Patented Oct. 20, 1936 2,057,959

UNITED STATES PATENT OFFICE

2,057,959

PROCESS OF REMOVING THE ODOR FROM BLEACHED ALKALI METAL SALTS OF FATTY ACIDS

Waldemar Kling, Frankfort-on-the-Main-Griesheim, Germany, assignor to I. G. Farbenindustrie Aktiengesellschaft, Frankfort-on-the-Main, Germany

No Drawing. Application January 10, 1934, Serial No. 706,162. In Germany January 18, 1933

6 Claims. (Cl. 87—16)

The present invention relates to the removal of the odor adhering to the alkali metal salts of fatty acids on account of the bleaching process.

It has already been attempted to render odorless the soaps bleached with hypochlorite, i. e. alkali metal salts of fatty acids which show the known odor resembling carbol or iodoform by boiling them, while simultaneously using oxygen compounds of sulfur having a reducing action. The effect obtained was, however, completely insufficient. It has, furthermore, been proposed to eliminate the smelling substances by blowing steam through the soap at a temperature of 200° C. or above, while applying pressure. This method has likewise not been successful, as it has been sufficient only for removing the readily volatile odor carriers but not those which are bound to alkali and are consequently sparingly volatile, as is the case with the bodies causing the carbol odor.

It has also been suggested to eliminate the odor by heating the bleached soaps with alkali, while applying pressure. This process, however, involves the danger that the bleached soaps discolor and assume a yellow to dark brown coloration.

I have now found that the bleached soap can be rendered odorless in a satisfactory manner by heating it in the presence of oxygen compounds of sulfur having a reducing action with application of raised pressure. This treatment may be carried out as follows: the bleached soap is introduced, if desired after having been grained and converted into a soap glue, into a pressure vessel and mixed with the named substances. The mixture thus obtained is heated either externally or by indirect steam or by introducing steam into the pressure vessel; the pressure is thus raised and for instance increased to about 2 atmospheres to about 6 atmospheres. Only in rare cases a still higher pressure is required, which may be increased to 15 atmospheres. The temperatures to be applied are generally between about 120° C. and 180° C. A working at a temperature of about 160° C. and under a pressure of about 6 atmospheres has proved to be particularly suitable.

As agents capable of removing the odor there are used the salts of sulfurous acid, hyposulfurous acid and hydrosulfurous acid and the derivatives of these acids, furthermore the sulfoxylates and thiosulfates either per se or several in combination with one another. Particularly useful are the alkali metal salts, the salts of the alkaline earth metals and the zinc salts. In most cases only very small quantities of these agents are sufficient, for instance about ½ part to about 10 parts per thousand of the soap material to be treated. The height of the pressure, the kind and degree of purity of the fatty material to be used for saponification have an influence upon the quantity of the reducing agent to be applied. In order to counteract a premature and unnecessary consumption of the reducing agent, it may be advantageous to remove the air from the soap material and the vessel by blowing in steam.

The effect of the process may still be improved by adding to the bleached soaps an alkaline substance besides the oxygen compound of sulfur having a reducing action. As alkaline substances there may be used, besides caustic soda, other alkaline-reacting substances, such as the alkaline salts and ammonium salts of the carbonic acid, phosphorous acid, acetic acid or boric acid, furthermore ammonia and the derivatives thereof, either per se or mixed with one another.

It may be pointed out that the present process is applicable not only to such soaps as have been bleached with active chlorine, but also to such soaps as have been bleached with other metals, for instance with peroxides, persulfates or the like.

Furthermore, there may be treated according to the present process the soaps which have been prepared from already bleached fats, it being of no moment whether the fats have been bleached with chemicals or with adsorbents, such as fuller's earth, active charcoal, silicic acid gel.

According to the new process it is possible in all cases to render the soaps odorless in a satisfactory manner, even palm kernel oil soaps to which, as is known, the carbol odor adheres very tenaciously, without there occurring a discoloration of the bleached soaps.

The following examples serve to illustrate the invention, but they are not intended to limit it thereto:

(1) 5000 kilos of curd soap are prepared in the usual manner from dark waste fat in an iron vessel provided with a stirring device. It is advantageous, if desired, repeatedly, to grain this soap and to separate the underlye. The soap is then bleached by causing the bleaching solution, at 80° C., to flow into the filled soap, while the stirring device is running. The bleaching solution is prepared from the usual chlorine lye with about 150 grams of active chlorine per liter by dilution with twice to three times the quantity of water. After about 6 to 12 per cent. of the chlorine lye, calculated upon the saponified fat,

has been consumed, the bleached soap paste is introduced into a pressure vessel having a capacity of about 8 tons. There is then added 2 parts per thousand of sodium bisulfite calculated upon the weight of the fat and neutralized by means of lye. After the lid has been closed, the mass is heated for 4 to 5 hours to about 150° C. under a pressure of 3 to 5 atmospheres. As soon as the soap is odorless, it is reconducted into the first vessel and further treated as usual. In cases where the chlorine odor adheres particularly firmly to the soap, it is advisable to use, besides sodium hydrosulfite, formaldehyde-sodium-sulfoxylate or this substance only.

(2) 1000 kilos of dark grease are saponified by means of caustic soda and the soap paste is grained twice. The mass is then bleached, for instance with a solution of sodium hydrochlorite. The soap curd is converted into a soap paste by the addition of 50 kilos of calcined soda and water. The soap paste contains 40 per cent. of fatty acid and is heated to 80° C. There is then added as much caustic soda solution (about 20 kilos of 40° Bé.) as the paste can take up without a separation into soap and lye occurring. An aqueous solution of 80 kilos of soda bleaching lye, 10 kilos of caustic soda and 200 kilos of water is then caused to run into the mixture in the course of one hour, while intimately mixing, care having to be taken that by the supply of open steam the soap paste is kept during the bleaching operation at a temperature of between 80° C. and 85° C. After the addition of the bleaching solution the mixture is stirred until the active chlorine has been consumed. The material is then grained and the bleached soap is subjected to a subsequent treatment with pressure.

The bleached soap paste is introduced into a pressure vessel; an aqueous solution of 3 kilos of sodium bisulfite, 1 kilo of sodium hydrosulfite and 6 kilos of caustic soda is added and after the lid has been closed the paste is treated for 3 to 5 hours at a temperature of about 160° C. and under a pressure of 6 atmospheres. The soap improved with regard to its odor is then worked up as usual.

I claim:

1. The process of removing the carbolic or iodoform odor from bleached plastic soaps which comprises heating said bleached soaps under a pressure of about 2 to 16 atmospheres at about 120° C. to about 180° C. in the presence of a small amount of a salt of an oxygen compound of sulfur having a reducing action sufficient to remove the odor.

2. The process of removing the carbolic or iodoform odor from bleached plastic soaps which comprises heating said bleached soaps under a pressure of about 6 atmospheres to about 160° C. in the presence of about ½ part to about 10 parts per thousand of an oxygen compound of sulfur having a reducing action.

3. The process of removing the carbolic or iodoform odor from bleached plastic soaps which comprises heating said bleached soaps under a pressure of about 2 to 16 atmospheres at about 120° C. to about 180° C. in the presence of a small amount of sodium sulfite sufficient to remove the odor.

4. The process of removing the carbolic or iodoform odor from bleached plastic soaps which comprises heating said bleached soaps under a pressure of about 2 to 16 atmospheres at about 120° C. to about 180° C. in the presence of a small amount of sodium hydrosulfite sufficient to remove the odor.

5. The process of removing the carbolic or iodoform odor from bleached plastic soaps which comprises heating said bleached soaps under a pressure of about 2 to 16 atmospheres at about 120° C. to about 180° C. in the presence of a small amount of sodium formaldehyde sulfoxylate sufficient to remove the odor.

6. The process of removing the carbolic or iodoform odor from bleached plastic soaps which comprises heating said bleached soaps under a pressure of about 2 to 16 atmospheres at about 120° C. to about 180° C. in the presence of a small amount of a salt of an oxygen compound of sulfur having a reducing action sufficient to remove the odor and an alkaline substance.

WALDEMAR KLING.