ABSTRACTS

Oils and Fats

Edited by
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glycerides with a wide range of m.p.s. depending on the degree of satn. allowed.

Hard fats. Buss Akt.-Ges. Fr. 820,184, Nov. 5, 1937.—Hard fats are obtained from vegetable and animal oils with a high fat acid content, especially those obtained by extn. with CS_2, by treatment with H at 200-300°. S, As and P are rendered volatile by this process and are eliminated from the oil by the current of H. The H is purified by passage through aq. solns. of basic substances such as alkali or alkali carbonates, and rinsed. (*Chem. Abs.*)

Catalyst manufacture. K. W. Coons (to Natl. Aniline & Chem. Co., Inc.). U. S. 2,120,958. For the ppn. of Ni catalyst, $NiCO_3$ is subjected to the action of H_2 at a pressure below atmospheric and temp. from 175° C. to about 500° C.

Purification of glycerol. G. W. Brant. (E. I. du Pont de Nemours & Co.). U. S. 2,120,227.—The removal of odor-forming constituents from glycerol which comprises maintaining glycerol in contact with an activated vegetable carbon for such a period of time that a 50% aq. soln. of filtered glycerol so contacted when heated to 75° C. with ½ its equiv. amt. of 0.5% soln. of H_2SO_4 will be substantially free from odor, the glycerol-carbon mass, having a pH value of less than 7, and separating the glycerol from the carbon.

ABSTRACTS

Soaps

Edited by M. L. SHEELY

pH of soap solutions. *Soap Perfumery and Cosmetics* 11 (6), 534 (1938).—Estimation of free alkali is one of the important operations in the soap industry. Many experts consider a certain excess of alkali to be essential to the stability of soaps. The titration values in alcohol will never be exact (after saponification during solution in alcohol, etc.), while the effects of the free alkali during the washing process will be much below the values derived from the "hydrolysed soap." Less than 0.5 per cent free alkali can scarcely be detected by a pH determination. On the other hand, the pH values of soap solutions range from 9 to 11.5, and are dependent upon the degree of hydrolysis. With increasing molecular weight of the fatty acid the degree of hydrolysis also increases. It is accordingly far more important to follow the reaction of the soap during the actual washing process. Davidsohn drew attention to this important point many years ago.

It will thus also be understood why, for example, modern shaving creams with a generous content of myristic acid act more mildly than soaps containing much stearin. From what has been said, coconut oil fatty acid, it is true, should be milder in action than stearic acid, but a reaction complex here comes into play. Lauric acid has a much more powerful wetting action, and thus degreases the skin to a greater extent. The irritant action of coconut soaps is due more to a strong degreasing effect than to a drastic alkaline action. Myristic acid here forms a compromise which, as in so many cases, gives the best results.

The fatty alcohol sulphonates, now so important for shampoos, degrease the hair more strongly than soap. This drawback is overcome by superfatting and by adding a little acid, which acts as an astringent. Acid is harmless to the hair. The isoelectric point of hair is at pH 5.8. Klöd gives the isoelectric point of degreased wool as 4.9. Since in the pH range of 5 to 6 only minute traces of acids are present, no damage is likely to follow treatment with acid. To reduce the action upon the hair to a minimum it is recommended that the acid baths for the hair be adjusted to near the isoelectric point. The absorptive power for alkalis is considerably greater. They swell the hair and are retained during washing. If followed by an acid bath, the alkali is neutralized and the hair acquires gloss and looseness.

New Jap fatty acid process. *Soap* 14, No. 7, 43 (1938).—Fatty acids which may be made into soap without the addition of tallow may be produced from fish oil at a cost warranting success as a commercial enterprise, according to an announcement by the Osaka Experimental Laboratory, Osaka, Japan, by a process invented by Dr. Gen Matsumoto of the Laboratory. The process is claimed to be an entirely new method. Its principal features are that the fish oil is first converted into glycerine and fatty acid; the latter further split by vacuum distillation into two groups, one with smaller molecules constituting 65 per cent of the total and the other containing the larger molecules accounting for 25 per cent. The former, when treated by a hydrogenation process, transforms into a fatty acid embodying all desirable properties of tallow and may be made into toilet soap, candles and similar articles. The other fraction may be used as a substitute for China wood-oil and other fast-drying paint bases, it is claimed.

Sulfur soap compound. *Soap* 14, No. 7, 62 (1938).—A new high-molecular weight, organic sulfur compound, classed as an "oil," is water- and alcohol-soluble, and is suitable for addition to soap to give it the usual characteristics of sulfur containing soap. It can be used in much smaller concentrations than inorganic sulfur and has no objectionable odor. For ordinary shampoos, from 7 to 12 parts are added to a liter of liquid, and for medicinal shampoos, from 12 to 20 parts to 1000 parts of liquid. In making sulfur soap, a completely neutral milled soap is used. Two per cent of the organic sulfur compound is well mixed into the soap a short time before it is pressed. Such a soap has unusual detergent action and is also therapeutically active on the skin. (*Ole, Fette, Wachse, Seife, Kosmetik.*)

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Properties of the sodium soap prepared with hardened oils. Y. Kawakami. *J. Electrochem. Assoc. Japan* 3, 389-394 (1935).—Oils from soya bean, rice, soya, and chrysalide, having I vals. of approx. 70, give toilet and laundry soaps with properties similar to those of tallow soap, although their turbidity points are lower. Hardened fish oils (I val. 60-65), if mixed in a suitable amount with other fats and oils, can be used without producing any disagreeable effect. (*J. Soc. Chem. Ind.*)

Solvation of soaps and turbidity of soap solutions in relation to temperature. B. Tiutiunnikov and A. Tschernitschkima. *Maslob. Shir. Delo* 11, 545-547 (1935).—Stearic and palmitic soap solutions form insol. ppts. at 0.25% concn. at lower temp. than do the 0.5% solutions. Oleic, isooleic, rosin, naphthenic, and castor oil soaps lower the temp. at which stearic and palmitic soap solutions form insol. ppts. (*J. Soc. Chem. Ind.*)

Catalytic effect of aromatics on the keeping properties of perfumed soaps. H. J. Henk. *Seifens.-Ztg.* 65, 8 (1938).—A no. of aromatic substances (ionone, linalool, BzOH, etc.) are classified according to their pro- or anti-oxidant propensities.

Disinfecting soaps. E. Stepancovski and M. E. Rodriguez. *Rev. farm., Buenos Aires* 77, 460-465 (1935).—Common soaps and most medicinal soaps have no microbicidal power. Afrodol soap shows some activity. A 5% CH_2O soap destroyed Esch. coli in 5 min., but not always microbes of higher resistance. (*J. Soc. Chem. Ind.*)

The preparation of free fat acids from fats, particularly from castor oil. Miloslav Jakes and Jan Hökl. *Chem. Listy* 32, 15-22 (1938).—The usual methods for prepg. fat acids with alc. KOH (Benedict-Ulzer, Krafft, Strauss) were not satisfactory when the oil contained hydroxy fat acids, and some of these hydroxy fat acids always formed when fats were saponified. Castor oil yielded more hydroxy fat acids than any other oil; the product consisted principally of ricinoleic acid which, upon analysis, gave a high esterification no. and a low acid no. The high esterification no. was caused by the union of the OH group of one mol. with (1) a COOH group of another mol. of ricinoleic acid forming ricinoleoricinoleic acid, triricinoleic acid or even polyricinoleic acid, (2) a COOH group of another fat acid (stearic) forming stearylricinoleic acid, and (3) a COOH of the same mol. forming a lactone. The low acid no. was due to undecompd. soaps and to the presence of H_2O. The following procedure gave free fat acids from castor oil: mix 50 g. of oil with 40 cc. of a 50% KOH soln. in a porcelain dish until the emulsion is thick and will not form layers. Heat for 2 hrs. on a water bath to complete the emulsification. Dissolve the emulsion in 10 volumes of hot distd. H_2O (750 cc.), add quickly in a thin stream 50 cc. of HCl dild. 1:1 with water, boil for 10 min. and decant the fat acids. Wash the fat acids 4 or 5 times with 5-10 vols. of H_2O or until the washings do not contain inorg. acids detectable with methyl orange. Fat acids prepd. in this manner contained less than 0.05% ash and were used directly for acetylation. (*Chem. Abs.*)

Methods for the determination of the solubility rate of soaps. A. Klyuchevich. *Masloboino Zhirovoe Delo* 13, No. 6, 23 (1937).—The methods of Shestakov (Seifensieder Ztg. 1911, 36) and Engel (C. A. 31, 8971) are critically reviewed. (*Chem. Abs.*)

PATENTS

Simplified soap process. Adolf Welter. Brit. Pat. No. 473,220.—By his procedure 400 kg. of mixed fatty acids consisting of one-third each of fatty acids from peanut oil, olive oil and palm oil, are saponified without addition of liquid, with twice the amount of soda ash required for complete saponification at a temperature slightly above that necessary to melt the fatty acids. In the above case, 168 kg. of 99% soda ash is used and is intimately mixed with the fatty acids at a temperature of 30-35° C. From 2-50% of water, calculated from the amount of fatty acids, is added, e.g., 100 liters. After addition of perfume the cooled soap may be ground or pressed into the form of ribbons, threads, flakes or bars. The fat content of the soap in the example given amounts to 70-71%. (*Soap.*)

Apparatus for distilling glycerol and other materials. Joseph Baudot. French 822,840, January 8, 1938.—The heated glycerol is introduced in the form of fine rain, at the same time as superheated steam, into a vacuum so as to cause instantaneous evapn. The vapors are carried over by the steam and fractionally condensed. (*Chem. Abs.*)

Tartaric or citric acid with boric for bleached soaps. Carl E. Rost and H. Wortmann. Brit. Pat. Specification No. 481,481.—Soaps are frequently bleached by means of boric acid, but this simple method is open to the objection, the present patentees state, that the finished products lack uniformity due to the boric acid introduced into the finished soap entering only into partial reaction with the excess alkali thereof. Owing to the resulting considerable amount of free excess boric acid, the soap becomes hard and cracked or it crumbles.

The invention claims to eliminate the drawbacks of the known processes and proposes to neutralize and bleach soap without any unfavorable secondary effects by adding hydroxy polybasic aliphatic acids besides boric acid to the curd while still warm or to the solid soap. Suitable acids for this purpose are tartaric or citric acid. The acids are added for instance in aqueous solution to the liquid and warm or solid soap during the rolling process to prevent inactivity of the boric acid in the soap body and to cause it to enter into reaction with the alkali not linked to the fatty acid.

Soaps made according to the new process are neutral and much lighter in color than the known soaps. They do not darken later on and retain their shape without becoming brittle or cracked. The neutral point can be determined by the phenolphthalein test.

The following example has been found to give satisfactory results: 1½ kg. of boric acid added to 100 g. tartaric or citric acid are mixed with 1,000 kg. of soap. According to prevailing practice 1½ kg. boric acid can be used for 600 kg. soap. The use of the added substances according to the invention considerably enhances the effect of the boric acid, improves the appearance of the finished products, and eliminates the use of bleaching agents. (*Perfumery and Essential Oil Rec.*)