ABSTRACTS

Soaps

***Edited by* M. L. SHEELY**

Use of Soap in the Emulsified Asphalt Industry. *Chemical and Metallurgical Engineering,* Vol. No. 4, Page 181, April, 1933. An expanding outlet for soap is in its use as an emulsifier in the emulsified asphalt industry. Sales of emulsified asphalt and fluxes in the United States in 1931 amounted to 155,140 tons, compared with 113,185 tons in 1930. The oldest established use of emulsified asphalt is in road building. It may also be used for coating and impregnating stone, wood, metal and felt. It serves as a protective covering on structural steel and iron, as a binder for mastic flooring, a waterproofing agent for concrete, a sound-deadening material for automobile bodies, etc.

Emulsions of the unstable type are made from asphalt and water mainly by the use of soap as the emulsifying agent. With certain types of asphalt, emulsification may be accomplished by the use of alkalies alone, the saponifiable ingredients contained in the asphalt taking the place of the fatty acids of the soap. Manufacture of the emulsion is at present usually a continuous process, both paddle mixers and colloid emulsions being used for the purpose. Addition of soap to the aqueous phase reduces the asphalt-water tension to such an extent that the work required to subdivide the asphalt is considerably less than that required for dispersing asphalt into emulsions of the stable or mineral-powder type. Composition and concentration of the soap solution must be carefully controlled and the temperature of both soap solution and asphalt must be maintained within narrow limits.

German Patent 521,129 of May 8, 1889, to the firm of Schulke & Mayra, apparently first develops the use of soap as an emulsifier. United States Patent 1,793,918 discloses the preparation of emulsions by use of a suspension of paste-forming colloidal material, such as bentonite, modified by adding to it an agent such as soap to reduce the interfacial tension between the aqueous medium and the asphalt, and to facilitate dispersion with light agitation.

The Saponification Process. *The Perfumery and Essential Oil Record,* Vol. 24, No. 4, Page 141, April 25, 1933. It has been fairly generally accepted for many years past that in the saponification of fats with alkali the process is really one in which the primary reactants are fat and water, the caustic soda or potash first acting as an accelerant or catalyst, in the "splitting" of the fat, and ultimately combining with the liberated fatty acids to form soap. This would seem probable in view of the rapid hydrolysis of fat into fatty acids and glycerin which is brought about by water alone at a high temperature, whilst it has also been established that prolonged contact with water at ordinary temperatures is capable of completely hydrolysing a fat.

An alternative view formerly held was that the reaction took place directly between the fat and alkali, but this theory could hardly be longer regarded as tenable once it had been shown that in the absence of water no saponification took place.

Corroborative evidence of the correctness of the first view is given in a recent paper by G. K. Rowe, *Journal Society Chemical Industry,* 1933, T. 49, who has examined the saponification process with coconut oil, lard, olive oil, linseed oil, butterfat and triolein.

Wetting Agents Tested. *Oil, Paint and Drug Reporter,* Vol. 123, No. 16, Page 30C, April 17, 1933. (Presented before March meeting of American Chemical Society.) A number of the sulphonates of the benzene series have been prepared and the effect of the nature and position of substituent groups upon their surface activities has been studied. The surface tension-concentration relations of these products are compared with those of soap and other wetting agents. The adsorption of some commercial wetting agents by wool has been measured in solutions having various hydrogen-ion concentrations. It is shown that, for substances of this type, the adsorption parallels the potential curve of the wool in acid solutions and is negligible in alkaline solutions. The influence of wetting agents upon the take-up of acid and basic dyes by wool at various hydrogen-ion concentrations has been determined quantitatively. These agents increase the take-up of basic dyes in acid solution and decrease dyeing under other conditions. The results are interpreted in terms of the electrical condition of the fiber and the adsorption of the capillary-active ions.

Preparation of Cheap Toilet Soaps. *Chemical Abstracts,* Vol. 27, No. 6, Page 1534, March 20, 1933. R. Krings. *Allgem. Oel-u. Fett-Ztg.* 29, 72-4 (1932).—Satisfactory soaps can be made by the cheap cold process if good-quality (refined) fats are used; the stability may be increased by use of antioxidants (cf. Allgem. Oel-u. Fett-Ztg. 29, 40-2 (1932).

Effect of Fat Additions on Washing Materials. *Chemical Abstracts,* Vol. 27, No. 8, Page 2055, April 20, 1933. B. Menes. Allgem. Oel-u. Fett-Ztg. 26, 69-72 (1932).—Lather tests were made according to Stiepel's method with a soap solution of 0.3% concentration at 37°. Two soaps identical except for the fats from which they were made were used. Soap A was made largely of coconut and palm-kernel oils, with little tallow. Soap B was made from the same 2 fats except that tallow was substituted for ½ the coconut and palm-kernel oils. Lather tests on these soaps dissolved in distilled H_2O showed both soaps to have practically the same lather powers. When the tests were repeated with the addition of 10 cc. of fish oil per 100 cc. of soap solution soap B had very much superior lathering powers.

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Determination of Soap and Fatty Acid in Dry-Cleaning Solutions. *Chemical Abstracts,* Vol. 27, No. 8, Page 2039, April 20, 1933. E. E. Hughes. *National Cleaner and Dyer* 24, No. 2, 39-40 (1933).—An analysis of 3 typical dry-cleaning soaps of known composition shows that the amount of soap and fatty acid present in dry-cleaning solutions can be determined by titrating to neutrality with approximately 0.1 N alcohol KOH with thymol blue as an indicator; calculating the free oleic acid corresponding to the alkali used; titrating the solution further with 0.2 N HCl after the addition of bromophenol blue indicator; calculating the K oleate corresponding to the acid; and subtracting this amount from the K oleate equivalent of the oleic acid found. This difference represents the soap originally present.

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The Effect of Dry-Cleaning Solvents Upon Fabrics. *Chemical Abstracts,* Vol. 27, No. 8, Page 2039, April 20, 1933. E. E. Hughes and Wm. D. Appel. *Drycleaner* 9, No. 5-6, 6-8, 24 (1932).—The effects of CCl_4, trichloroethylene and Stoddard Solvent on silk, weighted silk, cotton, wool, viscose rayon and cellulose acetate rayon cloths were studied with respect to the effect upon the strength of these fabrics of repeated solvent treatments under standardized conditions the effect of these solvents on the plaits and their effect on the color of the fabrics. The effect of water in the solvents on the strength of the fabrics was also investigated. The conditions were selected to stimulate as nearly as possible conditions met in the dry-cleaning plant. The results which are tabulated indicate that no solvent is uniformly superior.

Soaps and Their Latest Competitors in the Field of Rayon Improvement. *Chemical Abstracts,* Vol. 27, No. 7, Page 1761, April 10, 1933. Herman Stadlinger. The Rayon Record 6, 505-9 (1932).—The chemical nature of the sulfonated fatty alcohols is discussed, with reference to their application in the textile industry.

PATENTS

New Method for Production of Soap. *Chemical Abstracts,* Vol. 27, No. 8, Page 2055, April 20, 1933. R. Krings. *Allgem. Oel-u. Fett-Ztg.* 29, 157-60 (1932).—A discussion of U. S. Patent No. 1,831,610, covering emulsification of oils, alkali and water, and saponification under self-generation of heat.

Soap Powders. *Chemical Abstracts,* Vol. 27, No. 6, Page 1537, March 20, 1933. Lever Brothers, Ltd. French 736,024, April 27, 1932.—A small amount of a Mg compound e.g., MgO 0.1-0.3 or $MgSO_4 \cdot 7H_2O$ 0.6-1.8%, is incorporated with soap powders having a basis of perborate.

Distilling Liquids Such as Glycerol Under Vacuum with Steam. *Chemical Abstracts,* Vol. 27, No. 6, Page 1536, March 20, 1933.—Oscar H. Wurster. U. S. 1,886,256, Nov. 1. Superheated steam is injected into the liquid to be distilled, the mixture of steam and vapor is condensed, a fraction of the condensate is evaporated in vacuo and the vapors thus formed are preheated by vapors from the distilling liquid and then superheated by high-temperature and high-pressure steam to form the superheated steam to be injected into the liquid to be distilled (the condensate being evaporated by the high-pressure steam after being used to superheat the preheated vapors). Apparatus is described.

Floating Soap. *Chemical Abstracts,* Vol. 27, No. 5, Page 1226, March 10, 1933.—Coitein & Co. Austrian 129,777, April 15, 1932. A substance capable of generating H is added to the soap or a constituent thereof before, during or after the saponification process. Thus, 20 g. of Al dust may be added to 100 kg. of hot liquid grained soap.