

Voluntary Federal Standards for Frozen Fried Fish Sticks

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HISTORY:—At the April 1954 Convention of the National Fisheries Institute the first formal action was taken towards stabilization of the quality of fish sticks through the appointment of a fish stick committee representative of the industry as a whole. A technical sub-committee was selected and instructed to study the problem and to make specific recommendations regarding development of standards for grades. At a meeting in Boston in the latter part of 1954, the sub-committee recommended that voluntary grade standards similar to those developed and applied for agricultural products should be developed for frozen fried fish sticks. The Fish and Wildlife Service was asked to carry out this work in cooperation with the industry. The Service phase of the project was assigned to the Boston Technological Laboratory.

Laboratory research work was already in progress on determining and evaluating those characteristics of fish sticks that would be useful in defining the overall quality. Commercial products were compared with those prepared on a laboratory scale. Storage studies were carried out to establish those properties essential to the quality of the product.

By the first of the year 1955, the Boston laboratory working with the N.F.I. Fish Stick sub-committee had made considerable progress in the development of the descriptive standards for grades. A preliminary draft was submitted to industry for comment. The entire fish stick industry was invited by N.F.I. to meet in Washington, D.C., on February 2, 1955, to discuss the fish stick standards. Some changes were suggested. The group also voted to adopt a formal resolution requesting the Fish and Wildlife Service to (1) issue official voluntary Federal standards for grades of frozen fried fish sticks and (2) make available a grading and inspection service for voluntary use by the industry. At the N.F.I. convention held in New Orleans last April, the Fish Stick Committee reaffirmed this formal resolution to the Fish and Wildlife Service. Prior to the convention a revised draft of the standards was submitted to the industry for comment. Further discussions were held at the convention and a few comments were received. On August 10, 1955 at a meeting held in Boston of the sub-committee the final suggested changes were discussed. Following that meeting the Boston laboratory prepared a revised draft dated September 8, 1955. This draft has been distributed for comment to members of the industry representing all phases of the fish stick industry, including producers, brokers, distributors, and consumer organizations. These comments are now being considered.

Basic Principles in Development of Standards

The real problems are those involved in preparing the descriptive requirements and test procedures. According to the United States Department of Agriculture as reported by F. L. Southerland in the February 1954 issue of *Quick Frozen Foods* there are 6 basic principles which must be employed in the development of practical and useful standards. These are:

1. Standards must be based on the actual styles, types, and quality gradations of the product being produced and marketed, and not on theoretical possibilities.

2. Standards must be national in scope.
3. Standards must take into consideration the important factors that affect the relative desirability of the product.
4. Standards must provide for options or personal choices with respect to style, type or variety, product unit size or number of units per container, seasoning, and size of container.
5. Standards require the proper selection of factors upon which quality is to be based so that these factors can be appropriately and consistently evaluated.
6. Standards should incorporate, where possible, objective tests and procedures for use in determining compliance with the requirements of the standards.

Other important problems include (1) establishing a suitable definition for the product, (2) designating product unit size, and (3) establishing grading nomenclature.

With these principles in mind the Boston laboratory and the N.F.I. Fish Stick Sub-committee tackled the job of developing the practical descriptive requirements and test procedures for the voluntary Federal standards of grades. To be of greater value to the industry, these should be such that they could be used and applied by qualified members of industry.

Observations of plant processes, discussions with plant operators, distributors, and consumers, and research on quality and storage characteristics of frozen fried fish sticks revealed important data useful in developing the basic requirements for the standards. It was found that:

(1) The quality of frozen fried fish sticks is directly dependent upon the original quality of the fresh fish, the subsequent care exercised in their handling, and in preparation and storage of the frozen blocks, the proper condition and care of breading materials, and the workmanship in the preparation of the frozen fried product.

(2) Commercial fish sticks, carefully prepared from non-fatty fish and with good quality materials, were found to be of good acceptability after 8 months' storage at 0° F. Those prepared from oily fish have a storage life of less than 6 months.

(3) When stale fish or fish of poor quality are used in the manufacture of frozen fish sticks, the processing involved does not wholly drive off or mask undesirable spoilage or other off-odors that were present in the original raw material.

(4) Continued use of "spent" frying fat causes an unpleasant off-color in the fried sticks and soggy texture in the breading, and decreases the storage life of the product.

(5) Breading materials which contain too high a moisture content produce sticks that are more susceptible to rancidity.

(6) The important factors determining the degree of acceptability of long-stored, carefully-handled fish sticks appear to be the progressive loss of delicate fish flavor and adverse changes in texture.

Besides this useful information, the various characteristics which reflected the quality of the product were evaluated, classified, and defined.

It is not a particularly easy or simple problem to set up ratings for a processed product that will stand up under challenge. Many workers find it relatively easy to evaluate to their own satisfaction a particular sample of

fish sticks. They have their own personal preferences and descriptive terms of quality. Some packers have set up terms and guide lines that are convenient and useful within their organizations. However, communication with other people and other organizations requires a common language and a recognized standard set of quality values.

Definition of Product

Before a set of standards can be devised, therefore, the first step is to define the particular product. Lacking an official standard of identity to incorporate by reference, cooperative efforts on the part of the Service and the industry fish stick committee resulted in the following definition:

Frozen fried fish sticks are uniform, rectangularly shaped portions of breaded, pre-cooked, and frozen fish flesh: Rectangular portions of fish flesh are coated with a batter and/or breading; are cooked by frying in cooking oil or fat; are frozen and maintained at temperatures necessary for the preservation of the product. Frozen fish sticks are composed of at least 60 percent fish flesh. The largest dimension of each stick is at least $3\frac{1}{2}$ times that of the next largest dimension (width). The sticks shall have an average weight of not less than $\frac{2}{3}$ of an ounce and not more than $1\frac{1}{2}$ ounces with due allowances for normal processing variations.

Originally Proposed Grades

In developing the basic requirements, one of the principles that concerned us most was that "standards must be based on actual quality gradations of the products being produced." It was found on examining a number of commercial products that a certain few packers produced a consistently high score product. It was believed, also, that the consumer now expects a premium line of frozen foods which he will buy because of quality not just because of price. With these premises in mind, then, the original proposed standards included four grades: AA for high quality premium products, score of 90-100 points; Grade A for high quality products, score of 80-89 points; Grade B for products of medium quality, score of 70-79 points; and Substandard for products not meeting the next higher grade, score of less than 70 points.

At the 1955 N.F.I. Convention the Fish Stick Committee studied the matter and recommended reclassification of the grade levels from 4 to 3 and a broadening of the score ranges within each grade classification.

It was felt that the standards as originally developed provided for too narrow a classification of the top quality grade and did not necessarily provide for normal processing variations. There also seemed to be some objection to the general use of the "super" grades such as the AA and a trend toward the use of common symbols A, B, etc.

Presently Proposed Grades

A reevaluation was made of the descriptive requirements and scoring system. The present standards call for three grades: A, 85 to 100 score; B, 70 to 84 score; and Substandard, less than 70 score.

The three general factors which are considered in scoring the product are "Appearance," "Character," and "Freedom from Defects." The total point score allotted for each factor was based on the relative importance of that factor in contributing to the overall quality of the product.

Under "Appearance" various sub-items are involved which primarily reflect workmanship. These are (1) arrangement of the sticks in the package; (2)

condition of the package—that is conditions reflecting workmanship of the product; (3) uniformity of sticks; (4) color; and (5) adherence and continuity of the coating.

“Character” refers to (1) the ease of separation of the individual sticks; (2) oiliness of the product; (3) texture of the coating and (4) texture of the fish.

Defects are classified as (1) blemishes which include blood spots, bruises, pieces of skin, dark carbon specks and protein curd spots; (2) broken sticks; (3) damaged sticks; and (4) bones.

The scoring was set up with each sub-factor contributing a weighted amount to each factor score. The cumulative rating for each sub-factor then provides the total factor score.

Flavor and odor of the cooked fish sticks are evaluated but not scored. Objective methods of measurements are not as yet available which will indicate reliable gradations in score values. Grade A sticks must possess a good flavor and odor; Grade B, reasonably good flavor and odor. It is entirely feasible that a high score product reflecting excellent workmanship may be graded substandard because of poor flavor and odor. A product with good flavor and odor but with poor appearance or character, or showing a substantial amount of defects could not be given a high grade.

Summary

In summary, the net result of the efforts of the Service and the N.F.I. Fish Stick Technical Subcommittee has been the development of a proposed set of voluntary Federal standards for grades for frozen fried fish sticks. This draft dated September 8, 1955, has been distributed to all phases of the fish stick industry for review and comment.

Development And Promulgation Of Voluntary Federal Standards And Inspection Of Frozen Breaded Shrimp

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IN A COUNTRY RICHLY BLESSED with an abundance of foods, competition for the consumer's favor is keen. Two companies recently placed new frozen foods on the market. They are breaded chicken and turkey sticks. These products add to the wide variety of foods from which the homemaker can choose in competition with frozen sea foods, such as breaded shrimp. The homemaker of today is discriminating in her purchase of foods. She is attracted by the convenience of preparation, the quality, and the value of the foods offered by the manufacturer. Breaded meat, poultry and fishery products competition furnish plenty of incentive to bring the quality of breaded shrimp to its highest level.

Voluntary federal standards of quality and condition of breaded shrimp is a