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PROCESS FOR THE PRODUCTION OF SOAP THREADS

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The present invention relates to a process for the production of soap in the form of fine threads. To obtain products of this kind it is necessary to satisfy two conditions, namely first, a mass must be obtained, which is suitable for producing therefrom fine threads, and secondly a process must be chosen which enables the existing soap mass to be converted as economically as possible into fine threads of this kind. The two conditions are interconnected however, insofar as naturally the raw material must be capable of being worked up satisfactorily by the particular process adopted and on the other hand the process presupposes a raw material of definite characteristics.

Many soap masses and processes for the production of soap flakes or the like have, it is true, already been proposed, more especially also processes originating from the inventor, but it is not easy to fulfil simultaneously all the requirements, which are made in regard to a cheap process of manufacture and a product, which has a good appearance, does not effloresce or shrink when stored, dissolves quickly and clearly in water and does not injure the linen.

It has also been proposed by others to force soap in a liquid state through mouthpieces, having a large number of small apertures, of about ¼ mm. diameter by means of pumps. The emerging liquid soap is then supposed owing to the large surface, to solidify and begin to dry under favourable conditions in the form of small threads, so rapidly that it does not cake together during subsequent drying. This process is however inferior to the known atomizing processes and also does not result immediately in attractive and saleable products, but yields first intermediate products, which have to be further treated. The process differs from all those described below in that liquid soap is pumped through the apertures and only then solidifies and dries, whereas the other processes are more advantageous, because they proceed from solid soap already solidified which naturally can then no longer be pumped.

It has also already been proposed by the inventor of the present process, for the production of soap noodles or strips, to proceed in such a way that to liquid soap is added about a tenth of its weight in calcined soda or the like and the resulting thick liquid mixture is pressed into noodles or strips.

It has been proposed by others, to make flakes or the like from a mixture of dried soda- and potash-soap on the one hand and salts on the other hand. In such a case however in order to obtain useful, saleable products, it was necessary to proceed from mixtures of potash and soda soaps which are very difficult and troublesome to prepare, and in addition to use these mixtures in a dry or preliminarily dried form.

According to the present invention the process referred to one before the last is improved on the one hand by using instead of soda, other desired salts or salt mixtures, for instance potash, sodium or potassium bicarbonate, potassium or sodium sulphate, potassium or sodium phosphate, potassium or sodium silicate, potassium or sodium borate, potassium or sodium acetate, potassium or sodium nitrate, the potassium or sodium salts of aromatic sulphonic acids, such as for instance of beta-naphthalene sulphonic acids or of their homologues and substitution products or the like, which salts are referred to broadly hereinafter by the term electrolyte. It is then possible to add to the soap as much of these electrolytes or mixtures thereof as is possible without softening or reaching the point of salting out. Generally electrolytes are mixed with the hot liquid soap, the latter being pumped out of the soap pan. This procedure is of great advantage as the soap solidifies and cools off more quickly because of the improved conducting power for heat of the electrolyte solution. This mixing takes 15 minutes to one hour according to the quantity of soap, or kind of soap and electrolytes and temperature. The soap thus obtained, when completely cooled off, can be pressed into fine threads by means of fine sieves fixed in the mouthpiece of a plodder. Of course cold solidified soap can also be mixed with electrolytes, and in some circumstances, for instance when using per-

salts, is even advantageous. The upper limit for the electrolytes lies approximately between 10% and 30%, the former figure holding for the case of soda and the latter for the case of other electrolytes; it naturally depends upon the fats used for the production of the soap. When persalts, e. g. sodium perborate, are added to the soap as electrolytes, then the additional advantage is attained that by rapid cooling and pressing of the soap through fine apertures products are obtained in the form of fine threads which will keep for some time without the persalt losing any oxygen. This stability is increased if colloidal protectives are added at the same time, which envelop the persalts and thus protect them against decomposition. Such substances, for instance water glass are already used at the present time in the soap industry under the name protective colloids, to protect the persalts against premature decomposition.

It is also possible to add large quantities of other fat-dissolving substances to the mass to be worked up, prior to moulding, for instance ordinary or hydrogenized hydrocarbons, hydrocarbon halides, oxy-fatty acids, sulphoaromatic compounds or the like. Small additions of ethereal oils or of unsaponifiable or difficultly saponifiable hydrocarbons, such as for instance paraffin, vaselin, Montan wax, beeswax, ceresine or the like, may be made in order to have a favorable effect upon the appearance or conformation of the final products. Naturally, additions of filling media, such as for instance clay, talcum, wood meal, potato flour, glue, oxy- and hydrocellulose or the like are also admissible, although in a limited degree.

According to the present invention, the resulting mixture is converted in a manner known per se into the fine threads or fine filaments. It is more especially advisable to effect this by forcing the cold solid mass through fine mouth-pieces, in which case one can go as far as ¼ mm. diameter. The fundamental difference as compared with the forcing of liquid soap through such fine apertures, referred to previously, consists in this that in this case it is not liquid but solid soap that is forced through. The soap in the present process therefore does not solidify by rapid cooling and drying after it has emerged from the nozzles, but is pressed in a cool and solid state.

It was not to be foreseen that even solid soap could be pressed through such fine apertures in an economical manner without employing an excessive amount of force and without the fine apertures becoming clogged. The resulting products are very similar to artificial silk, have in most cases a bright lustre, dissolve very easily in water and are very stable with respect to efflorescence.

It is clearly pointed out that "fine apertures" or mouth-pieces in the sense of this invention are only understood as being those having at most 1½ mm. diameter; the use of wider apertures for pressing solid soap is not claimed for the mixture which comes into question. It must also be added that the process described above can also be modified if desired so that the primary material used is not liquid soap, but solid soap and the aforementioned electrolyte is then added to the said soap and mixed. This is however not advisable in general, as in such a case one has not the advantage of being able to proceed immediately from soap which is still liquid, but in some circumstances conditions of manufacture may necessitate the soap being first allowed to solidify. The entire process then remains unchanged in other respects.

According to the invention plastic masses are obtained, which solidify rapidly, and are readily pressable; products are obtained in the form of threads which no longer cake together and are immediately ready for packing. The advantage consists of the addition of the above kinds of salts on the one hand in removing the adhesive character from the soaps, especially if resin is used therewith, and on the other hand they make the soaps so stiff that pressing is facilitated. In addition, if the electrolyte is correctly chosen, it is possible to obtain the valuable advantage that when hard water is used, the soap is protected from reacting with the lime and magnesium salts contained in the water, to form insoluble compounds. By this means considerable saving in washing material is obtained, and no damage occurs by the formation of stains and no yellowing by colloidally dispersed iron. Such products hitherto could only be produced in the known powder form, which for other reasons were looked upon, not unjustly, with mistrust by the consumers. Any other form has hitherto led to products subject to efflorescence, which were unattractive and therefore unsaleable.

Examples

1. 500 kgs. liquid curd soap
   50 kgs. sifted 98% potash
   25 kgs. sodium bicarbonate

are stirred together. After five to ten minutes the mass becomes solid and is then homogenized and pressed into the threads by means of nozzles of 0.6 to 0.7 mms. diameter.

2. 500 kgs. curd soap
   25 kgs. borax
   35 kgs. sodium bicarbonate
   25 kgs. sifted 98% potash

are stirred together. After five to ten minutes the mass becomes solid. It is then completely homogenized by roller mills and then forced by means of nozzles of ½ mm. diameter into the form of threads.

3. 500 kgs. liquid curd soap
25 kgs. sodium bicarbonate
50 kgs. potassium metaborate
are mixed and treated further as in Example 1 or 2.

4. 500 kgs. 55–60% filled soap are stirred together with
25 kgs. borax
35 kgs. sodium bicarbonate and
25 kgs. sifted 98% potash
and further treated according to Example 1 or 2.

5. 500 kgs. liquid curd soap are stirred with
50 kgs. liquid highly concentrated water glass,
whereupon the mass becomes solid in 10–15 minutes and crumbles and no longer adheres together. After cooling it can then be easily worked up according to Example 2, highly lustrous threads being obtained, which are scarcely to be distinguished from artificial silk.

6. 500 kgs. liquid curd soap are stirred with
100 kgs. beta-naphthalene sulphonic acid sodium, in powder form,
whereupon the mass becomes solid and crumbly in about 10–15 minutes and no longer adheres together. It can be readily worked up according to Example 1 or 2 after cooling.

7. 500 kgs. curd soap are mixed in a known manner with
50 kgs. benzine or 50–60 kgs. hydrogenated phenols or cresols, until a perfectly homogeneous and clearly soluble soap containing hydrocarbons is obtained. The mass is then mixed with
50 kgs. sodium bicarbonate and
25 kgs. borax
and then further treated according to Example 1 or 2.

8. 500 kgs. 62% curd soap are mixed with a pasty mixture prepared independently and composed of
66½ kgs. crystallized sodium perborate
50 kgs. water glass of specific gravity 1.35 to 1.50
and with
1½ kgs. 34% soda lye.
After five to ten minutes
20 kgs. calcined soda
are added, again well mixed and the whole further treated as stated in Example 1 or 2.

9. 500 kgs. of a 62% liquid curd soap
are mixed with a pasty mixture prepared independently and composed of
32 kgs. sodium perborate, containing 22.5% active oxygen and
30 kgs. water glass of specific gravity 1.40 to 1.50, whereupon
25 kgs. sodium phosphate are added in finely powdered form.

The mass which is at first liquid becomes solid in the course of 5–10 minutes and can then be further treated according to Example 1 or 2.

What I claim is:—

1. A process for the production of soap in the form of very fine threads, which will be rapidly soluble in cold water consisting in adding to soap mass so much of an alkali salt that no softening or salting-out occurs, and then converting the solid mass into threads having a diameter less than 1.5 mm. by extrusion.

2. A process for the production of soap in the form of very fine threads, which will be rapidly soluble in cold water, consisting in adding to soap mass in as liquid a state as possible so much of an alkali salt that no softening or salting-out occurs, and then converting the solid mass into threads having a diameter less than 1.5 mm. by extrusion.

3. A process for the production of soap in the form of very fine threads, which will be rapidly soluble in cold water, consisting in adding to soap mass so much sodium perborate that no softening or salting-out occurs, and then converting the solid mass into threads having a diameter less than 1.5 mm. by extrusion.

4. A process for the production of soap in the form of very fine threads, which will be rapidly soluble in cold water, consisting in adding to soap mass in as liquid a state as possible so much sodium perborate that no softening or salting-out occurs, and then converting the solid mass into threads having a diameter less than 1.5 mm. by extrusion.

5. A process for the production of soap in the form of very fine threads, which will be rapidly soluble in cold water, consisting in adding to soap mass so much sodium perborate that no softening or salting-out occurs, together with waterglass, which prevents the decomposition of the sodium perborate, and then converting the solid mass into threads having a diameter less than 1.5 mm. by extrusion.

6. A process for the production of soap in the form of very fine threads, which will be rapidly soluble in cold water, consisting in adding to soap mass so much sodium perborate that no softening or salting-out occurs, and a colloidal substance that will prevent the decomposition of the sodium perborate and then converting the solid mass into threads having a diameter less than 1.5 mm. by extrusion.

In testimony whereof I have signed my name to this specification.

ADOLF WELTER.