Abstracts

Soaps

Edited by M. L. SHEELY

FREE CAUSTIC ALKALI IN SOAP. *Perfumery and Essential Oil Record 31,* 264 (1940). The accurate determination of free caustic alkali in soap is a matter of some difficulty, though very many methods have been proposed for the purpose. Two or three years ago (This Journal 1937, 37) the Society of Public Analysis published standard methods adopted by the Society, for determination of caustic alkali, carbonate alkali, and total free alkali in soap. For determination of free caustic alkali alternative methods were recommended according to whether the amount of total free alkali was small—not exceeding 0.4%—or large. In the presence of much free alkali the addition of 10% aqueous barium chloride to the alcoholic soap solution was recommended, an immediate titration of the supernatant layer, to phenolphthalein. This method was admitted to give slightly low results, and as an improvement, Bauschinger (Fette u. Seifen 1939, 671) recommends dissolving the soap in a mixture of two volumes of alcohol to one volume of cyclohexane, and substituting a neutral solution of barium naphthenate for the barium chloride solution. This is said to precipitate the carbonate without also throwing down bulky barium soaps, and the method is claimed to give accurate results with both hard and soft soaps, provided the total free alkali is not excessive, i.e., not over 7% when low results are obtained.

THE PROBLEM OF THE RANCIDITY AND DARKENING OF SOAP. Mykola Zajev. *Seifensieder-Ztg. 67,* 132 (1940). Soap contg. 0.001% CuO or Fe_2O_3 showed a noticeable darkening after exposure for 4 weeks to diffused daylight at 20-25°; that contg. 0.005% CuO or Fe_2O_3 showed deterioration after 1 week. It is suggested that rancidity proceeds in the following manner: the unsaponified fat, which is in a finely divided state in the soap, oxidized in the presence of moisture, light and catalysts to form lower mol. wt. fat acids, aldehydes, ketones and other products with decrease in alky. of the soap, until finally all free alkali is removed and rancid "acid soap" remains. *(Chem. Abs.)*

EFFECT OF GLYCEROL ON DISTILLATION METHOD FOR WATER. Ralf Trusler. *Ind. and Eng. Chem. 12,* 509 (1940). When xylene is used instead of toluene, for distilling out the water content of soap containing glycerol, the additive error in the amt. of water found may exceed 1%. A large error will be observed in the analysis of soaps derived from the fatty oils of the coconut oil type than in the analysis of other soaps made from longer-chain fatty acids. This is due to the larger yield of glycerol from the former type of oils. Toluene and xylene give identical results upon glycerol-free soaps. In order to obtain universal accuracy in ascertaining anhydrous soap, the distillation test for moisture should be made with toluene. The commercial variety known as 10° toluene is recommended.

SOAP FILLERS. *Perfumery and Essential Oil Record 31,* 256 (1940). Formulae are given for a silicated yellow laundry bar and a silicated white bar soap. Silicate solutions and the basic soaps in which they are incorporated must always be on the alkaline side. Since silicate of soda will combine with caustic soda to a certain extent, an excess of caustic soda should be kept in the soap base. If the mixture stiffens in the crutchers, quick addition of strong caustic soda solution is usually effective in thinning it out.

Methyl cellulose lends an attractive appearance and creamy consistency to the lather. Milling is facilitated by greater ductility. Methyl cellulose is not used with milled soap as a filler but as an improving agent. It may be used as a filler for soft soaps, however.

Suspensible china clay is an effective filling material because it possesses marked detergent properties. In toilet soaps, when milled into the chips, it gives a silky texture and increases capacity.

Bentonite reacts with acids by virtue of its mildly alkaline nature and its absorptive capacity, softens water by its zeolite base exchange action, and strengthens the lather. It is a favorite stabilizing agent for asphalt emulsions, and is more effective in this capacity than soap. Soap holds carbon or dirt in suspension by its deflocculating or wetting action. Bentonite also holds dirt in suspension because of its polarity.

EVALUATION OF DETERGENTS AS DISINFECTANTS. A. T. B. Mattick and E. Sharpe. *Abstr. Proc. Soc. Agr. Bact. 1939,* 38; *Dairy Sci. Abs. 2,* 59 (1940). The authors stress the importance of a fuller knowledge of the germicidal properties of detergents. The effect of mixed compds., temp., concn., and org. matter on the destruction of Bacterium coli and Bacillus subtilis has been investigated. The germicidal velocity of the detergent decreases steeply with temperature. The K values of NaOH are little effected by small additions of sodium phosphate, but large additions increase the value. NaOH has a concn. coeff. about half that of phenol, but this is reduced on the addn. of sodium carbonate, phosphate or silicate. Sodium phosphate, though a good detergent, is a poor germicide. The presence of 0.1% of milk reduces the rate of disinfection considerably—21% for sodium carbonate and 67% for sodium hydroxide; this confirms the necessity for a thorough pre-rinse of the article to be treated.

SOAP PLANT COSTS. J. M. Vallance. *Soap 16, 7,* 28 (1940). Scrap soap represents a loss in soap factories. Coconut fatty acids may be recovered from coconut soap scrap and used, together with oleic acid and triethanolamine, to form a clear liquid soap of a reddish hue and good quality. Knigge has pointed out that coconut soap scrap is particularly well adapted for production of floating soap.

Early in 1936 two investigators at the Bengal Department of Industries, Dr. R. L. Datta and Ashutosh Das, studied saponification by sodium carbonate. Their experiments appear to prove that if 100% soda ash is used, 60% of this is reacted upon, necessitating the addition of 40% of free fatty acids, obtained by any of the fat splitting processes for the utilization of all the soda ash and final reaction of the balance of 40% of the glycerides with caustic so as to form the final soap. Leaving out of account the free fatty acids added to neutralize the unreacted soda ash, a saving of 60% of

caustic soda is effected by replacing it with the cheaper soda ash.

Cheap fatty acids may be profitably worked up into low grade soaps by using soda ash as saponifying agent.

PATENTS

BIGUANIDE COMPOUNDS AND RANCIDITY RETARD. Robert Sibley (Monsanto Chemical Company). *Brit. 521,863.* Biguanide, or any of its compounds are used in soap to render it more stable. The stabilizing agent may be introduced into the soap at any convenient stage in its manufacture; for example, after the fatty acid has been obtained in the usual manner, and has been saponified to produce a soap stock, the soap then being dried in the usual manner and made into cakes, flakes or any other form desired. Alternately, the stabilizing agent may be incorporated in the soap in the crutching process. In addition to their action in retarding rancidity, the stabilisers of the present invention have the advantage that they do not generally discolor the soap even on exposure to sunlight; in fact, they have a retarding action on the discoloration of the soap when so exposed. As an indication of the action of the stabilizers of the present invention on discoloration, soaps prepared from edible tallow and coconut oil and containing 0.1% based on the weight of the soap, of mono-ortho-tolyl-biguanide or other such compounds showed no discoloration when exposed to direct sunlight for one hundred hours.

TOILET SOAP. Isac Segal (Les producteurs de sucre d'erable de Quebec). *Can. 389,475.* To fix perfume and neutralize alky., 20-5 g. of concd. maple sirup per kg. of soap is incorporated during the processing.

DETERGENT. John Ross (Colgate-Palmolive-Peet Co.). *U. S. 2,195,581.* A process for preparing sulphonated detergents which comprises treating an olefine halide contg. at least 12 carbon atoms in which the halogen substituent is on a carbon atom adjacent to a carbon having an olefine group with a strong acidic sulphonating agent, diluting with water, boiling the water solution and neutralizing with alkali to form a long chain alkyl sulphonate having at least two substituents from the group consisting of hydroxyl and halide radicals.

RIBBON SOAP PRODUCT. Charles Walter to Industrial Patents Corporation. *U. S. 2,202,974.* A ribbon soap product in which the component particles are collapsed soap tubes with a continuously smooth surface, having arcuate adges, sufficiently large to readily appear to the eye as individually distinct particles of reasonably uniform size and shape, and sufficiently small to constitute necessarily a bulk soap product of such character that the component particles are used in mass rather than as separate entites, and consist of a collapsed soap tube solidified into a characteristic arcuate edged ribbon, whereby chipping at the edges and the consequent production of dust-like matter is obviated, in which product the individual particles comprise appreciable amounts of soap so that the respective particles are individually distinct bodies capable of ready, independent, relative movement and ready separation upon introduction into water, are capable of attaining practically immediate contact with water upon being dropped upon the surface thereof, and of maintaining their independent identity without sticking together to form masses of undissolved soap, and are large considering the amount of soap contained therein to thereby present an available surface area which is large relative to the amount of soap in the particle, whereby the soap product is free from any substantial characterizing amount of powder or dust-like matter, is soluble with particular readiness, speed and completeness, and is characterized by a total absence of any tendency to form lumps, balls or spots of undissolved soap in washing. *U. S. 2,202,973* covers the tubular soap product.

TUBULAR SOAP PRODUCT. Charles Walter to Industrial Patents Corporation. *U.S. 2,202,973.* A tubular soap product in which the component particles are individual soap tubes sufficiently large to readily appear to the eye as independent individually distinct particles of uniform shape, and sufficiently small to constitute necessarily a bulk soap product of such character that the component particles are used in mass rather than as separate entities, and consist of a thin-walled tube of dry soap material open at the ends, in which product the individual soap tubes composing the mass comprise appreciable amounts of soap so that the respective particles are individually distinct bodies capable of ready-independent, relative movement and ready separation upon introduction into water, are capable of attaining practically immediate contact with water, upon being dropped upon the surface thereof, and of maintaining their independent identity without sticking together to form masses of undissolved soap, and are large considering the amount of soap contained therein to thereby present an available surface which is large relative to the amount of soap in the particle, whereby the soap product is free from any substantial characterizing amount of power or dust-like material.

METALLIC SOAP. Francis Licata to National Oil Products Co. *U.S. 2,211,139.* A process of producing a new metallic soap which comprises hydroxylating a fish oil, saponifying the hydroxylated oil with sodium hydroxide in an amount of at least 15% based on the weight of the oil, in excess of that required for stoichiometrical combination and precipitating the soap thus formed with a salt of a polyvalent metal to form the corresponding metallic soap.

WASHING, CLEANING AND BLEACHING AGENTS. Henkel and Cie G.m.b.H. *Fr. 842,831.* A homogeneous powder of uniform structure contg. soap, frothing agents, per compds. and other materials such as borax, water glass, phosphates, sodium carbonate, etc., is obtained by pulverizing all the components, except the per compds. in a gas current in form of a deep cone and by adding the per compds. in a pulverized state to the lower part of the cone formed by the pulverized particles.

PREPARATIONS CONTAINING SOAPS OF SYNTHETIC FAT ACIDS. I. G. Farb. Akt. and Standard Oil Development Co. *Fr. 842,895.* To soaps of synthetic fat acids are added pyrophosphates, secondary, orthophosphates, metaphosphates, hexametaphosphates, borax or alk. or ammoniacal esquicarbonates in amts. of 1-50% of the wt. of the soap. The synthetic fat acids are obtained by the oxidation of non-aromatic hydrocarbons such as crude petroleum paraffin or mixtures of paraffin and unsaponifiable residue resulting from the oxidation of paraffins.