ABSTRACTS

Soaps

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

Spontaneous heating of soap. *Perfumery and Essential Oil Record,* Vol. 24, No. 6, page 219, June, 1933.—The liability of soap powder to spontaneous combustion is well known, soap dust behaving in this respect like other organic materials such as sugar or flour. Less violent oxidation, in which there is no explosion, but considerable rise in temperature, sometimes also occurs spontaneously not only with powdered soap but with soap in the form of chips or ribbon.

A case recently rose of a sample of powdered olive oil soap which had become spontaneously heated. Packed in paper bags, the soap had at first been kept in a moderately warm place before being transferred to store. When examined after a month, it was found that the soap had a strongly rancid smell, that in the center it had become soft and pasty, and the temperature had risen to over 100°C. Analysis showed that considerable oxidation had occurred, with formation of much free fatty acids and oxidized acids.

The occurrence of spontaneous heating of soap is difficult to explain and to guard against. The recent investigations of Wittka and others on the accelerating effects on the oxidation of soap of small amounts of metals seem to indicate that such contamination may play an important part in the phenomenon. The sample in question contained 0.0025% of iron, and it is very desirable that all traces of metal should be rigidly excluded. A small amount of antioxygen, such as thiosulphate, might also be added.

Fat splitting and distillation. *Soap Gazette and Perfumer,* Vol. 35, No. 7, page 5, July, 1933.—No difference in color was distinguished in this method of distillation between fatty acids from pressed and from extracted oils. It was found, however, that the lightest fatty acids were obtained from the oil which was split as soon as possible after it had been pressed or extracted from the raw materials.

The splitting process was carried out in the usual copper autoclaves of 4 to 5 ton capacity. From 0.6 to 0.7% of zinc oxide ana a pressure of 10 to 12 atmospheres were used. Each charge of the autoclave consisted of 2700 kilograms of oil and the zinc oxides made into a slurry with 1000 liters of water.

According to a new method for processing the glycerin, a sample of the glycerin solution was titrated with fifth normal solution of sodium hydroxide until the reaction was alkaline and from the analytical result there was calculated the quantity of barium hydroxide required for making the glycerine alkaline. The important new detail was discovered that the addition of baryta before the barium hydroxide was added materially reduced the consumption of barium hydroxide and furthermore coagulated the precipitated dirt and facilitated filtration.

The character of the pitch is controlled by the fatty acids. It is always advisable in distilling fatty acids to pitch not to permit the temperature to rise above 300°C.

MAX JUNKER.

Study of wetting agents by the Drop-Number Method. *Chemical Abstracts,* Vol. 27, No. 11, page 2765, June 10, 1933. H. Boxser. *Melliand Textile Monthly* 4, 380-4 (1932).—The method used for comparison of different wetting agents consists in allowing a definite volume of the liquid to run slowly from a buret, the end of which is immersed in a liquid immiscible with H_2O, and counting the number of drops formed. The newer wetting agents, of the sulfonated aliphatic alcohol type, which possess good stability in acid of moderate concentration, are shown by this method to be superior to the sulfonated castor oil and naphthylamine types both in the absence and presence of added electrolytes.

New problems of fat chemistry and their importance for the textile industry. *Chemical Abstracts,* Vol. 27, No. 11, page 2817, June 10, 1933. W. Kling, *Melliand Textile Monthly* 12, 111-12 (1931).—The fatty alcohol sulfonates, obtained by catalytic reduction of the corresponding acids and sulfonation, are not only equal but even superior to ordinary soaps. Their wetting, as well as emulsifying power, is excellent. The fatty character of the products is of advantage, e.g., the higher members possess a decided brightening power. The products do not become rancid and odoriferous in storing. No alkali is split off hydrolytically.

E. M. H. R.

Stabilizing oils and fats. *Chemical Abstracts,* Vol. 27, No. 11, page 2833, June 10, 1933. Swift & Company. French 741,417, August 20, 1932. Oils and fats are stabilized by incorporating therewith a small amount of a natural resin, such as guaiacum gum, or the condensation product of a Me ether of a polyhydroxy alcohol and an aldehyde, insoluble in water.

The oxidation phenomena in oils, fats and soaps. E. I. BETTER. *Seifensieder-Ztg.* 60, 200-2, 219-21, 235-7 (1933); cf. *C. A.* 26, 4972.—*I. Oxidization and rancidity reactions.*—The peroxide formed according to Tschirch-Barben's theory in rancid oils and fats can be measured quantitatively by the KI reaction and is due to atm. oxidation of unsatd. glycerides. Satd. oils like coconut owe their rancidity to microbic action, producing alkyl ketones which can be detd. by the recent Täufel-Thaler reaction (*C. A.* **26,** 3394). The Kreis reaction is due to the formation of epihydric aldehyde during oxidation. There is no parallelism, therefore, between the results of the peroxide-, Kreis, and organoleptic tests. Barnicoat's rule that the tendency toward rancidity is the greater *the less linolenic acid is present* holds true for ordinary temp.; at 103° the more highly unsatd. acids rapidly turn rancid. The conditions under which rancidity occurs for the various unsatd. acids are still unknown. Holm and Greenbank found that oleic acid turned rancid after absorbing only a little O_2 while linolenic acid did not turn rancid. Better also found that Me oleate very soon developed a rancid odor when oxidized. On the other hand, oleic acid remains intact during hydrogenation until all other more unsatd. acids are hydrogenated. *II. Bleaching by O_2 absorption.* —In the oxidation of palm oil by air, the coloring matter is detroyed first, then the acids themselves are attacked, peroxides being formed; still later epihydric aldehyde forms as indicated by the increasing intensity of the Kreis reaction, but neither is the cause of the darkening of the oil on continued blowing. Subsequent refining and sapon. of this oxidized palm oil furnish darker soaps than those from normal oil. The air-blowing should be controlled by proper testing. Bleaching fats with active Japanese clay resulted in a weaker Kreis reaction than in fats similarly agitated without clay, excepting linseed oil which showed a pos. Kreis test only after addn. of the clay. *III. Autoxidation and catalysts.*—Fats contain antioxidants as natural constituents, probably sterols with free OH groups, as well as accelerators of oxidation, the latter forming peroxides which are catalysts of oxidation. The induction period is due to the union of the antibodies with the accelerator, this protecting the fat against O_2 absorption. Purification of the oils tends to remove the sterols and shortens the induction period. Brief summaries are recorded of the action of accelerators for paint oils, antioxidants for textile and transformer oils, and for soaps. The perfume in soaps may react with the free alkali of the latter, but rancidity in soaps is often caused by metallic impurities, while thymol, phenol and *B*- and α-naphthol are good antioxidants. Aromatic aldehydes and ketones in perfumes are strong oxidizing accelerators for soaps, those of the aliphatic and terpene series less so. Aromatic acids with the CO_2H group in a side chain are inactive; derivs. of polyhydric phenols which contain OH groups together with ethyl ether, propenyl and Et groups are strong antioxidants. P. ESCHER.

Litharge and glycerol compositions. *Chemical Abstracts,* Vol. 27, No. 12, page 3043. June 20, 1933. N. V. Tot Voortzetting der Zaken Van Pieter Schoen & Zoon. British 369,834, July 14, 1930. A cement for fixing glass in window frames, etc., is prepared by mixing 2 pastes shortly before use: (1) an insoluble carbonate, e.g., chalk, a drying oil, e.g., linseed, a polyhydric alcohol, e.g., glycol, and, if desired, a plasticizer, e.g., K oleate, (2) PbO and H_2O.

Magnesium Carbonate in Soap. Paul I. Smith. *Am. Perfumer.* 28, 154.5, 1933.—Mg carbonate has the following advantages for the soap manufacturer: (1) Because of its absorptive properties it is an ideal filler and stiffener. (2) Soaps containing this material press well and have a smooth non-greasy feel. (3) The finely divided nature of the carbonate prevents shrinkage, spottiness or lumpiness. (4) The whitening action of the carbonate improves the appearance of the soap and also produces brighter and cleaner colored soaps. (5) The distributing, carrying and diluting action are valuable in the manufacture of perfumed soaps where cost of production must be at a minimum. (6) Mg carbonate has no effect on the most sensitive skin. (7) It has a smooth lubricating property which makes it a pleasant filler for toilet soaps. E. Scherubel. (*C. A.* 27, 3354.)

Amides of Higher Fatty Acids. *Chemical Abstracts,* Vol. 27, No. 13, page 3293, July 10, 1933.—I. G. Farbenind. A.-G. British 384,665, June 4, 1931.—Amides of higher fatty acids, made from glycerides such as fatty oils, tallow and Japan wax by reaction with NH_3 or amines (other than purely aromatic amines), d. g., $MeNH_2$, $BuNH_2$, dibutylamine, undecylamine, benzylamine, piperidine, diethanolamine, cyclohexylethylamine, dicyclohexylamine and dibenzylamine, are suitable for use instead of fats in the soap and perfumery industries and in the production of cosmetics and pharmaceutical preparations.