Mixed lauric-myristic esters and method of making same. E. F. Drew. *U. S. 2,238,441-2.* The soap and oil removed from coconut oil in refining are split, the fat acids are distilled and these are reconstructed to an edible fat.

Soap stock purification. B. H. Thurman (Refining, Inc.). *U. S. 2,239,131.* The foots from refining is

Hydraulic pressure transmitting fluid. Robt. R. Fulton (Puritan Company, Inc.). *U. S. 2,238,045.* The fluid contains castor oil, glycerin, glycols, alcohol, soap and water.

Production of lubricants for textiles. I. M. Colbeth (The Baker Castor Oil Co.). *U. S. 2,225,552.* A lubricant for textiles and the like comprising dehydrated castor oil having one of the double bonds of each acid group saturated.

Grease and the method of preparing the same. L. C. Brunstrum and R. A. Swanson (Standard Oil Company). *U. S. 2,229,368.* A heat resistant grease comprising a lubricating oil, soda rosin soap and soda soap of hydrogenated fish oil fatty acid pitch.

Manufacture of an improved tall oil. H. R. Murdock (The Champion Paper and Fibre Co.). *U. S. 2,235,462.* Tall oil is improved in relation to color and made capable to prolong standing without crystn. by heating the dry oil at 250-350° until about 5% is lost.

Hydrocarbon drying oil. Charles A. Thomas (Monsanto Chemical Co.). *U. S. 2,240,081.* The method of making a drying oil comprising heating at a temp. between 100° and 300° C. and in the presence of H_3PO_4, a resin obtained by the polymerization of an unsatd. liquid hydrocarbon in the presence of a metallic halide, and separating therefrom a liquid distillate having an I no. of at least 100.

Continuous process of treating oils. Otho M. Behr. *U. S. 2,239,692.* An app. for separating polymerized from unpolymerized by pptn. from soln. in a solvent is described.

Factice. Yosio Nanasato and Teisi Ito. *Japan 137, 731.* To natural oils contg. esters of unsatd. acids, such as soybean oil, fish oil, linseed oil or castor oil, S_2Cl_2 is added, and the mixt. is treated with ultrasonic waves, without CCl_4, to shorten the time of reaction and to obtain homogenous factice. (*Chem. Abs.*)

Ink. R. E. Coleman (The Zein Corp.). *U. S. 2,236,521.* A printing ink comprising zein, a solvent for the zein, linseed fatty acids, and a coloring agent is described.

Abstracts

Soaps

Edited by
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Properties of detergent solutions. pH studies on modified soda-soap solutions. Leslie Bacon, James Hensley and Thomas Vaughn. *Ind. Eng. Chem. 33,* 723 (1941). This paper is the first of a series concerned with the properties of detergent solutions and the measurement of detergent effects. There is presented here detailed pH data at 25°, 40°, 60° and 80° C. for commercial modified soda-water solutions over a wide concentration range, with and without soap. Methods and apparatus for determining pH are discussed in detail. Concentrations from 0.01-10.0 were used. Modified soda solutions are characterized by remarkably flat pH maxima at concentrations between 0.5 and 1.0 gram per liter in a pH range of 0.3 unit. Dilution buffering capacity diminishes regularly with rise in temperature at all concentrations. The low maximum pH of 10.02 at 25° reflects the physiological mildness of modified soda solutions.

The presence of soap in modified soda solutions produces interesting effects. At very low modified soda concentrations, the pH values closely approximate those of the soap solutions. At high concentrations the behavior is practically that of the builder alone. Intermediate concentrations show transitional values. At 25° C. the pH of soap is reduced by modified soda at all concentrations, the reduction increasing with concentration. At 40° C. the behavior is similar but less marked. At 60° C. reduction no longer occurs but all concentrations of modified soda increase the pH of the soap solution, while at 80° C. a still greater increase occurs. At a soap concentration of 0.1% the practical laundry builder range of modified soda concentration can be taken as approximately 0.03 to 0.3%. For this range, it is shown that the entire pH difference would be 0.04 at 40° and 0.10 unit at 60° C. yet great differences in effective washing capacity result from the use of various compositions within this range.

Reclamation of Stoddard dry cleaning solvent. Charles Lowe and Adrian Smith. *Ind. Eng. Chem. 33, 762* (1941). The adsorptive properties of activated carbon, magnesium silicate and activated fuller's earths toward fatty acids and substances associated with rancidity in dry cleaning solvents have been studied in laboratory and plant tests. Alkali absorption and mineral acid theories of dry cleaning soap decomposition are presented to account for excessive accumulation of fatty acids in Stoddard dry cleaning solvent above that derived from the garments themselves. The effect of soap on the adsorptive capacity of a powder is pointed out.

Super-fatting of soaps. *Am. Perfumer 42,* 5, 65 (1941). Among modern super-fatting agents for which recent patents have been granted are decylphenol, decylcresol, dodecyl- (b-y-dioxypropyl)-amine, nonyl-, undecyl-, tridecyl- and pentadecylketone, monodecyl- to hexadecylphenol, etc. Further recommended as super-fatting agents are sodium protalbinate, particularly for increasing the lathering capacity, lamepones, casein, preferably in a borax solution, sodium cholate and the addition of sulphonated oils, especially sulphonated fatty alcohols.

For the stabilization of soap, additions of borax, sodium thiosulphate, salicylic acid, benzoic acid and their sodium salts have been recommended. Additions of 0.1% stannous chloride as well as additions of 0.1-0.2% methyl-p-oxybenzoate or -p-phenylphenolate are also said to be very effective. According to Brit. 440,910, octylphenols and their derivates are to be used as antioxidants for soaps and vegetable oils. For the same purpose the use of p-tertiaryamyl- and butylphenol has been protected in this country.

A patented process (*Ger. 653,217*) for the production of soaps, shaving creams, etc., uses ketones contg. a higher aliphatic or hydro-aromatic and a free or substituted oxyaryl group.

Continuous soapmaking process. J. W. Wigner. *Soap Perfumery and Cosmetics 14,* 169, 236 (1941). The Clayton process (*U.S. 2,037,006*) is discussed. There is no indication that the glycerine recovery is more efficient than in a well-conducted soap-boiling process, yet doubtless it is far purer and would probably be usable direct for certain industrial purposes.

The claims cover the production of a bar soap or soap in the form of filaments, with a water content of 10-20%, and fatty acid content of 74-83%. Though it may be doubted whether this process would produce bar soap of a quality to meet the public taste, the making of soap threads is quite another proposition. These would sell against flakes; they form a very attractive preparation, and if this process is any good should be very much cheaper to make. The objections to the process for making bar soap hardly apply in this case. Although it is quite likely that the proportion of free caustic may be high when the threads are fresh from the plant, there will always be considerable exposure to air before the soap is actually used, and owing to the large surface exposed, carbonation of the alkali should be rapid. Apart from this—flakes and thread, unlike bar soap, are always dissolved in water before use, and as this always contains dissolved carbon dioxide, any free caustic remaining will almost certainly be rendered innocuous. If the process turns out to be a commercial success in America, it will be interesting to learn if it can be worked on a scale suitable for factories of moderate size.

The Adcock process (*Brit. 367,513*), similar to Clayton's, Dickerson and Moreton (*U.S. 2,136,283*) and the German Descha and Loffl processes are discussed. The German processes are batch methods with some of the advantages of continuous soap making.

A phase rule study of the system sodium myristate-water. R. D. Vold, R. Reivere and J. W. McBain. *J. Am. Chem. Soc. 63,* 1293 (1941). The effect of the chain length of the soap molecule on the phase diagram involves at least two opposing factors, the longer chain soaps being less soluble at low temperatures and low concentrations of soap while at higher temperatures and high concentrations of soap the shorter chain soaps are the less soluble.

Benefits from proper storage of soap. Paul I. Smith. *Am. Perfumer 42,* 5, 61 (1941). Small storage bins filled fairly full but not fitted with tight lids prevent caking and sweating. Since both chipped and powdered soaps are known to heat when left for any considerable time in bins, they should be agitated every few days. Storage is essential in the manufacture of transparent soaps to allow time for clarification. Possible trouble during storage is formation of crystalline coating of filling agents which is accelerated by marked temperature changes. Pyridine bases in denatured alcohol have been known to cause turbidity in transparent soaps.

Cold process soap is kept warm on the frames for the first 24-48 hrs. to continue saponification, and then cooled. Chip soaps made from low grade fat will go rancid during storage. Liquid soap may improve during storage, but will throw down a greasy sediment. Straight coconut oil gives the least sediment. Shaving cream definitely improves from storage, forming a smoother and softer cream. "Aged" full-boiled soaps have a better texture and feel than one which is worked more quickly.

Rancidity and darkening of soap. Mykola Zafcev. *Seifensieder-Ztg. 67,* 15, 142; 16, 152 (1940). Analyses comparing fresh and rancid soaps showed little change in the amount of unsaponified fats and unsaponifiable material and confirmed the decomposition of the unsaponifiable fats in the rancid soap. Inside of 4 weeks an originally good soap, made of neutral fats, spoiled in the presence of 0.001% Fe_2O or CuO. There was a strong darkening of the fatty acids due to the presence of iron in quantities of 0.001-0.02% Fe. (*Chem. Abs.*)

Soap-scrap. C. R. Kemp. *Soap 17,* #5, 21 (1941). Old soap scrap can be reworked by running it through a pre-plodder with several plates of varying sized holes to facilitate re-boiling. It is impractical to make a refinish from a charge of 100% scrap. It could be refinished and added to a fresh run of soap, or a fresh charge of fats can be made from reboiled scrap. Sometimes it is impossible to destroy perfumes in the scrap. The glycerine is usually of no value, so every effort should be made to avoid waste through leaks, etc., and the unavoidable scrap should be kept clean.

Treatment of unfinished laundry soap. Siro Kubota (Nippon Yusi K. K.). *Japan* 132,158. Soap made by saponifying stock consisting partly or wholly of rosin and cut into bars or slabs is moistened with dil. glycerol by spraying and dried. The product thus treated can be kept in its original condition until it is stamped.

PATENTS

Method of treating tall oil. Emil Edward Dreger (Colgate-Palmolive-Peet Company). *U. S. 2,240,365.* Unsaponifiable is removed from tall oil soap by a current of steam at 200-350°.

Black liquor soap (tall oil). *Brit. 532,866.* The process of separating the mixture of fatty acids and rosin acids from black liquor soap comprises the formation of a hot, substantially dehydrated solution of the rosin acids and alkali salts of the fatty acids in a solvent, especially amyl alcohol, in which the alkali metal salts of the fatty acids are soluble in the hot but not the cold, and in which the rosin acids are soluble both in the hot and in the cold, cooling the solution to precipitate the salts of the fatty acids, and separating the precipitated salts from the mother liquor.

Thus black liquor soap which has been purified by repeated reprecipitation from aqueous solution by means of caustic soda and sodium sulphate is either (a) treated with a modicum of sulphuric acid sufficient only to liberate the rosin acids while leaving the fatty acids in the form of soap, or (b) acidified completely and the resultant tall oil treated with sufficient alkali to convert only the fatty acids into soaps; the mixture of rosin acids and fatty acid soaps so obtained is dissolved in sec. amyl alcohol and heated so as to distill off all removable water until soln. retains less than 1.5% (preferably less than 0.2%) of water by vol. and the soln. is cooled so as to precipitate the fatty acid soaps which are filtered off, washed with amyl alcohol, and worked up to free fatty acids. The solvent is evaporated from the cooled mother-liquor (containing the crude rosin acids, and these are taken up in petroleum naphtha (b.p. 90-130°), and extracted with 4% caustic soda (amyl esters and unsaponifiable matter, etc., remain in the naphtha layer) and again liberated by acidification. The rosin acids may be further purified by redissolving in petroleum naphtha to a concentration of 8-10% whereby the dark oxidized and polymerized "sapinic acids" are precipitated, and bleaching with furfural or resorcinol. (*Oil & Colour Trades J.* Mar. 28, 1941.)