United States

Department of Agriculture

Agricultural Marketing Service

Fruit and Vegetable Programs

Processed Products Branch

Grading Manual for Canned Cream Style Corn

June 1978

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This manual is designed for Processed Products Branch personnel of the U.S. Department of Agriculture. Its purpose is to give background information and guidelines to assist in the uniform application and interpretation of U.S. grade standards, other similar specifications and special procedures.

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This manual is for sale to the public. Address inquiries to:

Chief, Processed Products Branch
Fruit and Vegetable Programs, AMS
U.S. Department of Agriculture
STOP 0247, P.O. Box 96456, Rm. 0709, So. Bldg
Washington, DC 20090-6456

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CREAM STYLE CORN

Cream style corn is unlike whole kernel corn in that it is usually processed in batches. Therefore, any "deviant" container could represent a complete batch that fails requirements and not just a deviant caused by variability.

Corn starch, sugar and salt are added to cream style corn. The ratio of corn to ingredients can be varied to compliment the maturity of the corn. For example, if the corn is more mature than desired, more sugar can be added to compensate for the lack of sugar in the corn.

Compared to whole kernel corn, fresh corn being used for cream style corn can be a little more mature for grade A. The U.S. standards make this allowance. Too, if immature corn is used for cream style canned corn, the starch and sugar additives may need to be adjusted very closely to prevent curdling of the corn.

Similar Varietal Characteristics.

Since cream style corn is comminuted to some extent, it would be difficult to detect a small percentage of "off-variety" kernels. However, this requirement of the standards would stop mixed white and yellow corn from grading above Substandard. There are several "patented" variations of cream style corn on the market. One variation is cream style corn with whole kernel corn mixed in to produce a product with irregular consistency. These variations of cream style corn are acceptable and are not to be graded Substandard, unless for other reasons.

Certain varieties of corn, such as Jubilee, have varigated color. This is normal for the variety. It is not considered dissimilar varietal characteristics.

Color.

Processing time and temperature affect the overall brightness of canned cream style corn more than canned whole kernel corn. A slight caramelization occurs, especially in large cans such as No. 10 cans.

Cream style corn has a noticeable difference in color between the corn kernels and the cream portion primarily due to the "sheen" of the skin of the kernels. The cream portion has a "matt" finish.

Color and maturity are tied together in the descriptions of color in the U.S. standards. See the description of color under canned whole kernel corn in this manual. The summary of color requirements on the next page of this manual is a general guideline, individual varieties may differ from the guide.

Summary of Color Requirements - Cream Style Corn

	Brightness	Uniformity	Off-varieties	Maturity/Color		Caramelization
				Yellow	White	
A	Bright	No noticeable difference in color among kernels.	Allow: maximum of 2 kernels in each 10 oz net contents. 1/	Pale	Bright	Slight
B	Slightly dull.	Noticeable difference in color among kernels.	Allow: maximum of 7 kernels in each 10 oz net contents. 1/	Yellow or Golden	Opaque white.	Moderate
C	Dull but not off-color.	Mixed maturities. Do not grade SSTD because of uniformity.	Allow: maximum of 15 kernels in each 10 oz net contents. 1/	Yellow-orange.	Gray-white.	Severe but not off-color.

1/ Do not include discolored kernels (defects) in this allowance.

NOTE: There is a noticeable difference in color between the corn kernels and the cream portion. The cream portion does not have a "sheen" but should be bright.

CREAM STYLE CORN (continuation)

Consistency.

The corn should first be stirred in the can before dumping on to the grading tray. The temperature of the corn should be between 70° and 80°. Stirring is important because the starch is thicker in the bottom of the can.

In winter months, it is important to prevent the samples from freezing. Chilled or frozen cans may curdle.

Although fresh corn in the milk stage tends to curdle more than fresh corn in the cream stage of maturity, curdling may be more of a formulation problem than a maturity problem. The amount of starch and sugar that is added can be adjusted to balance the starch-sugar ratio in the fresh corn.

It usually takes about 5 days or more for cream style corn to "set up" after it has been canned. Under in-plant inspection, sample units may be graded after the corn is processed and cooled. Consistency can be scored on these line samples based on the consistency at the time of grading and knowledge of how well the corn is setting up after 5 days elapsed time.

If the canner changes his starch supplier during the pack, be alert for a possible change in consistency. If the canner uses the same starch supplier and the same basic formulation throughout the pack, the consistency can be expected to change very little if the product is satisfactory after the first verification check.

Under in-plant inspection every third sample unit should be set aside and cut in about 5 days for verification of consistency. Unless the packing season is unusually short, verification cutting of past production will occur at the same time as line checks of current production. Adjustments can be made to the consistency score if necessary.

If special process cream style corn (cremeogenized, etc.) is being graded, do not downgrade the corn because of lack of smoothness (presence of whole kernel corn). However, the corn should be acceptable for consistency in every other respect (mounding, separation of free liquid, curdling, etc.).

Summary of Consistency - Cream Style Corn 1/

	Mounding	Consistency	Curdling	Separation of Free Liquid 2/
A	Slightly mounded mass.	Heavy and creamy.	Slight.	None
B	Levels off to a uniform depth.	Creamy.	Moderate.	Slight.
C	None	Thin to pasty-dry.		Moderate. The diameter of the product area on a dry tray should not exceed 12 inches. If the AIS is more than 20%, allow only a 10 inch spread.
SSTD	Crumbly, watery, dry or excessively curdled.			

1/ After equilization of temperature, starch and sugar.
2/ Use the equivalent of a No. 303 can.

NOTE: The FDA test for consistency requires more than 24 hours to run. Do not make this determination unless the product is Substandard.

Scoring Guide for Defects - Cream Style Corn
Sample Unit Size 16 oz 1/

Score Points ➡	20	19	18	17	16	15	14
Cob	None	0.1 cc	0.2 cc	0.4 cc	0.5 cc	0.6 cc	0.8 cc
Husk	1/16 sq in	1/8 sq in	1/4 sq in	3/8 sq in	1/2 sq in	5/8 sq in	7/8 sq in
Pulled Kernels	2	3	4	6	7	9	10
Silk (Pieces over 1/2 inch)	4 in	8 in	16 in	24 in	32 in	48 in	96 in
Damaged	2	3	5	8 including	10	12	16
Seriously Damaged	0	1	2	3	4	6	8
Corn Stalk (Shank)	If hard and tough, include in the quantity of material allowed under cob. If less severe, include in the quantity of material allowed under husk.						
Black Sulfide Specks - Follow File Code 125.							

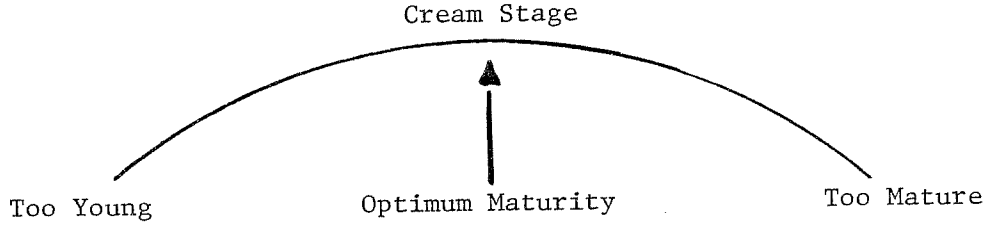
1/ Total contents or use the equivalent of 1 No. 303 can.

NOTE: Damaged and seriously damaged kernels are much easier to locate if the sample unit is gently washed through an 8-mesh sieve after all other factors are scored.

Summary of Requirements for Tenderness and Maturity - Cream Style Corn

	Kernel Portion		Cream Portion
	Mouth Feel	Tough Skins	
A	The kernels are tender.	Only an occasional tough skin should be encountered. Borderline tenderness may change slightly 5 to 10 days after canning.	Smooth, creamy mouth feel.
B	Firm with noticeably chewy kernels, but not objectionable.	Mixed tough and tender skins.	Less than desirable but not mealy or granular.
C	Objectionable, predominantly chewy kernels. 1/	All tough.	Mealy, dry, granular mouth feel.

1/ The alcohol insoluble solids test (AIS) is time consuming. Run the AIS only if the kernels are hard, beginning to dent, or obviously fail the dough stage.



Summary of Requirements for Flavor - Cream Style Corn

Maturity/Flavor					
Score the flavor in the same grade classification as maturity, except, that if one of the following conditions should occur →		Salt/Sugar Balance	Nonsucrose Sweeteners	Flat Sour	Caramelization
	B	Poor balance but not objectionable. 1/	Affect the flavor noticeably.	None above SSTD.	Moderate
	C	Objectionable. 1/			Severe but edible.
	SSTD	Must be edible. Follow Branch guidelines if inedible.			

1/ Cream style corn is usually prepared in batches. Each sample unit with poor flavor indicates a complete batch with poor flavor.