Abstracts

Soaps

Edited by
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ACUTE SILICOSIS OCCURRING IN EMPLOYEES OF ABRASIVE SOAP POWDER INDUSTRIES. R. J. Ritterhoff. *Am. Rev. Tuberc. 43,* 117-31 (1941); *U. S. Pub. Health Eng. Abstracts 21,* No. 9, 5-6 (1941). The soap powders involved in fatal silicosis consisted chiefly of a mixt. of NaOH and finely ground sand in 1 case, and in the other 60% free SiO_2, 30% Italian pumice and 10% "kettle" soap. *(Chem. Abs.)*

SOME PHARMACOLOGICAL PROPERTIES OF THE "TERGITOL" PENETRANTS. Henry Smyth, Jr., Jane Seaton, and Louise Fischer. *J. Ind. Hyg. Toxicol. 23,* 478-83 (1941). "Tergitol" penetrants are materials of only moderate toxicity in single doses, and in the usual effective concn. of 0.05 to 2% of their acute toxicity is of no importance. In repeated doses the "Tergitol" penetrants have slight cumulative action, being somewhat more injurious than castile soap and somewhat less injurious than sodium lauryl sulfate. Their chief site of attack is the kidney.

THE EFFECT OF PH ON THE DRYING OF A SULFONATED PRODUCT. R. A. Fisher and H. N. Nix. Proc. Virginia Acad. Sci. 1940-41 in *Virginia J. Sci. 2,* 195 (1941). Drying of a com. wetting agent (the Na salt of a long-chain alkyl benzenesulfonic acid) at pH 10.1 gave a flaky product with low moisture content, while at pH 2.4 an undesirable product was obtained. *(Chem. Abs.)*

LIQUID SOAP MANUFACTURING TECHNIQUE. Benjamin Levitt. *Chem. Ind. 50,* 362-5 (1942). The entire value of liquid soaps amounts roughly to only about 2% of the total U. S. soap production. The U. S. Gov. Spec. P-S-618 for liquid toilet soaps is given. Coconut oil has been used almost universally because of its high lathering qualities and clarity at low temperatures. Highest grade soap is made from cochin coconut oil; Ceylon or Manila oil produces a straw colored soap with a nutty odor.

To produce 720 lbs. of soap, there is required 100 lbs. of coconut oil, 28 lbs. of 88-92% solid caustic potash and the balance water of zero hardness (small batch formula). Ca, Mg, Fe, and A_1 salts in water must be avoided. A zeolite water softener is usually employed. Coconut oil is melted, weighed and run into the soap kettle, and 50 lbs. of soft water are added and heated to 150° F.; agitating slowly, run in 28 lbs. of solid potash slowly. An hour is allowed for saponification, during which time the mass becomes thick and translucent. Test for alkalinity, and make adjustments; water is added to dissolve the soap and make up to the proper volume. The soap is next pumped to a storage cooling and settling tank. Perfume (1%) may be added; pump soap through a refrigerating system (or age 2 weeks) and filter. Alcohol, to give clarity, is not necessary if the oil has been properly saponified. Dyes used in liquid soaps are discussed. A 20% liquid soap is usually used for shampoos; part of the oil may be substituted with olive, corn or soya. Shampoos for barbers are usually colored with fluorescene and well perfumed. A 15% liquid soap is used for liquid floor scrubbing soaps. Substitutes are babassu and palm kernel, of which there is little available. Others are castor, corn, cottonseed, linseed, olive, peanut, rapeseed, sesame, soybean, sunflower, teaseed, and oleic acid. More intensive boiling is required with these soaps, and the potash must be added very slowly.

THE SOLUBILITY OF SODIUM PALMITATE IN ORGANIC LIQUIDS. C. W. Leggett, Jr., R. D. Vold, and J. W. McBain. *J. Phys. Chem. 46,* 429-40 (1942). Solubility curves have been determined for sodium palmitate in glycerol, diethylene glycol, palmitic acid, isopropyl, ethyl, *n*-heptyl, and *n*-cetyl alcohols, *o*-, *m*-, and *p*-cresols, *n*-heptance, *n*-cetane, and Nujol. The appearance of the phases above and below the curves has been described. The following factors were found to be important in affecting the solubility of sodium palmitate: (1) the nature, no., and space relationships of the polar groups of the solvent molecules, (2) the polarity of the solvent as measured by the quotient of dipole moment and molar volume, and (3) the size and shape of the solvent molecules. The colloidal nature of these systems is indicated by the formation of gels, jellies, and liquid crystalline phases, by the occurrence of syneresis, and by the appearance of sharp elbows in the solubility curves, often attributed to the formation of micelles (5).

IN PLACE OF COCONUT OIL. C. R. Kemp. *Soap, Sanitary Chemicals 18,* No. 4, 21-3 (1942). Soybean oil can be hydrogenated to 80-100 iodine number to produce a soap that will lather in a 3.5% solution of NaCl. If supplies of tallow run short, hydrogenated linseed or fish oil could be used up to 10-15%. A soap formerly made from 75% tallow and 25% coconut can be changed to 87.5% tallow and 12.5% coconut which may cause some trouble with cracking. Grease is added, giving a formula containing 75% tallow, 12.5% grease and 12.5% coconut oil. Some partially hydrogenated soya can replace some of the coconut oil, changing the formula to 5% partially hydrogenated soya, 7.5% coconut oil, 12.5% grease, and 75% tallow. Cottonseed and corn may be used instead of soybean oil. Rosin may be incorporated into a soap having 86.5% tallow, 10% coconut oil, and 3.5% rosin, or 86.5% tallow, 5% coconut oil, 5% partially hydrogenated soya, and 3.5% rosin. If coconut oil is not available at all, soaps could be made from tallow and rosin, or tallow, grease and soybean oil, cottonseed or corn oil. Tables are given of approximate constants of soap oils, fatty acids in soap oils, and soapmaking properties of oils and fats, giving color, consistency, odor, lather, cleansing properties, action on skin, where used, glycerol recovered, and how saponified.

SHOE POLISHES AND CLEANERS. C. T. Small. *Chem. Ind. 50,* 501-4 (1942). Hard waxes such as carnauba, ouricuri, or candelilla are blended with softer waxes such as beeswax or ceresin, which are sometimes adulterated with paraffin. Solvents used are turpentine, kerosene, petroleum solvents, and nitrobenzene (which is banned in some regions). Trichlorobenzene or ortho-dichlorobenzene in amounts up to one-half of one per cent may be used to give the characteristic odor of shoe polish. A dye much used in black polish is oil-soluble nigrosine base or a nigrosine derivative. Carbon black has proved unsatisfactory. Brown dyes are made from a mixture of red, yellow, and black dyes; no satisfactory single brown dye has ever been developed. Typical formulae are given. Pastes are

made by melting the waxes, adding solvents with rapid stirring, then odorants and dyestuffs. Cream polishes contain waxes, solvents, and water which are emulsified with soap. Soaps are made from rosin, oleic acid or other fatty acids. The wax is melted, fatty acids and the caustic soda of triethanolamine are added with stirring and are boiled until saponification is complete. Boiling water and dyes are then added, shellac is warmed in an alkaline soln. of borax, and ammonia or TSP is added to the emulsion. Typical formulae for white shoe liquid polishes are given. Sulfated fatty alcs. or oils act as wetting and dispersing agents; dextrin, casein, Me cellulose or diglycol stearate as binders; disodium phosphate or TSP as cleaners; titanium oxide pigments with borax as a buffer to reduce the alkalinity of the phosphate in the water soln. Na stearate soap is used in making white shoe creams. Na thiosulfate may be added to serve as a stain remover.

MIXED SOLVENTS FOR SOAPS. S. R. Palit. *Current Sci. 10,* 436-7 (1941). It has been found that suitable mixts. of org. solvents have a powerful dissolving action on alkali metal soaps, though the individual components are practically nonsolvents for the same. Any mixt. of a monohydric alc. and a polyhydric alc. has a strong solvent action on soaps, but individually they are nonsolvents at ordinary temp. There is an optimum solvent compn. where the soly. is max. and this happens for ethylene glycol-EtOH mixt. at about 65:45 compn. by wt. for Na stearate. For the same glycol, the higher the mol. wt. of the alc. the greater is the solvent power. By suitable mixts. in proper proportions more than 10% concns. can be produced at room temp., and practically any concn. from a thin fluid to transparent gels at temps. higher than 40°. Hydrocarbons have a peculiar coupler action on these solvent mixts. Suitable alc.-glycol-hydrocarbon mixts. have been found which rapidly dissolve soap at room temp. to almost any concn. not even tending to satn. until production of transparent gel. All 4 types of hydrocarbons (aliphatic, cycloparaffins, benzenoid, and terpenic) have this coupler action. The latent solvents and couplers so far investigated in order of their solvent power are given in the following table:

Latent Solvents		*Couplers*
Monohydric alcs.	Polyhydric alcs.	Hydrocarbons
Iso-butyl alc.	Ethylene glycol	Benzene
Iso-amyl alc.	Propylene glycol	Turpentine
Propyl alc.	Diethylene glycol	Cyclohexane
Ethyl alc.	Glycerol	Heptane
Methyl alc.	Trimethylene glycol	Hexane

(Chem. Abs.)

PATENTS

PROCESS FOR STABILIZING ROSIN AND PINE OLEORESIN. William Pohle and Wiley Smith to Claude Wickard. *U. S. 2,277,351.* Rosin is stabilized by heating between 300-400° C. under at least 300-lb. pressure/sq." until substantially all the rosin has been converted to a stable form; the volatile fraction is distilled off, leaving a stabilized rosin residue.

PROCESS FOR PURIFYING SYNTHETIC SOAPS. John Owen (Standard Oil Development Company). *U. S. 2,274,632.* An improved soap composition comprises a soap of a synthetic fatty acid prepared by the oxidation of a petroleum wax, and Na hydrosulfite in an amount sufficient to improve the color and odor of the soap.

MILK SOAP. John E. McCormick to Edward McLaughlin. *U. S. 2,276,409.* Milk soap containing at least 80% whole milk and 3½% butter fat and an alkylol amine soap is produced by heating whole milk to about 143° F., adding to the milk about 6% of a composition comprising an alkylol amine soap of a fatty acid and a lower alkyl glycol, heating the mixture to about 170° F. while inhibiting the deposition of casein and scorching of the milk, reducing the temperature of the mixture to about 150° F., and adding to the resulting mixture about 10% of a composition comprising an alkylol amine soap of a fatty acid and a hydrogenated vegetable oil.

SOAP. Richard Thomas and Henry Bowen Oakley (Lever Brothers Co.). *U. S. 2,277,728.* A soap powder having improved hard water characteristics contains at least 10% unsaturated fatty acids, 20-25% saturated fatty acids, and one part of Na orthophosphate to 3.5-15 parts of fatty acids in the soap.

SOAP. Richard Thomas and Henry Bowen Oakley (Lever Brothers Co.). *U. S. 2,277,730.* A soap powder having improved hard water characteristics contains at least 10% unsaturated fatty acids, 20-25% saturated acids and one part of Na pyrophosphate to 2.2-8.2 parts of fatty acids in the soap.

NONEFFLORESCING BAR SOAP. Robert Heald (Colgate-Palmolive-Peet Co.). *U. S. 2,278,352.* There is added to a noneffloresing laundry bar soap, comprising from 75-85 parts of a soap base contg. about 2/3 fatty acid soap and 1/3 resin soap and about 31% water, and contg. Na silicate and Na carbonate, sufficient amounts of trisodium phosphate to prevent "bloom" caused by the effloresing of crystallized Na carbonate.

DETERGENT COMPOSITION. William Pratt; Annette Pratt, administratix. *U. S. 2,279,248.* Trioxymethylene which evolves formaldehyde is sprayed over a powdered stearic acid soap and oxidized with hydrogen peroxide to formic acid; the soap is then mixed with borax or Na perborate to produce a readily soluble detergent composition stable when dry.

NITROGENOUS CONDENSATION PRODUCTS AND A PROCESS OF PRODUCING SAME. Heinrich Ulrich to General Aniline & Film Corporation. *U. S. 2,272,489.* Nitrogenous condensation products useful as washing compounds are produced by the condensation of the reaction product of the halides of palm kernel fatty acids and ethylene imine.

PROCESS OF MAKING ALKYL AMINO FATTY ACID. Clyde Henke and Frank Schofield to E. I. du Pont de Nemours and Co. *U. S. 2,279,138.* A fatty acid having at least 8 C atoms is reacted with dimethyl amine in the presence of NaOH to form an alpha dialkylamino fatty acid for use as a textile assistant.

PHENOLS. Gunther Endres. *German 680,439.* The soly. of halogenated alkyl-, aryl-, and aralkylphenols in soap solns. is increased by an addn. of 3-4% PO_4^{---}. This addn. keeps the soln. homogeneous even at low temps., a fact of great importance for disinfectants. *(Chem. Abs.)*

GLYCEROL. Jan Augusto Viljoen, Ernst Beyers, and Ronald White Ballantine to National Maize Products, Ltd. *Australian 108,236.* Glycerol is extd. from aq. fermentation slops with BuOH. The vol. of the latter is 11 times that of the aq. liquid. From the BuOH the glycerol is extd. with a brine. A detailed flow sheet is given. *(Chem. Abs.)*