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• Detergents

α-SULFONATION OF FATTY ACIDS WITH SULFUR TRIOXIDE. IV. SULFONATION REACTION. Tetsuro Ishiguro, Terumune Ogushi, Yoshimitsu Ishiwada and Teruzo Asahara (Chuo Univ., Tokyo and Univ. Tokyo). *Yukagaku* **14**, 284–8 (1964). Sulfonation of palmitic acid in carbon tetrachloride was carried out by a direct method of adding liquid sulfur trioxide, by the addition of liquid sulfur trioxide to palmitic acid dissolved in a mixture of carbon tetrachloride and dioxane and by the use of an adduct of sulfur trioxide and dioxane (1:0.55 molar ratio). The adduct method gave extremely light colored product with 95% sulfonation, the direct method gave colored product, especially after 80% sulfonation, while the mixed solvent method gave product of intermediate coloration.

DETERMINATION OF SODIUM CARBONATE AND SODIUM BICARBONATE IN DETERGENT POWDERS. Yukinobu Iwamoto, Masayoshi Arai and Teijiro Oguro (Mitsuwa Soap Co., Tokyo). *Yukagaku* **14**, 302–4 (1965). In order to determine sodium carbonate and bicarbonate in detergent powders, 10% hydrochloric acid was added to two samples, one of which was heated to 160C while the other was unheated. In both cases the liberated carbon dioxide was absorbed in 0.1*N* potassium hydroxide and potassium carbonate was measured by titration with 0.5*N* hydrochloric acid. The difference in titration gives sodium carbonate and bicarbonate.

IRRITATION OF DETERGENTS. I. LIBERATION OF THIOL GROUP IN PROTEIN BY SOAPS. Tadahiro Takei, Motozo Kimura and Ken Saitoh (Mitsuwa Soap Co., Tokyo). *Yukagaku* **14**, 298–302 (1965). Liberation of thiol group of egg albimin by various sodium soaps has been estimated by the thiochrome method. Soaps having 12–14 carbon atoms in the chain have the greatest activity for the liberation of thiol group in protein. The result indicated that liberation of thiol group by the soap is closely related to irritation of skin.

BIOCHEMICAL STUDIES OF ALKYLBENZENESULFONATES. II. ACTION OF ABS ON MICROÖRGANISMS. Kenkichi Oba and Shin-ichi Tomiyama (Lion Fat & Oil Co., Tokyo). *Yukagaku* **14**, 364–9 (1965). Adsorption of alkylbenzenesulfonate (ABS) and cetyltrimethylammonium bromide (CTAB) on *B. subtilis* or *E. coli* at various pH levels was studied. The ABS was easily adsorbed on those organisms in acid side but CTAB was easily adsorbed on them in higher pH range. The differences in the growth inhibitory action of ABS and CTAB against *Staph. aureus* by the difference of pH range were investigated. The minimum growth inhibitory concentration was 2.5 γ/ml. below pH 5, 20 γ/ml. above pH 7 for ABS and 0.25–5 γ/ml. above pH 7 and 0.5–1.0 γ/ml. at pH 6 for CTAB. From those results, the electrostatic adsorption of surfactant on bacteria is one of the important factors concerning their antibacterial action. Bactericidal action of ABS and alkyl dimethylbenzylammonium chloride (ADBAC) against *E. coli* and *Staph. aureus* in nonvegetative stage of growth was found to be related exponentially to the dilution coefficient of ABS. Thus, the comparison of bactericidal activity of ABS with the well-known phenol coefficient is meaningless. Adsorption of ABS on organisms, concentration of living organisms, turbidity change of bacterial suspension and changes in the permeability of the cell wall were studied. The turbidity change of liquid medium was seen by addition of ABS during the logarithmic phase of growth of *Staph. aureus*. The results suggested that the permeability change of cell membrane and bacteriolysis resulting from denaturation of cellular proteins due to the adsorption of ABS is included in the mechanism of antibacterial action of ABS.

PACKET OF WATER-SOLUBLE FILM OF POLYVINYL ALCOHOL FILLED WITH DETERGENT COMPOSITION. H. A. Dunlop, Jr., and R. H. Chaffee (Procter & Gamble Co.). *U.S. 3,198,740*. The described packet consists of: (1) an envelope of polyvinyl alcohol in film form and (2) a water-soluble granular synthetic detergent composition consisting of (a) an anionic non-soap synthetic organic detergent; (b) sodium tripolyphosphate in an amount to act as a builder for the detergent; and (c) a salt hydrate chosen from the group consisting of sodium pyrophosphate decahydrate, potassium pyrophosphate trihydrate, sodium tetraborate decahydrate, sodium perborate tetrahydrate, magnesium sulfate heptahydrate, sodium acetate trihydrate, potassium benzoate trihydrate, sodium thiosulfate pentahydrate, sodium carbonate decahydrate, sodium sulfate heptahydrate and sodium sulfate decahydrate. The salt hydrate is present in an amount such that the water of hydration constitutes 5–20% of the total weight of the composition and thus prevents the polyvinyl film from becoming brittle at temperatures below 50F by maintaining a relative humidity in the atmosphere within the packet of 40–100% at temperatures from 0–50F.

• *New Products*

E. H. SARGENT & CO. has prepared a thermostatic recording pH stat designed for both research studies and routine assays based on reaction kinetics and stoichiometry of reactions involving release or up-take of hydrogen ion.

F&M SCIENTIFIC CORPORATION, Avondale, Pa., in conjunction with Chem Service, Inc., makes available to the laboratory chemist Chem-Supply kits, containing small quantities of frequently used chemicals, classified according to functional groups.

F & M SCIENTIFIC CORPORATION, Avondale, Pa., announces the Model 775 PrepMaster, which gives organic and analytical chemists choice between excellent GC resolution and collection capacities as high as a liter in one working day.

THE ELCO CORPORATION, Cleveland, Ohio, has introduced the Elco 400, an automotive and aviation fuel additive compounded to stabilize gasoline hydrocarbons and lead antiknocks.

BRINKMANN INSTRUMENTS, Westbury, N.Y., lists the Gradient Layer Applicator, Model GM. This applicator permits the preparation of gradient layers whose characteristics change from one side of the plate to the other.