Abstracts

Soaps

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Pros and cons of toilet soap irritation. Milton A. Lesser. *Soap 21,* No. 5, 25-28, 70 (1945). Soap may be classed as a very mild primary irritant. Depending on the individual sensitiveness, frequency and length of exposure, and various other factors, the degree of irritation produced by soaps may vary considerably. In aqueous solution, soaps hydrolyze to yield alkali and fatty acids. Early theories of soap irritation were based on the assumption that the free alkali was the cause. Various tests, including patch tests, arm immersion tests, and physical tests such as dialysis, have failed to prove that the alkali alone is the irritating factor.

The effect of free fatty acids has also been studied. It has been shown that soaps prepared from fats containing lower weight fatty acids (e.g. lauric and myristic acids) are more irritating that the higher molecular weight acids. However, tests show that neither the alkali nor the fatty acid alone is the causative agent in soap irritations but that each has some part to play. Other factors which are involved in analysis of the problem include effect of hard water and its dissolved salts, and individual allergies and hypersensitivity.

Yield value of commercial soaps. Robert D. Vold and Luther L. Lyon. *Ind. & Eng. Chem. 37,* 497-504 (1945). The yield values of typical framed, milled, and the new converter soaps have been measured as a function of temperature with a cutting wire plastometer. The yield value is determined partly by the number and nature of the phases present and partly by mechanical factors. Changes in slope in the curves of yield value vs. temperature for framed soap appear to be independent of the rate at which the vat was cooled in manufacture even though the actual magnitude of the yield value may vary greatly. They are, therefore, indicative of phase changes. Rapid cooling results in increased hardness. This result is explicable in terms of increased randomness of orientation of the crystallites but is difficult to reconcile with recently proposed phase theories for these systems. Most converter soaps appear to undergo transitions at 43-46°C. and 63-66°C., irrespective of water content or soap stock, contrary to all published phase diagrams for aqueous soap systems.

Theoretical aspects of soap manufacture. A. Davidsohn. *American Perfumer & Essential Oil Review 47,* No. 4, 56-8 (1945). Various theoretical aspects involved in soap manufacture are described. Emulsification, dispersion of fat globules throughout the aqueous phase, is the most important factor in the first phase of the saponification process, as saponification takes place as the oil-water interfaces. It has been found that emulsification is dependent on the character of the hydrocarbon chains of the oils and fats to be saponified, and that neat soap is the best emulsifying agent itself. It has also been found that an excess of alkali is harmful in the early stages of saponification as it causes the destruction of the emulsion. As saponification proceeds, the velocity of the reaction increases. This is explained by the fact that the saponification now occurs mainly in homogeneous solution in the soap phase rather than at the interfaces.

Salting out and graining are described, and the threshold concentrations of electrolytes necessary for various fatty acid soaps are tabulated. Microscopic observations during the various stages of saponifications are taken and the various phases and crystalline forms are discussed. The theory of the cold process is explained.

Theoretical aspects of soap manufacture. A Davidsohn. *American Perfumer & Essential Oil Review 47,* No. 5, 52-4 (1945). The detergent action of soap is described. It is based on the ability of soap to lower interfacial tension and to form a colloidal adsorption compound with dirt. The emulsification of soap contributes to the effectiveness of these properties. Emulsification is brought on by hydrolytic dissociation of the soap and is related to the chemical structure of the soap.

Another factor of detergent action is the wetting-power of a detergent. The first action of wetting, the affinity between surface and detergent, is the electric charging of the surface. The second factor is produced by the capillary action of the detergent. Experiments are described illustrating these actions. Newer theories of detergency include that of solubilization based on the "polar" structure of soap.

PATENTS

Treatment of fabrics with metallic soap. Harold Schiller (Socony-Vacuum Oil Co.). *U. S. 2,364,491.* A treating solution for textiles comprising a heavy metal soap of a soap-forming organic acid, water, ammonia to produce solution of the soap in the water, and a quantity of alkylolamine to delay the precipitation of the water.

Detergent composition. John Cecil Rhodes. *U. S. 2,365,215.* A detergent composition composed of a wetting agent such as "Esterine" or "Alrosene" which contains quaternary ammonium compounds of fatty acids including those acids derived from coconut oil, tetrasodium pyrophosphate and sodium carbonate, followed, after mixing, by addition of sodium bicarbonate and sodium metasilicate.

Manufacture of soap. Ashton T. Scott (The Sharples Corp.). *U. S. 2,369,257.* A continuous process for the manufacture of soap by continuously mixing a saponifying reagent with a source of fat to effect saponification and separating the soap formed by discharging it from the centrifugal rotor and passing it to the zone of subsequent treatment or use under the influence of its own rotational inertia.

Detergent. A. Welter. *Belg. 447,710.* The detergent is produced by saponification of aliphatic sulfonylchlorides in C_8 to C_{12}. The unsaponifiable is sepd. from the very dil. solns. in which it floats and the soap is then salted out with caustic alkali. The alkali present in the sepd. soap can be partly or completely neutralized by milling with acids. The product is finally reduced to flakes, powder, etc. (Chem. Abs.)