ABSTRACTS

Soaps

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Manufacture of soap flakes. Zilske. *Allgem. Oel-u. Fett-Ztg.,* 35,388-395 (1938). Precautions to be taken in the manufacture of good soap flakes are considered, and the inhibiting effect of salt on saponification is explained. The ratio of NaOH :KOH should not exceed 9:1. Soap with 8 pts. of NaOH to 2 pts. of KOH absored much H_2O and soon became rancid. Cold H_2O sol. soap flakes (from groundnut and coconut oils) dissolved in H_2O produce a strongly alkaline lather, but the remaining solution is only weakly alkaline. If the lather is removed and the solution again shaken, the lather formed is still alkaline but the solution is not. The process can be repeated until no more lather is formed, but soap is still present. This is probably an acid soap and needs relatively large amounts of soap to remove it from washed materials. Compounds, e.g., polysaccharides, must be added to the soap flakes to avoid this difficulty. (*Brit. Chem. Abs.*)

Sources of glycerol contamination. A. Kliutschevitsch. *Maslob. Shir. Delo, 12,* 95-96 (1938). The fermentation of glycerol H_2O (I) is a source of contamination of glycerol with low-mol. fatty acids. (I) contains yeasts, and fungi such as Ascomycetes and Saccharomycetes, besides the usual micro-organisms of butyric fermentation. (*Brit. Chem. Abs.*)

Rapid method of determination of glycerol in aqueous solution. O. Juhlin. *Anal. Chem. 1938,* 113; *Recherches 1938,* 339. The acetin method is uncertain, owing to hydrolysis, if the glycerol content is less than 50%, and the bichromate method gives high results if oxidizable impurities are present.

The following method does not suffer from these defects. A quantity of the sample equivalent to 0.112-0.114 gm. of pure glycerol is weighed out into an Erlenmeyer flask and neutralized with 0.1 N caustic potash solution, using methyl orange as indicator, and 10 cc. of 0.1% Br water solution are added. The flask is closed with a cork impregnate with a solution of KI; allow to stand for 15 min. without shaking, and add 10 cc. of 10% KI solution and 50-100 cc. of water. The iodine liberated is titrated with a 0.102 N sodium thiosulphate solution in the presence of starch. The reaction product being dihydroxyacetone, and percentage of glycerol is given by the formula: 9.2064 x n(a-b)/2e, where a and b are the numbers of cc. of thiosulphate solution, of normality, obtained for the blank and the sample, whose weight in gm. is e.

Soap base (chip) dryer. P. Tackmann. *Fette u. Seifen,* 45, 401-402 (1938). Requirements in the prep. and drying of soap chips (for milling) are discussed and the Lehmann dryer (G.P. 448.574) embodying horizontal, slatted conveyer belts is illustrated; the amount of drying air required may be reduced by fitting heaters within the dryer to maintain the temp. of the chips.

Transparent soaps. *Seifensieder-Ztg. 65,* 856 (1938). Solid transparent soaps are the more hydroscopic, the more transparent they are. Transparency varies with the content of coconut oil or palm kernel oil. The content of soft fats should not exceed 30%. Potash soaps can be prepared from fatty acids by the semiboiled process. The absence of glycerine then decreases hygroscopicity but also decreases transparency. A steamheated, double-walled kettle with stirrer is highly efficient. Transparency is achieved only with a fatty acid content of 62-63 per cent. A strong caustic potash solution of about 40° is used. Such a soap may be made from 50 parts by weight of tallow fatty acids, 20 of fatty acids from bleached palm oil, bone fat, or hardened fat, 30 of coconut oil or palm kernel oil-fatty acids, and 55 parts of 42° Be. caustic potash solution.

Fatty acids for mildew. *Chem. Trade, J. & Chem. Eng. 103,* 538 (1938). Fatty acids and their salts are used for the mildew-proofing of textiles, paper etc. The amount of salt added is 0.01-2-3 per cent by weight of the water present as free moisture in the material treated. The salts used include the sodium, calcium, potassium, magnesium, mercury, zinc and ammonium salts of propionic, butyric, isobutyric, valeric, caprylic and lauric acids. A solution of the salt may be sprayed on to the surface of the material.

Sulphur soaps. *Deutsche Parfumerie Ztg. 24,* 327-8 (1938). Sulphur soaps have long been a problem to the soap maker because of inherent disadvantage in the various forms of sulphur previously available. As the usual form of sulphur is crystalline and completely insoluble in water, it is of no value when applied to the skin and may even cause irritation from the scratching of the sharp-edged crystals. Soap makers have accordingly made use of precipitated sulphur. Soaps made from sulphur in this form, however, present another drawback. They evolve hydrogen sulphide in use with its notoriously bad odour of rotten eggs. A new preparation has recently been offered which, it is claimed, has all the advantages of sulphur but none of its disadvantages. The product is known as organic sulphur oil and is prepared according to German Patent No. 543,603. It is known that when mixtures of sulphur with sugar are melted together, the melt cooled in water and filtered (when hydrogen sulphide is given off) the product resulting will contain finely divided sulphur. It has been found that if sulphur is melted with sugar and starch in the presence of an air supply and the fusion cooled and stirred with water, a product separates which will form a colloidal solution in pure water. Liquid soaps containing sulphur should be of good quality. The same fatty acids as used in liquid shampoos are suitable. These include mixtures of coconut, olive, castor, etc., oils. The soap is preferably as near neutral as possible or may even be slightly acidified with castor oil fatty acids. Turkey red oil or similar neutralizing agents. Small amounts of potash up to 5% have a favourable effect on cleansing action.

The fat charge is saponified in the usual manner all solutions added after saponification — the water being added last. About 2% of sulphur oil is suitable for a liquid soap. This is dissolved in two-three times its volume of pure water, the latter being held out during the water addition to the soap. The colloidal sulphur solution is added after the soap has cooled somewhat and is mixed in well. The batch is allowed to stand for several weeks in a cool room and then filtered.

New glycerine substitute patented. *Ind. Eng. Chem. News Ed. 17,* 95 (1939). A new substitute for glycerol has been patented by W. Schrauth and co-inventors. It has to do with 1, 5-pentamethylene glycol, which can be used as a heating or cooling liquid, as a brake fluid, and as an antifreeze. The new product is miscible with water in all proportions, and no polymerization or splitting into water and decomposition products occurs when the mixture is maintained at the boiling temperature for long periods. According to the patent, the viscosity of the new material at room temperature is near that of glycerol, though much lower at 0° C. The 1, 5-pentamethylene glycol is compatible with many organic solvents, and therefore it may be used as a substitute for glycerol in many places where the latter is needed in techniques, cosmetics and pharmaceuticals.

PATENTS

Water-softening cleanser. Bert O. Crites. U. S. 2,142,180, Jan. 3, 1939. As a new article of manufacture, water-softening cleanser in free-flowing substantially dustless sifting powder from whose particles are uniformly composed of the reaction product of about 35-45 parts by weight of sodium sesquicarbonate and about 2-10 parts of tri-sodium phosphate, and about 45-65 parts by weight of normally solid commercial soap-making fatty acids of not less than 98% free fatty acid content, the sesqui-carbonate being in excess of that required to neutralize the acid and together with the excess phosphate being physically held in the particles against separation and dusting.

Spinning of rubber filaments, threads and like products. R. P. Roberts and R. M. Dingley. Brit. 482,335, September 23, 1936. Rubber filaments are formed by spinning an aq. dispersion of rubber containing casein (0.1-0.3%, on wt. the rubber), with n 1.35-1.65 times that of a 70-vol.-% aq. solution of glycerol, into an acid bath (20% aq. AcOH). (*Brit. Chem. Abs.*)

Sulfonated aliphatic acids. Bohme Fettchemie-Ges. m. b. H. Ger. 664,387, Aug. 26, 1938 (Cl. 120.23.02). Higher unsatd. aliphatic hydroxy acids are treated with about twice their wt. of conc. H_2SO_4 at a temp. not above 0° in the presense of an inert diluent. An example is given of the treatment of ricinoleic acid. (Chem. Abs.)

Complete saponification in the manufacture of a soap from distilled fatty acids and concentrated caustic soda. Heilsberg & Co., G. m. b. H. — Fr. 828,233, a 10-23-37, g. 5-12-38, in Recherches, Dec. Fatty acids split at high temperature give clots when saponified, by simple boiling in an open pan, with caustic soda of more than 25% concentration. It is preferable to carry out saponification in the presence of salts which have a retarding effect on the reaction. These salts are, e.g., silicates, phosphates, borates, etc., with the exception of carbonates. By this process, the soap has an exact content of water and it is not necessary to cool it in molds or cold presses. *Ex.*: Mix together 100 kg. of mixed fatty acids and 5 kg. of tri-sodium phosphate. Heat to 80° C and add slowly at the same temperature the equivalent quantity of 42° Be. caustic soda lye. By the use of diluent substances, the fatty acid content may be reduced to 45%.

Soap and synthetic cleansers. Henkel & Cie, Ges. Brit. 480,231. Cleansing-agents consist of one or more soaps of hard fats or fatty acids mixed with one or more water-soluble salts of ether-carboxylic acids of formula R.Ar.O.R.COOH where R is an organic radical, Ar an aromatic radical, and R an eliphatic or cyclo-aliphatic radical containing 4 or more C atoms. Suitable proportions are 50-50 or 70-30 of soap to the sodium salt. There may be added soda, phosphates, e.g. sodium pyrophosphate, silicates, borates, solvents, synthetic washing agents, bleaching agents, e.g. peroxides and persalts such as perborate, and stabilisers. Soap fats specified are stearic or palmitic acid or mixtures; tallow; hardened fats or fatty acids, e.g. hardened whale, sperm, soya, linseed, castor, peanut, and sunflower seed oils; or selected fractions. R may be butyl, sec. butyl, amyl, isoamyl, octyl, di-isobutyl, dodecyl, sec. dodecyl, tri-isobutyl, hexa-decyl, cyclohexyl, or methylcyclohexyl; Ar may be benzene, toluene, diphenyl, diphenyl-methane, or naphthalene radical. The ether-carboxylic acids are derived from acids such as hydroxy-acetic, hydroxy-propionic, hydroxy-butyric, hydroxy-valeric, malic, and salicylic acids. Suitable salts are the alkali, ammonium, triethanolamine, amino-propandiol, and tetra-ethyl-ammonium salts of phen-oxyacetic acid, cres oxyacetic acid, naphth-oxyacetic acid, lactic acid, or salicylic acid substituted in the aromatic radical by a hexyl or sec. hexyl radical. The neutralization of the ether-carboxylic acid and the production of the soap may be combined. The products may be marketed as powders, lumps, flakes, shreds, solutions, or pastes. (Soap Perfumery and Cosmetics)

Detergents. French 823,154, Jan. 15, 1938. Henkel & Cie, G.m.b.H. A washing agent with good wetting qualities consists of a mixt. of soaps of hard fats, of fatty acids and water-sol. salts of acids of the general formula RArOR′COOH in which R represents an alkyl, or cycloalkyl radical contg, at least 4 C atoms, Ar an aryl radical and R′an org. radical, with washing and other qualities. In an example, soap flakes made from the Na soap of whale oil and the Na salt of cresoxyacetic acid substituted in the nucleus by a secondary alkyl radical contg. 6-12 C atoms, and wool fat, are mixed to give a detergent. (*Chem. Abs.*)

Fatty acids by electrolysis. Hansa-Mühle A.-G. German 658,986, Apr. 21, 1938 (Cl. 23a. 4). Aq. solns. of salts of fatty acids such as aq. soap stock soln. are electrolyzed in a cell in which the electrodes are sepd. by a diaphragm, to free the fatty acids. A suitable cell is described. (*Chem. Abs.*)

Manufacture of soap and glycerin. R. A. Duncan (to Procter & Gamble Co.). U. S. 2,126,099. Water is added to the molten soap after distn. of water and glycerin and the soap is sprayed to evap. the water and cool the soap. The amt. of water is regulated so that it absorbs the heat and after spraying the soap is cool and contains substantially no water.

Sulphur monochloride-nitrile reaction products and process of preparing them. A. W. Ralston (to Armour & Co.). U. S. 2,125,853. Reaction products of S_2Cl_2 on fatty acid nitriles are prepd. They are used in lubricants.

Extreme pressure lubricant. A. W. Ralston (to Armour & Co.). U. S. 2,125,851. The lubricant comprises a mineral oil lubricant and polymerized aliphatic nitriles. The nitriles are prepd. from fats.