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(54) **Cold water soluble soap composition transformable into particles or flakes.**

(57) Soap composition transformable into particles or flakes which are readily soluble in cold water, especially suitable for use in washing agent compositions based on detergents and soaps, containing a mixture of fatty acids neutralised with a suitable base, characterised in that the Dalican titre of the fatty acid mixture is less than 38 ° C and preferably between 10 and 30 ° C.

EP 0 534 100 A1

The present invention relates to a soap composition suitable for being transformed into particles or flakes which are readily soluble even in cold water.

The now generalised tendency towards a reduction in the washing temperature, either in washing machines or handwashing; either for reasons of energy saving or because washing habits have fallen into disuse in some countries, or for washing delicate textiles, requires a formulation of detergents which are readily dispersible and soluble even at low washing temperatures, this definition being intended to mean temperatures ranging from 10 ° to 40 ° C.

A further tendency is towards the use of washing agent compositions which contain, as components, soaps in partial or total substitution of synthetic surfactants for the washing of household laundry in washing machines or by hand.

It is known that, when using, for example, only coconut fatty acids (Dalican titre 22-24 ° C), saponified with sodium hydroxide, a soap is obtained which is soluble but extremely hard and therefore not suitable, for example, for obtaining thin flakes, and which has a tendency to give rise to phenomena of pulverisation and breaking up, so that such soaps are not suitable for use, for example, in post-addition with detergent mixtures of the type envisaged, for example, in Patent Application IT 1259A/89 by the same applicant.

It is likewise known that the saponification obtained with alkalis other than sodium hydroxide, for example potassium hydroxide, ammonium hydroxide or triethanolamine, can improve the solubility of the soap in the cold, although the physical characteristics do not always permit such soaps (soft soaps) to be worked to give thin flakes having physical properties which make them suitable for use in industrial post-addition processes.

According to the invention, it has been found, surprisingly, that it is possible to obtain a considerable improvement in the physical properties of the soap produced, such that it is rendered suitable for transformation into thin flakes and, at the same time, has outstanding properties of solubility in the cold, by using mixtures of fats or oils or fatty acids, and saponifying such mixtures with sodium hydroxide, potassium hydroxide, ammonium hydroxide or alkanolamines, by using, as such saponifiable mixtures, mixtures having a Dalican titre of the fatty acids of less than 38 ° C and preferably between 10 and 30 ° C.

In the examples which follow, the compositions of a soap obtained by saponification with sodium hydroxide of a common tallow/coconut oil mixture (Example 1) referred to as a comparison example, and the compositions of two sodium soaps according to the invention (Examples 2 and 3) are reported.

EXAMPLE 1 Composition of a sodium soap obtained from a common tallow/coconut oil mixture.

fatty acids	% by weight
C_8	0.9
C_{10}	1.0
C_{12}	7.3
C_{14}	6.0
$C_{16} + C_{16}$-	27.0
C_{18}	15.2
C_{18}- + C_{18} =	43.6
Dalican titre 38.0 ° C	

EXAMPLE 2 Composition of a sodium soap obtained from a mixture according to the invention, characterised by a Dalican titre of 23.0 ° C.

fatty acids	% by weight
C_8	3.5
C_{10}	4.0
C_{12}	24.5
C_{14}	9.2
$C_{16} + C_{16}$-	12.5
C_{18}	3.0
C_{18}- + C_{18} =	43.4

EXAMPLE 3 Composition of a sodium soap obtained from a mixture according to the invention, characterised by a Dalican titre of 16.0 ° C.

fatty acids	% by weight
C_8	3.5
C_{10}	4.0
C_{12}	25.3
C_{14}	10.3
$C_{16} + C_{16}$-	9.8
C_{18}	2.3
C_{18}- + C_{18} =	45.1

The soaps, to which reference is made in Examples 1 to 3 above, were transformed into flakes of 2 to 5 mm length and 0.3 mm thickness, and such flakes were introduced into water at different temperatures and the time for total dissolution of the flakes at the different temperatures was measured. In the table which follows, the relative dissolution times in water, expressed in seconds, measured as a function of the temperature of the water are reported for the soaps referred to in the above Examples 1, 2 and 3.

TABLE 1

T ° C	Soap from Example 1	Soap from Example 2	Soap from Example 3
	Dissolution times in seconds		
20	100	17	10
30	67	11	7
40	13	9	5

From the table, it is immediately apparent that the dissolution time values of the soaps according to the invention are considerably lower than those of the soap from Example 1, taken as a comparison.

Moreover, the flakes obtained from the soaps according to the invention show outstanding physical properties of cohesion and are not susceptible to phenomena of pulverisation and breaking up or of excessive stickiness during the rolling and finishing stages and in their subsequent use in detergent powders.

The compositions indicated above also allow drying of the soap down to very low values of moisture content even below 5%, while the workability properties for obtaining flakes remain unchanged and the physical properties thereof are not adversely affected, so that they can also be used in products in which the components easily disintegrate in the presence of moisture.

These properties make the soap flakes according to the invention particularly suitable for use in detergent compositions of the type described, for example, in Patent Application No. 12597A/89 by the same applicant.

The higher solubility at low washing temperatures leads to an improvement in the detergency, in particular for greasy dirt, and, moreover, clearing of undissolved soap residues from the washing machine and redeposition thereof on the fabrics are avoided.

Even though soaps obtained by saponification of fatty acids with sodium hydroxide were described in the above examples, it is still intended that potassium hydroxide can be used as saponifying agent to give soaps which are even more soluble than said sodium soaps and which nevertheless do not have the stickiness properties of normal potassium soaps.

Therefore, the present invention is not restricted to the embodiments illustrated and described with reference to the specific composition examples given above, but comprises all those variants and modifications which fall within the widest scope of the inventive concept and substantially as claimed below.

Claims

1. Soap composition transformable into particles or flakes which are readily soluble in cold water, especially suitable for use in washing agent compositions based on detergents and soaps containing a mixture of fatty acids neutralised with a suitable base, characterised in that the Dalican titre of the fatty acid mixture is less than 38 °C and preferably between 10 and 30 °C.

2. Composition according to Claim 1, characterised in that the said fatty acid mixture consists of a mixture of C_8- to C_{10}-fatty acids.

3. Composition according to Claim 1, wherein the said neutralisation base is sodium hydroxide.

4. Composition according to Claim 1, wherein the said neutralisation base is potassium hydroxide.

5. Composition according to Claim 1, wherein the said neutralisation base is ammonium hydroxide.

6. Composition according to Claim 1, wherein the said neutralisation base is an alkanolamine.

7. Soap composition according to Claim 1, especially suitable for transformation into thin flakes or into atomised powder or into granules.

8. Composition according to Claim 7, wherein said flakes have dimensions of between 1 and 10 mm length and a thickness of the order of 0.3 mm.

9. Composition according to Claim 7, wherein said granules have dimensions of between 0.2 and 3.00 mm.

10. Composition according to the preceding claims, additionally containing soluble colorants or pigments.

11. Composition according to the preceding claims, containing a sodium soap obtained from the following fatty acid mixture, in percent by weight:

C_8	3.5%
C_{10}	4.0%
C_{12}	24.5%
C_{14}	9.2%
C_{16} + C_{16}-	12.5%
C_{18}	3.0%
C_{18}- + C_{18} =	43.4%

characterised by a Dalican titre of 23.0 °C.

12. Composition according to the preceding Claims 1 to 10, containing a sodium soap obtained from the following fatty acid mixture, in percent by weight:

C_8	3.5
C_{10}	4.0
C_{12}	25.3
C_{14}	10.3
C_{16} + C_{16}-	9.8
C_{18}	2.3
C_{18}- + C_{18} =	45.1

characterised by a Dalican titre of 16.0 °C.

13. Use of the soap composition according to any one of the preceding claims either alone for the washing of household laundry or as post-additive to high-foaming or controlled-foaming detergents for washing machines or for washing hard surfaces.

Claims for the following Contracting State : ES

1. Process for the manufacture of a soap composition transformable into particles or flakes which are readily soluble in cold water, especially suitable for use in washing agent compositions based on detergents and soaps containing a mixture of fatty acids neutralised with a suitable base, characterised by the step of using a fatty acid mixture having a Dalican titre of less than 38 °C and preferably between 10 and 20 °C.

2. The process according to claim 1, wherein said fatty acid mixture is a mixture of C_8-to C_{18}-fatty acids.

3. The process according to claim 1, wherein the said neutralisation base is sodium hydroxide.

4. The process according to claim 1, wherein the said neutralisation base is potassium hydroxide.

5. The process according to claim 1, wherein the said neutralisation base is ammonium hydroxide.

6. The process according to claim 1, wherein the said neutralisation base is alkanolamine.

7. The process according to claims 1 to 6, further comprising the step of transforming said soap into thin flakes or into atomised powder or into granules.

8. The process according to claim 7, wherein said flakes have dimensions of between 1 and 10 mm length and a thickness of the order of 0.3 mm.

9. The process according to claim 7, wherein said granules have dimensions of between 0.2 and 3.00 mm.

10. The process according to the preceding claims, comprising the further step of addition of soluble colorants or pigments.

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EUROPEAN SEARCH REPORT

Application Number

EP 92 11 3383

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
X	DATABASE WPIL Derwent Publications Ltd., London, GB; AN 89-361196 & JP-A-1 271 500 (NISSAN SEKKEN) 30 October 1989 * abstract * ---	1-4,7,13	C11D9/00 C11D9/02
X	CENTRAL PATENTS INDEX, BASIC ABSTRACTS JOURNAL Derwent Publications Ltd., London, GB; AN 73-20847U & JP-B-48 010 603 (DAI-ICHI KOGYO SEIYAKU) * abstract * ---	1,13	
X	EP-A-0 042 647 (UNILEVER) * page 1, line 19 - line 25; claim 1; examples * ---	1,13	
A	US-A-3 907 702 (J.H. MOSTOW) * claims 1,2; example 9 * ---	1-4,7,11,12	TECHNICAL FIELDS SEARCHED (Int. Cl.5)
A	DE-A-2 303 839 (UNILEVER) * claims * -----	1-3,11-13	C11D

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	04 JANUARY 1993	GRITTERN A.G.

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
Y : particularly relevant if combined with another document of the same category
A : technological background
O : non-written disclosure
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T : theory or principle underlying the invention
E : earlier patent document, but published on, or after the filing date
D : document cited in the application
L : document cited for other reasons

& : member of the same patent family, corresponding document

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