ABSTRACTS

Oils and Fats

Edited by
W. F. BOLLENS and R. E. KISTLER

Sulfonated oils. XIV. Sulfonated oil made from sperm oil. 1. Preparation of salts of the pure sulfuric acid ester of cetyl alcohol and their properties. KYOSUKE NISHIZAWA and TOSHIO TOMITSUKA. *J. Soc. Chem. Ind., Japan* **35** Suppl. binding 548-50 (1932); cf. *C. A.* **26,** 3948.—Five salts of the sulfuric acid ester of cetyl alc. were prepd., the K, Na, NH_4, Mg and Ca salts. Their crystallographic properties are tabulated. **XV. Sulfonated oil made from sperm oil. 2. Properties of the aqueous solution of the pure salt of sulfuric acid ester of cetyl alcohol.** KYOSUKE NISHIZAWA. *Ibid* 550-1.—The relative tension and viscosity against kerosene and against air of the aq. soln. of 5 pure salts of the surfuric acid ester of cetyl alc. were measured with an Ostwald viscometer, Killyer's pipet and Traube's stalagmometer at 25° ± 0.02° and 50° ± 0.02°. K, Mg, and Ca salts are sparingly sol. in H_2O and 1/10,000 *M* soln. of K salt and 1/50000 *M* soln. of Mg and Ca salts were hardly obtained at 50°. These dil. solns. lowered the surface tension against kerosene and air moderately. NH_4 and Na salts are more sol. and lower the surface tension of H_2O against kerosene and air in about the same degree as Na ricinoleate.

E. SCHERUBEL.

Acidimetric determination of glycerol in fatty oils. HENRIK BULL. *Tids. Kjemi Bergvesen* **12,** 78-84 (1932).—The method consists in treating the sample, which must be absolutely neutral, with an excess of EtONa, pptg. the Na glyceride formed with a large excess of petroleum ether, washing with petroleum ether, dissolving in water and alc. and titrating. (*a*) *Pretreatment of sample to remove free fatty acids.*—Weigh off exactly 4 g. of oil in a 100-cc. glass centrifuge tube, add 70 cc. of petroleum ether, then 10 cc. of an alk. soln. of glycerol (glycerol 240 cc., water 240 cc., 50% KOH 20 cc.), mix thoroughly without shaking, and centrifuge. Remove the heavy soap lye left at the bottom by means of a pipet, transfer the fat soln. quantitatively to a 100-cc. volumetric flask and fill to the mark with petroleum ether. The filling and the subsequent withdrawal of aliquot parts must be carried out at the same temp. (*b*) *Prepn. of the EtONa soln.*—Dissolve 2.3 g. metallic Na in 50 cc. abs. alc. (under reflux), and dil. the still hot soln. with 150 cc. petroleum ether, add a little CaC_2 and boil the soln. for 2 hrs., using a reflux condenser, to remove every trace of water. (*c*) *Pptn. of Na glyceride.*—Use an ordinary test tube, 15 cm. long, 16 mm. in diam. Measure 3 cc. of the alcoholate soln. into the thoroughly dried tube and add in about 1 min. 15 cc. of the acid-free fat soln. from a pipet clamped to a support above the test tube and having a 3-way stopcock connected to its upper end. Bubble H from a capillary tube through the soln. during the pptn. and for 1 min. after the pptn. is ended, to produce the necessary stirring. Close the test tube with a good, dry wood stopper. (*d*) *Centrifuging.*—This operation may be carried out 5 min. after the pptn. Use an ordinary Gerber centrifuge, with 1000 r.p.m. Decant the supernatant liquid completely from the ppt., add 15 cc. of petroleum ether, shake the mixt. thoroughly, centrifuge again and decant the clear liquid. (*e*) *Titration.*—Dissolve the ppt. in 0.5 cc. of water and add 5 cc. of neutral alc. contg. phenolphthalein. Use a microburet for the titration with 0.1 *N* acid, and bubble H through to obtain a good mixing. It is essential to avoid every trace of moisture in the pptn. of the glyceride. To recover the petroleum ether, shake the residues 3 times with water, then dist. on the water bath. Shake the distillate with a small quantity of concd. H_2SO_4 and decant. From the content of glycerol, *M,* and the sapon. no., *S,* for a certain fat, its content of diglyceride may be calcd. as follows: From *S,* the glycerol content (G_3) of the fat is calcd. on the assumption that it is a triglyceride, and the glycerol content (G_2) on the assumption that it is a diglyceride. Its actual content of diglyceride is then $100\ (M/G_3)/(G_2/G_3)\%$.

INGEBERG.

Estimation of gossypol in cottonseed meal. J. O. HALVERSON and F. H. SMITH. *Ind. Eng. Chem., Anal. Ed.* **5,** 29-33 (1933).—The ether-extd. gossypol is pptd. in a petroleum ether-ethylene glycol. soln. by the addn. of aniline. The dianiline gossypol is filtered off, and wt. of ppt. × 0.775 = gossypol. A quantity of purified gossypol was prepd. for soly. tests in the reagents used in the detn. H. E. MESSMORE.

Determination of Rancidity of Fats and Oils. *The American Perfumer and Essential Oil Review,* Vol. XXVIII, No. 1, Page 47, March, 1933. L. Szahlender (*Magyar Gyog. Tarsas. Ert.,* 1932, 8, 58-60; *Chem. Zentr.,* 1932, i, 1592).—One g. of oil or fat is dissolved in 1 c.c. of CCl_4, and 2 c.c. of glacial AcOH, 0.1 g. of finely-powdered KI is added, and after 5 minutes' shaking of the whole is titrated with 0.01 N-$Na_2S_2O_3$. The degree of rancidity is the number of c.c. 0.01 N-$Na_2S_2O_3$ required per g. Rancidity number is 1.27 X degree of rancidity.—British Chemical Abstracts.

Bleaching of palm oil. C. D. V. GEORGI and GUNN LAY TEIK. *Malayan Agr. J.* **21,** *23-32 (1933).*—Borates and resinates of Co, Mn and Ni to the extent of 0.01% were used in bleaching palm oil with air at a temp. of 90°. The Co compds. bleached the oil in 1.5-2.5 hrs. while the Ni compds. required 12-13 hrs. Palm oil can be sepd. into a liquid and a solid fraction by filtration. It was found that both fractions could be bleached with air in 3 hrs. at 150° and in 2 hrs. at 100° with Co borate. The rate of air bleaching is retarded when neutral oil is used.

F. SCHERUBEL.

Rapeseed oil. Air blowing in presence of catalysts. B. P. CALDWELL and GEO. H. DYE. *Ind. Eng. Chem.* **25,** 338-42 (1933).—Results of blowing rapeseed oil under regulated temp. and air rate in the presence of a no. of catalysts, as indicated by viscosity measurements, are given. Marked increase is obtained with Al oleate, erucic and oleic acids and blown rapeseed oil. With anthranilic acid, hydroquinone, phenyl-hydrazine and Co linoleate, the reactions are depressed. The largest amt. of peroxidized bodies occurs at the period of the blow when all properties are most rapidly altering. No peroxidized compds. are detectable when any of the catalysts is employed. E. S.

Soy-bean oil. R. L. SMITH and H. R. KRAYBILL. *Ind. Eng. Chem.* **25,** 334-6 (1933).—Soy-bean oil produced by pressing when heated at 600° develops a dark color and a dark ppt. Changes in moisture from 0 to 8.0% and in temp. from room to 100° had no effect on the I no. With beans of 4% moisture and with increase of temp. in pressing there is a small increase in color before the break test, after which the color is lower until the crit. temp. of pressing (65°) is reached. The crit. temps. of pressing at which break oils result were raised as the moisture of the beans was reduced. E. S.

Climatic influence on the quality of oil from ripening linseed. SARGIUS IVANOV. *Allgem. Öl. Fett Ztg.* **29,** 149-50 (1932).—Linseed from Nolink (Russia) was cultivated at 2 stations in Switzerland: at Liebefeld, 550 m. above sea level, and at Davos, 1550 m. above sea level, and also in the tropical house of the botanical gardens in Berlin. The oil from the seeds cultivated at the Swiss stations was sepd. by cold pressing, while the oil from the seed cultivated in the tropical house was sepd. by ether exts. The I nos. (Hübl) of these oils were: Nolinsk 185.1, Liebefeld 188.4, Davos 189.6, Berlin tropical house 92.57. The weather at the Swiss stations was rainy and cold, whereas the temp. of the Berlin tropical house was kept at 25-30° with an atm. satd. with water vapor.

W. F. BOLLENS.

Commercial peanut oil. G. SCHUSTER. *J. pharm. chim.* **16,** 230-9 (1932).—A com. sample gave d_{15} 0.917, sapon. no. 192.3, I no. 92, unsaponifiable 0.2 per cent. With HNO_2 an elaidin product was formed. By oxidation with $KMnO_4$ in Me_2CO soln. (Hilditch method, cf. *C. A.* **25,** 1637) were obtained: (*a*) glycerides of completely satd. acids less than 1 per cent; (*b*) triunsatd. glycerides (calcd. as dioleic esters) 82.6 per cent, and (*c*) diunsatd. monosatd. glycerides (calcd. as dioleic monoarachidic ester) 8.6%. Fraction *a* is sol. in the acetone, $b + c$ (the mixed K salts of azelaic glycerides) is insol. After removal of MnO_2 with $NaHSO_3$ and decompn. of the K salts with H_2SO_4, *b* and *c* are sepd. in 95% alc. soln. by Li_2CO_3; the Li salt of *b* is sol., that of *c* is insol. in alc. Upon sapon., azelaic acid and a mixt. of a little stearic and palmitic acids with large quantities of acids of high mol. wts. (348-353) were obtained (cf. *C. A.* **17,** 2560; **25,** 425; **26,** 421).

S. WALDBOTT.

Action of catalysts in the oxidation of oleic acid. BUNNOSUKE YAMAGUCHI. *J. Chem. Soc. Japan* **53,** 1134-40 (1932); cf. *C. A.* **27,** 201.—Tests on oleic acid (I) indicated that there was no period of incubation for oxidation at 100°; but no oxidation took place for 15 hrs. when 0.1% hydroquinone (II) was added to I. However, the antioxidant action of II was not as great as with triolein. When Cu oleate (III) and II were added to I, III inhibited the antioxidant action of II and III itself acted as a weak antioxidant. III accelerated further oxidation of oxidized products of I. The explanation of an inhibitory action of III for II is that III acts as a catalyst of an oxidation of II and the antioxidant action of II is thereby lost.

K. KITSUTA.