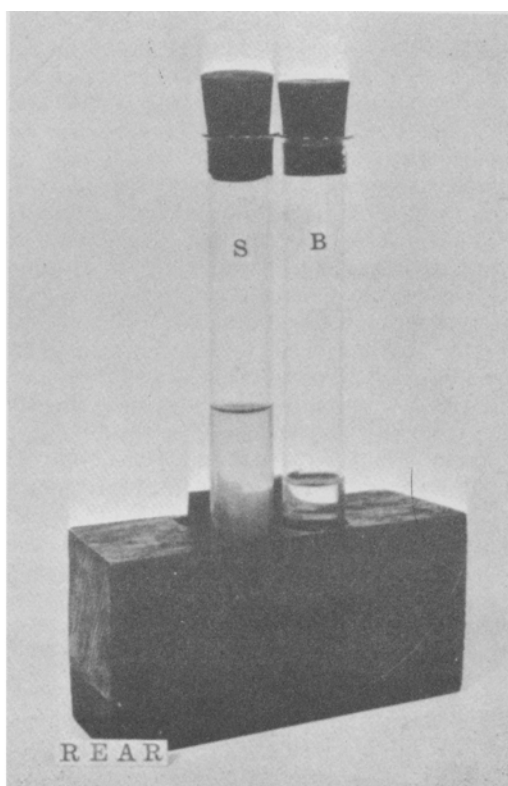
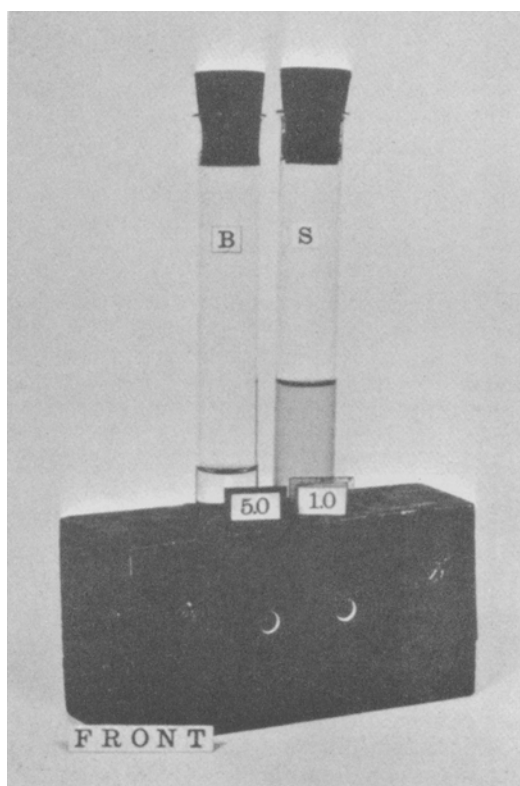


Report of Committee on the Kreis Test for Rancidity

Test Not Recommended for Inclusion in Official Methods
But Suggestions Offered for Numerical Measurement of Results

By A. S. RICHARDSON, *Chairman*



COOPERATIVE work during the first two years of the committee's existence showed that no two laboratories could be depended upon to obtain the same result when Kreis Tests were made in the usual way and merely reported as positive or negative.

During the last year, two methods of using color standards and reporting Kreis Test on numerical basis were tried. The results were less erratic than without a color standard, but still did not meet the standards of reproducibility which chemists generally have set for ap-

proved analytical and testing methods. Because of this difficulty of obtaining reproducible results, and also because of the somewhat uncertain relation of the test to quality of edible fats and fatty oils, it is not recommended that the Kreis Test be added to the official methods of the American Oil Chemists' Society.

To chemists who wish to make use of the Kreis Test, the committee informally offers the advice that the habit of reporting the test as positive or negative should be abandoned, and that some method of measuring the inten-

sity of red color should be used.

One of the committee members has found the Ives tintphotometer suitable for reading Kreis Test colors. It is possible to use paper color standards, although there is considerable difficulty in matching them against colored liquids; the committee members have tried to use, with varying success, the P.R. series in the color chart of indicators in the third edition of Clark's "The Determination of Hydrogen Ions." A more positive color match was obtained in our committee work with the use of Lovibond glasses, in accordance with the method described below.

"5.0 cc. of the fatty oil to be tested is placed in a test tube of 0.66 (± 0.02) inch inside diameter and 5.0 cc. of concentrated hydrochloric acid (specific gravity 1.19) added. The tube is closed with a carefully cleaned rubber stopper and shaken vigorously for 30 seconds. 5.0 cc. of 0.1% solution of phloroglucinol in ether is then added and the tube closed and again shaken vigorously for 30 seconds. Alternatively the oil and the reagents are mixed and shaken in a glass stoppered cylinder, and thereafter transferred to a test tube of standard inside diameter. The tube is allowed to stand until the amount of the lower layer separated is sufficient for the color comparisons outlined below. Separations can sometimes be accelerated by gently turning the tube. The color comparison of each tube should be made within 30 minutes after the beginning of the test.

"A blank test is made, repeating the whole of the above procedure, except that the fatty oil is omitted. The reagents should be of such quality that no distinct red color is developed.

"Without removing the ether-oil layer, place the test tube (S) containing the fatty oil in one of the two receptacles provided in a simple block colorimeter as shown in the accompanying illustrations. In the other receptacle place the tube containing the blank reagents (B). Holding the test tubes in an approximately vertical position, observe them through the two small holes of the colorimeter with a small sheet of white paper held in the line of vision in the background. The observer must not look toward any open window or other bright light, but must view the samples by means of reflected light from the white paper.

"The Kreis Test color is matched against Lovibond red glasses placed in series with the blank reagents. To improve the match in hue, Lovibond yellow is used in series with the tube containing the fatty oil, the units of yellow

being $1/5$ the units of red, plus or minus 0.2. A maximum of two glasses of each color is used."

Occasionally a pink color is obtained simply by shaking together the oil, ether and acid. This is a possible complication which may be taken into account by an additional blank test.

The membership of the committee includes: A. K. Epstein, D. M. Gray, W. D. Hutchins, G. S. Jamieson, W. D. Richardson, S. M. Tolman, H. W. Valteich and A. S. Richardson, *Chairman*.

F. T. C. Against Price Maintenance

Opposition to the passage of legislation permitting resale price maintenance was expressed by the Federal Trade Commission in a report sent to Congress June 22nd. The commission believes that in view of the difficulties of practical administration it would be difficult to provide government regulation of resale price maintenance which would bring relief to makers of trademarked goods without doing injustice to consumers. Interviews with 691 representative manufacturers showed that ten per cent opposed legalization of price maintenance, while six-nine per cent expressed no preference. Less than twenty-nine per cent of the total number, having a larger percentage of the gross income, favored price maintenance. Their average rate of earnings on investment was larger than that of those opposed.

In an investigation of rancidity, it has been observed that when fats containing mono- and di-glycerides are irradiated with ultra-violet light in the presence of air, the free alcohol groups are oxidized to aldehyde groups. Tristearin containing mono- and di-glycerides when irradiated in the presence of atmospheric oxygen gave a negative Kreis test, a positive silver reaction (reduction of ammoniacal silver nitrate) and a negative peroxide test. Synthetically prepared tristearin, free of mono- and di-glycerides, after irradiated olive oil, also triolein, gave positive reactions to the three tests. *Allgem. Ol-Fettztg.* 28, 3-7, 25-9 (1931), *Chem. Abstr.* 25, 3186-7 (1931).

Exports of fish oils from Japan during 1930 amounted to 66,815,000 pounds valued at \$2,648,000 as compared with 54,831,000 pounds at \$2,445,000, exported during 1929. Exports of rapeseed oil were 24,639,000 pounds and \$1,761,000 for the year 1930 and 16,596,000 pounds and \$1,454,000 for the year 1929.