

Low Calorie Spreads In The Margarine Industry

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INTRODUCTION

Low fat products are becoming increasingly popular all over the world due to the fact that the levels of fat in the diets in many countries are too high. In most of the European countries the first low calorie spreads are now regarded as high quality products. Recently, products containing no more than 20-25% fat have been introduced and most of these products are also of high quality. In the U.S. there are about 275 low fat foods that were introduced five years ago. In 1992 the number was 1257. One of the reasons for the manufacturers' fat-free frenzy is the apparent interest in low fat formulated foods by many who are faced with the dilemma of widening waistlines. These people "faced the tough choice of whether to cut down on calories intake or buy larger-sized clothing".

LOWCALORIE FRYING MARGARINE

Margarine spattering during open-pan frying occurs when the water droplets in the melted fat coalesce and come into contact with a hot frying pan. Increasing the amount of water in a frying margarine increases the risk of spattering dramatically. When producing a frying margarine containing only 60% fat, it is essential that the water droplets are kept dispersed whilst the margarine melts to ensure that the evaporation of the small individual water droplets occur. Dispersion can be ensured by adding the correct emulsifier combination.

LOW-CALORIES SPREADS

The consumption of low calorie spreads has increased significantly during the last couple of years. *Table 1* shows the production of low-calorie spreads in 1988 and 1990/1991 respectively in selected European countries.

TABLE 1. PRODUCTION OF LOW CALORIE SPREADS IN EUROPEAN COUNTRIES

Country	1988 (Tonnes)	1990/1991 (Tonnes)
Sweden	28600	31500
Holland	34500	59500
Switzerland	2400	7000
Germany	22500	71000
Norway	5700	11130
Great Britain	68000	78000
France	26500	32100
Denmark	13700	16700

Table 2 shows the production of various classes of margarines in the U.S. from 1991 to 1992. It can be seen that during 1992 there was an increase of almost 50% in the production of low calorie margarine (diet products).

Emulsion stability is very important for the production of low calorie spreads, and distilled monoglycerides with a high or medium iodine value (IV) are generally used, because they produce better emulsion stability than monoglycerides with a low IV. The presence of hydrocolloids in the water phase, in a high protein content low calorie spreads, is to create a three-dimensional network, thereby immobilizing the water. Owing to the high water content in low calorie spreads, it is often necessary to add a water phase flavouring in addition to the fat phase flavouring to ensure that the taste of the low calorie spread resembles that of butter as much as possible.

LOW CALORIE PUFF PASTRY MARGARINE

The main function of puff pastry margarine is to divide the layers of dough and to produce a uniformly layered structure as well as a high volume in pastries. To fulfill this purpose, the puff pastry margarine must be very plastic and homogeneous, and normally these two characteristics are affected when water is added. As low as 60% fat can be formulated in a low calorie puff pastry margarine.

**TABLE 2. PRODUCTION OF VARIOUS TYPES OF MARGARINE
IN THE U.S., TONNES**

	TOTAL Jan-Nov 92	TOTAL Jan-Nov 91	Percent Change
1. CONSUMER RETAIL PRODUCTS			
Includes butter blends			
Margarine Qtrs.	342,366	377,363	-9.3
Margarine Solids	6,882	7,688	-10.5
Margarine Patties	4,163	4,658	-10.6
Margarine Soft	81,176	90,795	-10.6
Spreads Qtrs. & Solids	91,832	65,400	40.4
Spreads Soft	293,202	302,831	-3.2
Diet Products	16,124	10,767	49.8
TOTAL RETAIL PRODUCTS	835,745	859,502	-2.8
2. FOOD SERVICE			
Margarine Solids & Liquid	152,953	154,310	-0.9
Margarine Single Serving (Potato Chips, Popcorn)	26,877	25,147	6.9
Food Service Over 2.24 kg.	30,530	32,343	-5.6
TOTAL FOOD SERVICE	210,360	211,800	-0.7
3. TOTAL INDUSTRIAL SIZES			
(Bakery & Other non-retail service 112 kg. & over)	73,633	73,082	0.8
TOTAL MARGARINE PRODUCTION	1,119,738	1,144,385	-2.2

**MAIN FACTORS THAT INFLUENCE THE
STABILITY OF LOW CALORIE SPREAD**

- correct type and amount of emulsifier
- correct type and amount of hydrocolloid
- the fat blend
- processing condition
- agitation and temperature of emulsion

CONCLUSION

The production of low calorie products by the margarine industry will continue to increase in the years to come. Consumers are becoming more conscious of the importance of reducing the fat content in their diets and in most cases, cost savings are also possible since low calorie products contain more water.

REFERENCES

Low Calorie Products in the Margarine Industry S. Madsen, Grinsted, Denmark. AOCS - Latin American Meeting Rosario, Argentina November 22-26, 1992

Margarine Statistics Report, National Association of Margarine Manufacturers Washington, D.C January 15, 1993

