ABSTRACTS

Oils and Fats

Edited by
M. M. PISKUR and RUTH LINDAHL

(West Virginia Pulp & Paper Co.). U. S. 2,105,478.—Combined rendering and refining app. is described.

Dehydrating oil-containing whale flesh. P. L. Fauth. U S. 2,105,782.—App. is described.

Refining oils. J. B. Carpzow. U. S. 2,093,348.—The fats or oils are treated with acid followed by treatment with chemically active, dry, finely powdered colloid substances from fresh or salt water mud.

ABSTRACTS

Soaps

Edited by M. L. SHEELY

Fat absorption and dialysis of fat acids. F. L. Breusch. *Biochem. Z.* **293,** 280-94 (1937).—Satd. fat acids with 16C or more and oleic acid, whether in aq. colloidal soln. or in the form of soaps in the presence of bile salts, do not diffuse through parchment. The Na salt of oleic acid, however, dialyzes through cellophane. Satd. fat acids with less than 16 C are diffusible, and their diffusibility as well as soly. in the bile salts increases with diminution in mol. wt. Linoleic acid dialyzes quite readily while the unsatd. ricinoleic acid just barely diffuses. In the case of the diffusible lower acids the soaps are about 5 times as dialyzable as the colloidal solns. of the free acids in bile salts. Aq. colloidal solns. of lecithin, which themselves dialyze slowly, increase the rate of dialysis of Na glycocholate 3-5 times, but do not affect the diffusion of soaps. (*Chem. Abs.*)

Modification of lac with higher fatty acids and their mixed glycerol esters. R. Bhattacharaya *London Shellac Research Bur., Tech. Paper* **12,** 16 pp. (1937).—Sixteen parts of oleic acid per 100 parts of lac approaches the limit of combination by heating the components at 130° for 3 hrs. in CO_2. Esterification proceeds more rapidly with suitable catalysts such as B-naphthalene sulfonic acid and p-toluene sulfonic acid. A typical varnish made from linseed oil fatty acid and lac dries to touch in 6 to 8 hrs. Partly esterified products of lac with fatty acids will give an oil-in-water type of emulsion which can be used as a binding agent for finishing material. Lac-fatty acid glycerol esters and nitrocellulose solns. in the usual solvents are compatible in all proportions and yield excellent films upon drying. (*Chem. Abs.*)

The preparation of ketones from higher fatty acids. III. The preparation of ketones from the fatty acids of hydrogenated sardine oil. IV. The preparation of ketones from the fatty acids of coconut oil and hardened rapeseed and soybean oils. Kiichiro Kino. *J. Soc. Chem. Ind., Japan* **40,** Suppl. binding 311-12 (1937).—Fatty acids, obtained from raw coconut oil and from sardine, rapeseed and soybean oils of various degrees of hydrogenation, were heated with equiv. wts. of Mg powder at 330-40° and 300-50°, resp. The m. ps. of the resulting ketones and the temp. of decompn. increase with the mol. wts. of the chief fatty acids in the mixt. The m. ps. of ketones from rapeseed and soybean oils of equal degree of hydrogenation differ but little (81.5-2.5° and 79.5-81°, resp.). For oils of different degree of hardening, the m. ps. of the ketones increase with the decrease in the contents of unsatd. acids. The latter rule is more characteristic of the coconut-oil fatty acids, which are difficultly converted into ketones at 300-10°. In general, the lower the I no., the easier is the conversion of fatty acids into ketones. (*Chem. Abs.*)

Detergents in Dairy Work. W. L. Davies. *Dairy Inds.* 2, 438-9 (1937).—Detergent action involves a variety of phys. and physiochem. reactions working together. These are: soln. of part of the film; hydration (peptization) of the protein; base exchange from the protein to give a more stable or more highly hydrated film; and mutual soln. of the surface in a detergent of similar compn., which tends to disrupt the film from its base. The efficiency of these operations depends on the detergent soln. and the time of reaction. The action of detergents is modified in a minor degree by the hardness of the water. A greater wear of plated metallic surface takes place through wear and tear and abrasion than by the corrosive action of alk. detergents. Some soln. of tin occurs, but this can be minimized by the use of 0.5 to 1.0% of Na sulfite in the detergent mixt. The corrosion of Al by alk. liquids is bound up with the phys. state and purity of the metal. Cryst. or cast Al or sheeting below 94% purity is rapidly attacked, but polished purer sheeting is fairly resistant. The protective action of silicate and phosphate or combinations of them on Al is established. The pH of alk. detergent soln. will usually exceed 11 and bactericidal effect will depend on temp. and time of exposure. In general detergent soln. will have considerable lethal effect on bacteria. (*Chem. Abs.*)

For Lubricating Rubber Parts. *India Rubber World*, Jan. 1, '38, p. 76.—To fulfill a need created by increased use of rubber parts in machines, a composition for rubber lubrication, consisting of a combination of colloidal graphite, glycerin, and water, is now

ABSTRACTS

Soaps

Edited by M. L. SHEELY

available. Product is applicable to rubber mechanical elements, such as those used in the spring shackles of automobiles, where a softening action accompanies the usual lubricating agents. *Chemical Industries* **42,** 176 (1938).

The behavior of solutions of soaps and wetting agents at semipermeable membranes. H. Kroper. *Fette u. Seifen* **44,** 298-301 (1937).—The ability of the whole mol. of soaps and synthetic wetting agents to dialyze through a semipermeable membrane (cellophane) is greater the greater the tendency of such products to cause skin irritation. Expts. with the K soaps of various fat acids showed that dialysis is favored by the presence of double bonds (linolenic acid) or OH groups (ricinoleic acid). Among the K soaps of the satd. acids, dialysis of the acid radical and of the K ion, resp., dropped from 95.3 to 2.45% and from 98.0 to 60.7% on passing from K laurate to K stearate. Similarly, sulfonated products (Cyclanon L and O, Igepon 702 K, KT, T, AP) showed less dialysis the higher the mol. wt. of the fat radical, but the presence or absence of inorg. electrolytes, e. g., $Na_2\text{-}SO_4$, was without much effect. In general, dialysis can perhaps be correlated with the greater tendency of certain cleaning and wetting agents to form true rather than colloidal solns. Data are tabulated and the exptl. technique is described. (*Chem. Abs.*)

Detection of lignin sulfates in soap and washing agents. A. Noll. *Seifensieder Ztg.* **65,** 35-8 (1938).—The use of sulfite lyes in soap necessitates analytical methods for this type of soap. Reaction between lignin sulfate and several organic bases is given. Trypaflavin, 3-6 dimethyl-10-methylacridinium chloride was the most sensitive reagent. It gave a ppt. in the presence of 126 gamma of lignin sulfate. To detect sulfite lye contg. soap, the fat acids are separated by acidifying. The water layer is neutralized with NaOH and filtered. The formation of a ppt. on addn. of soln. of trypaflavin, acridin yellow or β-naphthylamin indicates the presence of sulfiite lyes. The above reagents are given in descending order of their activity.

PATENTS

Cleansing Compositions. Fr. 811,515, Apr. 16, 1937. Rumford Chemical Works. One or more cleansing agents such as soap are mixed with tetraphosphoric acid or a water-sol. salt thereof. A sulfonated alkyl compd. contg. 10-18 C atoms may be added. (*Chem. Abs.*)

Waterproofing Materials. Fr. 810,109, Mar. 15, 1937. Drigard Products Corp. A liquid for rendering brick, stone, paper, skins, etc., impermeable, consists of a soap insol. in water, a normally solid glyceride of a fatty acid, a hydrocarbon solvent and a dispersion agent of an alc. character. The soap is present in the form of colloidal particles which combine with the glyceride and are dispersed uniformly throughout the liquid. In examples, the solvent is xylene or hydrogenated gasoline and the dispersion agent EtOH or AmOH; the soap is Al stearate or palmitate; glycerides of the solid fatty acid of cottonseed oil or lard are used. (*Chem. Abs.*)

Fractional Distillation of a Mixture of Glycerol and Steam. Ger. Pat. Appl. M. 130,965. K. Muller and Volkmar Hanig & Co. The formation of "sweet water" is avoided by passing the steam, charged with the small droplets of glycerol remaining after the condensation of the glycerol, into a mechanically-acting separator, e.g., a centrifugal separator. The steam then passes into the steam-condenser. (*Recherches* **4,** 154.)

Splitting of Fats and Oils. Ger. Pat. Appl. M. 130,650. Maschinenfabrik Heckmann G.m.b.H. The splitting is carried out as a continuous process in a tubular coil system under pressure and at a raised temperature. Owing to the sensitivity of the fats to heat, the circulation is regulated in such a manner that the splitting is only partial. The fat and preheated water and intimately mixed in an "homogeniser." A high-pressure pump drives the emulsion under 50 atm. pressure into the tubular system, at the other end of which is fitted an expansion valve. The condensing apparatus works under a good vacuum. There is obtained neutral fat, no split, which returns to the apparatus, heavy fatty acids, light fatty acids, crude 95% glycerol, and water. (*Recherches* **4,** 154.)

Filler for Powder Soaps and Soap-Flakes. Ger. Pat. Appl. St. 52,741. G. Stiepel. The filler consists of starch treated with a silicate solution, the alkalinity of which is neutralized with a sugar. Only a part of the starch swells and the larger part remains unattached in the filler. The addition of this filler to the soap shavings is carried out in the mixer, at the same time as the perfume is added; up to 20% of the amount of the soap may be added. Ex.: Mix 40 p. of silicate (sp. gr. —1.35) and 30 p. of cane sugar, and knead with 30 p. of wheat flour. A homogeneous paste is obtained, which will not dry in the soap. (*Recherches* **4,** 154.)

Soap, in Particular Shaving Soap. Ger. Pat. Appl. C. 49, 720. Chemische Fabrik Grunau, Landshoff & Meyer A.-G. To increase the lathering power of soap and obviate the drying of the soap lather, there is added to the soap the condensation products of higher fatty acids with products of decomposition of albumin, of the type of lysalbinic and protalbinic acids. Ex.: 30 gr. of fatty acid, of acid value 222 and iodine value 30, are saponified with caustic potash, and 5 gr. of potassium oleyllysalbinate dissolved in 10 gr. of water is added to the soap. The mixture is made up to 100 gr. with water, and is perfumed. (*Recherches* **4,** 154.)

Phenolic Substitution Products of Acids. U. S. 2,082,459. J. B. Niederl. Products such as 10-(p-hydroxyphenyl)-stearic acid are employed in soaps, shaving creams, toothpastes, and for therapeutic pur-

ABSTRACTS

soap

Edited by M. L. SHEELY

poses. They are obtained by the reaction of a phenol with an unsaturated aliphatic acid in the presence of a mixture of concentrated sulphuric acid and glacial acetic acid. A homologue, an alkyl sulphate, or an inert solvent such as hexane may also be used. For ex., the reaction of oleic acid with m-cresol or hydroquinone, erucic or elaeostearic acid with phenol, sorbic acid with xylenol, chaulmoogric acid with phenol or guaiacol, ethyl hydrocarpate with resorcinol, elaidic acid with pyrogallol, ricinoleic acid with tetrahydronaphthol, olein with salicylic acid, castor oil with vanillin, tung oil fatty acids with phenol, etc. (*Recherches* 4, 150.)

Hydrolysis of Fats. Fr. 808,069. Belg. 416,247. Henkel & Cie, G.m.b.H. Water and melted fat are caused to circulate continuously in opposite directions. Reaction takes place in a column where the temperature is high enough for the liberation of fatty acids and glycerol, the pressure being such that the water remains liquid; that is, a temperature of 185-315° C., preferably 240° C., and a pressure of 10.5-112 kg. per sq. cm., preferably 42 kg. per sq. cm. A catalyst is added to the fat: zinc, calcium or magnesium soaps. The time of contact should be a minimum of 30 min. The liberated glycerol is washed by the water circulating counter to the fat, and is discharged in the form of 20-50% glycerol-water. The fatty acids are discharged at the opposite end. (*Recherches* 4, 147.)

Thiotetraphosphates in Detergents. British Pat. 476,455. (Dec. 9, 1937.) Rumford Chemical Works. According to this invention, the improved detergent composition comprises in intimate association one or more detergents having a cleansing action, such as soap, and a water soluble compound of a thiotetraphosphoric acid.

Thiotetraphosphoric acids are those compounds in which one or more of the oxygen atoms in tetraphosphoric acid ($H_6P_4O_{13}$) have been replaced with a sulphur atom. The two thiotetraphosphates which are especially advantageous in the practice of the present invention are the monothiotetraphosphate of sodium, $Na_6P_4O_{12}S$, and the trithiotetraphosphate of sodium, $Na_6P_4O_{10}S_3$. . . .

The soap which may be used, according to the invention, may be an alkali metal (such as sodium or potassium), fatty acid compound with or without free alkali, borax, ammonium compounds, orthophosphates, soda ash, rosin, and the like. . . .

The proportions of soap of other cleanser and thiotetraphosphate in the improved detergent are without limits, but in practice it is advantageous to incorporate half as much thiotetraphosphate by weight in the detergent as there is hardness by weight, calculated in terms of calcium carbonate, in the water to be used with the detergent to form a washing liquid. . . . These thiotetraphosphates appear in combine with the calcium or magnesium ions in the water and keep the latter from combining with the fatty acid radical of the soap, and hence facilitate the cleansing action of the soap besides having an auxiliary detergent action themselves. . . . (*Perfumery and Essential Oil Record.*)

Method of Making Wood Products. U. S. 2,106,468—Ernest H. Schroth. This invention relates to a method of making wood products, particularly flexible wood veneer which may be used as a wall covering. The wood is first cut to desired thickness and then placed in a bath of hot water for two to three hours. The sliced wood is next placed in a hot bath of soap at a temperature of about 180° F. for about four hours. The bath may consist of a 1% soap solution. After removal from the soap bath, the wood is placed in a 1-10% magnesium chloride solution for about a half hour. The soap bath carries forward the removal of undesired materials from the green wood and the magnesium chloride. The bath precipitates an insoluble metallic soap on the wood fibers. After the sliced wood is removed from this solution and cleaned, it is placed in a bath of one part of glycerine to three parts of water for about ten hours. The glycerine preserves the flexibility of the wood fibers. Drying then takes place slowly, preferably between blankets of fibrous material to prevent too rapid escape of moisture.

◆