Abstracts

Soaps

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HIGH TEMPERATURE SAPONIFICATION. Joseph Jacobs, Jr. *Ind. Eng. Chem. 34,* 322-6 (1942). The Kokatnur process of saponifying fats was studied in a laboratory set-up. Fat (tallow) is dissolved in kerosene (equal amounts) and heated at 180° C.; powdered alkali in kerosene is added and the mass agitated while the temperature is raised to 220° C. as quickly as possible. Saponification is complete in 15 minutes. Bring mass of soap, kerosene, and glycerol through a glass spray nozzle into a heated vacuum flask where the kerosene and glycerol were flashed off, leaving a powdered anhydrous soap in the flask. Separate the kerosene from the glycerine by decantation. The recovered glycerol generally contained less than 1% water, but this was dependent upon the fatty acid content of the charge.

Crystalline caustic gave more rapid saponification. Free alkali must be removed from the soap by means of a strainer. An increase in pressure in the flask increased the % glycerol on soap, and the % kerosene on soap. There was no appreciable decomposition of the glycerol. The boiling range of the kerosene was found to influence the process, the higher boiling range (290-310) allowing for a more complete recovery of glycerol. With fresh kerosene the residual kerosene is higher. Soap produced is slightly darker than that produced by the usual methods. A pilot unit was built for 25-gallon charges.

The advantages are as follows: short time of saponification and savings in time, labor, and plant investments, kerosene prevents local overheating, and glycerol decomposition and soap charring, and produces an inert atmosphere from its vapors, gives a mass of low viscosity, relatively pure glycerine obtained, and low heat requirements. Disadvantages are: lack of refining during saponification, the anhydrous soap has to be worked with water to form a cake soap, traces of kerosene are present, but no odor persists. Uses include greases and metallic soaps.

THE EFFECT OF SURFACE-ACTIVE AGENTS ON ELECTRO-ORGANIC REDUCTIONS. Chas. W. Proudfit and Wesley G. France. *J. Physical Chem. 46,* 42-51 (1942). The surface-active agents which caused the greatest lowering of efficiency were those which were most active in producing foam in the electrolyte. For these agents there was an optimum concn. for the display of the inhibiting action; higher concns. of the agent had less effect on the reduction than relatively low concns. With a moderately strong surface-active agent of the anion-active type, the inhibiting effect increased with an increase in the concn. of the agent. With strong surface-active agents of the anion-active type, a max. effect was observed at a low concn. of the wetting agent, with subsequent addns. producing a lesser effect. With a strong surface-active agent of the cation-active type, a large effect was observed at a very low concn. while subsequent addns. were without further effect. The effect of anion-active agents is assumed to be due to their ability to stabilize emulsions of org. liquids in aq. solns. The effect of the cation-active agent is attributed to its satn. of the cathode surface when only minute quantities of the agent are added to the catholyte, the agent acting as a barrier which partially excludes the depolarizer from the reducing zone of the catholyte, the agent acting as a barrier which partially excludes the depolarizer from the reducing zone of the cathode.

ADVANCES IN ENTOMOLOGY. C. H. Richardson. *Ind. Eng. Chem. News. Ed. 20,* 241-56 (1942). Inorganic and organic stomach poisons, contact poisons, control of termites, plant insecticides covering pyrethrum, rotenone, nicotine in veg. oil solvents, nicotine-fatty acid salts, wetting, spreading and adhesion of sprays, fumigants, attractants and repellents, methods for testing insecticides and evaluating toxicological data are reviewed in detail. Two hundred and sixty-seven references.

Na PERCARBONATE IN SOAP POWDERS. J. B. Angus. *Industrial Chemist 204,* 18, 28 (1942). Na percarbonate has been found to be a satisfactory substitute for Na perborate in soap powders.

NEW IMPERIAL CHEMICAL INDUSTRIES CELLULOSE DERIVATIVE IN SOAP MANUFACTURE I. *Soap Perfumery and Cosmetics 15,* 37 (1942). Cellofas WFZ is a white to cream coloured fibrous cellulose derivative soluble in cold and hot water, hygroscopic, available in several viscosities. It imparts smoothness, hardness, high polish, absence of bloom, and a lasting creamy lather to soaps; it is an excellent dispersing and binding agent, both for colours and perfumes. NEW I. C. I. CELLULOSE DERIVATIVE IN SOAP MANUFACTURE II. *Ibid. 15,* 98 (Feb. 1942). Cellofas WFZ is the Na salt of cellulosic acid, a moderately strong acid, which renders it able to buffer pH of solns. It does not attack metals, and is unaffected by bacteria or fungi. Cellofas WLD (a cellulose ether) is neutral in reaction, is not hygroscopic, is resistant to light, alkalies and oxygen, fermentation, etc., and soluble in cold water. It behaves as a protective colloid, binding agent, stabilizer for fat emulsions, non-toxic, etc.

THE ADSORPTION OF WETTING AGENTS BY WOOL. Geo. C. LeCompte and Jos. W. Creely. *Am. Dyestuff Reptr. 31,* 121-3 (1942). Anion-active wetting agents are more strongly adsorbed from acid soln. than from alkaline soln. Cation-active wetting agents are more strongly adsorbed from alkaline soln. than from acid soln. The adsorption of non-ionizing wetting agents was in general much lower than that of the ionizing wetting agents, and in fact, with one non-ionizing wetting agent, the expts. consistently indicated negative adsorption in alkaline, acid, and neutral solns.

BACTERICIDAL ACTION OF SYNTHETIC DETERGENTS. Zelma Baker, R. W. Harrison and Benjamin Miller. *J. Exptl. Med. 74,* 611-20 (1941). The bactericidal action of a no. of anionic and cationic synthetic detergents on 4 Gram-pos. and 3 Gram-neg. bacteria has been investigated: the cationic examples were zephiran (mixt. $RMe_2(PhCH_2)NCl$, R C_8 to C_{18}), phemerol (R is p-tert-octylphenyldiethoxy), retarder LA (octadecyltrimethylammonium bromide), emulsol-605 ($C_{17}H_{33}CO_2C_2H_4NHCOCH_2NMe_3Cl$), catol C_{11}-$H_{23}CO_2C_2H_4NHCOCH_2NEt_3Cl$), emulsol-607 ($C_{11}H_{23}$-$CO_2C_2H_4NHCOCH_2NClPh$), emulsol-660B (dodecylpyridinium iodide), damol (N,N,-N′,N′-tetramethyl-N

N'-didodecyl-B-hydroxypropylene-diammonium bromide) and emulsol-609 (dodecylalphaaminoisobutyrate-HCl); anionic (as Na salt); cetyl sulfate, myristyl sulfate, duponol LS (oleyl sulfate), tergitol-8 (2-ethyl-1-hexanol sulfate), triton W-30 (alkyl phenoxyethansulfonate), igepon T (alkyl-$CONMeC_2H_4SO_3Na$), Tergitol-7 (3,9-diethyl-6-tridecanol sulfate), Tergitol-4 (2-methyl-7-ethyl-4-undecanol sulfate). The cationic detergents as a group exhibit marked bactericidal effects on Gram-pos. microorganisms and somewhat less pronounced action on Gram-neg. organisms. The anionic detergents were germicidal only against the Gram-pos. organisms and they were considerably less effective than the cationic compds. Of the anionic detergents, the most active one was an alkyl sulfate derived from a branched-chain sec. alc. Correlations between bactericidal action and inhibition of bacterial metabolism and also between bactericidal action and chem. structure of the detergents are discussed. *(Chem. Abs.)*

RELATIVE TOXICITY OF CERTAIN ANTISEPTICS CONTAINING SOAP AND ALCOHOL. WITH SPECIAL REFERENCE TO MOUTH WASHES. H. Welch and C. M. Brewer. *Am. J. Public Health 32*, 361-7 (1942). A very marked increase in the toxicity index occurred when soap was added to phenol solns. The relatively high toxicity index caused by the addition of soap was demonstrated with several phenolic compounds and essential oils. The toxicity of alcohol and soap was obtained for comparison. The toxicity and germicidal power of 87 commercial mouth washes have been determined.

WIRE DRAWING LUBRICANT CIRCULATING SYSTEMS. Robert O. Williams. *Wire and Wire Products 16*, 699-700, 724 (1941). Wire-drawing lubricant is generally an emulsion of fats or oils stabilized by soap and contains free fat acid, a certain amt. of which is necessary for proper lubrication. With age the lubricant increases in free fat acid content and forms Cu soap and ultimately Cu soap sludge which entangles Cu particles. The pH range of 8.5-10.0 is apparently satisfactory in most cases for wire drawing lubricants. Suggestions are given for the proper handling of wire-drawing lubricants. *(Chem. Abs.)*

INHIBITION OF THE PROTEOLYTIC ACTION OF TRYPSIN BY SOAPS. Robert Peck. *J. Am. Chem. Soc. 64*, 487 (1942). Potassium soaps of oleic, linoleic, linolenic, stearic, tuberculo-stearic and phthioic acids were prepared and added to pure crystalline trypsin in casein. The inhibition was measured using varying amts. of soaps. A table is given showing the minimum amt. of soaps capable of causing a complete inhibition for 2 hrs. Determining factors are solubility (least soluble show poor inhibiting power), double bonds (only as influence solubility), molecular weight (greater the molecular weight, the greater the inhibition) and structure. Reversibility is attained by adding Ca chloride. Order of addition of components was significant.

DETERGENCY MEASUREMENT. James Gould and C. W. Selheimer. *Soap 18*, No. 3, 29 (1942). Photoelectric reflectometers have been found very useful in determining the efficiency of detergent materials or washing operations. Wider use of reflectometers by smaller soap manufacturers has been limited by the relatively high cost of such equipment. A simple portable laboratory-size reflectometer has been devised consisting of a standard light bulb (50 candle power Mazda No. 1193 auto head lamp bulb) is adjusted to a standard intensity, light is projected upon a piece of cloth from which it is reflected into a photo electric cell. The cell transforms the light energy into electrical energy and registers the strength of the current upon a milliammeter with suitable amplifying apparatus. Equipment and methods are described in detail.

PATENTS

SOAP PRODUCT. Benjamin Thurman (Refining, Inc.). *U. S. 2,271,408.* A cleaning composition for use in spray cleaning devices is made with soap stock from the alkali refining of fats and oils. The soap stock containing gums and alkali is in an anhydrous condition to prevent fermentation. The gums present increase the foaming, rinsing and emulsifying properties of soap, as well as preventing the deposition of insoluble soaps when mixed with hard water. Isopropyl alcohol is added to prevent graining out of soap when incorporated in an aqueous solution of the order of 10% concentration.

SOAP PRODUCT. Benjamin Thurman (Refining Co.). *U. S. 2,271,407.* Fermentation of soap stock from the alkali refining of fats and oils is prevented by mixing with dry alkali to form a stable product for the production of washing powders, etc. The detergent action is enhanced by the presence of gums, which also have a water-softening effect.

SOAP. Joseph Crosfield and Sons, Ltd. *British 521,910.* Finely divided solid alkali metal silicate is caused to react with a soap-forming fat acid, in absence of water and at temps. below those producing the decompn. of the fat acids, with the resultant formation of a product contg. at least 5% soap and a substantial proportion of alkali metal silicate. *(Chem. Abs.)*

SOAP. Maurice Bertrand. *British 520,562.* Broken-up paper is subjected to a maceration and stirring in a soap soln. *(Chem. Abs.)*

GLASS FIBER PRODUCTS. The British Thomson-Houston Co., Ltd. *British 532,596.* Glass fibers of materially improved elec. and mech. properties are obtained by coating or sizing the strands with a water-insol, metallic soap such as the stearates, palmitates, oleates, arachidates and naphthenates of Ca, Ba, Mg, Zn, Cd, Al, Fe, Co, Ni, Sn, Pb, Th, Mn, Sr, and Cr. Al stearate gives the best results. A min. oil may be incorporated with the soap dissolved in the volatile hydrocarbon solvent to decrease stiffness of the treated glass fibers. *(Chem. Abs.)*

WASHING COMPOUND. Otto Lind (Henkel and Cie G.m.b.H.). *Ger. 703,604.* A soln. of: (1) an O-yielding salt such as per salt. (2) a water-sol. compd. with an alk. reaction, e.g., water glass borax, Na_2CO_3, soap, phosphates, etc., (3) a phosphate with less water than orthophosphate, e.g., pyrophosphate or metaphosphate, and (4) 0.1-1.5% Mg silicate as stabilizer, is used as a washing and detergent agent.

REMOVAL OF UNSAPONIFIABLE. Hermann Pardum (Nobles and Thorl G.m.b.H.). *Ger. 703,634.* A continuous process is described for the removal of unsaponified residues from saponification products. These residues are removed by steam distn. under pressure. To the steam is added an auxiliary liquid which is sol. in both water and the unsaponified residues, e.g., alcs. or ketones. The water and the auxiliary liquid are sepd. from the condensate and reused.