prepared from more than 4.5 moles of fatty acid per mole of sorbitol. A sorbitol drying oil having this optimum ratio of 4.5 was compared with analogous oils made from mannitol, pentaerythritol and glycerol and with refined linseed oil. Films from the bodied oils and from 50 gallon oil length ester gum varnishes were examined. The sorbitol product was superior to the others in drying time, equal to pentaerythritol in alkali resistance, and superior to linseed oil in hardness and alkali resistance.

ACTION OF VARIOUS ARTIFICIAL DRIERS ON THE OXIDATION AND DRYING OF SARDINE OIL. E. Otero Henlle and M. D. Garcia Pineda. *Inst. espan. oceanografia, Notas y resumenes, Ser. 2, No. 119,* 56 pp. Anales fis. quim. (Spain) *389,* 975 (1944). In general, resinates are prepared by interaction of the calculated quantity of metal hydroxide with rosin; ¾ of the rosin is melted at 180°, and an intimate powdered mixture of the remaining rosin and the hydroxide is added in small portions with vigorous stirring during 2-3 hours. After incorporation of the metal, the mixture is raised to 200-220° until a small test portion remains transparent when cool. For lead resinate, litharge is used, and for copper, calcium and zinc resinates (because the oxides are difficult to incorporate in the rosin), glass panels containing the drained oil films are exposed to diffuse light, in the dark, and in moist air. Curves and tables show the film weights as a function of time and drier content for resinates of manganese, cobalt, copper, lead, iron, cerium, calcium, zinc, chromium, and nickel. It is concluded that cobalt drier is the most active, cobalt-lead being excellent for fast-drying films. Manganese-lead drier shows the most industrial promise and with added cobalt is best for slow-drying enamels. Iron and calcium resinates are fair, cerium, copper, and zinc resinates poor, and nickel and chromium are almost inactive as driers. Driers formed from sardine oil fat acids were difficult to dry, but slightly soluble oil, had a bad odor, and underwent excessive darkening. (*Chem. Abs. 39,* 4237.)

PATENTS

SEPARATION OF SATURATED AND UNSATURATED FAT ACIDS. W. J. Bloomer (Lummus Co.), *Can. 428,392,* June 26, 1945. A mixture of fat acids (e.g., those from soybean cil) is dissolved in methyl ethyl ketone, or a mixture of methyl ethyl ketone and benzene, and the solution is cooled to precipitate the more saturated acids. (*Chem. Abs. 39,* 4243.)

PLASTIC-COATED NAILS. W. E. Book (American Steel and Wire Co. of New Jersey). *Can. 427, 632,* May 22, 1945. To increase the resistance to withdrawal, the nails are coated with a mixture of cumar CX 86, gilsonite 155, plasticizing oil (e.g., soybean oil) 2-8, petroleum naphtha 475, asbestine 125 and red ferric oxide 75-90 parts. (*Chem. Abs. 39,* 4265.)

COPOLYMERIZATION OF DRYING OILS AND VINYL COMPOUNDS. L. H. Dunlap (Armstrong Cork Co.). *U. S. 2,382,213.* This is a toluene-insoluble copolymer of oxidized linseed oil and a vinyl compound selected from the group consisting of styrene and acrylonitrile said copolymer containing about 85% by weight to about 95% by weight of said linseed oil.

LINOLEUM COMPOSITIONS. L. H. Dunlap (Armstrong Cork Co.). *U. S. 2,382,212.* This invention relates to linoleum composition which includes a cement comprising a copolymer of a drying oil and a vinyl compound selected from the group consisting of styrene and acrylonitrile.

METHOD OF PRODUCING FACTIS. I. Bencowitz (Texas Gulf Sulphur Co.). *U. S. 2,382,284.* The improvement in the production of factis comprises reacting in solvent naphtha a mixture of 1 part levulinic acid, about 2 parts of soybean oil and from 1-2 parts of S by weight leaving a part of the solvent naphtha in the factis and removing the excess solvent naphtha by distillation.

FLOOR COVERINGS. M. E. Cupery (E. I. du Pont de Nemours & Co.). *U. S. 2,382,297.* A floor covering, comprises an asphalt impregnated paper felt base and a coating therefor containing a gelled polyhydric alcohol mixed ester of a hexadien-2,4-oic acid and the acids of a natural drying oil and a pigmented filler.

VULCANIZED FATTY OIL EMULSIONS. L. Auer. *U. S. 2,382,532.* The stable oil-in-water dispersion of a vulcanized fatty oil contains Me cellulose and another surface-active agent which reduces the surface tension of the oil-water interface, the Me cellulose constituting a minor amount and not substantially more than about 2% in relation to the oil.

Abstracts

Soaps

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EVALUATION OF LIQUID SOAPS. D. H. Matheson. *Chemist Analyst 34,* No. 3, 63 (1945). The determination of the water softening power of liquid soaps provides an easy and reliable method of estimating the relative value of the products of different manufacturers. The water softening power may be defined as the volume of water of specified hardness which is completely softened by a unit volume of the soap. This is a significant property of liquid soaps, as water softening power is actually what is being purchased. Standard hard water is used in the test and directions are given for preparing the standard solution. The procedure of titration and results of the tests are given.

PEROXY COMPOUNDS IN SOAP MANUFACTURE. Kenneth W. Richmond. *Soap, Perfumery and Cosmetics 18,* 642-4, 647 (1945). The use of peroxy compounds in soap manufacture in pretreatment of the raw materials or the saponified fats and oils to produce soaps substantially white in colour is described. Basic methods using hydrogen peroxide, benzoyl peroxide, and persulphates are given. This process has been effected by the bleaching action of the active oxygen released on decomposition of the peroxy compound. A different use of peroxy compounds in soap manufacture lies in the utilization of their therapeutic properties in the treatment of skin ailments. In this case the undecomposed peroxy compound is incorporated in the finished soap. Perhaps the most outstanding example of this class of compounds is zinc peroxide, whose incorporation in ointments for the treatment of chronic ulcers, for example, is well known and highly recommended by the medical profession and research workers.

CURRENT SOAP PROBLEMS — REGARDED FROM THE AMERICAN POINT OF VIEW. E. G. Thomssen. *Soap, Perfumery and Cosmetics 18,* 634-5 (1945). Future problems in the soap field are reviewed. These include utilization of new types of soaps developed during the war such as all-purpose soaps and the new synthetic detergents; development of new methods and machines and increased scientific research.

QUATERNARY AMMONIUM SURFACE ACTIVE AGENTS. H. W. Zussman. *Perfumer and Essential Oil Rev. 47,* No. 9, 54-5 (1945). The development of surface active quaternary ammonium compounds, known as "invert soaps," is reviewed. They were first used in textile operations in the 1920's. Now they have applications ranging from disinfection to textile processing to ore flotation, and as soaps and emulsifying agents. Commercial types include crystalline and amorphous, waxy solids and viscous oils, all, in varying degrees, soluble in water and in many organic solvents. They are not compatible, with ordinary soaps, alcohol sulfates, sulfonates, and other high molecular weight negatively charged materials, but they are not precipitated by calcium, magnesium or heavy metal ions.

SURFACE-ACTIVE COMPOUNDS. X. DERIVATIVES OF ALKOXYANILINES. B. D. Tilak and K. Venkataraman. *J. Sci. Ind. Research* (India) *3,* 193-7 (1944). A general study of surface-active compds., apart from their use in textile processing, is projected, and the title of the series has been modified accordingly. Oleic and lauric acid were converted to the acid chloride by use of 3 moles of the acid to 1 mole of PCl_3 at 100° for 30 min. The upper acid chloride layer was used directly in the N-acylation of alkoxyarylaminesulfonic acids in dry C_5H_5N at 140-50° for 2-4 hrs., to prep. $MeOC_6H_3(3\text{-}SO_3Na)\text{-}(4\text{-}NHCOC_{11}H_{23})$ (I), $MeOC_6H_3\text{-}(3\text{-}SO_8Na)\ (4\text{-}NHCOC_{17}H_{33})$ (II), $MeOC_6H_3\text{-}(2\text{-}SO_3Na)\ (4\text{-}NHCOC_{11}H_{23})$ (III), $MeOC_6H_3(2\text{-}SO_3Na)\ (4\text{-}NHCOC_{17}H_{33})$ (IV), $EtOC_6H_3(3\text{-}SO_3Na)\ (4\text{-}NHCOC_{11}H_{23})$ (V), $EtOC_6H_3\text{-}(3\text{-}SO_3Na)\ (4\text{-}NHCOC_{17}H_{33})$ (VI), $EtOC_6H_3(2\text{-}SO_3Na)\ (4\text{-}NHCOC_{11}H_{23})$ (VII), and $EtOC_6H_3(2\text{-}SO_3Na)\ (4\text{-}NHCOC_{17}H_{33})$ (VIII). All the compds. except V and VI gave clear solns. in 5% NaOH, in dil. H_2SO_4, I was unaffected, II, III, IV, and V gave milky solns. which clarified on heating. VI and VII gave turbid solns. which formed oily drops on boiling. All except III gave curdy ppts. with $CaCl_2$ (5 cc. of 0.5% soln. to 5 cc. 1% $CaCl_2$ soln.). At 0.1% concn. at 30° the wetting power by the Herbig no. (C. A. 33, 392) was 50.6, 50.4, 56.1, 41.7, 54.2, 50.5, 52.1, 40.1 for I-VIII, resp. The value for Igepon T was 54.7. Introduction of the C-alkoxy group in derivs. of arylamine-sulfonic acids gave better wetting agents. In the Draves test (C. A. 25, 5296) at 0.1% concn. the sinking time in sec. at 30° was 10, 19, 11, 97, 6, 25, 10, 107 for I-VIII, resp., and the corresponding value for Igepon T was 20 sec. In Ca soap dispersion power by the titration and point-light method the lauric acid derivs. were superior to the oleic acid derivs., and the p-anisidine better than the p-phenetidin analogs. When the —SO_3 Na and —NHCOR groups were ortho, the compds. were better than the meta isomers. By the Congo Rubine no. Igepon T was the best, and then V and III. The lauryl compds. were generally superior to the oleyl compd., the —OEt group was superior to —OMe, but the introduction of the alkoxy group into the C_6H_6 ring did not give better protective colloids. (*Chem. Abs. 39,* 4242.)

METALLIC SOAPS. II. Milton A. Lesser. *Soap 21,* No. 8, 40-3 (1945). The varied uses of metallic soaps are reviewed. In the paint and varnish industry, the inclusion of a metallic soap results in deflocculation and decrease in caking of pigment. Aluminum stearate, when used in emulsion paints, aids in suspending the pigments and increasing water-repellency. The metallic stearates are good flatting agents because they give good flatting effect when used in small amounts, have very little jelling tendency, and yield varnish films free from crystalline material. These metallic soaps may also be used as components of priming coats for porous surfaces and to improve the quality, durability and antichalking properties of paints. Other industries in which metallic soaps are widely used include: printing and lithography, waterproofing porous materials such as concrete, textiles, paper and fiberboard, rotproofing of fabrics, in rubber compounding and processing, in plastics industry, etc.; 139 references.

MODERN SHAMPOOS. S. P. Jannaway. *Perfumery & Essential Oil Rec. 36,* 179-82 (1945). Shampoos may be classified into the following groups: Liquid types: liquid soap shampoos, soapless lathering shampoos, "dry" spirit shampoos, non-lathering oil shampoos and emulsified shampoo lotions—Powder types: soap powders with admixtures, tinted, comminuted soap flakes, soapless shampoo powders, and dry (dusting) shampoos—Cream and Paste types: mixed soap and soapless detergents, plus water, and modified shaving creams — Jelly types: soft soaps and gels containing non-saponaceous detergents. Shampoos may also be classified as to purpose, i.e., as general, medicated, bleaching, tinting and tonic types. Liquid soap shampoos are reviewed as to soap content, perfume content, rancidity, clarity and alkalinity. Formulas, methods of procedure and analyses are given.

A METHOD OF DETERMINING ORGANICALLY COMBINED SULFURIC ANHYDRIDE IN SURFACE-ACTIVE PRODUCTS. Bertha DuBose and V. B. Holland. *Am. Dyestuff Reporter 34,* 321-2 (1945). The value of a surface-active agent can best be ascertained by measuring the content of organically combined sulfuric anhydride. This paper describes a wet-ash gravimetric method which is applicable to every type of surface-active product. In addition to the official ash-gravimetric method it has the advantages of being wet-ashed instead of ignited, and any error due to salt carried over in the extraction process is eliminated in the subsequent precipitation of the sulfate. It also has the advantages of its simplicity and ease of manipulation, the number of samples that may be run simultaneously and the accuracy.

NEW TRENDS IN SOAP INDUSTRY—PART I. Dr. J. Davidsohn and A. Davidsohn. *Industrial Chemist 21,* 414-8 (1945). New improvements in the manufacture of soap are reviewed. The classical soap-boiling process is still the usual method of manufacture, but continuous saponification processes are now becoming popular. The difficulty in the continuous process lies in the problem of adjusting the alkalinity to the right degree. Various saponification processes are surveyed including "rapid saponification" and the Clayton process. New soap machinery is discussed, and such developments as steam-heated and water-cooled rollers, and spray-drying equipment are described.

Synthetic fats for the soap industry are being widely used, especially in Germany. The methods of production are mainly the oxidation of petroleum and coal oils, the oxidation of glycol derivatives, the hydrogenation of carbon monoxide, and synthesis of fat by yeast. Another new trend in soap manufacture is the addition of soap builders, e.g. alkaline inorganic salts, phosphates and starch.

THE MANUFACTURE OF FAT ACIDS FOR SOAP BY OXIDATION OF HIGH-MOLECULAR HYDROCARBONS. Fritz Rosendahl. *Z. kimpr. fluss. Gase 38,* 25-30, 37-43, 49-57 (1943). The oxidation of paraffins is discussed from the standpoint of basis for the process, raw materials, pretreatment of raw materials, oxidation with air and other gases, equipment, removal of unsaponifiable (according to the patent literature), use of the fat acids in the soap industry and for the manuf. of glycerides and fat alcs. (*Chem. Abs. 39,* 3445.)

PROPERTIES OF AND RESEARCH ON WETTING AGENTS. ELEMENTARY THEORY OF WETTING. R. Dubrissy. *Compt. rend. acad. agr. France 27,* 746-52 (1941). A theoretical discussion of wetting and the equil. conditions of the tensions on contact of solid, liquid, and gaseous phases. The following wetting agents are discussed: triethanolamine stearate and oleate, sulfonic esters of alcs. of high mol. wt., and the sapamines. (*Chem. Abs. 39,* 3682.)

N-ALKYLETHYLENEDIAMINES. Fred Linsker and Ralph L. Evans. *J. Am. Chem. Soc. 67,* 1581-2 (1945). The even-numbered straight chain alkylethylenediamines from C_8 to C_{18} have been prepared by direct alkylation of ethylenediamine and have been characterized. They are waxy, low-melting solids which combine with two equivalents of mineral acid to form neutral salts whose solutions have low surface tension and show promise as detergents.

NOMENCLATURE OF THE PRODUCTS FROM SULFATE SOAP. N. Avelius. *Svensk Papperstidn. 48,* 139-40 (1945). Modified definitions are given for the terms: sulfate soap, tall oil, tall light oil, tall fatty acid, tall rosin acid, tall rosin (amorphous), tall rosin oil, tall pitch, tall soap, and tall soft soap. These definitions have been adopted by the Swedish Patent Office and the Tariff Commission. (*Chem. Abs. 39,* 3157.)

PATENTS

NON-ALKALINE DETERGENT COMPOSITION. Emil A. Vitalis (American Cyanamid Co.). *U. S. 2,373,863.* A nonalkaline detergent comprises 20-90 parts by weight of a water-soluble, normally solid mild acidifying agent 7-70 parts of an N-alkyl sulfosuccinamate and 0.4-1% of a water soluble cellulose ether.

DETERGENT COMPOSITION. Lawrence H. Flett (Allied Chemical & Dye Corp.). *U. S. 2,374,187.* A detergent composition in bar form comprises a solid neutral, water soluble salt of an alkyl sulfoacetate and a water soluble amido body selected from the group consisting of urea, monobutyl urea, succinamide, etc.

CLEANSING COMPOSITIONS. Morris Katzman (The Emulsol Corp.). *U. S. 2,374,213.* A cleansing composition comprises a mixture of a cation active surface modifying agent such as a quaternary ammonium compound, with a carboxylic acid derivative of an aliphatic hydroxy compound containing one free or unesterified hydroxy group such as the lauric acid amide of monoethanolamine.

WETTING AND EMULSIFYING AGENTS. K. L. Lynch and H. J. West (American Cyanamid Co.). *U. S. 2,379,535.* Aspartic acid ester detergents are prepared by reacting a dialkyl maleate with a sulfo alkyl amine (the reactants being dissolved in an inert solvent, such as water, ethyl alcohol, etc.) at very low temperatures.

DETERGENT COMPOSITION. Lester Hoyt (Allied Chemical & Dye Corp.). *U. S. 2,374,544.* A detergent composition in bar form comprises a solid, neutral, water-soluble salt of an alkyl sulfoacetate having an open-chain hydrocarbon group of 12-14 carbon atoms mixed with an equal weight of thiourea.

LAUNDRY FINISHING COMPOSITION. Edward A. Robinson (Diamond Alkali Co.). *U. S. 2,379,458.* In a laundry rinsing composition, magnesium sulphate is used as an agent for converting soluble fatty acid soaps into inert magnesium soaps, providing the action takes place in the presence of boric acid to neutralize the soluble magnesium hydroxide, and to cause a dispersing action.

MANUFACTURE OF SOAP PRODUCTS. Floyd E. Joyce and Erik J. Lindhardt (National By-Products, Inc.). *U. S. 2,382,063.* Manufacture of granulated soap is by adding water to a soap in chip form to convert it into a pasty mass, subjecting to the action of.mulling rotors, the action being continued for a few minutes until the mass is broken into granules.

DETERGENTS IN CAKE OR TABLET FORM. Ernst Stern. British 557,593. Detergents are prepd. from a mixt. of crystd. Na metasilicate, anhyd. Na_2CO_3, and china clay to which is added sufficient water to cause the mixt. to set to a solid mass. (*Chem. Abs. 39,* 3454.)

APPARATUS FOR PRODUCING HOMOGENEOUS MATERIAL. Lever Brothers & Unilever Ltd. *British 557,956.* An agitating app. is described for the treatment of plastic masses, particularly soap, to obtain products of uniform quality. (*Chem. Abs. 39,* 3471.)

IMPROVED DETERGENT SOAP PRODUCTS AND METHODS OF MAKING SAME. The Procter & Gamble Co. *British 562,855-856.* Manufacture of powdered soap and soap flakes by mechanical action, usually after having reduced the moisture content of the soap base below 30%, then reducing the transformed soap to finely subdivided form.

SURFACE ACTIVE ALDOSIDE CONDENSATION PRODUCTS. J. H. Werntz and P. L. Salzberg (E. I. du Pont de Nemours & Co.). *U. S. 2,374,236.* Surface active aldoside condensation products are prepared by reacting 1-dodecylthiosorbitol and alpha-methyl glucoside in the presence of a sulfonium salt.