ABSTRACTS

Soaps

Edited by M. L. SHEELY

Esterified Oils. *Soap.* Vol. IX, No. 11, page 67, November, 1933. —Esterified oils or ester oils are prepared from the higher fatty acids by esterification with an alcohol and particularly with glycerine. The commercial success of the process depends on the difference in market price of the fatty acids and natural oils. The process demands fatty acids of a high degree of purity. A clear dynamite grade of glycerine is usually satisfactory. One to 3% of the oleates of zinc, magnesium, aluminum and tin may be used as catalysts.

There are three methods for carrying out the process:

1. Stochiometric quantities of fatty acids and glycerine may be used.
2. Fatty acids may be used in excess and the excess removed by distillation.
3. An excess of glycerine may be used.

Esterification is carried out in a vessel provided with stirring apparatus and made from a fatty acid resistant metal. The fatty acids are warmed to 80° C. and then the glycerine containing the catalyst is stirred in. The mixture is vigorously agitated and carefully heated to 210° C. in four hours. At this point the fatty acid content is reduced to 6% and after another hour or two, 2 or 3%.

Silicate in Phosphate Detergents. *Soap.* Vol. IX, No. 11, page 60, November, 1933.—Alkaline-reacting phosphates have been commonly used for detergent purposes, but when they are used together with water-soluble silicates, the disadvantage of attacking aluminum ware is counteracted. The quantity of sodium silicate that must be added varies within wide limits and even as small a proportion as one part of silicate to one hundred parts of alkali phosphate prevents the corrosion of aluminum and other sensitive metal. It is, however, possible to use silicate in very high proportions without impairing the detergent properties of the alkali phosphate. Various examples of such compositions are given. Thus, one composition consists of 100 parts by weight of crystalline trisodium phosphate which have been intimately mixed with ten parts by weight of soluble water glass or sodium silicate. Another preparation calls for the use of 90 parts by weight of dry sand, and five parts by weight trisodium phosphate crystals, two parts by weight of sodium carbonate and one part by weight of solid sodium silicate. Still another composition is made by mixing together 40 parts by weight of soap powder, 20 parts by weight of sodium carbonate, 20 parts by weight of trisodium phosphate and ten parts by weight of silicate. Henkel & Cie., G.m.b.H., Switzerland. Swiss Patent Number 140,958.

Spontaneous Heat of Soap Powders. *The American Perfumer,* Vol. 28, No. 9, page 485, November, 1933.—Among subjects that have recently been investigated in Germany is the problem of the spontaneous heating of soap powders. Welter is stated to have shown that powdered soap prepared from drying or semi-drying oils has a greater tendency to undergo spontaneous heating in storage than soaps prepared from saturated fats. A dry, powdered cotton oil soap, for example, spread on a cement floor, became hot spontaneously after one hour, shortly afterwards began to smoke, and finally became a mass of coke.

Lederer has also found the same thing to occur with soap flakes prepared from stock containing a drying oil, but on the other hand soap flakes in which no drying oil or semi-drying oil was present have been found to show a tendency to spontaneous heating, so that oxidization of an unsaturated acid is not the sole cause of the phenomenon. The presence of a small amount of zinc oxide is stated to have a protective effect against heating.

Herr Hagen, a well-known German chemist, has lately discussed the use of sodium thiosulfate as a soap preservative. Writing in the Seifen. Zeitung, he states that one of its chief disadvantages is its instability. For this reason he prefers the use of bismuth nitrate as a soap preservative.

The chemistry of some little known oils. E. Bures.—*Chimie & industries* Special No., 1056-77 (June, 1933).—*Peach kernel oils,* obtained by extn. with Et_2O, cold petr. ether, boiling petr. ether, $CHCl_3$, CCl_4, CS_2 and C_6H_6, differed but little in compn.; the best quality (as judged by the acid no.) was obtained with $CHCl_3$ and the poorest with boiling petr. ether. The characteristics were: yield 33.3—49.0%, d_{22} 0.911-0.920, acid no. 9.29-27.77, sapon. no. 196.12-198.82, I no. (Hübl) 97.39-104.41, I no. (Hanus) 97.64-104.92, Reichert-Meissl no. 0.403-1.53, Polenske no. 0.615-0.856, Hehner no. 92.54-94.08, Ac no. (on Et_2O-extd. oil only) 22.90-24.56, ester no. 173.68-188.98, glycerol 9.50-10.34%. The oil contains the following acids 55-60% oleic, 15-20% linolic and not over 5% satd. acids consisting chiefly of stearic and palmitic with probably a small amt. of myristic acid. The oil contains about 0.01% phytosterol, m. 129°. *Oils of para nut kernels,* obtained by extn. with the same solvents as above, differed but little in compn. and had the following characteristics: yield 50.75-68.80%, d_{29} 0.909-0.917, acid no. 0.80-4.00, sapon. no. 196.80-206.90, I no. (Hübl) 92.23-99.50, I no. (Hanus) 93.40-102.12, Reichert-Meissl no. 0.960-1.859, Polenske no. 0.140-3.140, Hehner no. 89.15-95.94, Ac no. (on Et_2O-extd. oil only) 8.20-13.73, ester no. 195.77-202.59, glycerol 10.71-11.08%. The oil contains the following fatty acids: 50-55% oleic, 15% linolic and 15% satd. acids consisting mainly of palmitic with some stearic. The oil contains 0.04-0.08% phytosterol, m. 130°. *Apricot kernel oils,* obtained by extn. with Et_2O, petr. ether, $CHCl_3$, CCl_4, CS_2, cold C_6H_6 and boiling C_6H_6, differed but little in compn. and had the following characteristics: yield 26.3-49.0%, d_{15} 0.944-0.956, acid no. 9.07-29.92, sapon. no. 191.30-205.82, I no. (Hübl) 05.17-113.78, I no. (Hanus) 98.97-116.39, Reichert-Meissl no. 0.877-3.275, Polenske no. 1.567-2.987, Hehner no. 89.30-94.60, Ac no. (only on oil extd. with boiling C_6H_6) 26.65-33.82, ester no. 173.74-196.40, glycerol 9.50-10.74%. The oil contains the following fatty acids: 65% oleic, 15% linolic and 2-3% satd. acids consisting of palmitic and stearic. The oil contains 0.19% phytosterol, m. 133.5-134°, I no. (Hanus) 139.5, giving phytosterol acetate, m. 119-20°, and hexabromophytosterol acetate, m. 80-1°. *Pear-seed oils,* obtained by extn. with cold Et_2O, boiling Et_2O, petr. ether, $CHCl_3$, CCl_4, CS_2 and C_6H_6, showed but little difference in compn. The oil obtained with boiling Et_2O m. 21-2° and has d_{24} 0.918. The characteristics were: yield 14.1-25.5%, d_{15} 0.914-0.928, acid no. 22.16-28.34, sapon. no. 196.20-200.62 I no. (Hübl) 119.95-122.26, I no. (Hanus) 119.11-121.85, Reichert-Meissl no. 1.21-1.75, Polenske no. 0.851-0.988, Hehner no. 90.14-93.05, ester no. 160.99-175.66, glycerol 8.81-9.61%. The oil contains stearic acid 5-6%, palmitic 2-3%, lauric up to 0.5%, linolic 4-6%, oleic about 65%. The phytosterol m. 115°. *Oils of horseradish (Raphanus raphanistrum) seed,* obtained by extn. with Et_2O, cold petr. ether, boiling petr. ether, $CHCl_3$, CCl_4 and C_6H_6 differed but little in compn. The oil obtained with boiling petr. ether m. 23-4° and has d_{25} 0.914. The characteristics were: yield 26.5-29.3%, d_{20} 0.910-0.932, acid no. 2.12-4.39, sapon. no. 175.35-178.99, I no. (Hübl) 105.59-109.72, I no. (Hanus) 105.22-109.40, Reichert-Meissl no. 0.652-1.39, Polenske no. 0.657-0.949, Hehner no. 92.34-93.84, ester no. 172.91, 176.48, glycerol 9.46-9.65%. The oil contains: archidic acid 1.5-2%, linolic 8-10%, linolenic 5-7%, rapic about 60%, oleic trace, solid unsadt. 1-1.5%. The oil contains 0.2-0.3% phytosterol m. 128°.

A. PAPINEAU-COUTURE.

Yield calculations for oil extractions. M. Junker. *Seifensieder-Ztg.* 60, 833-4 (1933).—The usual analytical oil extns. of several hrs.' duration dissolve besides oil the phosphatides and other substances while factory extns. of ¼ hr. do not; the H_2O contents of lab. and factory residues are not the same; these 2 factors cause the differences between the calcd. and actual oil yields.

P. ESCHER.

The A. L. C. A. methods of analysis for sulfonated oils. Ralph Hart. *J. Am. Leather Chem. Assoc.* 28, 593-602 (1933). H. discusses criticisms by Burton and Robertshaw (*C. A.* 26, 613; 27, 3630). The difference between results for so-called total oil in the A. L. C. A. and in the Burton-Robertshaw methods is one merely of nomenclature and method of calcn. The ether-abs. alc. method for salts gives low results for NaCl. Detn. of active groups is considered more important than a complete fractionation of the oil.

H. B. MERRILL.

Qualitative test for waxes. D. Holde. *Fettchem. Umschau* 40, 233 (1933).—The usual qual. test for unsaponifiable oil, wax, paraffin, etc., in fats and oils consists in boiling for 2 min. 6-8 drops of the oil with 2-3 cc. *N* KOH and adding dropwise 1-10 cc. H_2O, when the unsaponifiable substances cause a turbidity, with the exception of spermaceti oil, and bottlenose oil. G. Buchner reports that a long-continued boiling also keeps beeswax, spermaceti and other waxes dissolved in the hot soap soln.; only spermaceti seps. as a turbidity on cooling.

P. ESCHER.

Change in the composition and analytical constants of beeswax at 150-200°. G. Buchner. *Fettchem. Umschau* 40, 234 (1933).—When heating pure beeswax or its mixts. with paraffin to 150-250°, the acid no. decreases, the ester no. and sapon. no. increase, but on further heating a reesterization or estolide formation occurs which again decreases the ester no. and sapon. no.

P. ESCHER.