Observations on the Quantitative Comparison of Various Accelerated Stability Tests

The Editor.

Sir: The qualitative agreement between the results, on four samples, of seven different stability tests in four different laboratories reported on page 108 by King, Roschen, and Irwin[1], is so good that it seemed of interest to calculate the data to a basis allowing a quantitative comparison.

This has been done in the accompanying table by taking, for each test, the ratio of the value for sample B (the most stable) to 20 and multiplying the values for all the samples by this factor. In the case of test b, 100 times the reciprocal of the mg./kg. figures was used. This procedure, of course, gives sample B the same value for all tests and makes the other data comparable.

COMPARISON OF DATA OF VARIOUS ACCELERATED STABILITY TESTS

	Test						
Sample	a	c	d	b	e	f	g
A.....	7	8	8	11	10	10	9
B.....	20	20	20	20	20	20	20
C.....	12	13	12	16	16	14	16
D.....	2	5	3	2	4	2.5	4

Since test a is the subject of the paper under discussion, and as it was chosen as the basis of reference in the above calculation, it is interesting to observe the relation of its data to that of the other tests.

Considering the variety of the conditions and all of the circumstances involved in tests of this kind, the agreement is quite good. Directing attention especially to the values for Samples A and C, the tests fall into two groups: Tests a, c, and d give lower values for these samples than b, e, f, and g, the agreement within each group, however, being particularly close. That this may be accidental, is not overlooked, especially as tests e and d are identical; but their data fall in different groups. Another observation might be made: considering samples A, C and D, all of the methods give higher values than Test a, except for two values which are equal. This would seem to indicate, if we regard the general average of all the data as most nearly correct, that the results yielded by test a are, if anything, too low. It might be further noted that, of three tests depending on an organoleptic end point, two are in one group, the third in the other.

One conclusion seems certain: judged solely by the reliability of results, there seems little to choose between the various methods. As stressed, however, by the authors of the paper, test a has obvious advantages, chief among which is the relatively short time necessary for obtaining results.

EGBERT FREYER.

South Texas Cotton Oil Co.,
Houston, Texas,
June 22, 1933.

Referring to the above calculations by Dr. Freyer, the authors feel that the calculations are correct, but wish to emphasize one point which may be overlooked, and that is that Test A is a combination of an organoleptic test and a chemical test, the peroxide value. In other words, the titration is not made until an observation by the sense of smell indicates that the sample is rancid, and since three samples are started at hourly intervals, the titrations show the point at which there is a sharp break.

[1]Oil and Soap X-105 (1933).

Report of the Uniform Methods and Planning Committee, 1932-33

While the past year has been a very difficult one for everybody, including the members of the American Oil Chemists' Society, it is gratifying to note that considerable careful work has been done by the various committees appointed by our President during the last year. We shall briefly mention some of the work done and the recommendations presented and would bespeak a very careful consideration and discussion by the members of the Society present.

Sampling Committee:

This committee has worked up a few improvements on the present sampler, which will be incorporated in all of those which are furnished hereafter by the Refinery Supply Company. They recommend as follows:

"1. Reduce the weight. Without the added parts it now weighs 16¼ pounds and with the handles, etc., it is 17¾ pounds. It is believed this can be reduced to 11-12 pounds without seriously affecting serviceability.

"2. Develop a practical plan of making the sampler in sections so it can be easily knocked-down. Some commercial laboratories and others who must sample oil at widely scattered points object strongly to the length and unwieldiness of the official sampler."

Inasmuch as these changes can be handled by the Refinery Supply Company it is the recommendation of the Sampling Committee, and this is concurred in by the Uniform Methods and Planning Committee, that the

matter be turned over to them with the above recommendations.

Smalley Foundation Committee:

The report of this Committee speaks for itself. Several changes which were recommended at the last annual meeting were put into effect with very beneficial results. It is encouraging to note that the general high standard of work is being continued.

Seed Analysis Committee:

There has been no report received from the Seed Analysis Committee.

Journal Committee:

The Journal Committee has been struggling along in an effort to have the journal printed on time and see that it contains articles of interest and value to the oil and soap chemist. In our opinion they have succeeded quite well. However, economic conditions have militated against the expansion of the journal and there is still a great deal to be done before it can be put upon a paying basis. Since our last meeting several pages of abstracts have been added and we feel that this has been a distinct addition of considerable value to the membership. We would again urge all of our members to give more thought to the publishing of our journal and do what they can to assist in obtaining advertising for it.

Refining Committee:

The Refining Committee have followed the recommendations adopted by the Society last year and have studied the refining of cocoanut, soya bean and cold pressed oil, and in each case have recommended that no change be made in the methods as written. We suggest, however, that the membership carefully study this report, especially that which covers the work on cocoanut oil, in order that the Committee's suggestion might be tried out by a large number of collaborators. We are sure that the Refining Committee would welcome any comments on this part of their work before the next annual meeting.

This Committee also studied the suggestion that the caustic used for refining cottonseed oils be reduced from 80% to 65% of the maximum in one of the tests. They recommend no change.

On filter paper their recommendations are as follows:

"The Refining method to be changed as follows, referring to the method as published in N. C. P. A. Rules 1932-1933, page 148, (and Lefax page 16B), under Refining Procedure, line 24. Eliminate the sentence beginning, 'This oil is to be filtered' and substitute the following two sentences:

" 'In case of expeller oils only, add 0.5 gram filtercel (obtained from Secretary of the A. O. C. S.) and agitate in bleaching machine for 5 minutes at 250 R.P.M. at room temperature, to absorb colloidal matter. This oil is to be filtered through white filter paper of an approved brand (see below) and used for determination of grade.'

"Also, add the following note after the present note at the bottom of page 148:

Note: Approved brands of filter paper are:

Eaton & Dikeman No. 617.
Reeve-Angel No. 230.
Other brands not to be used unless first approved by the American Oil Chemists' Society."

The above was recommended for tentative adoption and approved by the Society.

Olive Oil Committee:

The Olive Oil Committee have submitted a modification of the Crismer Test for determining the purity of olive oil.

The above was recommended for tentative adoption and approved by the Society.

Fat Analysis Committee:

It is encouraging to note that the Fat Analysis Committee has again become active and has begun the study of several methods which need clarification.

Coöperative work is being done on the F. A. C. color standards, smoke point, Wiley Melting Point, Rosin in Soap, Moisture, and Titer. As this Committee was just revived at the Fall Meeting there is very little of a definite nature to report at the present time.

Moisture Committee:

This Committee read a paper of some work that had been done on the study of moisture changes in cottonseed meal held in various containers under different temperatures. No recommendations were involved.

Color Committee:

The Color Committee give the possibility of defining the ratio of red and yellow glasses to be used in reading colors. Their recommendations were as follows:

"1. That under the Section headed "Lovibond Color Glasses," the following paragraph be added:

"The ratio of yellow to red in determining color shall be as follows, except where Rules specify the yellow and/or red to be used in determining given grades:

Cottonseed Oil	Refined Bleached	35 yellow with necessary red to obtain best match. 10 yellow to 1 red.
Cocoanut Oil Palm Kernel Oil Peanut Oil	Refined or Bleached	10 yellow to 1 red where red is 3.0 or more. 6 yellow to 1 red where red is lower than 3.0.
Soya Bean Oil		10 yellow to 1 red where red is less than 3.5.
Corn Oil		70 yellow where red is more than 3.5.
Tallows, Greases, Fatty Acids, etc.		10 yellow to 1 red where red is less than 3.5. 35 yellow where red is from 3.5 to 5.0. 70 yellow where red is more than 5.0."

This recommendation was approved as tentative by the Uniform Methods Committee and adopted by the Society.

Planning Committee:

The Planning Committee are hopeful that during the coming year the Chairmen of the various committees will be appointed early so that work can be gotten under way during the summer months when the mill chemists are not overburdened with work. They also are anxious to have a large number of the membership of the Society take part in this coöperative work and in view of this are asking everyone to write the Chairman of the Planning Committee advising which particular committee they are interested in, so that they may become a part of the personnel of these committees.

Archibald Campbell,
C. B. Cluff,
H. P. Trevithick,
E. B. Freyer,
J. J. Vollertsen, Chairman.