CONTINUOUS PROCESS FOR PRODUCING TRANSPARENT SOAP HAVING PEARLESCENT QUALITIES

Yoshiro Tanaka, Tokyo, Japan, assignor to Ideal Soap Company, Tokyo, Japan

Filed July 1, 1971, Ser. No. 158,807

Claims priority, application Japan, Sept. 5, 1970, 45/77,598

Int. Cl. C11d 13/08, 13/16, 9/20

U.S. Cl. 252-367

1 Claim

ABSTRACT OF THE DISCLOSURE

A soap having pearl gloss is produced by cooling warm-fused transparent soap material containing pearl gloss developing to a temperature range higher than 1.5°C above the liquid-solid transition temperature and pouring the cooled soap material into solidifying container while giving directional qualities to the pearl gloss material therein, and the apparatus for producing the soap is disclosed.

The present invention relates to a process and apparatus for continuously producing soap having pearl gloss. In general, soap having pearl gloss is required to be produced in a batch style. That is, the conventional method of producing soap having pearl gloss is disadvantageous in that the operation of giving directional qualities to fish scale incorporated in fused transparent soap material in order to develop pearl gloss therein must be carried out in separate cooling containers. For this reason, it has been impossible to produce such a soap in a continuous manner.

In general, when warm-fused transparent soap material obtained according to the conventional method is cooled from its warm liquid state to a temperature inherent in the composition of said transparent soap material its viscosity rapidly rises and its solidification starts. That is, said temperature is a transition point from a liquid state to a solid state at which said soap material transfers to a solid state from a liquid state while discharging a solidifying heat. If the temperature at which the warm-fused transparent soap material is poured into a solidifying container is considerably higher than said solidifying temperature range, directional qualities given to the brightness developing material by stirring is lost before increase in viscosity in the solidifying container arises, and are dispersed uniformly to cause the precipitation of said material in the direction of the bottle thereof. Consequently, the product so produced does not possess the desired pearl gloss design. On the other hand, when the temperature concerned is lower than said temperature range, rapid increase in viscosity arises which leads to difficulties of pouring the soap material into the solidifying container, so that the soap material poured do not dissolve into each other thus causing a crack with the result of a nonuniform product.

It is, therefore, an object of the present invention to provide a process for continuously producing soap having pearl gloss without any stirring operation in separate cooling containers by means of a stirring rod and the like using a simple operation wherein fused transparent soap material having incorporated fish scale with directional qualities given is merely poured into a cooling container in order to remove said complicated operations possessed by the prior art.

It is another object of the present invention to provide an apparatus for accomplishing the present method.

Further features and advantages of the method and device of the present invention will be seen in detail from the following description, referring to the accompanying drawings, in which,

FIG. 1 is a graphical illustration of a relation between temperature and viscosity of a warm-fused transparent soap material during cooling according to an example of the method of the present invention,

FIG. 2 is a cross-sectional view of the device according to the present invention,

FIG. 3 is a cross-sectional view cut along III—III line in FIG. 2; and

FIG. 4 is a cross-sectional view cut along IV—IV line in FIG. 2.

For example, FIG. 1 shows a relation between temperature and viscosity obtained where 55 parts of 95 degrees alcohol, 5 parts of water and 30 parts of sucrose are added to the soap mass obtained by saponifying a mixed fat composed of 70 parts of beef tallow and 30 parts of coconut oil with an aqueous solution of 30% sodium hydroxide and dissolved to prepare warm-fused transparent soap material followed by cooling said soap material to a solid state. In this case, a transition temperature region is 46.5±1°C wherein rapid increase in viscosity with the associated solidification occurs and transition from a liquid state to a solid state takes places.

As a result of study we have found that if bismuth oxychloride, fish scale, mica or brightness imparting materials consisting of mica and other inorganic materials as pearl gloss developing materials in soap is added to the warm-fused transparent soap material obtained using the conventional method to disperse same therein, and the resulting material is allowed to cool under stirring to the liquid-solid state transition temperature region followed by pouring same into a solidifying container, and after cooling the poured soap is removed from the solidifying container, the soap having pearl gloss of a very elegant design may be easily obtained without carrying out any stirring operation for giving directional qualities to pearl material in the cooling container and further regardless of both any figures of the solidifying container and whether the heat conductivity and thickness of the solidifying container material is great or small, or thick or thin, respectively.

The process according to the present invention comprises adding pearl gloss developing materials such as bismuth oxychloride, fish scale or mica, or materials consisting of mica and other inorganic materials alone or in combination to warm-fused transparent soap material to disperse same therein, cooling the mixture to a temperature range higher, but no more than 1.5°C above a liquid-solid transition temperature region at which rapid increase in viscosity with the associated solidification occurs during cooling, and pouring the soap material kept at said temperature into a solidifying container to solidify same.

If the temperature at which the warm-fused transparent soap material is poured into the solidifying container is more than 1.5°C higher than said temperature region, it is impossible to develop pearl gloss design in the resulting soap.

In accordance with the present method, warm-fused transparent soap material to which is added pearl gloss developing material is cooled under stirring to a temperature range higher, but no more than 1.5°C higher than a liquid-solid transition temperature region at which rapid increase in viscosity with the associated solidification occurs during cooling, said region being inherent in said transparent soap, and then the soap material kept at said temperature region is poured into a solidifying container, whereupon said soap material is solidified with a rapid increase in viscosity and the associated solidification occurs while maintaining the directional qualities of the pearl gloss caused by a stirring prior to pouring and liquid movement during pouring, so that it becomes possible to provide the final product with a uniform pearl
3,789,011

A process for continuously producing soap having pearl gloss comprising the steps of:

(a) dispersing at least one pearl gloss developing material selected from the group consisting of bismuth oxychloride, fish scale, mica and mixtures of at least two of said developing materials in a warm-fused transparent soap material;

(b) cooling said dispersion while stirring to a temperature higher than the dispersion liquid-solid transition temperature region at which said dispersion is rapidly increased in viscosity with the associated solidification, said cooled dispersion temperature to exceed said liquid-solid transition temperature by a maximum of 1.5° C.;

(c) continuing the stirring of said dispersion so as to impart directional qualities to the pearl gloss developing material;

(d) pouring said cooled dispersion into a container at said cooled dispersion temperature; and

(e) allowing said poured dispersion to cool in said container in order to solidify said dispersion.

References Cited

UNITED STATES PATENTS

3,562,167 2/1971 Kamen et al. ......... 252--134 X

FOREIGN PATENTS

1,199,913 9/1965 Germany ............... 252--367

LEON D. ROSDOL, Primary Examiner
B. H. HESS, Assistant Examiner
U.S. Cl. X.R.

252--131, 132, 134, 370