

# SCI LECTURE PAPERS SERIES

## HYDROGENATION OF OILS FOR USE IN MARGARINES AND SPREADS

A Baldock  
Van den Bergh Foods Ltd

© 1998 All rights reserved  
ISSN 1353-114X  
LPS 0097/98

(Abstract of a presentation by A. Baldock at the SCI Hydrogenation Meeting, 26/02/98)

Prior to discussing the hydrogenation of oils for use in these applications it is important to fully understand the nutritional policy of Van den Bergh Foods Ltd (VdBF), and Unilever PLC, particularly as regards the issue of Trans Fatty Acids (TFA) since significant levels of these may occur in partially hydrogenated oils.

It is believed that TFA raise blood cholesterol in a similar way to Saturated Fatty Acids (SAFA), however it should be noted that SAFA is normally found at a higher level in the diet. Emerging research, medical recommendations, and growing public concern prompted the 1994 Unilever decision to reduce TFA in its retail margarines and spreads. The nutritional policy is hence to achieve “low in trans” (1%) or “virtually trans free” (0.5%) products, while keeping the same or reducing wherever possible the total TFA+SAFA content.

The TFA content of all margarines and spreads across the whole UK retail market needs addressing for the reasons outlined above. There has previously been a large financial disincentive to reduce TFA, but at current oil prices this is no longer true. It is possible to create zero TFA hardstocks from one, or a combination of several, modification techniques. One such technique is full hydrogenation, the implications of which are discussed below. These hardstocks can allow the use of more liquid oils, making the blend on-cost minimal.

This change from partially hydrogenated to fully hardened fats can give issues with:

### **Quality**

Oil pre-treatment and hydrogen quality may require improving, and end-point control needs close attention to give optimal solution between catalyst usage and utilisation.

### **Catalyst**

More fresh catalyst usage may lead to redundant re-use systems, and selectivity effects will become less important leading to higher activity fresh catalysts. Catalyst management will hence become simpler and using different suppliers will become easier.

### **Plant design**

Hydrogen demand will become more variable, and harder products may require tracing / lagging changes. Agitation systems may require changing to reduce catalyst usage.