



RESEARCH

IN SERVICE LABORATORIES

"TENTATIVE" METHOD FOR DETERMINING COATING CONTENT OF FROZEN FRIED FISH STICKS

The voluntary United States standards for grades of frozen fried fish sticks (Federal Register, July 21, 1956) provide that "frozen fried fish sticks contain not less than 60 percent, by weight, of fish meat." In order to determine compliance with this requirement for officially-graded products, work was carried out at the Service's Technological Laboratory at East Boston, Mass. A physical method has been developed which permits rapid analysis. Considerable interest in the method has been expressed by members of the fish-stick industry in the New England area. Several demonstrations to local industry groups have been carried out. At present commercial lot samples are being analyzed to check the lot-sampling rates.



Fish sticks coming off a conveyor belt system after they have been breaded.

The method of analysis is simple and requires only a comparatively short time. It consists of the following: (1) weigh whole frozen stick, (2) dip stick in a colored solution at room temperature for a specified time, (3) remove coating by scraping with a spatula, (4) weigh remaining fish meat, and (5) calculate percentage of fish meat content by the formula:

$$\frac{(\text{weight of fish meat after removing coating}) \times (100)}{(\text{weight of whole frozen fried fish sticks})}$$

In order to obtain accurate results, various specific procedures must be followed and certain precautions must be exercised. A complete report on the procedure will be issued at a later date. In the meantime, however, it is possible that producers of fish sticks may be interested in the method of analysis as a quality-control tool. A limited supply of a "nonofficial" draft of the procedure has been prepared and copies are available from the Fishery Technological Laboratory, U. S. Fish and Wildlife Service, 61 Sumner Street, East Boston, Mass.



FEDERAL SPECIFICATION FOR CHILLED AND FROZEN CRABMEAT

The Federal Specification for Crab Meat, Cooked; Chilled and Frozen, PP-C-656a, was issued March 6, 1956. This specification supersedes Interim Federal Specification PP-C-00656a, May 2, 1955 and the original Federal Specification PP-C-656, March 31, 1931.

The new specification was developed by the Technological Section of the U. S. Fish and Wildlife Service and the Quartermaster Food and Container Institute for the Armed Forces. It was approved by the Commissioner, Federal Supply Service, General Services Administration, for use of all Federal agencies. The new requirements reflect modern methods and improvements in preparation and packaging of fresh and frozen crab meat. Three species of crab are specified: blue, dungeness, and king.

Federal fish specifications are prepared by the U. S. Fish and Wildlife Service as needed to meet the requirements of two or more Federal agencies for the government purchase of fishery food items. They are in general use throughout the government agencies. A Federal fish specification is a definite, accurate, and complete statement of the requirements for a particular fishery product and of the procedures to be followed in determining compliance with these requirements. They are issued by the Federal Supply Service, General Services Administration, and are designed to cover existing commercial products. A specification is issued only after complete review by the various Government agencies and the fishery industries. (See Commercial Fisheries Review, vol. 14, no. 5, pp. 14-16, May 1952; vol. 17, no. 8, pp. 9-10, August 1955.)



PROSPECTS OF UTILIZING LITHIUM SALTS OF FATTY ACIDS FROM FISH OILS IN LUBRICATING GREASES

A possibly large field for use of fish oils appears to exist in the newly-developed, high-temperature, lithium salts lubrication greases. A review of the literature in Chemical Abstracts for the years 1952, 1953, and 1954 has indicated 23 separate articles and patents on lithium salts in greases. No attempt was made to go further into the literature for it seemed that the work reported in recent years would give a good indication of the progress and development being made in an apparently new field of lubricating greases.

A review of five United States patents on greases containing lithium salts indicated that the subject is well covered. Of these patents, two were found to include the use of hydrogenated-fatty acids from fish oils. No information was found regarding the use of the natural unsaturated fatty acids in these greases.

The types of lithium fatty acid salts that are most often used are stearates, hydroxystearates, and hydrogenated fatty acid salts such as those produced from hydrogenated fish oils or tallow. The lithium fatty acid salts are reportedly used in concentrations of as little as 4.5 percent to as much as 35 percent of the total grease composition, depending on the desired properties of the lubricant.

The lithium salts reportedly used and included in the patent were prepared from fatty acids containing from 12 to 24 carbon atoms per molecule. Salts prepared from fish-oil fatty acids possess an average carbon-chain length greater than those prepared from animal or vegetable oils. If, as seems to be the case, this unique characteristic imparts improved properties to the greases, then fish oils are a logical choice for this purpose.

On the basis of utilizing saturated fatty acids, hydrogenated fish oils should be a better choice than oils from animal or vegetable sources from the cost standpoint. It is suggested that lithium salts of hydrogenated fish-oil fatty acids be promoted for use in high temperature lubricating greases. Their prospects for this application should be very good.

