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METHOD OF PRODUCING A PEARLY LUSTER IN SHAMPOO CONCENTRATES

Günter Meinhard and Wolfgang Benzel, Düsseldorf, Germany, assignors to Dehydag, Deutsche Hydrierwerke G.m.b.H., Düsseldorf, Germany, a corporation of Germany

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This invention relates to a method of producing a pearly luster in shampoo concentrates with the aid of stearic acid, zinc sulfate and an alkaline substance.

In the production of aqueous shampoo concentrates from soaps or substances related to soaps, it is often desirable to impart a so-called pearly luster to the finished shampoo. This pearly luster is usually produced by adding to the shampoo concentrate water-insoluble salts of higher-molecular fatty acids, especially the earth alkali metal salts, earth metal salts or zinc salts of stearic acid. For example, one method consists of incorporating zinc stearate into a shampoo concentrate whereby a cloudiness is produced which is caused by the crystals of zinc stearate distributed throughout the solution; the shampoo thereby assumes a sheen or luster similar to mother-of-pearl, commonly referred to as a pearly luster.

However, the production of a pearly luster in shampoo concentrates by incorporating solid, insoluble salts of the type described above has considerable disadvantages. The fine and uniform distribution of the solid fatty acid salt in the concentrate is relatively difficult to effect, so that the pearly luster is often not uniform. Moreover, the fatty acid salts have a tendency to separate out and concentrate in the bottom portion of the shampoo, which is not only undesirable from the point of view of appearance and hence salability of the shampoo, but also often interferes with the effectiveness of that particular portion of the shampoo. Finally, in many cases the effect produced by a simple dispersion of insoluble fatty acid salts more nearly resembles a milky cloudiness rather than a mother-of-pearl luster in the usual sense.

It is an object of the present invention to provide a method of producing a pearly luster in shampoo concentrates which facilitates the homogeneous dispersion of the luster-producing additives in the aqueous concentrate.

Another object of this invention is the production of a stable and uniform pearly luster in aqueous shampoo concentrates.

Other objects and advantages of the present invention will become apparent as the description proceeds.

We have found that a lasting and uniform pearly luster is produced in aqueous shampoo concentrates by dispersing a combination of compounds in the shampoo concentrate which forms the fatty acid salt in situ after adding an alkaline agent, instead of dispersing the finished insoluble fatty acid salts themselves in the shampoo. For example, when equivalent amounts of stearic acid and zinc sulfate are dispersed in an aqueous shampoo concentrate and an alkaline substance, such as sodium hydroxide, is added to the dispersion, an increasingly pronounced turbidity caused by zinc stearate crystals is produced. The turbidity is very homogeneously distributed and has a beautiful pearly luster. The luster is absolutely stable; that is, it does not decrease even during extended periods of storage.

The above-described method of producing a pearly luster in accordance with the present invention is appli-

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cable to all types of shampoo concentrates having a base of fatty alcohol sulfates or other anionic compounds, or a base of non-ionic, surface-active compounds, such as ethyleneoxide addition products.

In place of stearic acid, other high-molecular carboxylic acids may be employed, for example, palmitic acid, arachic acid, behenic acid and the like.

In addition to sodium hydroxide, other alkaline agents may also be added to the modified shampoo concentrate to produce the pearly luster; for example organic bases, such as triethanolamine and other known inorganic or organic alkaline substances.

Instead of a zinc salt, such as zinc sulfate, a salt of such metals as magnesium or aluminum may also be used to form the fatty acid salt whose crystals produce the pearly luster.

The shampoo concentrates according to the present invention may be further improved by the addition of such agents which promote the foam stability, the consistency and the compatibility. The foam stability is increased, for example, by adding fatty acid alkanolamides. Agents for improving the consistency are, for example, ethoxylated higher molecular fatty alcohols, furthermore alkali soaps, salts such as sodium chloride or sodium sulfate. For improving the compatibility super-fattening agents, such as higher molecular fatty alcohols or fatty acid esters of these alcohols, may be used.

The following examples will further illustrate our invention and enable others skilled in the art to understand the invention more completely, but they should not be construed as an intention on our part to limit the invention to these particular examples.

Example I

100 gm. of an aqueous shampoo concentrate containing essentially 30 gm. of a mixture of sodium salts of the sulfates of ethoxylated higher molecular fatty alcohols having alkyl radicals with 12–18 carbon atoms and essentially two ethoxy groups per molecule were first heated to 50–80° C. and then 2 gm. of stearic acid and 1.1 gm. of zinc sulfate were added thereto and uniformly distributed throughout the concentrate. The dispersion proceeded very readily and resulted in a homogeneous, clear solution. Thereafter, while the solution was still warm, a sufficient quantity of sodium hydroxide was added to bring the pH to between 6.5 and 7; the quantity of NaOH was previously theoretically determined. A homogeneous precipitation of fine zinc stearate crystals was formed, which developed into a beautiful, silk-like pearly luster upon cooling to room temperature.

Example II

An aqueous shampoo concentrate having an excellent silk-like pearly luster is obtained according to Example I by substituting the zinc sulfate by 0.95 gm. magnesium sulfate.

Example III

An aqueous shampoo concentrate having an excellent silk-like pearly luster is obtained according to Example I by substituting the stearic acid by 2.0 gm. behenic acid, the zinc sulfate by 0.7 gm. magnesium sulfate and the sodium hydroxide by triethanolamine.

Example IV

An aqueous shampoo concentrate having an excellent silk-like pearly luster is obtained according to example I by substituting the stearic acid by 2 gm. of a coconut fatty acid mixture (C₁₂–C₁₈).

Example V

An aqueous shampoo concentrate is prepared according to Example I by adding 2 gm. stearic acid, 1.1 gm.

zinc sulfate and sodium hydroxide to 100 gm. of a shampoo concentrate containing essentially 30% of a mixture of alkyl sodium sulfates (alkyl radicals C_{12} - C_{18}) and of sodium salts of the sulfates of an ethoxylated higher molecular fatty alcohol mixture.

Example VI

An aqueous shampoo concentrate is prepared according to Example I by adding 10 gm. stearic acid and 4.5 gm. magnesium sulfate and sodium hydroxide to 100 gm. of a concentrate containing essentially 30% of a mixture of the sodium salts of alkyl benzene sulfonates (alkyl radicals C_{12} on average) and of sodium salts of the sulfates of an ethoxylated higher molecular fatty alcohol mixture. This shampoo concentrate may be diluted with water for preparing concentrates customarily sold in commerce.

While we have given several specific embodiments of our invention, it will be apparent to persons skilled in the art that various changes and modifications may be made therein without departing from the spirit of the invention or the scope of the appended claims.

We claim:

1. The method of producing a pearly luster in an aqueous shampoo concentrate composed essentially of an anionic detergent dissolved in an aqueous medium, which comprises heating said shampoo concentrate to a temperature between substantially room temperature and about 80° C., dispersing in said heated shampoo concentrate between about 2 and 10% by weight, based on the weight of the shampoo concentrate, of a high-molecular-weight organic monocarboxylic acid and a substantially equimolar amount, with respect to said high-molecular-weight organic monocarboxylic acid, of a water-soluble salt of a metal selected from the group consisting of magnesium and zinc, and adding an alkaline agent to the resulting dispersion until the pH of said dispersion is between about 6.5 and about 7.0.

2. The method of producing a pearly luster in an aqueous shampoo concentrate composed essentially of an anionic detergent dissolved in an aqueous medium, which comprises heating the shampoo concentrate to between 50 and 80° C., dispersing in said hot shampoo concentrate between about 2 and 10% by weight, based on the weight of shampoo concentrate, of stearic acid and a substantially equimolar amount, with respect to said

stearic acid, of zinc sulfate, and adding sodium hydroxide to the resulting dispersion until the pH of said dispersion is between about 6.5 and about 7.0.

3. The method of producing a pearly luster in an aqueous shampoo concentrate composed essentially of an anionic detergent dissolved in an aqueous medium, which comprises heating the shampoo concentrate to between 50 and 80° C., dispersing in said hot shampoo concentrate between about 2 and 10% by weight, based on the weight of shampoo concentrate, of behenic acid and a substantially equimolar amount, with respect to said behenic acid, of magnesium sulfate, and adding triethanol amine to the resulting dispersion until the pH of said dispersion is between about 6.5 and about 7.0.

4. The method of producing a pearly luster in an aqueous shampoo concentrate composed essentially of an anionic detergent dissolved in an aqueous medium, which comprises heating the shampoo concentrate to between 50 and 80° C., dispersing in said hot shampoo concentrate between about 2 and 10% by weight, based on the weight of shampoo concentrate, of a coconut fatty acid mixture and a substantially equimolar amount, with respect to said coconut fatty acid mixture, of zinc sulfate, and adding sodium hydroxide to the resulting dispersion until the pH of said dispersion is between about 6.5 and about 7.0.

5. The method of producing a pearly luster in an aqueous shampoo concentrate composed essentially of an anionic detergent dissolved in an aqueous medium, which comprises heating the shampoo concentrate to between 50 and 80° C., dispersing in said hot shampoo concentrate between about 2 and 10% by weight, based on the weight of shampoo concentrate, of stearic acid and a substantially equimolar amount, with respect to said stearic acid, of magnesium sulfate, and adding sodium hydroxide to the resulting dispersion until the pH of said suspension is between about 6.5 and about 7.0.

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