ABSTRACTS

Soaps

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New Stabilized Washing Preparations. Perfumery and Essential Oil Record 26, 11, 423, November, 1935. Ordinary commercial silicate is first converted from tetra- into tri-silicate by treatment with soda lye and 100 kilos of the tri-silicate is then mixed with 10 kilos of sodium phosphate and 90 kilos of soda ash and the mixture cooled and ground. A soap powder of 30-35% fatty acid content is then prepared and 85 kilos thereof mixed with 5 kilos of the stabilizing mixture just described, 5 kilos of sodium perborate, and 5 kilos of sodium pyrophosphate.

The next step is the production or incorporation of an efficient fat solvent soap or emulsifier. It has been found that the new improved turpentine introduced during the past few years offers advantages as a solvent. The most stable emulsifying agent seems to be Turkey Red Oil. The turpentine is first emulsified with the Turkey Red Oil, then well mixed with the stabilizer, and finally incorporated with the soap. Softer water is essential.

The Drying of Solids. IX, The Drying of Soap. Saburo Kagei J. Soc. Chem. Ind., Japan 38, Suppl. binding 463-73 (1935). A great many experimental data are given in the tabular and graphical form. Only one drying stage was observed, namely, that of the 2nd retarded drying velocity, and the other 2 stages present in most solids were missing. This indicates that the internal diffusion of the water plays the main role, while the resistance to surface evaporation is small in comparison to the diffusion resistance. The tests were carried out with velvet soap and Mitsuwa soap, both Japanese toilet soaps. (C. A. 29, 22, 7705, November 20, 1935.)

Synthetic Tallow. Seei-ichi Ueno J. Soc. Chem. Ind., Japan 38, Suppl. binding 237-41 (1935). "Oil foots" from alkali refining of fish oils containing 10-20 per cent of the original oils were completely saponified with caustic soda. The product was decomposed with dilute sulfuric acid and the mixed fatty acids were washed with hot water. Synthetic "tallow" was prepared by fractional distillation of the fatty acids under reduced pressure. From 700 grams of starting material having an acid number of 134, a solid portion of 170 grams having an acid number of 208, and a liquid portion of 130 grams having an acid number of 185.5, were obtained. The distilled fatty acids were esterified with glycerol, giving a product with an acid number of 5 and an idodine number of 51. The fat was then hydrogenated with a nickel catalyst to give a product with an iodine number of 30 and a melting point of 47° C.

Purified fish oils were further saponified with caustic soda, salted out with brine; the soap decomposed with sulfuric acid, and the crude mixed fatty acids washed with hot water and hydrogenated with a nickel catalyst at above 200° C. Repeated fractional distillation with steam gave a fraction which on esterification with glycerol resulted in a product having a composition similar to that of natural tallow. Synthetic butter was also prepared. The synthetic fats had a butterlike odor and were satisfactory for cooking and table use. (Soap XI, 11, 71, November, 1935.)

Fat Chemistry. Löffl Seifensieder-Ztg. 62, 627-9 (1935). A review of a number of papers on the synthetic preparation of fatty acids, the hydrogenation and oxidation of unsaturated acids, the washing action of soaps and methods of filling soaps and formulating washing preparations containing soap and water softeners with or without fillers or other additions. (C. A. 29, 22, 8369, November 20, 1935.)

Sulphonated and Sulphated Compounds in Admixture with Soap. Perfumery and Essential Oil Record, 28, 11, 442 (November, 1935). In spite of certain restrictions on the use of these newer detergents in the way of patent rights and limitations of export, their admixture with soap for toilet and laundry purposes seems to be increasing, and some of their advantages and disadvantages were discussed in these notes last month.

It has now become a matter of some importance to be able to detect and to determine approximately the amount of such admixture in soap, and an article on this subject by Biffen and Snell (Ind. Eng. Chem., Anal, Edit., 1935, 234) is there to be welcomed. It is pointed out that the presence of a sulphated or sulphonated compound may be readily detected qualitatively by the ability of the material to lather in acid solution, also by the presence of an appreciable amount of sulphate in the acid liquor after prolonged boiling with hydrochloric acid. Biffen and Snell give in their paper the results of a comprehensive analysis of three different commercial varieties of sodium lauryl sulphate, which show fairly wide variations. Thus the total alcohol-extract varied from 51.8 to 87.4 per cent and the ether-extract, after hydrolysis, from 29.9 to 54.9 per cent, the corresponding proportions of organic SO_3 being 12.4 and 21.4 per cent respectively, and of sodium sulphate 43.6 and 7.5 per cent. It is found that when dried at 110° C. the alkyl sulphates or their decomposition products are gradually driven off, comparative figures for the samples quoted above being after 6 hours, 2.34 and 7.33 per cent loss, after 24 hours 21.28 per cent and —, after 9 days, 31.38 and 53.98 per cent, so that for moisture determinations a distillation with petrol or xylol (Dean and Stark method) is necessary.

Further work on the washing qualities of the alkali alkyl sulphates is published by Ueno, Yokayam, and Ieakura (Journ. Soc. Chem. Ind., Japan, 1935, 603B), who have measured the solubility, interfacial tension of solutions (Hillyer), lathering power, and detergent properties of the cetyl, lauryl, and oleyl compounds. The actual detergent power was determined by soiling material with a standard soil containing dyestuff and olive oil, washing in a shaking machine, and measuring the color of the washed goods with the Lovibond tintometer. It is concluded that the oleyl compound is the most readily soluble, and that at moderate temperatures the salts of all three fatty alcohols have about the same efficiency. The best results are obtained for 0.5 per cent solutions at about 50° C. Contrary to the findings of other workers, the cetyl compound appears to be equal, if not superior to, the other compounds.

Determination of Glycerol in Distillation Residues. A. Chetaev, Masloboino Zhirovoe Delo 11, 264-5 (1935). The setup consists of a U-tube (12 centimeters high and 1.5 centimeters in diameter) set in a paraffin bath, with 1 limb filled with Cu shavings and connected with a steam-generating flask, and the other limb filled with loose asbestos and connected by a condenser with a receiving flask. Five cubic centimeters of 10% solution of glycerol to be tested are pipetted into the asbestos. The heating is so regulated that water in the steam generator comes to a boil when the paraffin bath reaches 190° and is held at 200° for 2 hours during the distillation. The distillate is evaporated and glycerol is determined as usual. By this method all organic and inorganic impurities are retained in the U-tube and only pure glycerol mixed with H_2O distils over. cf. C. A. 20, 4697. (C. A. 29, 22, 7870, November 20, 1935.)

Detergent Properties of Clay Soaps. W. G. Cass, *The American Perfumer,* page 243, July 1935. The scarcity of oils and fats in Germany, during and after the war, led to the use of clay and sand for cleansing preparations. Considerable attention is now being devoted in Russia to the possibilities of clay soaps and considerable work has been done in this direction, and it is suggested that washing agents should be divided into (a) surface-active preparations of the soap type, (b) solid emulsifiers, such as washing clays, and (c) solvents.

Recent work on the detergent action of soap has tended to confirm the views of McBain and others on its colloidal nature. In this connection, it should be noted that clay is a genuine detergent ranking with fats and fatty acids. Colloidal clay, in spite of the fact that it is without lathering power, enhances the lathering power of pure soap. The amount of kaolin soap required for complete lathering is only 60% of that required for soap alone. Soap and kaolin behave similarly physically in solution. Both form colloidal suspensions lower than that of water and viscosities greater than that of water; both are strong emulsifiers and absorbents.

An important property of colloidal clay is its capacity to absorb and neutralize free alkali. This applies especially to delicate skins and fabrics. Furthermore, it has distinct germicidal and disinfecting properties. In contradiction to previous assertions, colloidal clay, especially the improved types, is very suitable for cosmetic and toilet use.

A type of clay, known as bentonite, is being increasingly used for soap making. The principal source is in Wyoming, but deposits are also found in Cumberland and in China. Bentonite soaps have been in the market for a number of years, and it is suggested that they have water softening properties due to base exchange reactions. (*The Industrial Chemist Pharmaceutical and Cosmetic Supplement,* September, 1935.)

change reactions. (The Industrial Chemist Pharmaceutical and Cosmetic Supplement, September, 1935.)

Use of Potato Flour in Soaps in Germany. *Chemical & Metallurgical Engineering,* 42, 9, 519 (September, 1935). Regulations to restrict the use of fats, as insurance against a scarcity in food supplies, have affected particularly the soap industries. The fat content of all soap not designed for toilet uses has been reduced considerably. Potato flour, used before the war as a filler for soft soap, but prohibited during the war because of its food value, is now introduced to the trade in a refined form under the name of "Special Industry Starch." Dr. Steinhoff of Berlin reported that it qualifies particularly in the manufacture of those soaps in which fats have heretofore been used extensively. Its use is extended also to cold-stirred soaps, refined soaps and soap powders. While this starch is a filler, it contains properties which actually improve the resulting soap: because of its colloidal nature the lathering and washing qualities of the product are greatly improved.

PATENTS

Lathering and Dispersing Composition. U. S. 2,015,912, October 1, 1935. Fritz Sommer (to Chemische Fabrik Grünau Landshoff & Meyer (A.-G.). Higher fatty acid chlorides such as oleic, stearic, or palmitic chlorides are caused to react with high molecular split-off products of albumin of the type of lysalbinic and protalbinic acid in alkali solution (suitably with heating to about 60°). Several examples with details of procedure are given. (C. A. 29, 22, 8183, November 20, 1935.)

Production Fatty Esters. U. S. 2,015,606. Harvey D. Royce, Savannah, Georgia, to The Southern Cotton Oil Company, New Orleans, Louisiana. Production fatty esters by reacting neutral fatty tri-glycerides, a polyhydric alcohol and incompletely esterified fatty esters of polyhydric alcohols. (Chemical Industries 37, 5, 468, November, 1935.)

Apparatus, Particularly for Extruding Soap in Tubular Form. British 430,300, June 17, 1935. Charles Taylor Walter (to Swift and Company). (C. A. 29, 21, 7686, November 10, 1935.)

Soap. German 616,029, July 18, 1935. (Cl. 23e. 2). Johannes Mehne. Solid soap containing a high proportion (up to about 80%) of pine oil is prepared by treating pine oil at a raised temperature e.g., 80-100°, with a solid alkali hydroxide, and neutralizing the product by reaction with a fatty acid or its glyceride. The soap has good wetting properties and is useful, e.g., in washing wool. (C. A. 29, 21, 7686, November 10, 1935.)

Oil and Soap. German 614,898, June 24, 1935 (Cl. 25 a. 3). Metallgesellschaft A.-G. The oil and fat acid soap in the product obtained by neutralizing fats and oils with alkali hydroxides or carbonates is separated by treating the mixture with an aqueous alcohol concentrated alkali salt solution. This dissolves the soap, leaving the oil free. Examples are given. (C. A. 29, 22, 8382, November 20, 1935.)

Detergents, etc. French 783,319, July 11, 1935. Standard Oil Development Company. Wetting and cleansing agents are made by submitting to cracking a paraffin hydrocarbon, preferably of high molecular weight, to produce unsaturated products of more than 6 C atoms, preferably under conditions which will avoid appreciable polymerization, causing the product to react with concentrated H_2SO_4 and neutralizing to form a soap. The hydrocarbons treated are preferably of a petroliferous nature and chosen from the group composed of petrolatum and paraffin. (C. A. 29, 22, 8183, November 20, 1935.)

Apparatus for Soap Production. U. S. 2,019,776. Benjamin Clayton, Sugarland, Texas, and Ralph Everett Burns, Los Angeles, California, to Refining, Inc., Reno, Nevada. Apparatus for soap production. (Chemical Industries 37, 6, 580, December, 1935.)

Production Soap by Mixing Saponifiable and Saponifying Material. U. S. 2,019,775. Benjamin Clayton, Sugarland, Texas, and Ralph Everett Burns, Los Angeles, California, to Refining, Inc., Reno, Nevada. Production of soap by mixing saponifiable and saponifying material to produce soap reaction. (Chemical Industries 37, 6, 580, December, 1935.)