Abstracts

Soaps

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Progress in the washing field. *Fette u. Seifen 48,* 212-21 (1941). A review with 465 references.

A phase study of commercial soap and water. James W. McBain et al. *Ind. Eng. Chem. 33,* 1049-55 (1941). For isotropic liquid, liquid crystalline middle soap, soap-boiler's neat soap, superneat soap, and probably also the neat and subneat forms of anhydrous and nearly dry soap, the phase-rule behavior is qualitatively the same as that of single pure soaps. For other regions of the diagram however, some fractionation seems to occur. Solubilities of various pure and com. soap are each characterized by a value of T_s, the temp. of ready solubility which can be precisely defined by reference to the lower temp. boundary of moderately conctd. isotropic soln. As an example, for a palm oil soap T_s is 52° C. Above this temp. as much as 30 gs. of soap will dissolve in 70 gs. of water. Only 2° C. below T_s this solubility has fallen to 5 gs. in 95 gs. of water.

Properties of detergent solutions. Detergent action of the system modified soda-soap-water. T. H. Vaughn, Anton Vittone, Jr. and Leslie R. Bacon. *Ind. Eng. Chem. 33,* 1011-19 (1941). Three types of washing tests made with an artificially soiled cloth at 60° C. using 0.1% soap solns. built with modified soda, show that at a constant pH soil removal in this system first increases to a max. and then decreases as the amount of modified soda is increased. Over the range of soap-builder ratios used in com. laundry practice, soil removal is approximately proportional to the acid titration value, which is in turn proportional to the concn. Two types of Launder-Ometer studies have been made, and one type is correlated with com. washer tests. The relative merits of all 3 types of experimental washing procedures are discussed.

Testing the washing action of detergents. G. Gehm. *Siefensieder-Ztg. 68,* 159-60, 170, 181-2 (1941). The test soil is prepd. by mixing (A) oil 30, lanolin 5, egg yolk 1, egg albumin 1g. and (B) milk 250, cacao 20, soot 2, starch 4 and sugar 10 g. B is mixed cold, heated to boiling and dild. with 250 g. of water. One part of A is blended with 9 parts dild. B. This mixt. is applied with a viscose sponge to strips of a mixed cotton and rayon fabric 20 cm. by 150 cm., the sizing having been removed from the cloth previously. An exptl. washing machine (shown in 2 sketches) is divided into 6 compartments attached to a shaft and can be oscillated through 90°. Two to 31 wash soln., 2 or 3 soiled cloths 6 cm. by 20 cm. are put in each compartment with enough extra cotton cloths to make the wt. of the total cloth ⅛ that of the soln. Thirty min. is allowed to heat to boiling and boiling is continued for 15 min. During this time, the compartments are oscillated. The above method was adopted in 1931 by the Versuchsstelle fur Hauswirtshaft des Deutschen Frauenwerkes. Too frequently the differences in results between detergent solns. are too small to be measured significantly. A modification of the machine employs driven rubber rolls to simulate a wringing action. The whiteness of the washed cloth is measured with the Pulfrich photometer. Tests are made at several different concns. of detergent and graphs drawn from the results are used to compare different detergents. (*Chem. Abs.*)

A criticism of tall-oil soaps. Th. Ruemele. *Siefensieder-Ztg. 68,* 182-3 (1941). A review of the compn. of tall oil and its use in soaps. Soaps from the crude oil may be used only for industrial purposes. More than 25% tall oil usually leads to soft soaps. Distd. oil yields more effective soaps. Soaps from hydrogenated fat and raw or distd. tall oil cleanse better than those made only from fats. Afterdarkening in storage may be reduced by incorporating Na_3PO_4. Soft soaps from tall oil are too stringy and KCl or fat acid of linseed or soybean oils must be used to offset this objection. With proper precautions, a satisfactory soap can be prepd. In distn. of tall oil equipment is corroded, but Cu, Al or stainless steel (18% Cr, 8% Ni) resists this. The rosin acid content of the distillate is only 2 to 5%. The fat acids are oleic, linoleic and linolenic. (*Chem. Abs.*)

The glassy condition of soap. B. Tjutjunnikow, S. Pleschkowa and A. Tschernitschkina. *Seifensieder-Ztg. 68,* 193-4, 205-6, 215-6, 227-8, 237 (1941). A review of conditions leading to the formation of transparent soaps including both cold made and milled varieties. In the latter, transparency and hardness are favored by strong cooling of the rolls; opacity by less cooling. The temp. during plodding must be kept between suitable limits. The authors have constructed a special nozzle for the plodder in which the soap is pressed thru an annular orifice, both the internal and the external parts of the orifice being water cooled. By this, greater phys. homogeneity is promoted and crystn. of part of the transparent soap is prevented thereby. (*Chem. Abs.*)

Protection of aliphatic amino-alcohol preparations by "amicrol". E. Belani. *Seifensieder-Ztg. 68,* 209-10, 220 (1941). The manuf. of triethanolamine (I), its purification and the complexes it forms with metal salts are reviewed. Many compds. based on I are used to combat rancidity as induced by bacterial action. (*Chem. Abs.*)

The composition and source of the "esters" in distilled glycerol. B. Tyutyunnikov. *Seifensieder-Ztg. 68,* 57, 70-1, 82, 92, 103-4 (1941). Glycerol from the first condenser of a Van Ruymbeke still may contain Ca salts of higher fat acids, carried over by entrainment. Glycerol from the 2nd condenser may contain higher fat acid mono-esters of glycerol which have been distd: both portions, especially the 2nd, may contain esters of caproic and higher acids. Under the usual analytical conditions, heating on the water bath with excess alkali for 15 min. is insufficient to saponify all of the amounts. The esters found in distd. glycerol are formed in the vapor state. Fat acids are set free from soaps by alcoholysis during distn. and are carried over in the steam if excess alkali is absent. A high content of salts of sulfonaphthenic acids may be present in sapon. glycerol if the "Kontakt reagent" was made from kerosene. These acids during distn. of glycerol behave similarly to fat acids. Expts. showed that HOAc is distd. with glycerol from a glycerol soln. of NaOAc. Formic acid under similar conditions appears in the distillate to a lesser extent. Aldehydes and acetates were practically absent from the distd. glycerol. The aq. distillate when it contained free acids and lactones, gave a pos. test for lactic acid. Formic and lactic acids are not present in fats and are formed in industrial distn. of glycerol. Acetaldehyde was found in some sweet waters. No MeOH was found probably because of the difficulty of sepn. (*Chem. Abs.*)

DETERMINATION OF GLYCEROL-SPLITTING ACTIVITY OF BACTERIA. B. Tanzi. *Boll. soc. ital. biol. sper. 15,* 283-4 (1940). The activity is followed by detn. of I fixation. All of 56 types of bacteria examd. utilized glycerol, although to different extents. (*Chem. Abs.*)

EVALUATING SOAP LATHERING PROPERTIES. Paul I. Smith. *Am. Perfumer and Essential Oil Rev. 43,* #1, 55 (1941). Research carried out on the formation and stability or persistence of soap lather indicates that the deeper or thickness of lather and its lasting quality increase in direct proportion to the number of fully saturated C_{18} atoms appearing in the molecule. Stearic acid, $C_{18},H_{36}O_2$ is a good example of a saturated acid which forms a firm lathering soap. Lauric acid, $C_{12}H_{24}O_2$, another common saturated acid (found in coconut oil), is an example of a fatty acid forming a profuse, fluffy lather with poor lasting quality. Highly unsaturated acids, such as linolenic acid, with three double bonds form poor lathering soaps. When coconut oil is blended with tallow the subsequent soap possesses almost perfect lathering properties.

THE REMOVAL OF LIME SOAPS. W. Kind and O. Oldenroth. *Melliand Textilber 21,* 585-9 (1940). The amt. of fat acid lost in soaping operations through the use of hard water is illustrated experimentally. An economic basis of pre-softening is indicated. (*Chem. Abst.*)

MAKING GOOD LIQUID SOAP SHAMPOOS. Ralph H. Auch. *Am. Perfumer and Essential Oil Rev. 43,* #1, 25 (1941. A method for manufacturing all liquid soap shampoos is given below: The liquid soap may be made in a steam-jacketed kettle or pan using horizontal slow agitation. An open and a closed steam coil may replace the steam-jacket but the batch becomes much more unwieldy. Working in the higher concentrations causes an emulsion to form sooner and the saponification to proceed more rapidly. The oil or mixture of oils should be placed in the kettle at a temperature of about 90° F., then run in the calculated equivalent of potash lye or mixture of lyes of about 45% concentration in a thin stream with agitation. To avoid an initial setting up, as soon as jelling starts run in soft hot water to lower the concentration to about 28 to 30% anhydrous soap. A further dilution will retard the rate of saponification but in no case should heat be applied until this hot water is added. The boiling and agitation should be continued until the saponification is complete as confirmed by chemical analysis. If the batch becomes unruly and tends to froth unduly, a spill can be avoided by sprinkling in cold water.

A simple control method is described, consisting of titrating with N/10 KOH or acid to neutralize, then adding more oil or lye to adjust. If the soap is near neutral and clear, no adjustment is necessary. The concentration of anhydrous soap is determined as follows: (1) Acidify soap in Babcock milk test bottle, add hot water when fatty acids clear, centrifuge, read volume and consult table or graph for concentration. (2) Heat 10 g. of liquid soap to dryness in an evaporating dish contg. 10-20 g. of well dried sand. Loss of weight will represent moisture. The difference between 100% and the percentage of moisture is considered anhydrous soap.

It is recommended to age-test each component of the perfume in the shampoo.

PATENTS

STABILIZING SOAP. George Martin (Monsanto Chemical Co.). *U. S. 2,247,281.* An alkali metal water soluble soap rendered resistant to discoloration and the development of rancidity by having incorporated therein from 0.01% to 1.0% of di-p-biphenyl amine.

CONTINUOUS PRODUCTION OF SOAP. Benjamin Thurman (Refining, Inc.). *U. S. 2,245,536.* A process for continuously producing soap from a saponifiable material by reaction therewith of a saponifying material, which comprises: continuously mixing stream of the saponifiable material and the saponifying material; continuously advancing a stream of the resulting reaction products containing soap and volatile material through a conduit to a vapor-separating chamber while at a temperature which is above the boiling point of the volatile material measured at the pressure existing in said vapor-separating chamber; introducing said stream of the resulting reaction products into said vapor-separating chamber which is maintained at a reduced pressure lower than the pressure existing in said conduit to permit the volatile material to separate from the soap in said vapor-separating chamber and leave a soap in comminuted condition; continuously removing the separated vapors from said vapor-separating chamber at such rate as to maintain said reduced pressure; and continuously removing the comminuted soap from said vapor-separating chamber without interruption to the concurrent removal of the vapors from said vapor-separating chamber.

WATERPROOFING TREATMENT OF TEXTILE MATERIALS. E. B. Higgins. *U. S. 2,250,377.* The process for the treatment of textile materials consists in impregnating the textile material with a soln. contg. a member of the group consisting of albumen and globulin, coagulating said member by the action of moist heat and treating the textile material with a hot aqueous soln. of soap contg. free higher fatty acid.

CLEANING COMPOSITION AND PROCESS FOR THE PREPARATION THEREOF. C. Johnson. *U. S. 2,250,379.* A cleaning composition in the form of a substantially dry product capable of releasing a substantial quantity of available hydrogen chloride when admixed with water, comprise the reaction product of urea sulfats and a sufficient quantity of a water-soluble metallic chloride to form urea chloride and the sulfate of the action of such reactant chloride with said urea sulfate.

GRANULAR SOAP CONTAINING PERBORATES. Clemens Bergell. *Ger. 693,026.* To the hot soap soln., contg. about 30% water, is added an aliphatic alc. The soln. is cooled to 50° and the perborate added.

MANUFACTURE OF DRIED GRANULAR SOLIDS. Arthur Jones (Industrial Associates, Inc.). *U. S. 2,249,960.* The method of producing granular soap which comprises downwardly directing a stream of hot gases, forming a fluid mixture of kettle soap and granular soap, centrifugally spraying said mixture into the upper end of said stream and thereby producing granular soap by spray drying, utilizing the spray dried product as the granular soap ingredient of said mixture in proper ratio that the mixture has such content of soap as will yield by flash drying a granular soap having a mass density not less than .3 and limiting the ingredients of said mixture to kettle soap and the granular soap produced by spray drying said mixture.