Abstracts

Soaps

COLD, WARM AND HOT WATER SOAPS AND THEIR MIXTURES. Josef Hetzer. *Fette u. Seifen, 49,* 47-9 (1942). Formulas (fats) required for the various soaps are presented.

CHEMICAL BASES FOR SUDSING, WASHING, WETTING AND DISPERSING AGENTS. J. Hetzer. *Fette u. Seifen 49,* 364-71 (1942). A review.

DETERMINING THE WASHING VALUE OF SOAP AND WASHING AGENTS BY A TIME SAVING LABORATORY WASH TEST. Th. Hesse. *Fette u. Seifen 49,* 436-41 (1942). The app. is small. A ribbon (test cloth) is run through a soln. of the washing agent and then between rollers. This process is repeated any desired no. of times. Temp. of the soln. is controlled by a thermostat.

SUBSTITUTING FOR "LEIM" FAT (COCONUT, PALM KERNEL, AND THE LIKE) WITH SULFONATED OILS. F. B. Wittka. *Fette u. Seifen 49,* 115-17 (1942). Method of prepg. "similcocos" is given. This is a soap contg. sulfonated oils and was patented by C. Cagliotti *(It. pat. 380,441).* Similcoco must have a min. of 20% sulfonation degree and the total fat acids of the soap must contain at least 40% similcoco.

SURFACE-ACTIVE AGENTS. F. D. Snell. *Ind. & Eng. Chem. 35,* 107-17 (1943). Sulfated castor oil is a sulfuric acid ester formed at the hydroxyl groups of glyceryl ricinoleate. Aliphatic sulfonates are represented by esters of sulfosuccinic acid. These are true sulfonates contg. $-SO_2ONa$ rather than $-OSO_2ONa$. In both sulfated and sulfonated compds. the acid H is usually neutralized by reaction to give the Na salt. Addn. of a hydrocarbon side chain and a Na sulfonate group to an aromatic nucleus forms alkyl aryl sulfonates. This class may rival soap in price when produced in comparable amts. The nucleus used is predominantly that of benzene, but naphthalene and hydrogenated cyclic compds. also are important. Oleic acid chloride condenses with 2-chloroethylamine and, on subsequent treatment with Na_2SO_3, gives Igepon T, $C_{17}H_{33}CONH(CH_2)_2$-SO_2ONa. Quaternary amines, carrying high-mol. wt. hydrocarbon chains, form a reversed type of surface-active agent. Most types such as those already mentioned have an active anion; this has an active cation. Those with an active anion will ppt. with the cation-active type. Complex ethers and esters with long hydrocarbon chains are nonionizing types of surface-active agents also applicable in nonaq. media. The great majority of surface-active agents have $-COONa$, $-OSO_2ONa$, or $-SO_2ONa$ as the water-attracting group, and a straight-chain hydrocarbon radical of the range C_8 to C_{18} as the water-repelling group.

A NEW METHOD FOR DETERMINING FOAMING ABILITY AND THE INTRODUCTION OF AN AVERAGE LIFETIME FOR ITS CHARACTERIZATION. K. Hoffmann and H. Peter. *Kolloid-Z. 97,* 161-70 (1941). The foam height of soap solns. and oils (no more exact statement) is examd. for dependence on time, temp. and bubble size. The app. permits a series of investigations in ten vessels. Air is passed into soln. through capillaries, which were compared among themselves beforehand, whereby the pressure inside is held automatically const. within a fraction of a mm. The foam structures are regular and show a sharply defined height. The height-time curves obtained with different capillaries increase linearly at first, curve gradually, and reach a final const. value. In order to characterize the foaming ability, the av. lifetime r of the bubbles is introduced. This is the time taken by the foam to reach the final volume on linear extrapolation of the initial velocity. As soon as the capillary is tested for its permeability to air, r can be ascertained by reading off the final value in a simple way. The foaming ability and the av. lifetime decrease with increasing temp. and bubble size. The theory of Lederer according to which the velocity of decompn. of the foam is not proportional to the lifetime of the bubbles but dependent only on the total number does not correspond for the liquids investigated (higher hydrocarbons). This is shown by comparison of exptl. foam-rising curves with the curve calcd. from the theory of Lederer. The av. lifetime, as a characteristic const., is therefore to be preferred to the theory of Lederer for these liquids. It still cannot be decided whether the relation is general for aq. foams (albumin, soap). From the assumption of an av. lifetime of bubbles two types of decompn. curves are shown according to whether the decompn. begins before or after reaching the final height. The exptl. relations confirm these ideas on the decompn and show that an av. lifetime can be assigned to the liquids in the cases investigated. *(Chem. Abs.)*

ACID DETERGENTS IN FOOD SANITATION. M. E. Parker. *Ind. Eng. Chem. 35,* 100-3 (1943). Results are shown for alkali washed cans (I); alkali washed can treated with a gluconic acid steam rinse (II); can washed with Mikro San Acid Cleaner (III) (Midro San is reported as combination of certain organic and specific wetting agents, corrosion reacting inhibitor and microbiological depressant). Treatment II and III showed definite improvement in bacterial counts and in odor.

X-RAY INVESTIGATION OF LARGE LATTICE SPACINGS AND EXAMINATION OF FLOWING SOLUTIONS. H. Kiessig. *Kolloid-Z. 98,* 213-21 (1942). A camera specially designed for the measurement of the large interplanar spacings assocd. with mol. chain lengths is described. It is provided with an elec. heater for the investigation of solid samples and both stationary and flowing liquids at different temps. Solid samples: The largest lattice spacing of pure Na oleate was found to be 44.5 A. That of carnauba wax is 83 A. Igepal, with 20 polyethylene oxide groups, has a max. spacing of 80.3 A.; that with 30 polyethylene oxide groups has a max. spacing of 99.6 A., showing an increase of 1.9 A. for each group. Solns.: 18% K laurate soln. has a max. spacing of 48.3 A., whereas a mixt. of 18% K laurate with 0.25 g. of benzene per g. of K laurate has a max. spacing of 57.4 A. It is concluded that on infiltration of benzene into the soap micelle takes place in the latter case. Flowing solns.: 33.4% K laurate shows in contrast to Na oleate, no splitting up of the interferences of the large lattice spacings. Methylcellulose of degree of polymerization 43, corresponding to a chain length of 215 A., shows strong small-angle scattering. Ramie fibers also show small-angle scattering. *(Chem. Abs.)*

HEMOLYTIC POWER OF SOAPS OF ALKALI METALS. II. INFLUENCE OF THE NATURE OF THE FAT ACID. B.

Cavier. *Bull. Soc. Chim. Biol. 23*, 311-16 (1941). Soaps are more hemolytic in an acid medium than in an alk. medium, and this is particularly true for derivs. of the ricinoleic acid group. The introduction of Br or OH in the α-position in the fat acid increases the hemolytic activity of the soap. Satn. of the double bonds of oleic and ricinoleic acids gives soaps much more hemolytic than the original soaps. Replacing the ethylenic linkage with the acetylenic linkage does not modify the hemolytic activity. Na hydnocarpate is more active than Na chaulmoograte but neither of these soaps has a marked hemolytic power. *(Chem. Abs.)*

SURFACE TENSION OF MICELLE-FORMING SOLUTIONS. A. E. Alexander. *J. Chem. Phys. 10*, 69 (1942). Cassel agrees generally with Alexander's views. Cassel's assignment of a cryst. or liquid-cryst. structure to his adsorbed surface films, and his explanation that time effects before the min. surface tension is reached are due to a superposition of surface tension and surface stress, are tenable. *(Chem. Abs.)*

THE MECHANICAL SIDE OF TOILET SOAP MAKING. *Perfumery & Essential Oil Record Yearbook 1943*, 43-50. The numerous stages in the production of a finished toilet soap from the boiled base at which mechanical plant of some form is required are considered under the following headings: cooling and solidifying; slabbing, barring, chipping; drying; milling; plodding or compressing; rotary cutters; stamping-presses, moulds and dies; wrapping and cartoning.

RE-INCORPORATED SOAP SCRAP. *Soap, Perfumery & Cosmetics 15*, 607-8 (1942). Briefly outlined the procedure for semi-boiled soap is as follows: Soap cuttings and oil loaded into conical tank and steam turned on. Fatty acids, etc., run into the pan, heat applied and lye added. Softened cuttings and oil emptied from conical tank into the pan below. Remainder of fatty acids added to crutching pan. Caustic lye added to carry out complete saponification.

CONCRETE PLUS SOAP BUBBLES. *Soap, Perfumery & Cosmetics 15*, 586 (1942). Concrete that is made of soap bubbles and takes the place of cork is reported from Capetown, South Africa. Soap bubbles are strengthened with liquid glue, and a box of this froth is then mixed with cement. The result after hardening is a block resembling pumice stone, which floats in water and has all the heat-insulating properties of cork. Unlike cork, however, it can be built up with cement and plaster to make an inside wall by itself.

SOLVENT MIXTURES FOR SOAPS. *Soap, Perfumery & Cosmetics 15*, 588 (1942). According to S. R. Palit (Current Science, 10, 436-37) mixtures of organic solvents have a powerful dissolving action on ordinary soaps, although the individual solvent may not have any such action, e.g., any mixture of a monohydric alcohol and a polyhydric alcohol has a strong solvent action on soaps, even though either alone is a poor solvent at ordinary temperature. An optimum solvent composition exists where solubility is maximal. For ethylene glycol-ethyl alcohol this is 65:45 parts by weight for sodium stearate.

SALT WATER DETERGENTS. N. E. Buckman, Ray Huges and P. E. Clarke. *Soap 19*, 1, 21-3 (1943). Composition of bars of synthetic detergents for use by the Navy in salt water is discussed. Soap is used to bind the detergent into bar form. Soap is a poor detergent in salt water unless an excessive amount is used, but combined with a detergent the soap contributes its share to the effectiveness of the product.

Table I gives the relative cleaning efficiency of solns. of detergents in synthetic sea water and Table II outlines the method used to determine cleaning efficiency at the Naval Engineering Experiment Station, Anapolis, Maryland, and the Test Laboratory, Navy Yard, Philadelphia.

THE ROLE OF SOAP IN THE RUBBER PROGRAM. G. Leffingwell and N. Radin. *Rubber Age 52*, 235-6 (Dec., 1942). A review of the use of soap in the emulsification of butadiene, utilization of reclaimed rubber and other uses of soap with rubber. Twenty-five references.

CHROMIUM SOAPS IN LEATHER MANUFACTURE. R. Faraday Innes. *J. Intern. Soc. Leather Trades' Chem. 26*, 113-22 (1942). Cr soaps are formed in leather either by the action of soap on unwashed Cr leather, or by the action of Cr liquor on pelt contg. Ca soaps. Cr oleate was prepd. by adding aq. Na oleate soln. to solns. of Cr compds. at lab. temp. From solns. contg. over 7.5 g. Cr per l. an immediate ppt. of greenish white flocks, becoming purple after 18 hrs., was obtained. From dil. solns. (1 or 2 g. Cr per l.) a ppt. was formed only after 18 hrs. Cr oleate is much more difficult to decomp. than the Ca soap. It is completely decompd. only by boiling in relatively strong acids or alkalies (3 N HCl; N KOH). Owing to the difficulty of decompg. Cr soaps or removing them from leather, their formation must be prevented by removal of fat acid radicals from the pelt before Cr tanning. Fourteen references.

ARMY'S G. I. SOAP. *Soap 19*, 1, 28-9, 96 (1943). A discussion of the yellow laundry Government Issue all-purpose soap.

GLYCEROL AND CITRIC ACID SUBSTITUTES. *Chem. Eng. News 21*, 29 (1942). Production of substitutes for glycerol and citric acid has been announced by S. W. Landsberger, 116 N. Nassau St., New York, N. Y. and specimen quantities are available. The glycerol substitute is said to have properties similar to those of glycerol, to be soluble in water and alcohol, and to be very hygroscopic and noncrystallizing. The citric acid replacement is made entirely of organic acids.

PATENTS

HARD WATER SOAP. Mearl A. Kise and James F. Vitcha (The Solvay Process Co.). *U. S. 2,303,212.* A hard water soap contg. water soluble soap and a salt selected from the group consisting of alkali metal, ammonium, and organic amine salts of an ester of an alpha sulfonic acid derivative of a satd. fatty acid e.g., the sodium salt of the methyl ester of the alpha sulfonic acid derivative of stearic acid.

STARCH DERIVATIVE SOAP. Kenneth M. Gaver (The Komel Corp.). *U. S. 2,300,413.* A soap contg. an ester derivative of an alkali metal starchate in which the hydroxide of the metal is soluble in ethanol.

SOAP. Bror J. Grondal and Harry M. Wylde (Lever Brothers Co.). *U. S. 2,300,416.* Lathering properties and mildness of soap is improved by the removal of the fatty acids having less than 12 C atoms, e.g., caproic, caprylic and capric, from oils consisting of cocoanut, palm kernel, babassu, tucuum and cohume.

HIGHLY FILLED SOAP. E. Gröner *et al. Ger. 711,700* and *719,348 Cl. 23e*. Me acrylic acid and its polymers are added before adding the filling talc. *(Fette u. Seifen.)*

WASHING AGENT. A. Volz *et al. Ger. 719,734 Cl. 23e*. Reaction products of alkylolamine and phosphates are added to liquid K soaps. *(Fette u. Seifen.)*