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TREATMENT OF WAXES

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True fats and fatty oils consist essentially of glycerides of higher fatty acids and, as is well known are easily saponified to give soaps and glycerine. Waxes also consist of or contain esters of fatty acids, but these esters are not glycerides; they are the esters of higher monohydric alcohols. When the distinction between fats and waxes is thus drawn on a chemical basis, there come to be classed among the waxes the the so-called liquid waxes, sperm oil and arctic sperm oil.

The present invention relates to a treatment of waxes, liquid or solid, whereby the esters present are saponified and the alcohols are separated in a technically advantageous way.

Known methods of saponifying waxes are not adapted to be performed on a manufacturing scale. When aqueous alkali is used much troublesome froth is formed and it is difficult to separate the alcohol from the soap. To saponify with alcoholic alkali is too costly. It has been proposed to separate alcoholic material, adapted for pharmaceutical use, from spermaceti by a treatment with lime, followed by distillation (Axelrad, Journal of Industrial and Engineering Chemistry, 1917, 9, 1123) but this process is not free from technical disadvantages because the lime, lime soaps, etc. of which the mass to be distilled consists do not melt.

According to the present invention we heat together a liquid or solid wax and either dry caustic potash or a dry mixture of caustic potash and caustic soda and separate the alcohol from the molten reaction mass by a distillation process.

When a wax and dry caustic potash or a dry mixture of caustic potash and caustic soda are heated together in accordance with the invention a mixture of fatty alcohol and anhydrous soap is formed. This is molten at a temperature such that the alcohol can be separated by distillation.

The distillation is preferably carried out by use of superheated steam, and it can then be carried out usually at atmospheric pressure. Distillation may also be effected under diminished pressure, with or without simultaneous use of steam.

In using superheated steam it is not necessary that the steam should be superheated before it is admitted to the distillation vessel, it suffices that dry steam such as is commonly available in factory processes, be passed into the vessel, the contents of which are kept at the desired temperature by appropriate external heating.

Distillation proceeds smoothly because the material in the still is liquid. So that distillation may take place at the lowest convenient temperature it is advantageous to use not caustic potash alone, but a mixture of caustic potash and caustic soda, the proportions of caustic potash and caustic soda being so chosen that preferably the soap remaining at the end of the distillation is a eutectic mixture.

The invention is illustrated but not limited by the following examples, the parts are by weight.

Example 1

241 parts of spermaceti are melted and heated to 200° C. 42 parts of powdered potassium hydroxide are now added with agitation in half an hour, during which time the temperature is allowed to rise to 240° C. It is held at this temperature for half an hour when superheated steam is passed in. There distils over with the steam a colourless oil which sets on cooling to a crystalline waxy solid which is entirely free from fatty acid and from unsaponified spermaceti. The yield is approximately 100 parts by weight, the proportion of water to oil in the distillate being approximately 10:1.

Example 2

241 parts of spermaceti are treated as in Example 1 with a mixture of 21 parts powdered potassium hydroxide and 15 parts of powdered sodium hydroxide. After reaction, the molten mixture of soaps and fatty alcohol is subjected to superheated steam distillation at about 250° C., eventually at 280° C. until no more oil distils. The yield is approximately 100 parts of the pure alcohol from spermaceti, the ratio of water to oil in the distillate being approximately 10:1.

Example 3

268 parts of sperm oil are treated as in Example 1 with a mixture of 21 parts of caustic potash and 15 parts of caustic soda. After reaction the mass is subjected to superheated steam distillation until no more oil distils. The yield is 90 parts of a semi-solid alcohol, free from unsaponified wax or free fatty acid. The ratio of water to oil in the distillate is approximately 4:1.

Example 4

200 parts of beeswax are heated to 150° C. and a mixture of 16 parts of powdered caustic potash and 11½ parts of powdered caustic soda is added. The mixture is then treated with superheated steam as described in the preceding examples. Myricyl alcohol is obtained, the ratio

of water to alcohol in the distillate being about 25:1.

Other waxes, e. g. chinese wax, wool fat, carnauba wax may be treated in the same way.

We claim:

1. Process for the manufacture of higher alcohols comprising heating a wax with a dry mixture of caustic potash and caustic soda in proportions such as to give a eutectic mixture of the corresponding soaps.

2. Process for the manufacture of higher alcohols comprising heating a wax with a dry mixture of caustic potash and caustic soda in proportions such as to give a eutectic mixture of the corresponding soaps and separating the alcohol by distillation.

3. Process for the manufacture of an alcohol from spermaceti wax which comprises heating substantially 241 parts of the wax with a mixture of about 21 parts of dry caustic potash and about 15 parts of dry caustic soda at about 200–240° C., and thereafter distilling off the alcohol in a current of superheated steam.

4. Process for the manufacture of an alcohol from sperm oil which comprises heating substantially 268 parts of the liquid wax with a mixture of about 21 parts of dry caustic potash and about 15 parts of dry caustic soda at about 200–240° C., and thereafter distilling off the alcohol in a current of superheated steam.

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