape, or other characteristic which differentiates it from other styles.

§52.4074 Requirements for style.

- (a) **Whole.**
 - (1) **Type I.** The units are well shaped and that approximately 10 percent by count of the units (lot average) may be less than, 7/8 inches (20 mm) or 5 percent greater than 1-7/8 inches (48 mm) at the widest portion of the unit.

- (2) **Type II.** The units are well shaped and that approximately 10 percent by count of the units (lot average) may be less than 3/8 inch (10 mm) or 5 percent greater than 7/8 (20 mm) in the greatest portion of the unit.
- (b) **Strips style.** A maximum of 25%, by weight, of units may be less than the minimum style requirement of 3/4 inches in length.
- (c) **Diced style.** The units are practically uniform in size and the aggregate weight of all the units which are noticeably smaller than one-half the area of an average sized unit (or the designated size) does not exceed 30 percent, by weight, of all units, and of all the large and irregular-shaped units greater than 1-1/2 times the area of an average sized unit (or the designated size) do not exceed the weight by 30 percent of all units.
- (d) **Other.** Units shall be reasonably uniform in size and shape provided that the overall appearance is not materially affected.

§52.4075

Definitions of terms.

- (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) **Appearance.**
 - (1) **Good appearance** means that the product is free flowing, bright with practically uniform units. Markedly variable units, small specks or other factors, do not significantly affect the overall appearance or edibility of the frozen onions.
 - (2) **Reasonably good appearance** means that the product is fairly free flowing, reasonably bright with reasonably uniform units. The overall appearance or edibility of the onion is slightly but not seriously affected by markedly variable units, small specks or other factors

- (3) **Poor appearance** means that the product does not meet the requirements of reasonably good appearance.
- (c) **Blemished** means the unit is affected or damaged by pathological injury, insect injury, or any other injury, which, affects overall appearance or eating quality of the unit.
- (1) **Minor blemish** means a unit with tan to brown blemish(s), which in the aggregate, exceeds the area of a circle 1/8 inches (2 mm) in diameter but not more than 1/4 inches (6 mm) in diameter.
- (2) **Major blemish** means a unit with a tan to dark blemish(s), which in the aggregate, exceeds the area of a circle 1/4 inches (6 mm) in diameter.
- (d) **Character.** Reference the firmness and texture of the individual onion unit and the degree of freedom from tough, soft, or mushy units.
- (1) **Good** character means that the onions are reasonably firm, reasonable tender, and are not soft and spongy.
- (2) **Reasonable good** character means that the onion are fairly firm, fairly tender, and are not soft and spongy.
- (3) **Poor** character means that the product fails to meets the requirements of paragraph 1 and 2.
- (e) **Color** refers to the predominating and characteristic color of the exterior surface of the units of frozen onions.
- (1) **Good color** means that the frozen onions have a good characteristic bright color typical of the variety.
- (2) **Reasonably good color** means that the frozen onions have a reasonably good color typical of the variety and the units individually or collectively may vary slightly from bright to slightly dull.
- (3) **Poor color** means the units do not meet the requirement of reasonably good color.

- (4) **Core material** means the fibrous portions of the onion bulb. This portion is part of the internal onion flesh and should not be discolored, excessively tough, fibrous, or soft and mushy. Core material may include sprouts, seed stems, root crown, and root material and shall not exceed 3/8 inches (10 mm) in diameter or length, whichever is applicable. One unit is equivalent to one defect.
- (f) **Dark Green units** - units with dark green stripes across 50 percent or more of the onion unit is considered a defect.
- (h) **Defect** means any nonconformance of a unit(s) of product from a specified requirement of a single quality characteristic.
- (i) **Extraneous vegetable material (EVM)** means any plant material of onions or other plants including but not limited to the leaves or roots (aggregate of one inch in length or more).
- (j) **Mechanical damage** (in Whole Style only) means that the appearance of the unit is affected by gouging, or the unit is crushed, or broken to the extent that the appearance is materially affected.
- (k) **Normal flavor and odor** means that the frozen onions, before and after cooking, have a flavor and odor that is normal and typical for the variety and is free from objectionable flavors and odors.
- (l) **Peel** means the thin outer skin of the bulb. Peel is usually creamy, white to brown in color, tough, and tissue-like. One defect is equivalent to 1/2 square inch (3.2 cm²).
- (m) **Root crown** means the tough fibrous material found on the bottom portion of the onion where the roots attach to the onion bulb. Portion of the root crown exceeding 3/8 inches (10 mm) in diameter are scored as defect. Roots greater than 3/8 inches (10 mm) in length attached to the root crown are scored as one defect.

- (n) **Sprouts** mean the internal material that protrudes from the top or neck of the onion. Scoreable sprouts may be tough, fibrous, or leathery and may be white, brown to tan, or green in color and should not extend more than 1/4 inch (6 mm) from the neck of the onion. One unit is equivalent to one defect under “Core Material”.
- (o) **Sample size** means the amount of product specified to use for grading. For varietal characteristics, color, flavor and odor, and appearance, a sample size is the entire container. For blemishes, character, specified defects, mechanical damage, and loose scales, a sample size is 50 units by count for Whole style, or 450 grams by weight for strips, diced, cut and other styles. 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) **Tolerance (TOL)** means the percentage of defective units allowed for each quality factor for a specific sample size.
- (q) **Unit** means a whole peeled bulb, immature bulb, individual piece, or portion of such, in frozen onions.
- (r) **Grit or dirt** means any particle of earthy material

§52.4076

Grades.

- (a) **U.S. Grade A** is the quality of frozen onions that meets the following prerequisites in which the onions:
 - (1) Have similar varietal characteristics,
 - (2) Have a normal flavor and odor,
 - (3) Have a good color;
 - (4) Have good appearance;

- (5) Practically free from grit or dirt
 - (6) Are within the limits for defects as specified in Tables I and II of this subpart, as applicable for the style in Section 52.4073.
- (b) **U.S. Grade B** is the quality of frozen onions that meets the following prerequisites in which the onions:
- (1) Have similar varietal characteristics;
 - (2) Have a normal flavor and odor;
 - (3) Have a reasonably good color;
 - (4) Have reasonably good appearance;
 - (5) Practically free from grit or dirt;
 - (6) Are within the limits for defects as specified in Tables I and II of this subpart as applicable for the style in Section 52.4073.
- (c) **Substandard** is the quality of frozen onions that fail to meet the requirements of U.S. Grade B.

§52.4077

Factors of quality.

The grade of frozen onions is based on meeting the requirements for the following factors:

- (a) Prerequisites;
- (1) Varietal characteristics;
 - (2) Color;
 - (3) Flavor and odor;
 - (4) Appearance;
 - (5) Absence of grit or dirt

- (b)** Classified Quality Factors and Defects;
 - (1)** Poor colored units;
 - (2)** Dark Green Units;
 - (3)** Major blemishes;
 - (4)** Minor blemishes;
 - (5)** Total blemishes (Major, and Minor);
 - (6)** Character;
 - (7)** Mechanical Damage (In Whole style);
 - (8)** Core Material;
 - (i)** Seed stem,
 - (ii)** Sprouts exceeding 1/4 inch (6 mm) in length from the neck of the onion,
 - (iii)** Root Crown material exceeding 3/8 inch (10 mm) in diameter,
 - (iv)** Root material exceeding 3/8 inches in length.
 - (9)** EVM;
 - (i)** Leaves,
 - (ii)** Loose roots aggregate of 1 inch in length or greater.
 - (10)** Peel.

§52.4078

Requirements for classified quality factors and defects.

- (a)** **Sample size** can be found in Section 52.4075 (q), Definition of Terms.
- (b)** **Acceptance criteria** for specified defects can be found in Tables I and II, that follow.

TABLE I
FROZEN ONION, DEFECTS WHOLE STYLE BASE ON 50 UNITS
GRADE A

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
DEFECTS	TOL	AQL <u>1/</u>	ACCEPTANCE NUMBERS				
Dark Green Units	1	0.612	1	4	7	10	14
Poor Colored Units	5	3.8	4	17	33	50	67
Major blemished	2	1.3	2	7	13	20	26
Total Blemish (Major, Minor)	5	3.8	4	17	33	50	67
Mechanical Damage	2	1.3	2	7	13	20	26
Core Material	2	1.3	2	7	13	20	26
Peel (sq. in)	2	1.3	2	7	13	20	26
Character	3	2.9	3	13	26	39	53
Character "B" Grade	2	1.5	2	8	15	22	29
Character "SSTD"	1	.75	1	5	8	12	16
EVM (count)	1	0.612	1	4	7	10	14

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

2/ Unofficial Samples

TABLE I (Continued)
 FROZEN ONION, DEFECTS WHOLE STYLE BASE ON 50 UNITS
GRADE B

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
DEFECTS	TOL	AQL <u>1/</u>	ACCEPTANCE NUMBERS				
Dark Green Units	2	1.3	2	7	13	20	26
Poorly Colored Units	8	6.4	6	26	52	80	108
Major blemished	3	2.9	3	13	26	39	53
Total Blemish (Major, Minor)	8	6.4	6	26	52	80	108
Mechanical Damage	3	2.9	3	13	26	39	53
Core Material	3	2.9	3	13	26	39	53
Peel (sq. in) ½ sq. inch = one defect	3	2.9	3	13	26	39	53
Character	4	3.8	4	17	33	50	67
Character "SSTD"	2	1.9	2	9	18	27	36
EVM (count)	2	1.3	2	7	13	20	26

1/ AQL calculated from tolerance (TOL) at 650 unit

2/ Unofficial Samples

TABLE II
FROZEN ONION, DEFECTS IN STRIPS, DICED OR OTHER STYLES BASE ON 50 UNITS
GRADE A

Sample Units X Sample Unit Size			1 x 450	6 x 450	13 x 450	21 x 450	29 x4 50
Units of Product (by count)			450 <u>2/</u>	2700	5850	9450	13050
DEFECTS	TOL	AQL <u>1/</u>	ACCEPTANCE NUMBERS				
Dark Green Units	0.11	0.056	1	3	6	9	12
Poorly Colored Units	0.88	0.696	6	26	51	79	106
Major blemished	0.22	0.144	2	7	13	19	26
Total Blemish (Major, Minor)	0.88	0.696	6	26	51	79	106
Core Material	0.44	0.325	3	13	26	40	53
Peel (sq. in) ½ sq. inch = one defect	0.22	0.144	2	7	13	19	26
Character Soft or Mushy	2.0	1.72	12	83	117	183	249
Character Soft or Mushy "B" Grade	1.0	.9	7	32	64	100	135
Character Soft or Mushy "SSTD"	.5	.4	4	16	31	48	64
EVM (count)	0.11	0.056	1	3	6	9	12

1/ AQL calculated from tolerance (TOL) at 5850 unit

2/ Unofficial Sample

TABLE II (Continued)
 FROZEN ONION, DEFECTS IN STRIPS, DICED OR OTHER STYLES BASE ON 50 UNITS
GRADE B

Sample Units X Sample Unit Size			1 x 450	6 x 450	13 x 450	21 x 450	29 x4 50
Units of Product (by count)			450 <u>2/</u>	2700	5850	9450	13050
DEFECTS	TOL	AQL <u>1/</u>	ACCEPTANCE NUMBERS				
Dark Green Units	0.22	0.144	2	7	13	19	26
Poorly Colored Units	2.0	1.72	12	57	117	183	249
Major blemished	0.67	1.72	5	20	39	60	81
Total Blemish (Major, Minor)	2.0	1.72	12	57	117	183	249
Core Material	0.88	0.696	6	26	51	79	106
Peel (sq. in) ½ sq. inch = one defect	0.22	0.144	2	7	13	19	26
Character Soft or Mushy	4.0	3.6	23	113	234	370	506
Character Soft or Mushy "SSTD"	2.0	1.8	13	60	122	191	260
EVM (count or weight)	0.22	0.144	2	7	13	19	26

1/ AQL calculated from tolerance (TOL) at 5850 unit

2/ Unofficial Samples

§52.4079 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 Products" (7 CFR 52.1 through 52.83).

§52.4080 Acceptance criteria.

- (a) **Style.** A lot of frozen onion is considered as meeting the requirements for style if the requirements in Section 52.4074 as applicable are not exceeded.
- (b) **Quality Factors.** A lot of frozen onions is considered as meeting the requirements for quality if:
 - (1) The prerequisites specified in Section 52.4077 are met; and
 - (2) The Acceptance Numbers in Table I or II, as applicable, are not exceeded.
- (c) **Single Sample Unit.** Each unofficial sample unit submitted for quality evaluation will be treated individually and is considered as meeting requirements for quality and style if:
 - (1) The prerequisites specified in Section 52.4077 are met; and
 - (2) The requirements for style in Section 52.4074 and the Acceptable Quality Levels (AQL's) in Tables I and II, in Section 52.4078, as applicable, are not exceeded.

Dated:

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