

of Applied Chem., Calcutta Univ., Calcutta-9, India). *Fette Seifen Anstrichm.* 73, 625-30 (1971). The bodied oils were fractionated into two fractions using urea and in four fractions, namely, monomer, dimer, polymer and "oxi" products by column chromatography. The oils show no nitration in spite of their contact with nitrate/nitrite salts at a temperature of 320°C. The analyses by GLC have shown that various components having different chain lengths e.g. 20.3, 22.1, 23.5, 25.9, 32.8, 35.6, 36.0, 36.6 etc. have been formed. These components consist of oxygenated and dimer fatty acids. The analyses by NMR spectroscopy have shown the presence of cyclohexene ring together with an ether linkage in which the latter predominates; IR spectroscopy also supports the same.

ADHERENT ELECTRO-COATINGS ON MILD STEEL FROM AQUEOUS ROSIN MODIFIED MALENISED DEHYDRATED CASTOR OIL RESIN SYSTEM. S. Guruswamy, N. Shanmugam and R. Rajagopal (Central Electrochem. Res. Inst., Karaikudi-3, India). *Paint India* 22, 29-31 (1972). Adherent electrocoatings for decoration, corrosion resistance and electrical insulation can be prepared from dehydrated castor oil by treating the malenised oil with the glyceryl ester of rosin. Electrodeposits suitable for pigmentation and pigmented deposits can be baked at lower temperatures. The addition of mercaptobenzothiazole to the bath improves the electric properties and the general appearance of the baked deposits.

THERMODYNAMIC PROPERTIES OF LIQUIDS, INCLUDING SOLUTIONS. VI. A NEW APPROACH TO THE PREDICTION OF SOLUBILITIES. M.L. Huggins (Arcadia Inst. Sci. Res., Inc.). *J. Paint Tech.* 44(567), 55-66 (1972). The problem of the prediction of solubilities is reviewed. It is shown how approximations in procedures based on Hildebrand's solubility parameters can be improved upon with regard to both the enthalpy of mixing and the entropy of mixing contributions. The writer's new theories relate these contributions to parameters characteristic of the component chemical groups and their interactions. These theories permit the determination of the most important needed parameters for systems containing more than two kinds of chemical groups from measurements on simpler systems, each containing only two types. The problems: (1) of making quantitatively accurate predictions; and (2) of making approximate predictions, using a smaller number of known parameter values, are both discussed. The accumulation of parameter values and their application to the prediction of solubilities in specific systems are left for later papers.

REACTION OF MALEIC ANHYDRIDE WITH ISOMERIZED SAFFLOWER OIL AND FATTY ACIDS. V. Markanday et al. (Regional Res. Lab., Hyderabad, India). *Farbe u. Lack* 78, 299-304 (1972). When maleic anhydride is reacted with either cladized alkali isomerized safflower oil fatty acids or the isomerized oil itself in 1.2 mole/mole linoleic acid, 84-85% of the dienoid acid takes part in the reactions. The reaction products after removal of the unreacted fatty acids, which were nearly 34% in both the cases, consisted of Diels-Alder adducts of maleic anhydride and trans-trans linoleic acid (80.3%) and succinyl derivative of dilinoleic acid (19.7%) in the former case while the latter in addition to the above two products in percentages of 32.5 and 57.2 respectively also contained succinyl derivative of conjugated linoleic acid (10.3%).

DATA MODEL FOR ALKYD RESIN CALCULATIONS. K. Ekborg (Perstorp AB, Perstorp/Sweden). *Farbe u. Lack* 78, 317-20 (1972). The program described has been adapted to the IBM time-sharing system RAX. The programming language BASIC FORTRAN IV is used. The calculations were limited to fatty acid (oil), two polyalcohols and two carboxylic acids which covers the main part of the alkyd resin formulations. The calculations are based on the equations known to the alkyd chemist: alkyd constant, oil content and yield. With the data model alkyd resin calculations are possible which are fast and give results of great accuracy.

OIL-BASED URETHANE COATINGS. II—URETHANES BASED ON LINSEED OIL. J.P. Misra and M.A. Sivasamban. *Paint Manuf.* 41 No. 9, 46-7 (1971). Glycerolysed linseed oil products of varying mono-, di- and tri-glyceride composition have been prepared. The optimum glyceride composition required to give urethanes with superior film performance has been established. (World Surface Coatings Abs. No. 357)

POLYMERIZED FATTY ACIDS AND THEIR ESTERS. G.A. Silverstone (Victor Wolf Ltd.). *U.S.* 3,661,956. Alkyl esters of dimeric and polymeric fatty acids are produced by heating an alkyl ester of a hydroxy acid in a liquid hydrocarbon solvent which forms an azeotrope with water. The reaction is carried out

in the presence of a dehydration catalyst selected from acid and alkaline clays, inorganic oxides, ion exchange resins, and acid sulfates, thereby simultaneously dehydrating and polymerizing the ester.

• Detergents

STUDY OF DETERGENCY. XVII. CORRELATION BETWEEN APPARENT DETERGENCY AND REMOVAL OF SOIL COMPONENTS. I. Kashiwa, H. Kuwamura, I. Nakaju, M. Inamori and T. Tsunoda (Res. Lab., Lion Oil Co., 3-2393 Hirai, Edogawa-ku, Tokyo; Hitachi Central Res. Lab., 1-280 Higashi Koigakubo, Kokubunji, Tokyo). *Yukagaku* 19, 347-51 (1970). The detergency of soiled cloth with detergents was measured by reflectance (apparent detergency) before and after washing. The real removal of soil from cloth was measured by chemical analysis (dichloromethane extraction, IR, GLC, TLC and ash analysis). The log of apparent detergency was proportional to soil removal in various washing conditions. Organic soil components were more easily removed than inorganic components. Cholesterol stearate was very easily removed. Paraffin and squalene were difficult. Fatty acids and triglycerides were removed in different ways.

GEL FILTRATION CHROMATOGRAPHY OF SURFACTANTS. T. Nakagawa (Shionogi Res. Lab., Fukushimaku, Osaka, Japan). *Yukagaku* 20, 277-83 (1971). A review with 9 references on the application of a computer system to gel filtration chromatography of surfactants.

CHELATING AGENTS IN DETERGENTS. B.M. Milwidski (Zohar Detergent Factory, Kibbutz Dalia, Israel). *Soap, Cosmetics, Chemical Specialties* 47(9), 46-9 (1971). A rapid and highly accurate method for determining both chelating agents (e.g., NTA, EDTA) and phosphates in the presence of each other is described. The procedure involves adding ZnSO₄ to a solution of the material to be tested at pH 4 and titrating the liberated acid. A second determination is made at pH 2.5. Although both phosphates and chelating agents are determined at pH 4, only the chelating agents react at pH 2.5, and the difference between the two titrations measures the phosphates. The method is accurate to within $\pm 2\%$ and applies equally well for NTA or EDTA. It also applies to all complex phosphates but not to orthophosphates. Most other components of detergents do not interfere at all.

INTERACTION OF POLYACRYLIC ACID AND NONIONIC SURFACTANTS. S. Saito and T. Taniguchi (Momotani Juntanken, Ltd., Minatoku, Osaka 552, Japan). *Kolloid-Z. u. Z. Polymere* 248, 1039-40 (1971). Viscosity was determined for systems of polyacrylic acid (PAA) with polyethylene oxides and polyethylene oxide dodecylethers (various EO ratios). Systems were found pH-dependent in viscosity reduction. Higher EO ratios for the nonionics caused reduced viscosity of PAA at higher concentrations. ■

Erratum

Due to an editorial error, the fourth paragraph of the letter to the editor, "Phosphate vs. Non-Phosphate Detergents" by David Taber (*JAOCs* 49:342 [1972]), is misleading. The paragraph should read:

Several experimental procedures in the regulations of the Federal Hazardous Substances Act (FHSA) are becoming recognized as being unsuitable for products such as laundry detergents. Despite the fact that experimenters (R.O. Carter and J.E. Griffith, *Toxicol. Appl. Pharmacol.* 7:60 [1965]) from his company, citing in-house data, concluded that the rabbit, which is prescribed under FHSA regulations, is unsuitable for predicting detergent hazard to the human eye, Weaver nevertheless relied on results obtained with that animal. At the same time he chose to ignore the FHSA test for skin irritation, according to which the "typical" phosphate detergent to which he referred is corrosive.