NATIONAL UNIVERSITY OF SCIENCE AND TECHNOLOGY

FACULTY OF APPLIED SCIENCES

DEPARTMENT OF APPLIED CHEMISTRY

PROJECT TITLE:

TO INVESTIGATE THE RELATIONSHIP BETWEEN IODINE VALUE AND REFRACTIVE INDEX DURING HYDROGENATION, AND TO STUDY THE CHARACTERISTICS OF HYDROGENATED OIL IN RELATION TO THE COMPOSITION OF THE FEEDSTOCK.

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A DISSERTATION SUBMITTED IN PARTIAL FULFILMENT OF REQUIREMENTS
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ABSTRACT

The objective of this study was to develop a calibration to enable Process and Quality Control in the Hydrogenation of oils for the manufacture of Bakers' Fat. 100% Cotton Seed Oil and 70% Cotton Seed + 30% Soyabean Oils were considered in this study. Samples were drawn from the Hydrogen converter at thirty minute intervals during the course of the hydrogenation reaction. The Refractive Index and Iodine Value were determined. The correlation between Iodine Value and Refractive Index was found to be high and linear for each type of feed of the same composition provided that the process conditions were the same. It was concluded that the faster, accurate and relatively easy to use Refractive Index be used to monitor and predict the extent of hardening at any given time by consulting and extrapolating from the established curve for that particular feed. It was further established that for 100% Cotton Seed, the final Refractive Index is 1.481 while for the blend it is 1.680 so as to give a product which complies to stipulated specification. The following characteristics of the hydrogenated oil were investigated : Free Fatty Acids, Slip Point, Moisture Content and Peroxide Value. It is instructive, the study found, to hydrogenate 100% Cotton Seed for the production of Bakers' Fat instead of the blend.