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 brominefixation 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-

Bain (Stanford University). *J. Am. Chem. Soc. 68,* 547-50 (1946). Two forms of sodium oleate are distinguished by x-ray powder diagrams. The unit cell parameters of a pure sample of one of these forms of sodium oleate are obtained after fibrillation of the sample, produced by extrusion through a small orifice under pressure. The parameters agree with values previously found for the gamma forms of saturated sodium soaps. Samples of sodium oleate used in previously published physiocochemical investigations in this laboratory are identified by x-ray diffraction. The parameters of the unit cell of hexanolamine oleate are obtained after fibrillation of the sample, as already described.

PHYSICAL-CHEMICAL PROPERTIES OF SOLUTIONS OF THE COLLOIDAL ELECTROLYTE HEXANOLAMINE OLEATE. Emanuel Gonick and James W. McBain (Stanford University, California). *J. Colloid Science 1,* 127-35 (1946). Freezing-point, conductivity, viscosity and transport data have been given for aqueous solutions of hexanolamine oleate. The osmotic coefficients have been shown to follow Brady's curve for branched chain compounds, and the "critical concentration" has been calculated therefrom. The necessity for the existence in solution of "small micelles" or particles which contribute very little to the freezing point lowering but have substantial conductivity is demonstrated by the fact that the conductivity ratio $\Lambda/\Lambda_0$ is considerably higher than the osmotic coefficient. The cationic transport number is found to be negative and that for oleate radical is greater than unity at moderate concentrations, a further demonstration of the presence of conducting micelles, which, moreover, must include hexanolammonium ions.

ISOTROPIC AND ANISOTROPIC LIQUID PHASES IN THE SYSTEM HEXANOLAMINE OLEATE-WATER. Emanuel Gonick and James W. McBain (Stanford University). *J. Am. Chem. Soc. 68,* 683-5 (1946). The phase diagram of aqueous systems of the exceptionally soluble colloidal electrolyte hexanolamine oleate has been mapped out with particular reference to the boundaries of the isotropic solutions. Although the isotropic solution extended to below room temperature both in dilute and extremely concentrated solution, two liquid crystalline solutions intervened which are stable up to 156 and 183°, respectively. The conductances and indices of refraction of a number of these systems have been recorded. It has been shown that the change in organization of an isotropic solution of colloidal electrolyte to anisotropic phase involves a minor decrease in electrical conductivity. It is concluded that the colloidal particles are micelles existing in both phases, but that in the anisotropic solutions the micelles are oriented and parallel over large tracts so that many of the gegenions are constrained to move within the aqueous atmospheres between the layers of micelles. At room temperature aqueous hexanolamine oleate solution is a jelly at 12% soap, and liquefies reversibly as water is added or removed while the phase remains homogeneous and isotropic.

X-RAY DIFFRACTION BY POTASSIUM LAURATE SOLUTIONS. E. W. Hughes. *India Rubber World 113,* 819 (1946). This paper described the results of an x-ray diffraction study, mostly at small scattering angles, of aqueous K laurate solutions with and without other added substances. The soap concentration was varied over the range 10 to 50%, which includes the phase change from isotropic to anisotropic "middles soap." The added materials include KCl up to 2.0 weight normal and more than 30 hydrocarbons and hydrocarbon derivatives. The hydrocarbons were added in some instances up to a concentration of one mole per mole of soap. These experiments were part of a study of the role of soap in emulsion polymerization.

## PATENTS

SOAP-SYNTHETIC DETERGENT MIXTURE. Harland H. Young and Kurt H. Spitzmueller (Industrial Patents Corp.). *U. S. 2,394,834.* Wetting agents (detergent) may be prepared from polyhydroxy ether dichlorides (2-2′-dichlordiethyl ether) reacted with sodium sulfite to produce a mono-chloro-mono-sulfonate which may be fused with a soap (Na or K) to form an acylated sulfonated ether.

WASHING AGENT. Arnold Doser (I. G. Farbenindustrie A.-G.). *Ger. 745,555.* A mixt. of hydroxyalkylated amides of high-mol. fatty acids, water-sol. salts of aliphatic chlorobenzylated aminosulfonic acids, alk. inorg. salts, and the usual addns. is used as washing agent. (*Chem. Abs. 40,* 2014.)

BRITTLE SOAP TABLETS. E. A. Westerberg. *Canadian 432,509.* Individual brittle soap tablets are made by adding 3 parts by volume of commercial neutral soap powder to water at 180-212° F., plus 1/9 volume of an aqueous solution containing 2 parts of Irish moss and 1 part of gelatin. The mixture is whipped until it becomes a mass of minute air cells, stiff enough to retain air without subsiding. It is then dried in small portions.

UREA ADDITIVES. L. F. Hoyt (Allied Chemical & Dye Corp.). *Canadian 433,105.* A solid detergent for toilet purposes similar in general properties to those of soap, contains a neutral synthetic sulfated detergent of an anion-active nature with 12-14 carbon atoms in the nonpolar portion of the molecule. Intimately mixed with this is an equal weight of thiourea.

PROCESS FOR MAKING COPPER SOAPS. James E. Taylor (Procter & Gamble Co.). *U. S. 2,397,767.* Preparation of Cu soap by mixing coconut fatty acids with comminuted Cu and blowing an excess of an oxygen-containing gas through the mixture at high temperatures.

MANUFACTURE OF ALKYL ARYL SULFONATE DETERGENTS. Lawrence H. Flett (Allied Chemical & Dye Corporation). *U. S. 2,394,851.* Alkyl aromatic sulfonates produced by Friedel-Crafts condensation of benzene and "Keryl chlorides" have better odor, are more stable in storage, release less HCl during distillation if heating is continued for 1 to 5 hours after the apparent completion of reaction.

ALKYL AROMATIC COMPOUNDS. Lawrence H. Flett (Allied Chemical & Dye Corporation). *U. S. 2,393,-526.* Over chlorination of kerosene fractions and their use in alkylating benzene gives better yields of alkylated aryl sulfonates plus cyclo-alkylene aromatic sulfonates, having marked surface active properties.

SURFACE ACTIVE ROSIN DERIVATIVES. Donald Price and Everette L. May (National Oil Products Co.). *U. S. 2,397,692.* Surface active agents are prepared by reacting rosin with long chain alcohols to alkylate and then sulfonate.