

CODEX ALIMENTARIUS

INTERNATIONAL FOOD STANDARDS



Food and Agriculture
Organization of
the United Nations



World Health
Organization

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STANDARD FOR QUICK FROZEN CAULIFLOWER

CXS 111-1981

Adopted in 1981. Amended in 2019.

1. SCOPE

This Standard shall apply to quick frozen cauliflower of the species *Brassica oleracea* L. var. *botrytis* L. as defined below and offered for direct consumption without further processing, except for repacking, if required. It does not apply to the product when indicated as intended for further processing or for industrial purposes.

2. DESCRIPTION

2.1 Product Definition

Quick frozen cauliflower is the product prepared from fresh, clean, sound heads of the cauliflower plant conforming to the characteristics of the species *Brassica oleracea* L. var. *botrytis* L., which heads may be trimmed and separated into parts, and which are washed and sufficiently blanched to ensure stability of colour and flavour during normal marketing cycles.

2.2 Process Definition

2.2.1 Quick frozen cauliflower is the product subjected to a freezing process in appropriate equipment and complying with the conditions laid down hereafter. This freezing operation shall be carried out in such a way that the range of temperature of maximum crystallization is passed quickly. The quick-freezing process shall not be regarded as complete unless and until the product temperature has reached -18°C (0°F) at the thermal centre after thermal stabilization.

2.2.2 The recognized practice of repacking quick-frozen products under controlled conditions is permitted.

2.3 Handling Practice

The product shall be handled under such conditions as will maintain the quality during transportation, storage and distribution up to and including the time of final sale. It is recommended that during storage, transportation, distribution and retail, the product be handled in accordance with the provisions in the *Code of Practice for the Processing and Handling of Quick Frozen Foods* (CXC 8-1976).

2.4 Presentation

2.4.1 Style

- (a) *Whole* - the whole, intact head, which is trimmed at the base and which may have attached small, tender, modified leaves.
- (b) *Split* - the whole head, cut vertically into two or more sections.
- (c) *Florets*¹ - segments of the head, which may have a portion of the secondary stem attached, measuring at least 12 mm across the top in the greatest dimension. A maximum tolerance of 20 percent m/m is permitted for units in which the greatest dimension across the floret is more than 5 mm and less than 12 mm. Small, tender modified leaves may be present or attached to the units.

2.4.2 Other Styles

Any other presentation of the product shall be permitted provided that it:

- (a) is sufficiently distinctive from other forms of presentation laid down in this Standard;
- (b) meets all other requirements of this Standard;
- (c) is adequately described on the label to avoid confusing or misleading the consumer.

2.4.3 Sizing

2.4.3.1 Quick frozen cauliflower florets may be presented sized or unsized.

2.4.3.2 If presented as size graded they shall conform to the following specifications.

- (a) *Large florets* - segments of head measuring at least 30 mm across the top in the greatest dimension and of which a portion of secondary stem may be attached. Small tender modified leaves may be present or attached to the unit.
- (b) *Small florets* - segments of head measuring at least 12 mm but less than 30 mm across the top in the greatest dimension and to which a small portion of secondary stem may be attached. Small tender modified leaves may be present or attached to the unit.

¹ The term "clusters" is used as an alternative to "florets" in some English-speaking countries.

2.4.4 Tolerances for Sizes

2.4.4.1 When cauliflower is presented as sized, a tolerance of 20 percent by weight is permitted as not conforming to the size indicated on the package.

2.4.4.2 Standard Sample Size

The standard sample size shall be 500 g.

2.4.5 Definition of "Defective" for Presentation

Any sample unit which fails to comply with the sizing requirements of Section 2.4.4 shall be regarded as defective.

2.4.6 Lot Acceptance for Presentation Factors

A lot will be considered acceptable with respect to sizing when the number of "defectives" as defined in Section 2.4.5 does not exceed the acceptance number (c) of an appropriate sampling plan with an AQL of 6.5, (see relevant Codex texts on methods of analysis and sampling).

3. ESSENTIAL COMPOSITION AND QUALITY FACTORS

3.1 Optional Ingredients

Salt (Sodium Chloride)

Condiments, such as spices and herbs.

3.2 Quality Factors

3.2.1 General Requirements

Quick frozen cauliflower shall be:

- of reasonably uniform white to dark cream colour over the tops of the units which may be slightly dull and have a tinge of green, yellow or pink. The stem or branch portions may be light green or have a tinge of blue;
- free from foreign flavour or odour, taking into consideration any added optional ingredients;
- clean, free from sand, grit and other foreign material;

and with respect to Visual Defects or Other Defects subject to a tolerance shall be:

- reasonably free from discoloured areas confined essentially to the surface;
- reasonably free from damaged or blemished areas;
- reasonably free from fibrous stems;
- reasonably free from poorly trimmed units;
- reasonably free from fragments;
- reasonably compact and reasonably well-developed;
- reasonably free from coarse green leaves;

for floret styles:

- practically free from loose stems.

3.2.2 Definition of Visual Defects

- (a) *Discolouration* - grey, brown, green or similar discolouration confined essentially to the flower surface of the unit and which materially detracts from the appearance of the product. Branches or stems with a bluish or greenish tinge are not be considered as discoloured.
- Light - the discolouration disappears almost entirely upon cooking.
 - Dark - the discolouration does not disappear upon cooking.
- (b) *Blemished* - A unit affected by pathological or insect injury, and which may extend into the cauliflower.
- Minor - the appearance of the unit is only slightly affected.
 - Major - the appearance of the unit is materially affected.
 - Serious - the appearance of the unit is objectionably affected to such an extent that it would customarily be discarded under normal culinary preparation.
- (c) *Mechanically damaged*
- Major - A unit in which more than 50 percent of the curd has been mechanically damaged or is missing (for spit and floret styles)
 - Major - A unit in which more than 25 percent of the curd has been mechanically damaged or is missing (for whole style).
- (d) *Fibrous*
- Major - A unit which possesses tough fibres that are quite noticeable and materially affect the eating quality.
 - Serious - A unit which possesses tough fibres that are objectionable and of such nature that it would be customarily discarded.
- (e) *Poorly trimmed* - A unit which has deep-knife gouges or a ragged appearance.
- (f) *Leaves* - coarse green leaves or parts thereof whether or not attached to the unit.
- (g) *Fragments* - portions of the floret 5 mm or less across the greatest dimension.
- (h) *Not compact* - A unit in which the florets are spreading, or the flowerhead has a "ricey" appearance or the flowerhead is very soft or mushy.
- (i) *Loose stem* - Each piece of stem exceeding 2.5 cm in length detached from a cauliflower unit.

3.2.3 Standard Sample Size

- (i) Whole style - The minimum number of heads weighing in total at least 500 grammes.
- (ii) Split sections - 500 grammes
- (iii) Florets - 500 grammes
- (iv) Other styles - 500 grammes

3.2.4 Tolerance for Visual Defects

For tolerances based on the standard sample sizes indicated in Section 3.2.3, visual defects shall be assigned points in accordance with the appropriate Table in this Section. The maximum number of defects permitted is the Total Allowable Points rating indicated for the respective categories Minor, Major and Serious or the Combined Total of the foregoing categories.

3.3 Definition of "defective" for Quality Factors

Any sample unit taken in accordance with an appropriate sampling plan with an AQL 6.5, (see relevant Codex texts on methods of analysis and sampling) shall be regarded as a "defective" for the respective characteristics when:

- (a) it fails to meet the general requirements given in Section 3.2.1;
- (b) it exceeds the "maximum total points" in any one or more of the defect categories in Table 1 or Table 2, as appropriate for the style given in Section 3.2.4.

3.4 Lot Acceptance for Quality Factors

A lot will be considered acceptable with respect to Quality Factors when the number of "defectives" as defined in Section 3.3 does not exceed the acceptance number (c) of an appropriate sampling plan with an AQL of 6.5, (see relevant Codex texts on methods of analysis and sampling).

TABLE 1 - WHOLE STYLE

Defect		Unit of Measurement	Defect Categories			
			Minor	Major	Serious	Total
Discolouration	Light	Each area or combined area of 8 cm ²	1			
	Dark	Each area or combined area of 4 cm ²		2		
Blemished	Minor	Each head	1			
	Major	Each head		2		
	Serious	Each head			4	
Mechanically damaged	Major	Each head		2		
Fibrous	Major	Each head		2		
	Serious	Each head			4	
Poorly trimmed leaves		Each head		2		
		Each 2 cm ²		2		
Not compact		Each area or combined area of 12 cm ²				
				2		
Total Allowable Points			10	6	4	10

TABLE 2 - SPLIT, FLORETS AND OTHER STYLES

Defect		Unit of Measurement	Defect Categories			
			Minor	Major	Serious	Total
Discolouration	Light	Each area or combined area of 8 cm ²	1			
	Dark	Each area or combined area of 4 cm ²		2		
Blemished	Minor	Each unit	1			
	Major	Each unit		2		
	Serious	Each unit			4	
Mechanically damaged	Major	Each unit		2		
Fibrous	Major	Each unit		2		
	Serious	Each unit			4	
Poorly trimmed Leaves		Each unit	1			
		Each 2 cm ²		2		
Fragments		Each 3% m/m		2		
		Each area or combined area of 12 cm ²				
Not compact				2		
		Each piece	1			
Total Allowable Points			25	16	4	25

4. FOOD ADDITIVES

4.1 Citric acid or malic acid, as processing aids for use in the blanching or cooling water in accordance with GMP.

4.2 Carry-Over Principle

Section 4.1 of the *General Standard for Food Additives* (CXS 192-1995) shall apply.

5. HYGIENE

- 5.1 It is recommended that the product covered by the provisions of this standard be prepared and handled in accordance with the appropriate sections of the *General Principles of Food Hygiene* (CXC 1-1969), and other Codes of Practice recommended by the Codex Alimentarius Commission which are relevant to this product.
- 5.2 To the extent possible in Good Manufacturing Practice, the product shall be free from objectionable matter.
- 5.3 When tested by appropriate methods of sampling and examination, the product:
- shall be free from microorganisms in amounts which may represent a hazard to health;
 - shall be free from parasites which may represent a hazard to health; and
 - shall not contain any substance originating from microorganisms in amounts which may represent a hazard to health.

6. LABELLING

In addition to the requirements of the *General Standard for the Labelling of Prepackaged Foods* (CXS 1-1985), the following specific provisions apply:

6.1 The Name of the Food

- 6.1.1 The name of the food as declared on the label shall include "cauliflower". The words "Quick-frozen" shall also appear on the label except that the term "frozen"² may be applied in countries where this term is customarily used for describing the product processed in accordance with Section 2.2 of the Standard.
- 6.1.2 The name of the food shall also include the style, as appropriate: "whole", "split" or "florets"³ in accordance with Sections 2.4.1 and 2.4.3.
- 6.1.3 If the product is produced in accordance with Section 2.4.2 the label shall contain in close proximity to the word cauliflower such additional words or phrases that will avoid misleading or confusing the consumer.
- 6.1.4 When any ingredient other than salt, has been added which imparts to the food the distinctive flavour of the ingredient, the name of the food shall be accompanied by the term "with X" or "X flavoured", as appropriate.
- 6.1.5 If a term designating the size of the florets is used:
- (a) the words "large florets" or "small florets" as appropriate, and/or
 - (b) by a correct representation on the label of the size range to which the florets predominantly conform, and/or;
 - (c) the customary method of declaring size in the country in which the product is sold.

6.2 Additional Requirements

The packages shall bear clear directions for keeping from the time they are purchased from the retailer to the time of their use, as well as directions for cooking.

6.3 Bulk Packs

In the case of quick frozen cauliflower in bulk, the information required above shall either be placed on the container or be given in accompanying documents, except that the name of the food accompanied by the words "quick frozen" (the term "frozen" may be used in accordance with Section 6.1.1 of this Standard) and the name and address of the manufacturer or packer shall appear on the container.

² "Frozen": This term is used as an alternative to "quick frozen" in some English speaking countries.

³ The term "clusters" is used as an alternative to "florets" in some English speaking countries.

7. PACKAGING

Packaging used for quick frozen cauliflower shall:

- (a) protect the organoleptic and quality characteristics of the product;
- (b) protect the product from microbiological and other contamination;
- (c) protect the product from dehydration and, where appropriate, leakage as far as technologically practicable, and
- (d) not pass on to the product any odour, taste, colour or other foreign characteristics throughout the processing (where applicable) and distribution of the product up to the time of final sale.

8. METHODS OF ANALYSIS AND SAMPLING

For checking the compliance with this Standard, the methods of analysis and sampling contained in the *Recommended Methods of Analysis and Sampling* (CXS 234-1999) relevant to the provisions in this Standard shall be used.