ABSTRACTS

Soaps

Edited by **M. L. SHEELY**

Report of the sub-committee on the determination of unsaponifiable matter in oils and fats and of unsaponified fat in soaps to the standing committee on uniformity of analytical methods. L. V. Cocks. *Analyst* 58, 203-11 (1933).—In the method recommended, the sample is sapond. by heating with KOH in alc., the resulting soap soln. is dild. with water and extd. with Et_2O. The ext. is heated till the solvent has evapd. and the residue is weighed. Special cases are discussed. W. T. H.

Rancidity of Soap and Fats. *Perfumery and Essential Oil Record.* Vol. 24, No. 5, page 184, May 23, 1933.—Recent research has shown that the rancidity of fats is exclusively a chemical process which consists primarily of an autoxidation of the reactive double bonds of the unsaturated glycerides; peroxides are formed concerning the structure or kind of which almost nothing is known. Exactly what takes place has not been determined; a predeterminating process is the formation of molecules having acetic, aldehydic and ketonic characteristics.

The theory that darkening and rancidification of soap is due to the presence of nonsaponifiable fat is not well founded.

It seems beyond question that a perfectly saponified soap can turn rancid. This is liable to occur when soap shavings are heaped into large masses so that considerable pressure results. It appears that such pressure and humidity cause profound modification in a saponified matter. Phenomena of oxidation arise together with scission of single molecules of fatty acids into two products of very small mass. This molecular duplication results in the production of free fatty acids. Granting that a single molecule of fatty acid decomposes into two of similar properties but of lower molecular weight, the quantity of combined soda that was sufficient to saturate the acid in the first case saturates only half the product when the scission takes place.

The Effect of Different Soaps on Lead Arsenate in Spray Mixtures. *Chemical Abstracts.* Vol. 27, No. 10, page 2524, May 20, 1933. Joseph M. Ginsburg. *J. Agr. Research* 46, 179-82 (1933).—Apple trees were sprayed 3 times at 2-week intervals with mixtures consisting of $PbHAsO_4$, hydrated ferric oxide and each of the following soaps: commercial potash fish-oil soap, K oleate and triethanolamine oleate. The spray containing fish-oil soap produced severe injury and caused about 30% leaf drop. The injury from the K oleate spray was limited to spots on the leaves and browning of the leaf edges. The injury from the triethanolamine oleate spray was very slight and did not appear until after the 3rd application. Laboratory tests on the action of the soaps mentioned and of Na oleate and NH_4 oleate soaps on $PbHAsO_4$ indicate that soaps of strong bases form more soluble As than soaps of weak bases, potash fish-oil soap producing the greatest quantity of soluble As and triethanolamine oleate the least.

The Foaming Properties of Soap. *Oil and Colour Trades Journal.* Vol. LXXXIII, No. 1806, page 1401, May 26, 1933.—The foaming of soaps, due to their physical properties, is discussed by Lederer (*"Fettchem. Umschau,"* 1933, p. 69). He treats of the physics and mathematics of the subject, the results of which are summarized as follows: For the characterization of a foam, the quantities obtained are critically considered, especially is an exact definition given for the stability, and this is expressed in terms of a single value, the half value time (or constant). From the hypothesis stated, formulae are developed, and experimental results found to be in good agreement with this. In order to obtain the half value, observations at several points are taken and the initial foam figure may be obtained by graph. The theories appearing in the literature of the subject were tested by the author's method. In the case of individual soaps the stability of the foam appears to increase with rise in the homologous series of fatty acids. The presence of unsaturated fatty acids in the soap decreases the stability. Concentration increases the stability. The "foam number" (the volume of a solution converted into a foam under definite conditions) is less dependent on external conditions than is the "foam volume" (the volume of the foam arising from a determined amount of solution, under defined conditions). It seems that unstable components have a dominating effect on the properties of soap foams and an indication of purity may be obtained from a consideration of the properties of the foams of soaps.

Saponification of Oils and Fats in the Cold. *Chemical Abstracts.* Vol. 27, No. 6, page 2592, May 20, 1933. I. Davidsohn and E. I. Better. *Fettchem. Umschau* 40, 26-31, 52-5 (1933).—The authors discuss the preparation of cold-made and semi-cold-made soaps, concluding from laboratory experiments in which an insufficient amount of alkali had been used, that the unsaponified fat is freely soluble in H_2O, because it consists of free acid and mono- and diglycerides. This unsaponified fat cannot entirely be extracted with petroleum ether and does not materially decrease the soap's lathering power. All soaps made with an equivalent amount or less of alkali show nevertheless a small amount of free alkali when finished. Cold-made soaps of mixtures of coconut oil and other fats will be of satisfactory quality if the fat charge has a low acid number, if it is started at a low temperature, kept at the optimum temperature during the after-saponification period and agitated vigorously. P. ESCHER.

Corrosion of Lead by Fatty Acids in the Presence of Iron. *Chemical Abstracts.* Vol. 27, No. 6, page 2592, May 20, 1933. G. O. Heyer. *Seifensieder-Ztg.* 60, 131-2, 165-7 (1933).—Pb-lined iron tanks had to be relined after 2 years, while a Pb-lined wooden tank lasted more than 8 years. Laboratory experiments with Pb and Pb-Fe in oleic acid and H_2O-oleic acid mixtures showed that Pb in contact with Fe corroded more than Pb alone. The destructive agent is oleic acid lodging between the Fe wall and its Pb lining. P. ESCHER.

Evolution of the Manufacture of Washing Products. *Chemical Abstracts.* Vol. 27, No. 6, page 2595, May 20, 1933. A. Pouzet. *Russa* 8, 107 (1933).—A brief outline showing that the most striking and important development has been the elimination of the COOH group in soap and its replacement by OH, which has very greatly broadened the field of application of the soaps. A. P.-C.

Cause of Coloration and the Refining of Nigre (During Soap Boiling). *Journal of the Society of Chemical Industry.* Vol. 52, No. 14, page 274, April 7, 1933. S. Igarasi (*Journal Society Chemical Industry,* Japan, 1933, 36, 19-24B). The discoloration of the fatty acids of the neat soap and the niger (measured with a tintometer is correlated with the amount of oxidized acids in the stock (cottonseed and fish oils) and the presence of Fe compounds, dirt, etc. Decolorization of nigres by a salting out treatment and filtration (to remove Fe) is cheap and efficient, and preferable to the use of chemical bleaching agents.

PATENTS

Hollow Soap Cakes. *Chemical Abstracts,* Vol. 27, No. 8, Page 2057, April 20, 1933. Robert S. Blair. U. S. 1,891,744, December 20. Various details of apparatus and operation are described, involving extrusion and compression in cake-forming dies.

Bleaching Soap Stock. *Chemical Abstracts,* Vol. 27, No. 7, Page 1778, April 10, 1933. Anthony M. Lagasse (to Stockton G. Turnbull). U. S. 1,890,121, December 6. Soap stock is treated with H_2O_2 in non-alkali condition and excess H_2O_2 is decomposed after the bleaching operation is completed.

Powdered Soaps; Glycerol. *Chemical Abstracts,* Vol. 27, No. 8, Page 2056, April 20, 1933. John B. E. Johnson. British 367,513, January 7, 1931. A mixture of a fatty oil and the requisite amount of a basic saponifying agent is passed in a rapidly moving stream through an externally heated narrow tube under pressure and the saponified mixture is discharged therefrom into a receiver to form a precipitate of dry soap powder and water vapor containing the whole or part of the glycerol. Apparatus is described.

Impregnation of Fabrics With Soaps (for Waterproofing). *Journal of the Society of Chemical Industry,* Vol. 52, No. 15, Page 303, April 14, 1933. Chem. U. Seifenfabr. R. Baumheier A.-G. (British Patent 386,700, June 8, 1931. German June 8, 1930).—An impregnating liquor is used consisting of an emulsion of a fatty acid or resin soap of a multivalent metal (e. g., Al, Zn, Pb, Mg) together with a waterproofing substance (e. g., paraffin wax, bitumen) and an emulsifying agent (e. g., glue, starch); the liquor is stabilized by passage through a homogenizing machine.

Soap. *Chemical Abstracts,* Vol. 27, No. 8, Page 2056, April 20, 1933. Peter Krebitz. British, 364,565, September 30, 1930. Soaps are dried by addition of dehydrated Na or K phosphate, e. g., dehydrated Na pyrophosphate. Perfumes and colors are then added and the soap is treated in a soap mill, plodder press or pilier machine.