

REPORT OF THE COMMITTEE ON THE ANALYSIS OF COMMERCIAL FATS AND OILS

It has been a principle of this committee from the beginning to develop and adopt methods covering determinations which are not well established, by its own labors; but wherever other committees or societies have already developed and adopted methods in their own special fields, these have been adopted in toto unless there are important and valid reasons why they should not be adopted.

This committee functioning as a committee of the American Chemical Society had hoped to be able to adopt the Methods for Refining Vegetable Oils and for Making Color Readings by Means of the Lovibond Color Glasses as established by the A. O. C. S. But when these were carefully studied by this committee, it was decided that they were not in proper form for adoption. This applies particularly to the Method for Refining and the Method for Making Color Reading.

Specifically, some of the objections to these methods as they stand are as follows:

In the first place, they are not written up as chemical and physical testing methods should be, apart from the commercial transaction involved. It has been a fundamental principle of this committee that all methods adopted should be definite, physical and chemical methods, and that commercial transactions based on them should be regarded as a separate matter. This principle cannot be departed from in any part of the methods published by this committee.

In the second place, the Methods of the A. O. C. S. for Refining Loss and Color are indefinite, vague and incomplete under

(1) PRIME COTTONSEED OIL. (a) General Directions, which read:

"The quantity of dry sodium hydroxide to be used in refining Prime Oil must not exceed 1.097 per cent by weight of the Oil for hydraulic pressed oils, and must be employed in solution of 10, 12, 14, 16, 18, and 20 degrees Baume at 20 degrees C.

"Note—In case the above limit of sodium hydroxide produced worse than a prime color with a loss less than 9 per cent, then a greater amount of sodium hydroxide can be used in order to produce a prime color if possible, provided the refining loss does not exceed 9 per cent, and in such case if a prime color is produced, the oil shall be graded a prime as to color."

It will be obvious to any disinterested chemist that the note offsets and does away with practically all that precedes it. This method should

be written up as a single paragraph and put in definite form.

The next paragraph reads :

"No oil shall be rejected unless treated with three or more sodium hydroxide solutions of the above Baume; nor shall any claim for excessive refining loss be established if it can be proven that the color can be made with a smaller loss than produced with the maximum amount of sodium hydroxide allowed; nor shall any claim for deficiency in color be established if it can be proven that the color can be obtained without exceeding 9 per cent refining loss with maximum amount of caustic soda allowed."

The commercial matter in this paragraph should be entirely eliminated from the method. If, in the opinion of the committee, it seems desirable that "three or more sodium hydroxide solutions" be used, this should appear in the method as a part of the method.

Under COLOR, the directions are as follows :

"(a) Report color of refined oil in terms of Lovibond's equivalent color scale using yellow and red glasses.

"In every case where color standards are mentioned, only the two standard glasses specified in the rule must be used to determine the grade.

"(b) The color examination shall be made as follows: Place the oil in a white polished-bottomed bottle or cylinder of such depth that a column of oil $5\frac{1}{4}$ inches can be accurately measured therein. Such bottle or cylinder to be of not less than $\frac{3}{4}$ inch internal diameter. The reading shall be made by artificial light in a form of tintometer approved by the Chemist Committee of the Interstate Cottonseed Crushers Association and at a temperature of about 21 degrees C. If the oil is of deeper color than the combined standard glasses 35 Yellow 7.6 Red, it shall not be classed as prime."

These directions are entirely inadequate. No description is given of the form of tintometer to be used, although the one in general use is of a standardized type. This method does not specify the manner of applying the Lovibond glasses, the assumption probably being that everybody knows how to do this. Details should be introduced into the method. No provision is made for reading oils of color darker than 35 Yellow and 7.6 Red, or for reading oils of less than this amount of color. No method is given for reading bleached oils.

Under (2) OFF OIL (a) General Directions, no mention whatever is made of color, although it is well known by all oil chemists that the

reading of color in the case of off oils is a matter of great difficulty and at the present time of no agreement, although such readings are frequently made. The method should be standardized as well as possible under present conditions and with existing knowledge, in the view of your committee.

On the page following is a Suggested Method for Color Reading of Normal, Bleached and Off-Color Cottonseed Oil and Other Vegetable Oils.

The suggestion of your Committee on the Analysis of Commercial Fats and Oils is that the proper committee of the A. O. C. S. redraft the Method for Refining, Bleaching and Color Reading of Vegetable Oils and that these be revised and written in the light of the above suggestion.

W. D. RICHARDSON, Chairman.