ABSTRACTS

Soaps

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Control method for glycerol determination in soap lyes. *Chemical Abstracts,* November 10, 1932.—J. DAVIDSOHN. *Seifensieder-Ztg.* 59, 490-1 (1932).—Method: Acidify 100 g. of the heated sample with HCl, filter, wash, make the filtrate alk. with Na_2CO_3; evaporate to dryness, extract the glycerol with abs. alcohol, filter, evaporate alcohol and weigh the residual glycerol; any accidental contamination by NaCl can be determined with $AgNO_3$ and subtracted; the method agrees with the dichromate method within 0.2% glycerol, and has been in successful use for several years.

High vacuum fatty acid distillation. *Soap,* November, 1932. —Steam distillation of fatty acids, glycerin and the like under a high vacuum avoids decomposition of the products. A new apparatus for carrying out this process and for providing a special steam spray compressor to create the required vacuum is described in German Patent No. 545,764. This compressor is located between the fatty acid and the steam condensers. A vacuum exists in the latter due to the condensing action of the cooling water. The new compressor produces a vacuum in the fatty acid condenser and in the still which is substantially higher than what can be obtained by means of the steam condenser alone.

The high vacuum avoids the distillation of odoriferous substances along with the fatty acids. The traces carried along mechanically are removed with the steam from the fatty acid condenser. The surprising fact is that the fatty acids can be easily condensed under this high vacuum. The fatty acid distillate is satisfactory in color and odor and also contains practically no unsaponifiable matter.

Comparative cost of soaps as water softeners. O. E. LOWMAN. *Iowa State College Journal of Chemical Education.* Vol. IX, No. 10, Page 1809 (1932).—An experiment was conducted to measure the soap-consuming power of water. From these data the comparative cost for various brands of soap could be computed.

Alcoholic solutions of different brands of soap were made up to a concentration .01 grams of soap per cc., and these solutions titrated along with samples of boiled distilled water.

Weigh each bar to the nearest gram, then shave off exactly 5 g., dissolve in 100 cc. of 80% alcohol and allow to stand for at least one day. It should then be diluted with 400 cc. of 70% alcohol.

Soap costs may be determined according to the following formula:

$$\frac{5/500 \times \text{cc. of soap solution required} \times 20 \times \text{cost of bar in cents}}{\text{weight of bar in grams}} = \text{cost in cents per liter.}$$

Properties of Igepon soap mixtures. *Textile Colorist,* November, 1932.—K. BOEDEKER (*Textilber.,* 1932, 13, 436-438) has microscopically investigated the properties of solutions of Igepon and mixtures of Igepon in soap with a view to ascertaining how it is that a small addition of this product to hard water is able to prevent the formation of insoluble lime and magnesium soaps.

A 3% solution of a stearine soap is fluid at high temperatures but, on cooling, sets to a firm jelly. Under the microscope the cold solution is seen to contain innumerable needles of sodium stearate compactly interlocked with each other. Each needle is about 100 times longer than it is thick. Both solutions of sodium oleate and stearate show the presence of colloidal particles.

In contrast, 3% solutions of Igepon A and Igepon T at ordinary temperatures contain no colloidal particles; the solutions are thus molecular dispersions.

When a small amount of a stearate soap is added to water of about 20° hardness, there is immediately formed a precipitate of the lime soap. The particles of lime soap are large but as the quantity of soap present is increased, these particles become smaller until a point is reached at which the excess of soap is sufficient to completely disperse them. On adding an Igepon solution to hard water, no precipitate is formed and the lime-Igepon compound must thus be molecularly dispersed. Also, Igepon is able to disperse an ordinary insoluble lime soap very much more easily than does excess of the soap itself.

Rancidity in Toilet Soaps. Fred Winter, *American Perfumer and Essential Oil Review,* Vol. 27, No. 9, Page 484, November, 1932.—The rancidity of soap is usually caused by factors which promote decomposition of the alkali salts of fatty acids, i. e., soap, into free fatty acids. This liberation of fatty acids is almost always due to hydrolysis. While the transitory hydrolysis, caused by the normal wetting of a cake of soap as it is used, causes simultaneous liberation of fatty acid and alkali, the prolonged absorption of water will cause permanent decomposition and rancidity. This destructive hydrolysis may be due to wetting the soap during grinding or storing in a humid atmosphere. Soap containing an excess of sodium chloride is subject to sweating due to the hygroscopicity of the salt. This condition is equivalent to continuous wetting and causes rancidity.

The presence of metallic impurities in the soap is also responsible for rapid rancidity, whether this is due to the catalytic action of the metal or to the hydrolysis of the anhydrous metallic soap which is formed. The possibility of contamination of soap from metallic containers depends on the composition of the fatty mixture. The use of certain fatty substances, particularly free fatty acids, may predispose the soap to poisoning by metals.

Method of Bleaching Soaps. *The American Perfumer and Essential Oil Review,* Vol. XXVII, No. 10, Page 568, December, 1932.—One of the cheapest processes is that with sodium hypochlorite. There is no foundation for the idea that the chlorine may be injurious in bleaching and therefore is to be avoided in soap-making. In fact, if this product is scientifically employed to bleach soap, there will be no excess of chlorine. When the fat is completely saponified, it is treated with hypochlorite containing about 5 per cent of chlorine. It is recommended to work in a wooden vat at a temperature not exceeding 50° C. The action of hypochlorite is maximum at a low temperature and the mass should be kept moving with a mechanical agitator. The soap is then let rest for some hours. Excessively concentrated solutions should not be used. It is better to work with 5 per cent, although, of course, it is impossible to fix the absolute percentage required, which will depend upon the materials employed and their constitution. The average figures are: For 100 kgs. soap, 3 to 8 kgs. of alkali containing 40 grams of active chlorine obtained by treatment of calcium chloride. If possible, it is better to work with an alkali containing 100 grams of active chlorine. In this case about 1 to 2.5 kgs. for 100 kgs. of soap will suffice. (Kazarnowski, Olii et Grassi [8], 28.)

Bleaching Soaps. *Soap Gazette and Perfumer,* Vol. XXXV, No. 1, Page 22, January, 1933.—The amount of potassium persulphate employed for bleaching soap varies from 200 gr. to 1 kilo. per 100 kilo. Excess of persulphate must be avoided as it may later cause yellowing. Successive bleachings are recommended. Thus, for a charge containing bone fat and dark arachide oils, as also palm oil, the arachide is saponified and the soap formed bleached before adding the bone fat. The same thing is done with the bone fat. As for palm oil soaps, they do not actually require bleaching. It is always well, when persulphate is employed, to have a slightly alkaline soap. The reagent should be added at as low a temperature as possible and, in any case, below 80° C. Disengagement must not be too rapid on penalty of a bad yield. Addition of zinc oxide is recommended in the proportion of 100 gr. per 100 kilo. This product eliminates the last traces of oxygen remaining in the soap. It is added diluted in the water either with or after the persulphate. Addition of this substance is, however, useless with soft soaps. Finally the soap is boiled for three hours.—(Ind. Sapon. 37, 28.)

Popular Soap Bleaches. *American Perfumer and Essential Oil Review,* Vol. 27, No. 9, Page 515, November, 1932.—The oils and fats should be free from excess of impurities. Complete saponification is essential when the soap is to be bleached. For some bleaches the soap should be alkaline and for others, neutral. Efficient agitation or mixing is necessary.

Sodium hydrosulphate is the most satisfactory and economical method for ordinary soda soaps and white soft soaps. Soaps containing rosin, bone fat and other cheap ingredients may be bleached with sodium hydrosulphate providing a little palm oil is added. An objection to the use of sodium hydrosulphite is the darkening of the lyes through the formation of iron salts in the glycerine recovery plant.

Ammonium persulphate is a suitable bleach for soft soaps. Potassium persulphate may also be used for the soap as an excess of free alkali.