Abstracts

Soaps

Edited by
LENORE PETCHAFT

FILLED TOILET SOAPS STUDIED. Anon. *Soap, Perfumery, Cosmetics 19,* 292 (1946). The effects of various soap fillers on such properties of toilet soaps as density, efflorescence, feel, lather, and rate of wear are reviewed. The fillers which are most suitable for improvement of these properties are given.

MODIFIED ROSINS—THEIR POSSIBILITIES IN SOAP MANUFACTURE. J. N. Borglin (Hercules Powder Co., Wilmington, Del.). *Soap 22,* No. 6, 43-6 (1946). Rosins, when modified by hydrogenation, dehydrogenation (disproportionation) or polymerization to reduce unsaturation are useful additives in soap manufacture. These modified rosins are light in color (a property desired for soap manufacture), and help to maintain detergency, sudsing, and favorable rate of solubility. They also enhance the wetting action of tallow-base soaps (coconut oil soap detracts from the wetting action), impart bacteriostatic and bactericidal action not possessed by tallow-base soaps, and reduce skin irritation under test conditions.

SOME OBSERVATIONS ON THE CRACKING OF SOAPS. PART II. N. N. Godbole and J. S. Shukla. *Indian Soap J. 11,* 138-40 (1945). "Regular cracking" is a phenomenon observed in milled toilet soaps only and is unknown in unmilled soaps. This action has been minimized to such an extent that only horizontal lines appear after use. This has been effected by adjusting the soap in regard to its higher and lower melting point fatty acid soaps. Often K (soft) soap is deliberately added to help produce a free lather which also reduces the cracking tendency of the soap cake as well. The other factor involved in this problem is the mechanical one—the effect of the milling machine. The length, the angle and the tapering of the cone and size of the mouthpiece will influence cracking. It has been found that a sieve-plate with rectangular hole will help to reduce the cracking.

EFFICIENCY OF WETTING AGENTS. T. Krishnappa, K. S. Gururaja Doss, and Basrur Sanjiva Rao. *Proc. Indiana Acad. Sci. 23A,* No. 1, 1-7 (1946). Surface tension (γ) measurements at pH 3.7 with the maximum-bubble pressure (*I*) and ring methods were used in evaluation of wetting agents. *I* was found unsuitable for measurement of γ of solutions showing a variation with time. Solutions having γ values less than 37 dynes per centimeter were considered good wetting substances. By this standard Surfax, Igepon T, Gardinol C.A., and Ultrawon WX are very efficient. Nekal BX is less so and Diazopon A, Silvatol I, and Turkey Red Oil are inefficient. Bivalent ions are more effective than the univalent in increasing the wetting power of Nekal BX. (*Chem. Abs. 40,* 3282.)

DETERGENCY STUDIED BY PHOTOMICROGRAPHIC MOVIE TECHNIQUE. Anon. *Soap 22,* No. 6, 53 (1946). A new apparatus is described consisting of a combination movie camera and microscope designed to observe the action of detergents and made possible the study of the washing action on single fibers. This equipment reveals the difference in the action of soap and alkyl sulfates and shows the effect of various detergents on different types of soil, the effect of temperature on the removal of various soils from all types of fibers, and many of the other variations which enter into the mechanism of detergency.

WHAT'S AHEAD FOR SYNTHETIC DETERGENTS? Anon. *Chem. Industries 58,* 964-6 (1946). The general types of synthetic detergents are reviewed. An attempt was made to relate surface activity to chemical structure. For example, soap and the Na alkyl sulfates are good detergents; paraffin chains with a water-soluble group near the center, like sulfonated castor oil and Na dioctyl sulfosuccinate, are good wetting agents; quaternary ammonium salts are good dispersants; and the non-ionic compounds are good emulsifiers. The problem of testing and evaluating these products is discussed. Dispersion, emulsification, and wetting properties may be easily reproduced and evaluated in the laboratory. Detergency, a complex phenomenon depending upon the interrelationships of interfacial tension, contact angles of wetting, diffusion constants, solute and solvent properties, stearic effects, dissociation constants, etc., cannot be tested as easily. Practical applications using the Launderometer and Reflectometer are the best methods yet devised. The future problems of synthetic detergents including competition with soap, the fat and oil supply, prices, potential markets, newer products and uses are surveyed.

SOLUBILIZATION OF INSOLUBLE ORGANIC LIQUIDS BY DETERGENTS. James W. McBain and Paul H. Richards (Stanford University, Calif.). *Ind. Eng. Chem. 38,* 642-6 (1946). Solubilization is attributed to incorporation of an insoluble substance within and upon the colloidal particles or micelles of the soap or detergent. The detergent compounds, dodecylamine hydrochloride, Na oleate, K laurate, cetyl pyridinium chloride, and Emulsol 607L were used with a series of aliphatic and aromatic hydrocarbons, in addition to a number of polar compounds to test their influence as solubilizers. Substances of very low molecular weight are freely solubilized, but the extent of solubilization falls off rapidly with increase in molecular weight or molar volume. Polar compounds are more readily solubilized than hydrocarbons. However, the extent of solubilization of an organic compound depends not only upon low molecular weight and volume, structure, presence or nature or position of any polar groups, but also sometimes upon a direct interaction with the detergent. It was shown that the cation-active detergents are better solubilizers than the anion-active detergents, although there are distinct differences within each group. Soaps and detergents that have in common the 12-C paraffin chain differ greatly in solubilizing power, each favoring particular classes of chemical substances.

RELATION BETWEEN THE REVERSAL OF EMULSIONS AND THE ALTERATION OF PHASES IN SOAPS. Felix Lachampt. *Compt. rend. 220,* 46-7 (1945). To 100 cc. of triethylolamine oleate was added 19 cc. of paraffin oil. Increasing amounts of distilled water were added to this solution. With 5 cc. the solution became rigid, and with 50 cc. the emulsion was not resolvable under a microscope but had a honeycomb appearance; this indicates a heterogeneity which became evident as the particles of water became clearly visible toward 100 cc. With 200 cc. of water the appearance was very creamy, but the emulsion was still of the type water-in-oil. A very noticeable softening occurred at 220 cc. and when 240 cc. was added the alteration occurred distinctly, producing an oil-in-water emulsion. On repeating the experiment with lower concentrations of soap in oil the alteration occurred again with 240 cc. of water. The concentration of soap in water at the point of reversal is 28.5%. In dilute solutions the volume of the disperse phase is 88% of the total volume. The type of emulsion was determined for each preparation by adding a few grains of oil-soluble Sudan Red and examining under the microscope. The emulsions were prepared with the aid of an ordinary egg-beater. These results demonstrate that the principle which determines the type of emulsion by the solubility of the emulsified component in one or the other phase can be applied to soap solutions. (*Chem. Abs. 40,* 3282.)

SIDELIGHTS ON SOAP PERFUMES. Marcel Loir. *Soap, Perfumery, Cosmetics 19,* 210-14, 216 (1946). The various chemical constituents of both natural and synthetic perfumes fall into nine classes: hydrocarbons, alcohols (aliphatic, aromatic, terpenic, and sesquiterpenic), aldehydes, ketones, aromatic fatty acids, esters, lactones, phenols and phenol ethers, and nitrogenous compounds. These classifications are reviewed in order to determine the value of these constituents in relation to soap. Fixatives may be animal substances having very persistent perfumes, resins and balsams, crystalline synthetic products such as coumarin or cinnamic alcohol, or by-products in the manufacture of natural and synthetic perfumes.

PATENTS

CONTINUOUS MANUFACTURE OF SOAP AT LOW TEMPERATURES. James K. Gunther (Industrial Patents Corp.). *U. S. 2,401,756.* In the process, saponification of materials takes place in the presence of organic solvent such as Skellysolve to prevent necessity of conducting reaction at high temperatures, thus avoiding vaporization of glycerine and controlling fluidity of soap.

PROTEINACEOUS-QUATERNARY AMMONIUM SURFACE ACTIVE AGENTS AND PROCESS OF MAKING SAME. Charles A. MacKenzie and Leonard Spialter (Montclair Research Corporation). *U. S. 2,398,317.* Surface active agents are prepared by reacting protein degradation products from gelatin or blood albumin with organic acid halide and then with tertiary amine.

NONIRRITATING SKIN DETERGENT. Joseph Cunder (National Oil Products Co.). *Can. 432,690.* The composition comprises a sulfated fatty material e.g. sulfated oleic acid containing in excess of 13% SO_3 by weight, and an alkali metal stearate; the composition is substantially devoid of soaps of unsaturated acids and soaps of fatty acids containing fewer than 16 C atoms. (*Chem. Abs. 40,* 3286.)

WETTING AGENTS. Arthur E. Everett, James A. Wallwork, and Myer Briscoe. *Brit. 564,359.* A wetting composition miscible with mineral oils is prepared by treating a mixture of one or more cycloaliphatic amine salts of sulfonated or sulfated aliphatic primary, secondary, or tertiary alcohols containing at least 8 C atoms in the molecule, the corresponding cycloaliphatic amine sulfate, and one or more organic solvents with an inorganic salt, with the addition of water if necessary. The clear oily layer formed is separated from the aqueous layer. The cyclohexylamine salts, such as the salts of sulfonated or sulfated lauryl alcohol, are preferred. BuOH, pine oil, cyclohexanol, methylcyclohexanol, or cyclohexanone may be used as the organic solvents. The compositions, as such or mixed with a mineral or coal-tar oil, are suitable for wetting out and penetrating with oil materials saturated with water. (*Chem. Abs. 40,* 3286.)

PROCESS FOR FORMING SEPARABLE BAR OF DETERGENT. John W. Bodman and Fred Forrest Pease (Lever Brothers Co.). *U. S. 2,400,871.* Preparation of a divisible soap or detergent bar is by addition, along desired line of cleavage, of any substance dissimilar to soap such as salts, alcohols, etc., to prevent cohesion of soap at that point and to facilitate breaking.

CAPILLARY ACTIVE SALTS. Vernon E. Haury and Seaver A. Ballard (Shell Development Co.). *U. S. 2,402,495.* A wetting agent is prepared by the reaction of an amino alcohol or ketone (2-amino, 4-hydroxy pentane) with higher fatty acids.

SALT WATER SOAP COMPOSITION. Benjamin S. Van Zile (Hercules Powder Co.). *U. S. 2,402,473.* A salt water soap consists of the combination of a fatty acid soap, alkali resinate, and polyphosphate of an alkali metal, having high detersive and foaming properties.