

Progress Report—Fat Analysis Committee

At the Governing Board meeting following the 1932 May Meeting of the Society in New Orleans, President Hammer brought up the matter of the desirability of re-viving the activities of the Fat Analysis Committee, and asked the writer, as Secretary of the committee, to get the work under way.

Therefore, in pursuance of this request, in July a report of the cooperative work on rosin in fatty acid mixtures, and also a report on some cooperative work on the color of fish oil using a dilution method with white mineral oil and reading the colors in the Lovibond scale, were sent out to the members of the committee for their comments.

A meeting of the committee was called in conjunction with the Fall Meeting of the Society, at which Messrs. Vollertsen, Sheely, Long, A. S. Richardson (for H. J. Morrison), A. A. Robinson (for L. M. Tolman), and the writer were present.

F. A. C. Color Standards.—The F. A. C. color standards were thoroughly discussed and it was agreed that the committee would make a study of the standards suggested by Mr. Doherty. This work is under way at the present time and considerable progress has been made, but some difficulties have developed with the suggested formulae. The committee work so far indicates that the standards are much less likely to be changed by the action of light than the old F. A. C. standards.

Smoke Point.—Work was also outlined on the smoke point of edible fats and oils and two sets of cooperative samples were sent out and reports have been received on the first set. This work, however, is not far enough along to make a final report.

Wiley Melting Point.—It was also agreed to make a cooperative study of the Wiley Melting Point, and two sets of samples were sent out on this work. The results on the first set are not in as good agreement as the committee should like to see, and further work is being done.

Rosin in Soap.—Further samples of fatty acid rosin mixtures were prepared and sent to a sub-committee consisting of Messrs. Long, Sheely and Irwin for further study.

Moisture.—The Vacuum Oven Method for moisture, which has been the Official Method of the Fat Analysis

Committee for several years, was ordered deleted at the last meeting. The main reason for this action was that very few laboratories are equipped with the Official Vacuum Oven, and since the Hot Plate method is in quite general use, and gives satisfaction in the majority of cases, it was adopted as the Official Method for moisture and volatile.

Since this action, however, there has been some objection to the deletion of the vacuum oven method, in view of the fact that the study made by the committee indicated that the results obtained by it were very satisfactory. Therefore, the matter of the deletion of this method will be reconsidered at the next meeting of the committee where it is hoped we may have a full discussion of the matter.

The paragraph in regard to the use of a well constructed and well ventilated air oven, held at a uniform temperature of 105 to 110°, remains unchanged.

It was also agreed to insert a note in the method, that in case large amounts of free moisture were present the Kingman Distillation method should be used.

Titer.—The question of clarifying the method of stirring, in the titer determination, was discussed and it was agreed to add a note calling attention to the fact that the intent of the method was to stir with a circular motion instead of up and down. While this would appear obvious, some laboratories did not agree on this viewpoint.

It is the plan of the committee to continue the work and try to have a report of recommendations as to the adoption of methods ready for the Fall Meeting, October 12 and 13, 1933.

FAT ANALYSIS COMMITTEE.

W. H. Irwin, Chairman.

T. C. Law

J. J. Vollertsen

H. J. Morrison

H. P. Trevithick

David Wesson

M. L. Sheely

C. P. Long

L. M. Tolman

R. W. Bailey

Report of the Referee Board for the Year 1932-33

Two new limited referee certificates have been granted, to the following:

C. M. Coguenhem, Shilstone Testing Laboratory, Houston, Texas.

N. F. Amsler, Brenham Laboratory, Brenham, Texas.

Coöperative test samples distributed by the Referee Board are as follows:

6 crude cottonseed oil samples for refining and bleaching tests.

5 refined cottonseed oil samples for bleaching tests.

3 soap stock samples for determination of total fat.

These samples were distributed in coöperation with the Chemists' Committee of the N. C. P. A. The total number of coöperative samples handled by our referee chemists, including the check seed samples of the Chemists' Committee and the check meal samples of our Smalley Foundation Committee, is the largest of record and not necessarily to be taken as a precedent to be followed in the future.

The Chemists' Committee has met the expense of distributing the oil and soap-stock samples and the chairman of that committee has made the only detailed analysis of the results. The Referee Board has assisted by studying the methods of handling coöperative samples and by attending to the actual distribution of oil and soap-stock samples throughout the past season.

The results as a whole are far from perfect, but more reassuring than alarming. The worst work of any referee chemist calls for no action other than merely letting the participant see his results in comparison with the prevailing results of the whole group. In this connection it should be pointed out that the three laboratories making the poorest showing in the tabulation of the Chemists' Committee on crude oil samples were not referee chemists. This fact is gratifying to the Referee Board, but means that the showing of some of the referee chemists, relative to that of other referee chemists, is not as good as may have appeared in the complete tabulation.

The cost per sample of oil and soap-stock has been reduced to considerably less than half what it formerly was. The chief but by no means the only saving is in the size of sample. An increase in cost of the containers was more than offset by a saving in gross shipping weight and the decreased postage. We have used tin cans of type approved by the postal authorities, furnished with cardboard containers by the manufacturers.

The handling of crude oil samples was simplified.

Heretofore experience indicated that crude oil must be settled to insure getting uniform samples to all collaborators, although removal of settlings is obviously not favorable to making the oil representative of commercial oil. We find that unsettled oil reaches the collaborators in uniform condition if it is dry. Specifically we recommend selection of cooperative crude cottonseed oil samples of moisture content not over about .2%.

Chairman, Referee Board. A. S. Richardson,

Changes in Rules Adopted by Chemists' Committee and Rules Committee of the National Cottonseed Products Association at New Orleans, May 15, 1933

CHAPTER XIII.

Methods of Chemical Analysis.

Page 125.

Rule 270. Cotton Seed.

Section 3. Fuming and Grinding.

(a) Second paragraph—FUMING OVEN. A double walled tank constructed of sheet iron or copper, preferably with welded or brazed seams, and with the inner compartment open at the top. This compartment is approximately 7¼ inches deep and 7 inches wide, which dimensions allow it to hold two rows of porous fuming pots. The oven may be of any convenient length, this depending upon the number of seed pots to be fumed at a time. A compartment 17½ inches long will accommodate ten pots in a double row of five.

The double walled jacket surrounds the oven on four sides and bottom, the space between walls being about 1¾ inches. This jacket is provided with a filler and breather pipe consisting of a ¾ inch close nipple welded into the end of the tank near the top and an elbow and 10-inch nipple extending vertically. The jacket is filled with vegetable or mineral oil which can be heated to a temperature of about 175° C. A nipple is also provided through which a thermometer can be inserted in the oil. Flat bottom trays of perforated metal, with handles which will fit within the compartment, are provided to hold the pots (conveniently ten to the tray) and enable them to be easily removed. Small angle irons are welded on the bottom of the compartment so that the trays do not rest directly on it, thus permitting circulation of heated air around the pots.

If the oven is made of a length to accommodate more than one tray of ten pots, it is advisable to place sheet iron partitions, tacked in place, between the sections for trays, so that one tray can be removed without interference with another.

A lid of sheet metal with handle is used to cover the inner compartment, lugs on the under surface serving to center it in place. One lid for each section for ten pots is convenient. Holes for ventilation and for a thermometer are cut in the lid, two (2) one (1) inch diameter holes for each ten pots capacity being satisfactory.

This oven is supported in any convenient manner and heated either with gas burners or with electric space heaters placed in contact with the bottom. Thermostatic regulation is not essential but may be convenient.

(NOTE: Sheet iron painted with an aluminum lacquer paint has been found to resist the corrosive effect of the hydrochloric acid.)

Section 8. Calculation of Analysis. (Change (a) to read as follows):

(a) Data on reports of seed analyses should be expressed as follows:

Foreign Matter to..... .1%

Oil to1%
 Ammonia to01%
 Free Fatty Acid, when 5% or under, to .1%
 Free Fatty Acid, when over 5%, to.... .5%
 Index to1%
 Grade to whole units.
 Yields to whole units.

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Rule 273.

Section 5. Refining Crude Cottonseed Oil.

(d) (Line 24, sentence beginning, "This oil is to be filtered, etc." change balance of paragraph to read as follows):

Weigh the refined oil and filter through white filter paper (Eaton & Dykeman No. 617, Reeve Angel No. 230 or such other brand as approved by the Chemists' Committee.) In case of Expeller Oils, before filtering add 0.5 grams of filtercel (obtain from Secretary of American Oil Chemists Society) and agitate in bleaching machine for five minutes at 250 R.P.M. at room temperature to absorb colloidal matter. This filtered oil is to be used for determination of grade. Weigh the soapstock cup with its contents. Melt the soapstock by setting it in a water bath maintained at 75± 2° C. without stirring for 30 minutes; cool in the cold water bath for 15 minutes or until thoroughly chilled, then decant into a weighed beaker any additional oil thus recovered, draining for 15 minutes. Weigh this oil separately. Add this weight to the weight of refined oil first obtained, and subtract it from the weight of soapstock first obtained. Repeat the remelting, cooling, and decanting as above, if necessary, until the recovered oil from the last remelting amounts to not over 2.5 grams.

(Balance of section, including note, remain as written.)

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Rule 275. Refined oils.

Section 1. (b)

(In last line on page 152 sentence beginning, "In matching the color" change sentence to read as follows):

In matching the color, use only one yellow glass, 35 yellow for refined cottonseed oil and refined peanut oil; 70 yellow for refined soya bean oil; 30 yellow for refined coconut oil; not more than 2 red glasses up to and including 13.0 red, and not more than 3 red glasses above 13.0 red.

(Balance of paragraph and section to remain as written.)

Section 2. (b)

(Add to last sentence of section 2. (b) page 153 so that the entire sentence will read as follows):

Cool and read color immediately as prescribed in Section 1 of this Rule using 20 yellow and 2.5 red for determining grade.

(Balance of Section to remain as written.)