Abstracts

Soaps

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HIGH TEMPERATURE SAPONIFICATION. *Soap 17*, No. 10, 64 (1941). A method of making soap which requires only about fifteen minutes, as compared with the three to seven days required to make a batch of soap by ordinary methods, was described by Joseph J. Jacobs, of the Polytechnic Institute of Brooklyn, at the recent meeting of the A.C.S. at Atlantic City. A feature of the process is the complete elimination of the use of water. In the process, the fat is dissolved in kerosene, solid lye is added, and the mixture is heated at a high temperature. According to Jacobs, the lye reacts with the fat very rapidly, requiring something less than fifteen minutes to make the soap. This hot mass of soap and kerosene is then sprayed into a vacuum chamber. Here the kerosene and pure glycerin vaporize off leaving a dry, granular soap behind, which has a porous structure said to be useful where a quick-dissolving soap of the bead or flake type is desired. The kerosene and glycerin are condensed and separated, the kerosene being re-used for a new batch.

ANHYDROUS SODIUM SOAPS. HEATS OF TRANSITION AND CLASSIFICATION OF THE PHASES. R. D. Vold. *J. Am. Chem. Soc. 63*, 2915-24 (1941). A differential calorimeter has been devised suitable for determination of heats of transition and transition temperature up to 340°. These were determined for the series of phases occurring between true crystal and true liquid for sodium laurate, myristate, palmitate, stearate and oleate. Since the heat effects are similar at the successive transitions of sodium myristate, palmitate and stearate, it is inferred that similar changes in structure are involved. These structural changes may not occur in the same order at the numerically corresponding transitions of sodium laurate, and may also be different for sodium oleate. At the transitions from curd fiber phase to sub waxy soap and from subway soap to waxy soap the heat effect is large and varies with the chain length. At the higher temperature transitions the heat effect is small and relatively independent of the chain length. The conclusion is that the low temperature transitions are probably due to changes in the arrangement of the hydrocarbon chains while the high temperature transitions are due to rearrangement of the polar heads of the molecules.

THE INFLUENCE OF THE TITRATION ALKALINITY OF CLEANSING AGENTS ON THE PH OF HUMAN SKIN. L. Peukert, *Arch. Dermatol. Syphilis 181*, 417-24 (1941). Unavoidable cleansing of the skin of workers with raw material decreases the protective acidity of the skin and predisposes to the production of dermatitis. Ordinary cleansing solutions have a pH of about 9 and influence the acidity of the skin to a degree which depends on the quality of the skin, and not merely the actual alky. but the titration alky. or the buffer capacity, in which the ionic reserve plays a role. The authors measured by the modified Bülmann hydroquinone glass electrode method the reaction of the cutaneous surface and the actual alky. and potential alky. (buffer capacity) of 5 cleansing solns. Actual alky. varied from pH 9 to 10 while the potential alky. varied from 6.5 to 50 (amt. N HCl necessary to lower pH to 5.5). A simplified practical method for detg. relative buffer capacity is by use of phenolphthalein which becomes colorless at about pH 8.5. Normal pH of the skin was detd. and repeated at intervals after washing the skin with 1 gm. of various cleansers for 1 min. The pH rose sharply and returned to normal or nearly normal in 4 hrs. The titration alky. of a cleanser with actual alky. over pH 9.0 should not be over 10 (e.g., 10 c.c. N HCl should reduce the pH of 100 c.c. of a 10% soln. below pH 8.5. (*Chem. Abs.*)

PHYSICAL PROPERTIES OF NA, K, AND NH_4 LACTATE SOLUTIONS. A. Dietz, E. Degering, and H. Schopmeyer. *Ind. Eng. Chem. 33*, 1444 (1941). Na, K, and NH_4 lactates have been proposed as substitutes for glycerine in pharmaceuticals and as hygroscopic agents. The densities, refractive index, viscosity, b.p., f.p., surface tensions are reported for concentrations ranging from 1-90%.

POTASSIUM SOAPS OF A WOOD ROSIN AND ROSIN RESIDUE AS SPREADERS FOR NICOTINE, DERRIS, AND PYRETHRUM IN HORTICULTURAL SPRAYS. W. W. Fassig and R. L. Pierpont. *J. Econ. Entomol. 34*, 200-2 (1941). Sprays contg. nicotine and K soaps of wood rosin (A) and of rosin residue (B) were more effective than either nicotine alone, or derris and pyrethrum alone, or in mixts. with these soaps. The test insects were the bean aphid (Aphis rumicis) or the spirae aphid (Aphis spiraecola). As spreaders in nicotine sprays, A and B were as satisfactory as K oleate; but the latter was the best spreader for derris. Added to pyrethrum at several concns., A and B did not affect its efficiency. K oleate at any concn. was more toxic than A or B; the latter two soaps were about equal in toxicity. The order of effectiveness of the toxic agents when used alone was: derris (acetone ext.) >nicotine sulfate >pyrethrum ext. (*Chem. Abs.*).

ALKALIES IN CLEANING PROCESSES. P. D. Liddiard. *Chem. & Industry, 60*, 684-8 (1941). Cleaning is considered under the following classifications of industry: 1—Textiles, (a) vegetable fibre processing, e.g., cotton, linen, etc.; (b) animal fibre processing, e.g., wool, hair, silk, etc.; (c) artificial fabrics, e.g., artificial silk; (d) laundry. 2—Food industries. 3—Meal cleaning. 4—Miscellaneous industries. 5—Domestic uses.

PATENTS

IMPARTING GLOSS TO TOILET SOAP TABLETS. Lever Brothers and Unilever, Ltd., *Brit. 583,675*. The invention consists in a continuous automatic process of uniformly imparting gloss to tablets of toilet soap consisting in passing the tablets in one or more feed lines by suitable conveying means successively through a steaming zone wherein each tablet is subjected to a brief treatment with steam and then through a drying zone wherein each tablet is subjected to the drying action of a current of cold or hot air. The duration of treatment in the drying zone is such that the treated tablet when cold or sufficiently cooled can be wrapped or packed in the normal way either by hand or by means of the customary machines without in-

jury to the glossy surface. The gloss appears to be imparted to the surface by the steam treatment causing a partial solution and partial melting of the surface layer of the soap, whereby minor surface irregularities are evened out. The invention further consists in apparatus suitable for carrying out the process in a preferred manner, consisting of a steam chamber, a hot-air tunnel and an endless conveyor belt, passing over pulleys at each end and driven by a geared motor, the arrangement being such that the hot air may reach the tablet as quickly as possible after the latter has passed through the steaming zone. *(Perfumery and Essential Oil Record.)*

COLD-FORMED SOAP. Hermann Plauson. *German 696,733.* Addn. to *Ger. 693,241.* The fat acids, rosin, and talloil are dispersed in the required amt. of water in a colloidal mill or similar apparatus without the use of dispersants. It is then saponified in the usual kneading machines with concd. caustic.

STABILIZING AGENT FOR OXYGEN-CONTG. PER-COMPOUNDS. Otto Lind and Herbert Colonius (Procter and Gamble Co.). *U. S. 2,254,434.* As an agent for stabilizing and controlling the flow of oxygen from oxygen-contg. per-compounds (in a bleaching detergent), the combination comprising water-soluble salts of amino acetic acid, having at least two carboxyl groups in the alpha positions for each basic nitrogen atom present and magnesium silicate, said water-soluble salts being present in excess of the quantity of said magnesium silicate.

GERMICIDAL SOAP. Walter Hartung (Sharp and Dohme, Inc.). *U. S. 2,251,934.* A germicidal and detergent soap composition exhibiting effective germicidal activity and possessing effective detergent and washing properties, which composition comprises an alkali metal soap of at least one saturated fatty acid and from about 1-10%, based on the soap, of an alkyl phenol capable of acting as a germicide, which soap is free from soaps of unsaturated fatty acids and substantially free from unsaponifiable and unsaponified material other than phenol. *U. S. 2,251,935* relates to saturated fatty acids reacted with caustic and mixed with phenol to form a germicidal soap with good detergent properties.

Report of the Soap Analysis Committee—1941

A year ago our Committee reported on some studies in the determination of tetra sodium pyrophosphate in soap. In that work a sample of soap powder containing about 12 per cent of pyrophosphate in addition to appreciable percentages of sodium silicate and sodium carbonate was analyzed using two methods: (1) a gravimetric procedure in which an aqueous solution of the alcohol insoluble was treated with a solution of zinc acetate, after adjusting to a pH of 3.5. The precipitate of zinc pyrophosphate was then washed, ignited and weighed; (2) by conversion of the pyrophosphate to the ortho salt by acid treatment and determination of the P_2O_5 by precipitation and weighing according to the official A.O.C.S. procedure. As a result of this work, the Committee decided at that time not to recommend adoption of either method but outlined some further studies to be carried out on the same sample of soap using a modified procedure which, in brief, was as follows:

1. Obtain alcohol insoluble in usual manner.
2. Dissolve alcohol insoluble in water and adjust to pH of 3.8 using glass electrode.
3. Add a measured excess of zinc sulphate solution.
4. Titrate liberated sulphuric acid with standard alkali, again using the glass electrode in determining the endpoint.
5. Calibrate the standardized alkali against recrystallized and dried tetra sodium pyrophosphate using the glass electrode in the same manner as in the actual determination.

During the present year eleven laboratories collaborated on this method, the results ranging between 11.69 per cent and 12.20 per cent or an average of 11.93 per cent tetra sodium pyrophosphate. The results are in close agreement showing a variation of only 0.51 per cent between laboratories reporting. The endpoint using the glass electrode appears to be much superior to that obtained with the procedure used last year in which a pH color indicator was used. Compilation of results is given in Table I.

Conclusions

The Committee at their meeting held in Chicago on October 7, 1941, agreed to recommend tentative adoption of the volumetric procedure using a glass electrode. Incidentally, the method outlined and recommended for adoption follows substantially that adopted by the A.S.T.M. for evaluation of commercial tetra sodium pyrophosphate.

1941 A. O. C. S. Soap Committee Cooperative Results

TABLE I

Sample for Determination of $Na_4P_2O_7$

Collaborator	Moisture	% $Na_4P_2O_7$ as received	% $Na_4P_2O_7$ calc. to 5% moisture
Armour & Co.	3.83%	12.30%	12.15%
31st St. Aux.	3.81%	12.39%	12.24%
		12.35%	12.20%
	Ave. 3.82%	12.35%	12.20%
U. S. Dept. of Commerce Nat'l Bureau of Standards	3.71%		12.00%
Fels & Co.	3.46%	12.05%	11.88%
Foster D. Snell, Inc.			11.94%
Hercules Experimental Station	3.4%	11.9%	11.69%
	3.4	11.9	11.69
	Ave. 3.4%	11.9%	11.69%
Hooker Electro-chemical Co.	3.63%	11.99%	11.83%
Lever Bros. Co.	3.59%	12.20%	12.02%
Los Angeles Soap Co.	3.31%	12.19%	11.98%
	3.41	12.11	11.90
	Ave. 3.36%	12.15%	11.94%
Procter & Gamble	2.96%	*12.02%	11.77%
Swift & Co.	3.15%	.....	11.90%
Allen B. Wrisley Distributing Co.	3.71%	12.22%	12.05%
			Ave. 11.93%
			High 12.20
			Low 11.69

* Caustic solution was standardized against constant boiling HCl instead of C. P. $Na_4P_2O_7$.