



**United States
Department of
Agriculture**

Agricultural
Marketing
Service

Fruit and
Vegetable
Division

Processed
Products
Branch

United States Standards for Grades of Frozen Cauliflower

Effective September 26, 1996

This is the fourth issue of the United States Standards for Grades of Frozen Cauliflower published in the **FEDERAL REGISTER** of August 27, 1996 (61 FR 43939) to become effective September 26, 1996. This issue supersedes the third issue, which has been in effect since November 12, 1951.

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 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:

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UNITED STATES STANDARDS FOR GRADES OF
FROZEN CAULIFLOWER
EFFECTIVE SEPTEMBER 26, 1996

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Authority: 7 U.S.C. 1621 - 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.

§52.721 Product description.

Frozen cauliflower is prepared from fresh flower heads of the cauliflower plant (**Brassica oleracea botrytis**) by trimming, washing, and blanching and is frozen and maintained at temperatures necessary for preservation of the product.

§52.722 Styles.

- (a) **Clusters** mean individual segments of trimmed and cored cauliflower heads, which measure not less than 20 mm (0.75 in) in the greatest dimension across the top of the unit.
- (b) **Nuggets or Small Clusters** mean individual segments of trimmed and cored cauliflower heads, which measure from 6 mm (0.25 in) to less than 20 mm (0.75 in) in the greatest dimension across the top of the unit.

§52.723 Requirements for style.

- (a) **Clusters style.** A maximum of 10%, by weight, of clusters less than 20 mm (0.75 in) in the greatest dimension across the top of the unit are allowed.
- (b) **Nuggets style.** A maximum of 20%, by weight, of clusters, 20 mm (0.75 in) or greater, and a maximum of 10%, by weight, of clusters less than 6 mm (0.25 in) in the greatest dimension across the top of the unit are allowed.

§52.724 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. Good appearance** means that the overall appearance or edibility of the cauliflower is not materially affected and; for clusters style, a maximum of 5%, by weight, of chaff is allowed for the sample unit. For nuggets style, a maximum of 10%, by weight, of chaff is allowed for the sample unit.
- (c) **Blemished** means the cluster is affected or damaged by pathological injury, insect injury, or any other injury, which singly or in combination, affects the appearance or eating quality of the unit.

- (1) **Minor blemished** means a unit with a dark blemish(s), which in the aggregate, exceeds the area of a circle 4 mm (0.16 in) in diameter but not 6 mm (0.25 in) or a light blemish(s), which in the aggregate, exceeds the area of a circle 6 mm (0.25 in) in diameter.
 - (2) **Major blemished** means a unit with a dark blemish(s), which in the aggregate, exceeds the area of a circle 6 mm (0.25 in) in diameter.
- (d) **Chaff** mean individual segments of trimmed and cored cauliflower material, with and without head material, which measure less than 6 mm (0.25 in) in its greatest dimension.
- (e) **Character** means the extent of firmness and compactness of the cluster and its degree of freedom from fuzzy, ricey and soft units.
 - (1) **Fuzzy character** means a cluster with sections of head that have elongated individual flowers (or pedicels) that result in a very fuzzy appearance.
 - (2) **Ricey character** means a cluster with sections of head on which the ultimate branches have become elongated, causing the flower clusters to separate and present a loose or open and sometimes granular appearance.
 - (3) **Soft character** means a cluster that is limp and flabby and the flesh yields readily when handled.
- (f) **Color defect.**
 - (1) **Minor** means that after cooking, the cluster possesses a color that is more than slightly darker than light cream to dark cream.
 - (2) **Major** means that after cooking, the cluster possesses a color that is seriously darkened or discolored.
- (g) **Core material** means the loose or attached center portion of the cauliflower head which is tough or fibrous.
- (h) **Defect** means any nonconformance of a unit(s) of product from a specified requirement of a single quality characteristic.
- (i) **Fragment** means a stem or other cauliflower material without head material that is 6 mm (0.25 in) or greater in the greatest dimension (excluding tough or fibrous core material, loose leaves, and chaff).

- (j) **Loose leaves** mean leaf material, exclusive of small tender leaves, that are detached from the stem.
- (k) **Mechanical damage** means that the appearance of the unit is affected by trimming, or the unit is crushed or broken to the extent that the appearance is materially affected.
- (l) **Normal flavor and odor** means that the cauliflower, before and after cooking, has a flavor and odor that is normal and is free from objectionable flavors and odors.
- (m) **Sample unit** means the amount of product specified to be used for grading. For varietal characteristics, flavor and odor and appearance, a sample unit is the entire container. For blemishes, character, color, core material, fragments, mechanical damage and loose leaves, a sample unit is 100 grams for Nuggets Style and 50 units for Clusters 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.
- (n) **Tolerance (TOL.)** means the percentage of defective units allowed for each quality factor for a specific sample size.
- (o) **Unit** means one cluster or piece of cauliflower.

§52.725 Grades.

- (a) **U.S. Grade A** is the quality of frozen cauliflower that meets the following prerequisites in which the cauliflower:
 - (1) Has similar varietal characteristics,
 - (2) Has a normal flavor and odor,
 - (3) Has a good appearance; and
 - (4) Is within the limits for defects as specified in Tables I and II, of this subpart, as applicable for the style in § 52.727.

- (b) **U.S. Grade B** is the quality of frozen cauliflower that meets the following prerequisites in which the cauliflower:
- (1) Has similar varietal characteristics;
 - (2) Has a normal flavor and odor,
 - (3) Has a good appearance; and
 - (4) Is within the limits for defects as specified in Tables I and II, of this subpart as applicable for the style in § 52.727.
- (c) **Substandard** is the quality of frozen cauliflower that fails to meet the requirements of U.S. Grade B.

§52.726 Factors of quality.

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

- (a) Prerequisites;
- (1) Varietal characteristics,
 - (2) Flavor and odor; and
 - (3) Appearance.
- (b) Classified Quality Factors;
- (1) Major blemished;
 - (2) Total blemished (Major and Minor);
 - (3) Fuzzy character;
 - (4) Ricey character;
 - (5) Soft character;
 - (6) Major color defects;
 - (7) Total color defects (Major and Minor);

- (8) Core material;
- (9) Fragments;
- (10) Loose leaves; and
- (11) Mechanical damage.

§52.727 Requirements for classified quality factors.

TABLE I
AQL's AND TOLERANCES (TOL.) FOR DEFECTS IN CLUSTERS STYLE
BASED ON 50 UNITS OF PRODUCT FOR 13 SAMPLE UNITS, 50x13 = 650 UNITS

Sample Units x Sample unit Size			1x50	3x50	6x50	13x50	21x50	29x50
Units of Product			50	150	300	650	1050	1450
Defects	AQL	TOL						
GRADE A			ACCEPTANCE NUMBERS					
Major Blemished	3.8	5.0	4	9	17	33	50	67
Total Blemished (Major&Minor)	8.2	10.0	7	18	33	65	101	137
Fuzzy Character	1.3	2.0	2	4	7	13	20	26
Ricey Character	8.2	10.0	7	18	33	65	101	137
Soft Character	0.612	1.0	1	2	4	7	10	14
Major Color Defect	0.612	1.0	1	2	4	7	10	14
Total Color Defect (Major&Minor)	6.4	8.0	6	15	26	52	80	108
Core Material	2.17	3.0	3	6	11	20	31	41
Fragments	3.8	5.0	4	9	17	33	50	67
Mechanical Damage	8.2	10.0	7	18	33	65	101	137
Loose Leaves (each piece)	2.17	3.0	3	6	11	20	31	41
GRADE B			ACCEPTANCE NUMBERS					
Major Blemished	8.2	10.0	7	18	33	65	101	137
Total Blemished (Major&Minor)	13.0	15.0	10	26	48	98	154	209
Fuzzy Character	6.4	8.0	6	15	26	52	80	108
Ricey Character	13.0	15.0	10	26	48	98	154	209
Soft Character	2.9	4.0	3	8	13	26	39	53
Major Color Defect	3.8	5.0	4	9	17	33	50	67
Total Color Defect (Major&Minor)	13.8	16.0	11	27	51	104	163	221
Core Material	3.8	5.0	4	9	17	33	50	67
Fragments	8.2	10.0	7	18	33	65	101	137
Mechanical Damage	17.6	20.0	13	34	63	130	205	279
Loose Leaves (each piece)	6.4	8.0	6	15	26	52	80	108

TABLE II
AQL's AND TOLERANCES (TOL.) FOR DEFECTS IN NUGGETS OR SMALL CLUSTERS STYLE
BASED ON 100 GRAMS OF PRODUCT FOR 13 SAMPLE UNITS, 100x13 = 1300 UNITS

Sample Units x Sample Unit Size			1x100	3x100	6x100	13x100	21x100	29x100
Grams of Product			100	300	600	1300	2100	2900
Defects	AQL	TOL						
GRADE A			ACCEPTANCE NUMBERS (GRAMS)					
Major Blemished	3.8	5.0	7	17	31	61	94	127
Total Blemished (Major&Minor)	8.2	10.0	13	33	61	123	194	263
Fuzzy Character	1.3	2.0	3	7	12	23	36	48
Ricey Character	8.2	10.0	13	33	61	123	194	263
Soft Character	0.612	1.0	2	4	7	12	19	24
Major Color Defect	2.17	3.0	4	11	19	37	56	76
Total Color Defect (Major&Minor)	8.2	10.0	13	33	61	123	194	263
Core Material	2.17	3.0	4	11	19	37	56	76
Fragments	3.8	5.0	7	17	31	61	94	127
Mechanical Damage	8.2	10.0	13	33	61	123	194	263
Loose Leaves (each piece)	3.8	5.0	7	17	31	61	94	127
GRADE B			ACCEPTANCE NUMBERS (GRAMS)					
Major Blemished	8.2	10.0	13	33	61	123	194	263
Total Blemished (Major&Minor)	13.0	15.0	18	48	91	189	298	407
Fuzzy Character	6.4	8.0	10	26	48	98	153	208
Ricey Character	13.0	15.0	18	48	91	189	298	407
Soft Character	2.9	4.0	6	13	24	48	74	99
Major Color Defect	6.4	8.0	10	26	48	98	153	208
Total Color Defect (Major&Minor)	13.8	16.0	19	51	96	200	316	430
Core Material	2.17	3.0	4	11	19	37	56	76
Fragments	3.8	5.0	7	17	31	61	94	127
Mechanical Damage	17.6	20.0	24	63	121	251	398	544
Loose Leaves (each piece)	6.4	8.0	10	26	48	98	153	208

§52.728 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).

§52.729 Acceptance criteria.

- (a) **Style.** A lot of frozen cauliflower, is considered as meeting the requirements for style if the requirements in § 52.723, as applicable, are not exceeded.
- (b) **Quality Factors.** A lot of frozen cauliflower is considered as meeting the requirements for quality if:
 - (1) The prerequisites specified in § 52.726 are met; and
 - (2) The Acceptance Numbers in Table I or II in § 52.727, 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 § 52.726 are met; and
 - (2) The requirements for style in § 52.723 and the Acceptable Quality Levels (AQL's) in Tables I & II in § 52.727, as applicable, are not exceeded.

Dated:

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Director
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