ABSTRACTS

Oils and Fats

Edited by
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Purifying Oils. *Oil and Colour Trades Journal,* Vol. LXXXIII, No. 1806, page 1403, May 26, 1933.—English 371,503. J. Y. Johnson, 47, Lincoln's Inn Fields, W. C., on behalf of I. G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany.—Animal and vegetable oils are freed from lecithin, phosphatides, and mucins by dispersing small amounts of water, water vapour, or acidulated water in the oil heated to at least 60° C., and then cooling rapidly enough to reach room temperature or below in at most 30 minutes; the impurities settle out as flakes and may be removed by centrifuging and filtering. Settlement of the impurities may be facilitated by adding soda to the cooled mixture. The purified oil may be deacidified by distillation, e.g., as described in Specification 213,267. The acidulated water may be formed by adding 2-5 kg. of concentrated hydrochloric, sulphuric, or phosphoric acid to 160 kg. of water; 1 per cent of water relative to oil is suitable. In an example, 1,500 kg. per hour of soya bean oil at 75° C. and 15 litres per hour of water are run through a turbo mixer, and 25 kg. per minute is cooled to 20° C.; 8 kg. of dry soda are stirred in, and the whole allowed to settle for 8 hours and then the supernatant oil is filtered. The slimy mass settled out is centrifuged to recover entrained oil. Specifications 213,267 (Class 91, Oils, etc.) and 341,390 also are referred to.

Ammonia Oil Refining Process. J. Leimdoerfer. *Seifensieder Zeitung,* Vol. 60, 1933, pages 15, 34, 50 and 60.—Free fatty acids are refined according to the process of German Patent 525,946 by passing moist ammonia gas into the crushed oil seeds until the pressure becomes constant. Then again the benzine extract may be treated with ammonia, sodium hydroxide or calcium hydroxide. Anhydrous soaps are soluble in oil, while hydrated soaps are not. The "break" of the finely divided soap in the refining process with sodium hydroxide is caused by the absorption of water by the anhydrous precipitated soap. This coagulation is analogous to the separation into soap and lye in the salting-out process. When the temperature is too high and only a small proportion of water is present, the separated oil in the cooled state may gelatinize due to the soap that is dissolved in it.

The causes of color in cottonseed oil were examined and found to be four in number. First there is the yellow tinge caused by unsaturated fatty acids. Second, the brownish color caused by impurities; third, the color due to green chlorophyll or to brown iron-chlorophyll and finally the red color due to absorption of albumenoid impurities. The red color is partially removed from cottonseed oil by using an excess of sodium hydroxide during refining. This results in the color passing into the neutral oil held by the precipitated soap. Neutralization of the oil with an alcoholic solution of ammonia decreases oil losses and gives a light-colored oil, but distillation is required to recover the solvents. Neutralization with substances that do not dissolve oils yields edible oils light in color. (*Soap,* 9, 59.)

Hardening Fats Without Hydrogen. Dr. J. Davidson. *American Perfumer and Essential Oil Review,* Vol. 28, No. 5, page 274, July, 1933.—It is reported that hardening oils may be accomplished in an apparatus, operating under a vacuum, by treatment with two types of substances in proportions of three and seven per cent, respectively, calculated on the weight of the original material. No further details have been announced except that the yield is approximately 107%. The process is to be patented in Germany. Samples of hardened sesame peanut oil have been examined. Odor and taste are not entirely unobjectionable. The hardened oils dissolved smoothly in either but in the cold the solution precipitates small traces of a substance which resembles wax. The samples contained 7 to 8% of unsaponifiable matter.

Oxygen absorption of oils and fats. E. I. BETTER. *Allgem. Oel- u. Fett-Ztg.* 29, 330-41 (1932).—Linseed and olive oils rapidly increased in peroxide no. and Kreis reaction on exposure in thin films to a daylight lamp, but scarcely became oxidized in the dark; soy-bean oil, however, oxidized at the same rate in the light or the dark. Oils treated with bleaching earths readily became rancid. Bleached palm oil gave a strong peroxide (and Kreis) reaction, which decreased on illumination. B. C. A.

Deacidification of oils with glycerol. *Chemical Abstracts,* Vol. 27, No. 12, page 3099, June 20, 1933. E. Schlenker. *Allgem. Oel-u. Fett-Ztg.* 29, 343-6 (1932); cf. C. A. 25, 3858.—Experiments quoted indicate that a mixture of EtOH and glycerol (e.g., 2:1) might be employed in suitable apparatus to deacidify highly acid oils; in laboratory tests, at least, the fatty acids extracted do not entrain much neutral oil. B. C. A.

Oils and fats purifying is improved in Germany. *Oil, Paint and Drug Reporter,* Vol. 123, No. 8, page 47, August 21, 1933.—Various methods have in the past been proposed for the removal from oils and fats of such impurities as mucin, lecithin, carbohydrates, etc., but many difficulties arise which either make the process too slow or too uneconomical. It is, therefore, of interest to note that the German firm of Harburger Oelwerke Brickman & Mergell has developed a process whereby, it is claimed, such impurities are readily removed by the use of phosphoric acid and cellulose, together with adsorbing agents such as pure chalk. Thus 0.1 to 0.8 per cent of 1.55 specific gravity phosphoric acid is added to 100 parts by weight of linseed oil and the whole thoroughly mixed. The temperature is then raised to 70° C., and 1 per cent of kieselguhr and from 0.1 to 0.5 per cent of cellulose are introduced. The temperature is kept at 70° C. for 30 minutes and the pure chalk used to neutralize the acid. The oil mixture is then filtered and it is stated that losses are minimized, while the time taken is considerably shorter than that necessary for any of the known processes.

Carlonit in catalytic oil hardening. E. BELANI. *Seifensieder-Ztg.* 60, 202-4 (1933).—Carlonit is a natural, active, non-hygroscopic bleaching earth and can be used in selective oil hardening. One g. pure Ni catalyst reduced at 420-430° diminished the I no. of fish and rape oil at 180° after 1 hr. by 10, Ni from Ni borate, still contg. 47.2% B_2O_3 by 16.9 and Ni on kieselguhr by 41 units. When the Ni from Ni borate was exhaustively washed with hot H_2O to contain only 16% B_2O_3, the catalyst was very active and not sensitive to air, and the I no. of the oil was reduced by 78.1-96.5 units. Basic Ni borates can be prepd. by pptg. Ni solns. with a mixt. of Na_2CO_3 and borax solns., with or without kieselguhr. Thus prepd. the catalyst is non-pyrophoric, most active and has been used 5 times without much loss of activity. When partially hardened oil freed from Ni is recharged with the same amt. of fresh catalyst, the I-no. reduction is less than before, and with a 3rd fresh Ni catalyst is less than the 2nd time, this proving that the slowing down of the process is due not to a poisoned Ni but to the difficulty of H_2 reaching the double C bonds within the mol. of the oil. Selective hardening: fish oil was freed from clupanodonic acid at an I no. of 85, but when hardening was slowed down by using a less active catalyst or by the use of smaller amts. of an active Ni, the clupanodonic acid disappeared at a much higher I no. together with the fish odor. Expts. with Carlonit in place of kieselguhr gave good results, its action being due to its high content of colloidal SiO_2. Coconut oil, when pre-treated with Carlonit at 130-195° and deodorized by vacuum, is perfectly neutral in taste and odor. The odor does not return in refined fish oils when treated with cold Carlonit and a stream of cold inert gas. P. ESCHER.

Bituminous emulsions. *Chemical Abstracts,* Vol. 27, No. 16, page 4054, August 20, 1933.—Bitumen Investments, Inc. French 744,008, April 11, 1933. Aqueous emulsions of bitumen or asphalt for use on roads are made by heating a caustic alkali solution slowly adding molten asphalt, mixing the ingredients, adding a substance capable of saponifying with the alkali, e.g., oleic acid, finally adding more asphalt and agitating until the mass is completely emulsified. Clay or bentonite in amount sufficient to give the desired stability may be added.

Bituminous compositions. *Chemical Abstracts,* Vol. 27, No. 15, page 3813, August 10, 1933.—Robert Arnot. British 374,987, June 23, 1932. A composition suitable for coating or surfacing purposes or incorporating in road-making materials comprises low-temperature tar with a fatty pitch dispersed therein and an addition of CaO or other alkali compound adapted to accelerate hardening. In an example, 2 parts stearin pitch is heated with 5 parts shale oil at not over 60 lb. per sq. in. to 150° for 4 hours to give a solution which is diluted with 40 parts shale oil and stirred into 250 parts tar warmed to 50°. The cooled product may be mixed with gravel and slaked CaO.

Detergents. *Chemical Abstracts,* Vol. 27, No. 16, page 4043, August 20, 1933.—Raymond Vidal. British 379,438, September 1, 1932. Fatty acids, e.g., oleic or acids from copra, castor, olive, peanut or palm oil, are treated with solutions of alkali metal or NH_4 sulfite or thiosulfate to yield sparingly soluble compounds which on subsequent treatment with caustic alkali, or alkali metal or NH_4 carbonate, yield soluble crystal substances. The detergents may be obtained directly by action of the two agents in admixture on the fatty acids.

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