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.

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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