(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) Publication number: **0 239 165**
A2

(12) EUROPEAN PATENT APPLICATION

(21) Application number: **87200486.6**

(22) Date of filing: **17.03.87**

(51) Int. Cl.⁴: **C 11 D 1/14**, C 11 D 17/00

(30) Priority: **27.03.86 NL 8600800**

(43) Date of publication of application: **30.09.87**
Bulletin 87/40

(84) Designated Contracting States: **AT BE CH DE ES FR GB GR IT LI LU NL SE**

(71) Applicant: **Van Buuren, Cornelis, Vlielandseweg 73, NL-2641 KA Pijnacker (NL)**

(72) Inventor: **Van Buuren, Cornelis, Vlielandseweg 73, NL-2641 KA Pijnacker (NL)**

(74) Representative: **Morel, Christiaan Frederik, MORELPATENT Laarstraat 3, NL-8166 GR Emst (Epe) (NL)**

(54) Synthetic soap and method for the preparation thereof.

(57) The invention related to a synthetic soap consisting of a mixture of at least a C_{14}–C_{18} fatty acid, an alkali metal salt of an C_{10}–C_{14} alkane sulphate and/or a mixture of C_{13}–C_{16} alkane sulphonates. The mixture might also contain sodium cetyl stearyl sulphate and/or cetyl alcohol as well as a softening agent such as an alkylene glycol and/or glycerol. The invention also relates to a method for preparing a synthetic soap by adding a mixture of a C_{14}–C_{18} fatty acid, sodium cetyl stearyl sulphate, cetyl alcohol and optionally titanium dioxide to a mixture of a C_{14}–C_{18} fatty acid and a softening agent at elevated temperature, followed by the addition of sodium lauryl sulphate and then a mixture of C_{13}–C_{16} alkane sulphonates at elevated temperature, which is a temperature at which the mixture is in molten state, whereafter the mixture is poured into moulds and allowed to cool.

EP 0 239 165 A2

Synthetic soap and method for the preparation thereof.

The invention relates to a synthetic soap containing at least one higher fatty acid derivative.

Synthetic soaps are known per se. As the fatty acid derivative they contain in general at least sodium stearate, which is present in a mixture of sodium salts of higher fatty acids containing 8 to 20 carbon atoms. This mixture is a so-called solid white sodium soap and is usually preferably obtained from a mixture of essentially coconut oil and tallow. In addition to these sodium soaps, a water-soluble salt of a synthetic organic cleaning agent may be present in the synthetic soap. Such a salt of a synthetic organic cleaning agent is, for example, the sulphuric acid reaction product of alkane compounds containing 10 to 18 carbon atoms having preferably straight chains.

The known synthetic soaps therefore always contain a considerable amount of a natural soap mixture. Because such natural soap mixtures are obtained by boiling natural oils and/or fats with hydroxide solution, in particular sodium hydroxide solution, the soap mixtures obtained have a certain alkalinity which is very detrimental for the skin.

Said alkalinity is therefore also present in synthetic soaps containing a portion which consists of natural soap.

A synthetic soap has now been found which is completely free of alkaline constituents and which can therefore be tolerated very well by any type of skin.

The invention is characterized in that the synthetic soap consists of a mixture of at least one fatty acid containing 14-18 carbon atoms, an alkali metal salt of an alkane sulphate containing 10-14 carbon atoms and/or a mixture of alkanesulphonates containing 13-16 carbon atoms.

Preferably, the synthetic soap according to the invention also contains a softening constituent. This constituent consists preferably of an alkylene glycol; more particularly, propylene glycol. Other polyhydric alcohols can, however, also be used, in particular glycerol. To achieve a uniform appearance of the moulded soap it is preferable for the soap also to contain an anion-active emulsifier, in particular sodium cetylstearylsulphate (trade name Lanette E) as well as a fatty alcohol as emulsifier, preferably cetyl alcohol.

As the alkali metal salt of an alkane sulphate use is advantageously made of sodium lauryl sulphate.

The present synthetic soap has the important property of remaining afloat on water; this property is inherent in the composition.

Although a floating soap is known per se, said known soap obtains the floating capability by providing the pieces of soap on one side with a solid foam layer having sufficient porosity.

The synthetic soap according to the invention advantageously has the following composition:

Fatty acid containing 14-18 C atoms	20-60% by weight
Sodium lauryl sulphate	20-60% by weight
Mixture of alkanesulphonates containing 13-16 C atoms	2-10% by weight
Propylene glycol	1-20% by weight
Sodium cetyl stearyl sulphate	1-20% by weight
Cetyl alcohol	1-20% by weight

A composition which is to be preferred in particular is the following:

Stearic acid	36% by weight
Sodium lauryl sulphate	40% by weight
Mixture of alkane sulphonates containing 13-16 C atoms	2% by weight
Propylene glycol	8% by weight
Sodium cetyl stearyl sulphate	4% by weight
Cetyl alcohol	10% by weight

Expediently, the synthetic soap according to the invention may also have the following composition:

Fatty acid containing 14-18 C atoms	20-60% by weight
Sodium lauryl sulphate	10-50% by weight
Mixture of alkane sulphonates containing 13-16 C atoms	1-20% by weight
Glycerol	1- 7% by weight
Sodium cetyl stearyl sulphate	0.1-2% by weight
Cetyl alcohol	1-20% by weight

and more particularly

Stearic acid	45% by weight
Cetyl alcohol	10% by weight
Sodium lauryl sulphate	30% by weight
Mixture of alkane sulphonates containing 13-16 C atoms	10% by weight
Glycerol	4% by weight
Sodium cetyl stearyl sulphate	1% by weight

Moreover, the synthetic soap composition may also contain an agent which makes it opague. Preferably this will be titanium dioxide. The amount of titanium dioxide to be added to the soap is usually 0.1 to 0.3 % by weight, more particularly 0.2% by weight.

The invention also relates to a method for preparing a synthetic soap according to the invention, which method is characterized in that a mixture of stearic acid, sodium cetyl stearyl sulphate and optionally titanium dioxide is added to a mixture of stearic acid, cetyl alcohol and a softening agent: in particular an alkylene glycol and/or glycerol at elevated temperature, and that sodium lauryl sulphate and then a mixture of alkanesulphonates containing 13-16 C atoms is added to the mixture obtained at elevated temperature and the mixture formed in this manner is poured into moulds and allowed to cool.

This method differs from known methods for the preparation of soap in that the mixture formed is liquid at elevated temperature and can easily be poured into moulds in which the soap mixture cools down.

According to a normaley used method, the soap mixture formed is on the other hand ground to form a homogeneous mass and extruded, in general by means of a device intended for forming soap into blocks. After the blocks have been formed, the extruded bar is cut into pieces and moulded in a known soap press in order to shape the soap mass into the desired form.

The method of the invention is therefore completely different from the known methods.

Preferably, a synthetic soap according to the invention is formed by a method in which, on the basis of the final weight, a mixture of approximately 2% by weight of stearic acid, 1-20% by weight of sodium cetyl stearyl sulphate (Lanette E), and also optionally 0.1-0.3% by weight of titanium

dioxide is formed and added to a mixture of 18-58% by weight of stearic acid, 1-20% by weight of propylene glycol and 1-20% by weight of cetyl alcohol, the mixture formed is melted and 20-60% by weight of sodium lauryl sulphate, followed by 1-10% by weight of a mixture of alkanesulphonates containing 13-16 carbon atoms is added at elevated temperature, whereafter the mixture is poured into moulds and allowed to cool.

However, if glycerol is used as the softening agent, the synthetic soap according to the invention is preferably formed by a method in which, on the basis of the final weight, a mixture of approximately 2% by weight of stearic acid, 0.1-2% by weight of sodium cetyl stearyl sulphate (Lanette E) as well as optionally 0.1-0.3% by weight of titanium dioxide is formed and added to a mixture of 18-58% by weight of stearic acid, 1-7 % by weight of glycerol and 1-20% by weight of cetyl alcohol, the mixture formed is melted and 10-50% by weight of sodium lauryl sulphate, followed by 1-20% by weigt of a mixture of alkanesulphonates containing 13-16 carbon atoms is added at elevated temperature, whereafter the mixture is poured into moulds and allowed to cool.

The invention will now be explained in more detail on the basis of the following examples.

EXAMPLE I.

Approximately 2 kg of stearic acid, 4 kg of sodium cetyl stearyl sulphate (Lanette E) and 200 g of titanium dioxide are introduced in succession into a fast mixer and an intimate mixture thereof is formed.

A mixture is formed in a boiler from approximately 34 kg of stearic acid, 10 kg of cetyl alcohol and 8 kg of propylene glycol while stirring and the mixture formed in the fast mixer is gradually added thereto.

Then the temperature of the boiler is increased until the mixture has a temperature of approx. 100°C and is in the molten state.

Approximately 40 kg of sodium lauryl sulphate, followed by approximately 2 kg of a mixture of alkanesulphonates containing 13-16 carbon atoms (Hostapur SAS, manufactured by Hoechst) are gradually added in succession to this molten, and therefore liquid, mixture while stirring and maintaining the temperature at approx. 100°C.

This mixture is then cooled to 55-90°C, preferably 70°C, colorants and perfumes are added if desired and the mixture is poured out into moulds, whereafter the mixture is allowed to harden.

EXAMPLE II.

Example I is repeated, but the propylene glycol is replaced by glycerol. An intimate mixture is first formed in the fast mixer from approximately 2 kg of stearic acid, 1 kg of sodium cetyl stearyl sulphate (trade name Lanette E) and 200 g of titanium dioxide.

Approximately 43 kg of stearic acid, 10 kg of cetyl alcohol and 4 kg of 96% glycerol are mixed in the boiler while stirring and the mixture formed in the fast mixer is gradually added thereto.

Then the temperature of the boiler is increased until the mixture has a temperature of approx. 100°C and is in the molten state.

Approximately 30 kg of sodium lauryl sulphate, followed by approximately 10 kg of a mixture of alkanesulphonates containing 13-16 carbon atoms (Hostapur SAS,manufactured by Hoechst) are then gradually added in succession to this molten, and therefore liquid, mixture while stirring and maintaining the temperature at approx. 100°C.

This mixture is then cooled down to 55-90°C, preferably 70°C, colorants and perfumes are added if desired and the mixture is poured out into moulds, after which the mixture is allowed to harden.

The moulding of soap with different colours present in layers is possible both with the mixture obtained according to Example I and the mixture obtained according to Example II by allowing the first layer to harden in the mould and pouring the next layer with a different colour onto it, the mixture having a temperature of 55-90°C, preferably 70°C.

This procedure can be repeated until the desired number of layers is obtained.

The multicolour soap formed has good adhesion of the layers to one another. In addition, the synthetic soap according to the invention has an attractive appearance, i.e. is not dull, while the soap also feels pleasant.

CLAIMS

1. Synthetic soap containing at least one higher fatty acid derivative, characterized in that the synthetic soap consists of a mixture of at least one fatty acid containing 14-18 carbon atoms, an alkali metal salt of an alkane sulphate containing 10-14 carbon atoms and/or a mixture of alkanesulphonates containing 13-16 carbon atoms.

2. Synthetic soap according to claim 1, characterized in that the mixture also contains sodium cetyl stearyl sulphate and/or cetyl alcohol and a softening agent, preferably an alkylene glycol such as propylene glycol, and/or glycerol.

3. Synthetic soap according to claims 1 or 2, characterized in that the alkali metal salt of an alkanesulphate is sodium lauryl sulphate.

4. Synthetic soap according to claims 1-3, characterized in that the soap has the following composition:

Fatty acid containing 14-18 C atoms	20-60%	by weight
Sodium lauryl sulphate	20-60%	by weight
Mixture of alkanesulphonates containing 13-16 C atoms	2-10%	by weight
Propylene glycol	1-20%	by weight
Sodium cetyl stearyl sulphate	1-20%	by weight
Cetyl alcohol	1-20%	by weight

5. Synthetic soap according to claims 1-4, characterized in that the soap has the following composition:

Stearic acid	36%	by weight
Sodium lauryl sulphate	40%	by weight
Mixture of alkanesulphonates containing 13-16 C atoms	2%	by weight
Propylene glycol	8%	by weight
Sodium cetyl stearyl sulphate	4%	by weight
Cetyl alcohol	10%	by weight

6. Synthetic soap according to claims 1-5, characterized in that the soap also contains an agent which renders it opaque, such as titanium dioxide, advantageously in an amount ranging from 0.1 to 0.3% by weight preferably 0.2% by weight.

7. Synthetic soap according to claims 1-6, characterized in that the soap is moulded by pouring at a temperature of 55-90°C.

8. Method for preparing a synthetic soap according to claims 1-7, characterized in that a mixture of a fatty acid containing 14-18 carbon atoms, sodium cetyl stearyl sulphate, cetyl alcohol and optionally titanium dioxide is added to a mixture of a fatty acid containing 14-18 carbon atoms and a softening agent at elevated temperature, sodium lauryl sulphate and then a mixture of alkanesulphonates containing 13-16 carbon atoms are added to the mixture obtained at elevated temperature and the mixture formed in this manner is poured into moulds and allowed to cool.

9. Method according to claim 8, characterized in that an alkylene glycol, such as propylene glycol and/or glycerol is used as softening agent.

10. Method according to claims 8-9, characterized in that, on the basis of the final weight, a mixture of approximately 2% by weight of stearic acid, 1-20% by weight of sodium cetyl stearyl sulphate and also optionally 0.1-0.3% by weight of titanium dioxide is formed and added to a mixture of 18-58% by weight of stearic acid, 1-20% by weight of cetyl alcohol and 1-20% by weight of propylene glycol, the mixture formed is melted and 20-60% by weight of sodium lauryl sulphate, followed by 2-10% by weight of a mixture of alkanesulphonates containing 13-16 carbon atoms is added at elevated temperature whereafter the mixture is poured into moulds and allowed to cool.

11. Method according to claims 8-10, characterized in that a mixture of 2% by weight of stearic acid, 4% by weight of sodium cetyl stearyl sulphate and optionally 0.2% by weight of titanium dioxide is formed and added to a mixture of 8% by weight of propylene glycol and 34% by weight of stearic acid, and 40% by weight of sodium lauryl sulphate, followed by 2% by weight of a mixture of alkanesulphonates is added at elevated temperature, and then the mixture is cooled down.

12. Method according to claims 8-11, characterized in that the mixture is melted at a temperature of 80-110°C, cooled down to 55-90°C, poured out into moulds and then allowed to harden.

13. Method according to claims 8-12, characterized in that the mixture is coloured before being poured out and then allowed to harden layer-wise in moulds, whereby the coloured mixture is preferably poured out at a temperature of 55-90°C