cream and ice milk stabilizer comprises polyhydric alcohol esters of fat acids having at least one free hydroxyl group and a finely divided, dry milled oat product.

Egg product. E. C. Scott and C. H. Parsons (Industrial Patents Corp.). *U. S. 2,395,587.* Partial glycerol esters of fat acids are used to restore the emulsifying value of sugared egg yolks.

Abstracts

Drying Oils

Edited by
HOWARD M. TEETER

Styrene copolymers in surface coatings. D. H. Hewitt and F. Armitage. Paint Manuf. *16,* 91-94 (1946). Styrene was copolymerized with dehydrated castor oil in the presence of xylene as a solvent. Particularly useful products were obtained within the range of from 40 parts of styrene to 60 parts of oil, to 60 parts of styrene to 40 parts of oil, the solvent being kept constant at 100 parts. In the absence of solvent heterogeneous masses resulted unless the styrene was added to the oil at intervals or unless certain varnish resins were present. The solventless type of product differed fundamentally from the solvent type in so far as it was permanently thermoplastic. When mineral spirits was used as a solvent, polymerization was less complete although more rapid, and solutions were opalescent. Polymerization could be increased by adding the styrene at intervals. The final films from solutions in mineral spirits were not perceptibly different from those made in xylene solution. The salient properties of the styrene copolymers are rapid air dry to touch by solvent release, after-hardening by oxidation, low acid value, stable toward all pigments, moderate wetting properties but excellent suspension for pigments, pale color, good color retention, lack of dirt retention, good water resistance, and good electrical properties.

Butyl acetyl ricinoleate. Evaluation as a plasticizer for polyvinyl chloride. C. Soyka and H. F. Wilson (Telegraph Construction and Maintenance Co., Ltd.). *British Plastics 17,* 433-42 (1945). Incompatibility of butyl acetyl ricinoleate samples with polyvinyl chloride is due to the presence of high boiling residues, such as estolides and ricinoleins, and other incompatible esters, such as butyl oleate, butyl ricinoleate, and butyl stearate. To form compatible compounds with polyvinyl chloride, commercial butyl acetyl ricinoleate must conform to the compatibility formula: 3.25 × percent residue + 4.25 × percent other incompatible esters (expressed as butyl oleate) shall not exceed percent butyl acetyl ricinoleate. The factors involved in this formula may be estimated from saponification equivalents, rotatory power, iodine values, or acetyl values. The objections to use of these values are: (1) because of the number of compounds present in commercial butyl acetyl ricinoleate and the wide range of results when their iodine values or other similar constants are expressed in terms of butyl acetyl ricinoleate, it is possible to obtain high apparent content of butyl acetyl ricinoleate when little is present (and *vice versa*) and (2) no constant is directly determined upon butyl acetyl ricinoleate alone. It is therefore proposed to distill the sample of butyl acetyl ricinoleate whereby four fractions are obtained: (1) most volatile impurities, such as butyl acetate, (2) incompatible esters, such as butyl oleate or ricinoleate, (3) butyl acetyl ricinoleate, (4) non-volatile residue. Analysis of each fraction then permits an accurate estimate of the factors involved in the compatibility equation.

Total synthesis of linoleic acid. P. Baudart (Inst. Tech. superieur Chambre Commerce Marseille). *Bull. soc. chim. 11,* 336-8 (1944). A linoleic acid was synthesized and shown to be an isomer of natural linoleic acid. Intermediates prepared include 1-bromopentane, b_{760} 122-4°, n_D^{25} 1.4290, d_4^{25} 1.1552; 1-methoxypentane, b_{760} 100-2°; 1,6-hexanediol, b_3 121-4°; 1,6-dibromohexane, b_3 77-80°; 1-bromo-6-methoxyhexane, n_D^{25} 1.4469, d_4^{25} 1.1887. Glutardialdoxime (180 g.) and 240 g. ethyl nitrite were added gradually in alternate portions to 50 ml. of 95% ethanol containing 5 ml. acetic acid at 0°. The mixture was acidified with alcoholic hydrogen chloride and allowed to stand 5 hours at 0° and 48 hours at room temperature over $CaCl_2$, yielding after ether extraction and distillation 175 g. glutaraldehyde bis (diethyl acetal) (I), b_3 97-100°, n_D^{25} 1.4232, d_4^{25} 0.9009. I was reacted with 290 g. PCl_5 at 30-40°, ethyl chloride and phosphorus oxychloride removed under vacuum, and the residue of 1,5-diethoxy-1,5-dichloropentane (II) distilled $b_{0.8}$ 90-100° (partial decomposition); yield 118 g. II with bromine at 0° gave 240 g. impure, very unstable 1,5-diethoxy-1,2,4,5-tetrabromopentane (III) which was used at once. To III in ether at 0° were added ether solutions of 78 g. amyl magnesium bromine and 120 g. 1-bromo-6-methoxyhexane. The product was isolated and reduced with Zn in butanol, yielding after distillation 11 g. impure 1-methoxy-7,10-hexadecadiene (IV), b_3 144-7°, as well as 6,9-pentadecadiene and 1,17-dimethoxy-7,10-heptadecadiene. IV (9 g.) was reacted with bromine at 0°, then with hydrogen bromide at 100-130° and finally debrominated with zinc in ethanol to produce 8 g. 1-bromo-7,10-hexadecadiene (V), $b_{0.3}$ 136-40°. V was transformed to the iodide with sodium iodide in acetone, reacted with sodiomalonic ester, decarboxylated and distilled, giving 3.2 g. of a linoleic acid, $b_{0.8}$ 179-83°, iodine number 152. Bromination of 2 g. of acid produced a large amount of an oily bromide and 0.35 g. of a tetrabromide, m. 77-8°, identical with the bromide of natural linoleic acid elaidinized by selenium. (*Chem. Abs. 40,* 1782.)

Cashew oil. J. van Loon. *Verfkroniek 19,* 8-10 (1946). A review of the technology and physical and chemical properties of cashew oil. Its applications as a raw material for the paint and varnish industry are pointed out.

Analytical tests on blown oils. I. Molecular weight. M. Carrière (Faculté Sci. Marseille). *Industries corps gras, 1,* 76-7 (1945). The molecular weight determinations by the cryometric method varied with the solvent used and the concentration of oil in the solvent. Results, therefore, should be expressed with the precise conditions of testing. Tests showed that the angular coefficient for the curve of the variation of molecular weight as a function of the concentration was modified gradually in the course of blowing. II. THE DEGREE OF UNSATURATION. *Ibid.,* 77-9. A comparison of six methods for the determination of the iodine number and modifications of these methods confirmed the conclusions of Steger and van Loon (*Chem. Abs. 26,* 4490). Work on the thiocyanogen value determination and modifications of it also confirmed work by Steger and van Loon (*Chem. Abs. 27,* 201). III. CONJUGATED DOUBLE BONDS. *Ibid.,* 79-81. The diene value determinations serve to determine the amount of conjugation. The Meinel bromine-fixation value permits qualitative distinction of thermally polymerized oils from oils bodied by air oxidation. This value for the oxidized oil is lower than for the non-oxidized oil. (*Chem. Abs. 40,* 2323.)

POLYMERIZATION AND DRYING OF OILS AND ESTERS OF FAT ACIDS. VI. GLYCOL POLYESTERS OF MALEIC ACID. A. Ya. Drinberg and V. M. Grinevich (Leningrad Chem. Tech. Inst.). *J. Applied Chem. (U.S.S.R.), 17,* 606-12 (1944) (English summary). It was shown that polymerized glycol maleate can dry in the presence of driers analogous to the vegetable oils. Glycol maleates modified by oils and fatty acids were investigated. The products obtained by alkyd formation from the acids had no advantages over the products prepared by transesterification of oils by the glycol. Formulations were developed which permit complete elimination of glycerol and 65-75% oil economy. (*Chem. Abs. 40,* 2316.)

Abstracts

Soaps

Edited by
LENORE PETCHAFT

THE INFLUENCE OF PERFUMES ON THE CHANGES OBSERVED ON STORAGE OF TOILET SOAPS. Vicente Borderas. *Ion 5,* 648-53 (1945). A review with 13 references. A list is given of 31 perfumes recommended for soap manufacture and 21 perfumes that are unsatisfactory because of instability with respect to color or odor. (*Chem. Abs. 40,* 2013.)

THE COMMERCIAL SURFACE-ACTIVE AGENTS. Lawrence H. Flett (Allied Chemical and Dye Corp., New York, N. Y.). *Colloid Chemistry 6,* 243-7 (1946). Following a historical introduction, the principles governing surface-active agents are discussed—the aliphatic group and its derivation and chain length, the solubilizing group, and the effects of impurities. (*Chem. Abs. 40,* 2326.)

PROCESSING KAOLIN FOR SOAPMAKING. G. Gerth. *Fette u. Seifen 50,* 324-7 (1943). For processing kaolin (I) for soapmaking, 4 methods are possible: (a) elutriating including electrophoresis, (b) buddle processing, (c) flotation, and (d) centrifugal processing. Process a, the most common, comprises milling, elutriating to remove coarse sand, screening to remove more sand, sedimentation in a tapered vat to remove fine sand, flocculating, filtering, drying, and packaging. In the sedimentation tank the turbid I sludge is drawn from the top and fine sand is drawn from the tapered bottom. Milk of lime solution and extract of Irish moss are used as reagents in flocculation. The I sludge enters the filler containing 50% moisture. In modifying the process by use of electrophoresis, the I is separated from sand with a 50-v. current which attracts the I to the + pole as a solid layer contg. 20% water. Process b is a usual buddle process using a circular buddle surface. Process c is not yet used commercially, although it should give a highly refined concentrate. In process d, a jet-type continuous centrifuge is used. This type of centrifuge can replace the tapered sedimentation vat of process a. The use of the centrifuge permits a better concentration of the desirable finer I. (*Chem. Abs. 40,* 2324.)

SURFACE ACTIVE COMPOUNDS—THEIR USE IN TEXTILE OPERATIONS. Dr. Hugh H. Mosher. *Am. Dyestuff Rept. 35,* 168-73 (1946). The chemical structure of surface active compounds is reviewed. Commercially used hydrophilics include the carboxyl, sulfate, phosphate, amide sulfate, polyethylene, polyglycols, amines (primary, secondary, tertiary and quaternary) and sulfonium radicals. The lauryl hydrophobic radical produces the best wetting and penetrating agents, while the stronger and more adhesive myristyl, cetyl and stearyl hydrophobics produce the best potential radicals for detergency and emulsification. Surface active compounds are divided in anionic, cationic and non-ionic auxiliaries and the properties of each type are described. The usefulness of the newer cationic and non-ionic compounds is emphasized. The textile processes in which these compounds are utilized include preparation of oil emulsions, detergency, dyeing, and finishing.

DETERMINATION OF THE ACTIVE SUBSTANCE IN MERSOL AND MERSOL SOLUTIONS IN THE FORM OF SODIUM MERSOLATE. A Hintermaier and L. C. Kelber. (Henkel & Cie. G.m.b.H., Dusseldorf). *Fette u. Seifen 50,* 413-15 (1943). Mersol (I) is described as a mixture of alkylsulfonyl chlorides of various chain lengths and isomer composition. Reaction with alkali yields a mersolate solution. (II). Two methods are described for analysis of I. Method A comprised determination of the saponification value, determination of unsaponifiable, determination of NaCl, and combined Na_2SO_4 and Na_2SO_3 as Na_2SO_4 in the filtrate from the unsaponifiable determination, and determination of moisture with the Fischer reagent. The mersolate is calculated by difference. According to method B the Na_2SO_4 and Na_2SO_3 are not determined. The difference represents the percentage of I, and this figure multiplied by 0.91 represents the mersolate content. The bases for the methods on II are the same as the above after one takes into account that this is a saponified form of I. On II titratable alkali (%Na_2O) should be included in the calculations. (*Chem. Abs. 40,* 2325.)

DIFFRACTION OF X-RAYS BY SODIUM OLEATE AND HEXANOLAMINE OLEATE. Sydney Ross and James W. Mc-