



Test Kit Technologies, Inc.

Development of Fried or Par-Fried Foods for Microwave Reconstitution

Problem: A company has a product line of ovenable frozen, formed, filled, and deep-fried. Marketing has charged Product Development to develop a microwavable line of frozen, formed, filled, and deep-fried products. What options does Product Development have for meeting this charge?

Background: One of the major problems faced by product development people in developing microwavable foods is how the food heats. Microwaves heat by causing individual molecules or ions to vibrate. The rate of vibration is related to the amount of heat generated. Food systems, which contain large amounts of water, are limited by the amount of water in the system as to how much heat will be generated. Unlike oven heating or frying, which heat foods from the surface inwards, microwaves heat the food throughout. This can result in the loss of perceived quality in certain cases, such as when surface crusts become soggy. These are among the reasons that susceptors are used in packaging. They absorb energy and generate the heat needed to brown food or form a crust, similar to the process that occurs in frying or conventional baking.

As microwavable foods have become more widespread, suppliers have developed a wide range of ingredients with microwave applications. These include flavors, gums, starches, and breadings. The scientist charged with product development still must conduct his or her own development work, and more often than not has no idea what happens to the food during actual microwaving.

Libra Can Provide Technical Assistance During Development of Microwavable Foods: Libra Labs can help the product development scientist understand what is actually happening to the food during microwave reconstitution. Using state-of-the-art microwave technology, our staff can tell our clients how efficiently a food heats and offer advice as to how the product can be optimized. We recommend that this be conducted as a joint effort, with Libra Labs staff providing the product engineering expertise, and the client, the formulation knowledge. Based on the heating data generated from the temperature indicators in the food and microwave chamber, information as to process modification, maintenance of oil quality, ingredients, and product formulation may be developed. This service has been developed to help product development scientists formulate products that, when microwaved, most closely resemble those prepared in an oven or fryer.

Benefits of Using Libra's Expertise in Microwave Technology: Libra Labs can assist in speeding up the development process. In a rapidly changing market, time is truly money. By helping development scientists to better understand the products and ingredients they are using, the development process can be optimized. The data gathered can also be used for future product development, as it is real data, not simple observation. Using this information, observation, and the creativity inherent in most product development people, present and future projects can be enhanced and economized.