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(54) **Mixing order to prepare aqueous clear detergent compositions.**

(57) A process is disclosed for the manufacture of an aqueous detergent composition comprising a substantial amount of organic components. By incorporating said organic components in a specific order, a finished product is obtained which is clear and transparent.

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Technical field

The present invention relates to a process for the manufacture of an aqueous detergent composition. The present invention relates more particularly to a mixing order to prepare such a composition comprising a substantial amount of organic components.

Background of the invention

Aqueous, detergent compositions have been described extensively in the art. More specifically it is well known that such compositions may be formulated as solutions comprising water and organic components such as surfactants, perfumes, stabilizers and the like. These organic components are predominantly poorly soluble or even insoluble in water. Therefore, there is a natural tendency for said compositions to be unclear, i.e. turbid, as said organic components may not be fully dissolved in the aqueous matrix. This becomes even more of a problem as the total proportion of organic components is increased. This phenomenon results in mitigated consumer acceptance. Therefore, the problem the present invention seeks to solve is to avoid turbidity in the compositions finally obtained.

In response to this technical problem, applicants have found that by incorporating the different organic components in a specific order during the manufacture of such an aqueous detergent composition, a clear and transparent final composition could be obtained.

It is thus an object of the present invention to obtain an aqueous detergent composition which is clear and transparent.

Applicant's European patent application EP-A-517 996 discloses stable hydrogen peroxide-containing bleaching compositions which are made by mixing together all ingredients except for hydrogen peroxide which is added as a final step in the process. Said application discloses nothing about the aforementioned turbidity problem.

Summary of the invention

The present invention includes a process for the manufacture of an aqueous detergent composition comprising a nonionic surfactant, an anionic surfactant and a perfume. Said process includes the steps of :

- mixing said nonionic surfactant in said water (composition A);
- dissolving said perfume in said anionic surfactant (composition B);
- thereafter mixing said composition B in said composition A (composition C).

Detailed description of the invention

The present invention concerns the manufacture of an aqueous detergent composition. Said aqueous detergent composition comprises water, a nonionic surfactant, an anionic surfactant and a perfume. The compositions according to the present invention can be formulated in a variety of different embodiments, especially household cleaners.

As a first essential ingredient, the compositions manufactured according to the present invention comprise a nonionic surfactant according to the formula

$$R_1\text{-}O\text{-}[(R_2O)_n(R_3O)_m]\text{-}R_4,$$

wherein :

- R_1 is a C_{1-25} alkyl or alkenyl chain, preferably C_{10-15}, preferably alkyl;
- R_2 is a C_{2-4} aliphatic hydrocarbon chain, preferably C_2;
- R_3 is a methyl or ethyl monosubstituted C_2-C_4 aliphatic hydrocarbon chain, preferably a methyl substituted ethylene;
- R_4 is a C_{1-25} alkyl or alkenyl carboxyl chain, or H, preferably H;
- n is an integer of from 1 to 10, preferably 1 to 5;
- m is an integer of from 0 to 20; preferably 0 to 10, most preferably 0 to 3; or mixtures thereof.

It is to be understood that, in the chemical formula above, R_2O and R_3O groups may appear in any sequence in the molecule; also, when n and m are greater than 1, different R_2O and R_3O groups may appear in a same molecule. Commercially available nonionic surfactant compounds are described for instance in the European Patent Applications EP-A-0 518 401 or EP-A-0 517 996. The compositions manufactured according to the present invention comprise from 0.1% to 30% by weight of the total

composition of said nonionic surfactant or mixtures thereof, preferably from 0.5% to 10%.

As a second essential ingredient, the compositions manufactured according to the present invention further comprise an anionic surfactant or mixtures thereof. Suitable anionic surfactants for use herein have been extensively described in the art and include alkyl benzene sulphonates and alkyl sulphates. Alkyl sulphates surfactants for use herein can be obtained from natural source, e.g coconut. Accordingly, the compositions manufactured according to the present invention preferably comprise from 0.5% to 40% by weight of the total composition of said anionic surfactant or mixtures thereof, preferably from 0.5% to 10%. Particularly preferred herein is sodium coconut alkyl sulfate.

The compositions manufactured according to the present invention may further comprise additional surfactants such as described in the art including cationic and zwitterionic surfactants.

As a third essential ingredient, the compositions manufactured according to the present invention further comprise from 0.03% to 5% by weight of the total composition of a perfume, preferably from 0.03% to 3%.

The compositions manufactured according to the present invention comprise from 60% to 99% by weight of the total composition of water, preferably from 80% to 95%.

The compositions manufactured according to the present invention may also comprise additional conventional ingredients such as solvents, hydrotropes, chelating agents, thickeners, fragrance and whitening agents, provided all these ingredients are compatible with the compositions. Said ingredients are not critical for the clarity of the compositions of the present invention.

In a preferred embodiment the compositions manufactured according to the present invention also comprise from 1% to 15% by weight of the total composition of a bleach, preferably from 2% to 10%. Preferred bleach for use herein is hydrogen peroxide.

The compositions manufactured according to the present invention are preferably acidic and have a pH of from 2 to 6, preferably 3 to 5, most preferably 4. Such pH range can be attained by the addition of appropriate acidifiers such as organic or inorganic acids, acidic salts which buffer pH to an acid value. Examples of suitable acidifiers are sulfuric acid, phosphoric acid although it is somewhat undesirable from an environmental viewpoint, hydrochloric acid, phosphonic acid, citric acid, acetic acid, tartaric acid, maleic acid and the like.

In a further preferred embodiment the compositions manufactured according to the present invention further comprise butyl hydroxy toluene as an antioxydant and a H_2O_2 stabilizer. Said compositions comprise from 0.01% to 1% by weight of the total composition of butyl hydroxy toluene, preferably from 0.01% to 0.8%.

The process according to the present invention comprises the following steps.

In one step the nonionic surfactant is mixed in water so as to obtain a composition, hereinafter composition A.

In an other step the perfume is dissolve in the anionic surfactant so as to obtain a composition, hereinafter composition B.

The order in which compositions A and B are made is not critical for the present invention.

In a further step of the process according to the present invention, said composition B is mixed in said composition A so as to obtain composition C. In said step, the composition of the present invention becomes clear and transparent when said compositions A and B are mixed together.

In a preferred embodiment where the compositions manufactured according to the present invention further comprise a bleach, said bleach is added on top of the composition C, in the final step of the process.

In a further preferred embodiment where the compositions manufactured according to the present invention further comprise butyl hydroxy toluene, said butyl hydroxy toluene is dissolved in the perfume before the step where said perfume is dissolved in said anionic surfactant so as to obtain a composition B.

In a further preferred embodiment where said aqueous bleaching composition further comprise acidifiers, it is preferred to include an additional step in the process of the present invention, where said acidifiers are added to the composition C before the final addition of the bleaching compounds. The acidifiers can be added pure or pre-diluted.

Example

The following compositions were made by the listed ingredients in the listed proportion according to the process of the invention as described hereinafter.

Compositions	1	2	3	4	5	6
	Weight %					
H_2O_2	6	8	8	6	5	5
alkyl sulphate	3.5	4	1	1	3	1
Citric acid	6	0	4	6	4	4
Polyethoxypropoxy alcohol	1.5	4	1	1	1	1
perfume	0.5	0.1	0.1	0.3	0.5	0.1
Butyl hydroxy toluene	0.03	0.03	0.03			0.03
NH_3 up to pH	4				4	
NaOH up to pH			3	4		3.5
H_2SO_4 up to pH		4				
Water & minors	.....up to 100%.....					

In one step of the process according to the present invention the polyethoxypropoxy alcohol is mixed in water. The composition obtained is named A.
In another step, the butyl hydroxy toluene is dissolved in the perfume. After that, the perfume is dissolved in the anionic surfactant. The resulting composition is named B.
Thereafter, in a further step of the process according to the present invention, composition B is mixed in composition A.
The pH is adjusted.
And finally, hydrogen peroxide is added as a final step in the process, on top of the remainder of the composition.

The present compositions prepared in accordance with the specific mixing order of the present invention is clear and transparent.

Claims

1. A process for the manufacture of an aqueous detergent composition comprising a nonionic surfactant, an anionic surfactant and a perfume **characterized in** that said process includes the steps of:
- mixing said non-ionic surfactant in said water (composition A);
- dissolving said perfume in said anionic surfactant (composition B);
- thereafter mixing said composition B in said composition A (composition C);

2. A process for the manufacture of an aqueous detergent composition according to claim 1, wherein said nonionic surfactant is according to the formula

R_1-O-[$(R_2O)_n(R_3O)_m$]-R_4,

wherein :
- R_1 is a C_{1-25} alkyl or alkenyl chain;
- R_2 is a C_{2-4} aliphatic hydrocarbon chain;
- R_3 is a methyl or ethyl monosubstituted C_2-C_4 aliphatic hydrocarbon chain;
- R_4 is a C_{1-25} alkyl or alkenyl or carboxyl chain, or H;
- n is an integer of from 1 to 10;
- m is an integer of from 0 to 20; or mixtures thereof.

3. A process for the manufacture of an aqueous detergent composition according to the preceding claims, wherein said composition comprises from 0.1% to 30% by weight of the total composition of said nonionic surfactant.

4. A process for the manufacture of an aqueous detergent composition according to the preceding claims, wherein said composition comprises from 0.5% to 40% by weight of the total composition of said anionic surfactant.

5. A process for the manufacture of an aqueous detergent composition according to the preceding claims, wherein said composition comprises from 0.03% to 5% by weight of the total composition of said

perfume.

6. A process for the manufacture of an aqueous detergent composition according to the preceding claims, wherein said composition further comprises a bleaching compound, and wherein said bleaching compound is added as a final step to said composition C.

7. A process according to claim 6 for the manufacture of an aqueous detergent composition, wherein said composition comprises as said bleaching compound from 1% to 15% by weight of the total composition of hydrogen peroxide.

8. A process for the manufacture of an aqueous detergent composition according to the preceding claims, wherein said composition further comprises butyl hydroxy toluene, and wherein said butyl hydroxy toluene is dissolved in the perfume before the step where said perfume is dissolved in said anionic surfactant.

9. A process according to claim 8 for the manufacture of an aqueous detergent composition, wherein said composition comprises from 0.01% to 1% by weight of the total composition of said butyl hydroxy toluene.

10. A process for the manufacture of an aqueous detergent composition according to the preceding claims, wherein said composition comprises from 60% to 99% by weight of the total composition of water, preferably from 80% to 95%.

European Patent Office

EUROPEAN SEARCH REPORT

Application Number

EP 93 20 1287

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)
A	EP-A-0 347 110 (COLGATE-PALMOLIVE) * abstract * ---	1	C11D3/50 C11D11/00 C11D17/00
A	GB-A-2 205 578 (KAO CORPORATION) * abstract * ---	1	C11D1/83 C11D3/39
A	FR-A-2 324 732 (PROCTER & GAMBLE) * page 3, line 1 - line 6 * * page 5, line 5 - line 11 * * page 18, line 30 - line 34 * -----	1	

TECHNICAL FIELDS SEARCHED (Int. Cl.5)

C11D

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	11 OCTOBER 1993	DELZANT J-F.

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
Y : particularly relevant if combined with another document of the same category
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