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(54) **USE OF ETHOXYLATED DIPHTIC ALCOHOLS AS DISSOLUTION AIDS**  
VERWENDUNG ETHOXYLIERTER ALIPHATISCHER ALKOHOLE ALS LÖSUNGSVERMITTLER  
UTILISATION D'ALCOHOLS ALIPHATIQUES ETHOXYLES COMME AIDES DE DISSOLUTION

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- **LUTENSOL AT, Technical Information, BASF**  
**December 1987**
- **DOBANOL, Technical Information, SHELL**  
**Chemicals**
- **NEODOL, Technical Information, SHELL**  
**Chemicals**

**Description**

5 [0001] The present invention relates to the use of an ethoxylated aliphatic alcohol containing at least 25 ethylene oxide groups to improve dissolution and/or dispersion in the wash liquor of a particulate detergent composition. The invention is of especial applicability to particulate detergent compositions, containing no, or low levels of, phosphate builder and to compositions of high bulk density.

10 [0002] In recent years there has been a trend to reduce or eliminate phosphate builders in particulate detergent compositions. The replacement of sodium tripolyphosphate as a builder in detergent powders by a crystalline aluminosilicate (zeolite), has led to a number of difficulties with the structure and physical properties of powders. One such problem that has been encountered, is the tendency of zeolite-built powders to dispense less well in automatic washing machines than do their phosphate-built counter-parts; a higher proportion of the powder dosed into the washing machine is left in the dispenser, in the washing process leading to product wastage and clogging. The problem is especially marked at low water inlet temperatures.

15 [0003] The tendency towards poor dispensing has been exacerbated by the recent trend in the detergent industry towards higher bulk density powders. Detergent powders of high bulk densities from 600 to 1100 kg/m<sup>3</sup>, preferably from 700 to 1100 kg/m<sup>3</sup>, are attractive to the customer. Because the capillary diameter of the high bulk density powder is smaller than in low bulk density powders, the water penetration into the particle is slower. As a consequence, when the powder is wetted by water flowing through the dispenser the detergent particles may stick together resulting in considerable residues of wetted and adhering powder left behind in the drawer. Similar problems may be encountered when applying a detergent dosing device as described in EP-A-253,419, for indrum dosing of high density detergent powder.

20 [0004] Detergent powders typically comprise anionic and/or nonionic surfactants. Nonionic surfactants are particularly effective in removing hydrophobic soils such as hydrocarbon oils, complex fats and other long-chain unsaturated and saturated glycerides. However, when detergent powders containing nonionic surfactants come into contact with aqueous solutions, the nonionic surfactant may form a viscous phase which may impede dissolution. Nonionic surfactants having a low degree of ethoxylation, generally employed because of their oily soil detergency, are especially problematic in this respect.

25 [0005] It has now surprisingly been found that the problem of poor dissolution and/or dispersion in the wash liquor of such a powder can be overcome by incorporating in the powder a relatively small amount of an ethoxylated aliphatic alcohol containing at least 25 ethylene oxide groups.

30 [0006] Accordingly, the present invention provides the use set out in Claim 1.

35 [0007] Suitably the granular detergent composition has a bulk density from 600 to 1100 kg/m<sup>3</sup>, preferably from 700 to 1100 kg/m<sup>3</sup>. Various postdosed ingredients, such as sodium carbonate, bleach material and foam depressing agent, may be added to the composition as desired. The composition may be prepared by spray-drying optionally followed by mixing or by dry-mixing/agglomeration. For obtaining high bulk densities, the composition is preferably prepared by dry-mixing/agglomeration.

40 [0008] As essential ingredients, the composition contains surfactant system, builder material and a dissolution aid. It is preferred that the dissolution aid is present in the composition of the invention as a separate granular component. Preferably the dissolution aid is substantially pure ethoxylated aliphatic alcohol containing at least 25 ethylene oxide groups.

[0009] Preferably, the dissolution aid contains at least 50 ethylene oxide groups, more preferably at least 80 ethylene oxide groups.

[0010] The dissolution aid is suitably present at a level of from 0.01 to 1% by weight, preferably from 0.05 to 0.5% by weight based on the composition.

45 [0011] The surfactant system present in the detergent composition suitably contains alkoxyated nonionic surfactants having an average degree of alkoxylation of at most 11. Suitable nonionic surfactants include condensation products of ethylene oxide with an aliphatic alcohol having from 8 to 15 carbon atoms and an average degree of ethoxylation from 2 to 10.

50 [0012] A preferred surfactant system comprises a mixture of two C<sub>8-15</sub> nonionic surfactants having an average degree of ethoxylation respectively of 2 to 5, preferably 2.5 to 4 and 6.5 to 10, preferably 6.5 to 8 which, suitably, are present in a weight ratio of 1 to 25:5. In order to obtain particularly beneficial dissolution properties it is especially preferred that the proportion of nonionic surfactant having a branched aliphatic alcohol is in the range from 10 to 60% by weight for example about 55% by weight based on the total amount of nonionic surfactant in the composition.

55 [0013] Nonionic detergent-active compounds and the dissolution aid together are suitably present in the compositions in a total amount of from 2 to 50% by weight, preferably from 5 to 30% by weight.

[0014] In addition to the nonionic surfactants mentioned above, other detergent-active materials may be present in the compositions. These additional detergent-active materials may be anionic (soap or non-soap), cationic, zwitterionic, amphoteric surfactants, or any combination of these surfactants.

**[0015]** Anionic detergent-active compounds may be present in an amount of from 0 to 40% by weight, preferably from 0 to 20% by weight. It is preferred that the ratio of nonionic surfactant and dissolution aid to anionic surfactant is within the range of 1:2 to 9:1.

**[0016]** Synthetic anionic surfactants are well known to those skilled in the art. Examples include alkylbenzene sulphonates, particularly sodium linear alkylbenzene sulphonates having an alkyl chain length of C<sub>8</sub>-C<sub>15</sub>; primary and secondary alkyl sulphates, particularly sodium C<sub>12</sub>-C<sub>15</sub> primary alkyl sulphates, olefin sulphonates; alkane sulphonates; dialkyl sulphosuccinate; and fatty acid ester sulphonates.

**[0017]** It may also be desirable to include one or more soaps of fatty acids. These are preferably sodium soaps derived from naturally occurring fatty acids, for example the fatty acids from coconut oil, beef tallow, sunflower or hardened rapeseed oil.

**[0018]** The total amount of surfactant in the composition is suitably from 5 to 50% by weight. Of particular interest are high-performance compositions containing relatively high levels of surfactant, preferably from 10 to 50% by weight and more preferably from 15 to 50% by weight.

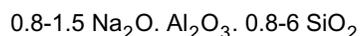
**[0019]** Especially preferred compositions include surfactant systems consisting especially of nonionic surfactant as described above in combination with linear alkylbenzene sulphonate (LAS) or primary alcohol sulphate (PAS) or both.

**[0020]** Surfactant systems of especial interest consist essentially of

- (i) from 40 to 100% by weight of ethoxylated nonionic surfactant, and
- (ii) from 0 to 60% by weight of linear alkylbenzene sulphonate or primary C<sub>8</sub>-C<sub>18</sub> alcohol sulphate.

**[0021]** The detergent powders contain one or more detergency builders, suitably in an amount from 5 to 80% by weight, preferably from 20 to 60% by weight. The invention is especially applicable to compositions containing alkali metal aluminosilicates as builders. Alkali metal (preferably sodium) aluminosilicates may generally be incorporated in an amount from 5 to 60% by weight (anhydrous basis) of the composition, preferably from 25 to 55% by weight, and suitably, in a heavy duty detergent composition, from 25 to 46% by weight.

**[0022]** The alkali metal aluminosilicate may be either crystalline or amorphous or mixtures thereof, having the general formula:



**[0023]** These materials contain some bound water and are required to have a calcium ion exchange capacity of at least 50 mg CaO/g. The preferred sodium aluminosilicates contain 1.5-3.5 SiO<sub>2</sub> units (in the formula above).

**[0024]** Suitable crystalline sodium aluminosilicate ion-exchange detergency builders are described, for example, in GB 1,429,143 (Procter & Gamble). The preferred sodium aluminosilicates of this type are the well-known commercially available zeolite A and X, and mixtures thereof.

**[0025]** The zeolite may be the commercially available zeolite 4A now widely used in laundry detergent powders. Alternatively, the zeolite builder incorporated in the composition is maximum aluminium zeolite P (zeolite MAP) as described and claimed in EP-A-384,070 (Unilever). Zeolite MAP is defined as an alkali metal aluminosilicate of the zeolite P type having a silicon to aluminium ratio not exceeding 1.33, preferably within the range of from 0.90 to 1.33, and more preferably within the range of from 0.90 to 1.20.

The calcium binding capacity of zeolite MAP is generally at least 150 mg CaO per g of anhydrous material.

**[0026]** Other builders may also be included in the detergent composition if necessary or desired.

**[0027]** Inorganic builders that may be present include sodium carbonate, if desired in combination with a crystallisation seed for calcium carbonate, as disclosed in GB 1,437,950 (Unilever).

Organic builders that may be present include polycarboxylate polymers such as polyacrylates, acrylic/maleic copolymers, and acrylic phosphonates; monomeric polycarboxylates such as citrates, gluconates, oxydisuccinates, glycerol mono-, di- and trisuccinates, carboxymethyloxysuccinates, hydroxyethyliminodiacetates, alkyl- and alkenyl-malonates and succinates; and sulphonated fatty acid salts. This list is not intended to be exhaustive.

Builders, both inorganic and organic, are preferably present in alkali metal salt, especially sodium salt, form.

**[0028]** Especially preferred supplementary builders are polycarboxylate polymers, more especially polyacrylates and acrylic/maleic copolymers, suitably used in amounts of from 0.5 to 15% by weight, especially from 1 to 10% by weight; and monomeric polycarboxylates, more especially citric acid and its salts, suitably used in amounts of from 3 to 20% by weight, more preferably from 5 to 15% by weight.

**[0029]** The composition may contain alkali metal, preferably sodium, carbonate, to increase detergency and to ease processing. Sodium carbonate may generally be present in amounts ranging from 1 to 60% by weight, preferably from 2 to 40% by weight, and most preferably from 2 to 13% by weight. However, compositions free of alkali metal carbonate may also be used.

[0030] Preferred compositions preferably do not contain more than 5% by weight of inorganic phosphate builders, and are desirably substantially free of phosphate builders.

[0031] Suitable fully formulated laundry detergent compositions may additionally contain any suitable ingredients normally employed in detergent compositions, for example, inorganic salts such as sodium silicate or sodium sulphate; organic salts such as sodium citrate; antiredeposition aids such as cellulose derivatives and acrylate or acrylate/maleate polymers; fluoescers; bleaches, bleach precursors and bleach stabilizers; proteolytic and lipolytic enzymes; dyes; coloured speckles; perfumes; foam controllers; fabric softening compounds.

[0032] The particulate detergent compositions may in principle be prepared by any of the available tower (spray-drying), non-tower (granulation) or combination processes.

[0033] Of especial interest are compositions of high bulk density - at least 600 g/l, preferably at least 700 g/l and most preferably at least 800 g/l - which may be prepared by processes involving granulation and/or densification in a high-speed mixer/granulator.

[0034] One suitable method comprises spray-drying a slurry of compatible heat-insensitive ingredients, including the zeolite MAP, any other builders, and at least part of the detergent-active compounds; densifying the resulting base powder in a mixer/granulator; and then spraying on or post-dosing those ingredients unsuitable for processing via the slurry (for example bleaches and enzymes).

[0035] In another method, the spray-drying step can be omitted altogether, a high bulk density base powder being prepared directly from its constituent raw materials, by mixing and granulating in a high speed mixer/granulator, and then post-dosing bleach and other ingredients as in the spray-drying/post-tower densification route.

[0036] The high-speed mixer/granulator, also known as a high-speed mixer/densifier, may be a batch machine such as the Fukae (Trade Mark)FS, or a continuous machine such as the Lodige (Trade Mark) Recycler CB30. Processes using high-speed mixer/granulators are disclosed, for example, in EP-A-340,013, EP-A-367,339, EP-A-390,251 and EP-A-420,317 (Unilever).

[0037] The dissolution aid may be included in the base powder but is preferably admixed with the finished base powder. Nonionic surfactants having a lower degree of alkoxylation, particularly those containing on average less than 11 ethylene oxide groups, may be included in the base powder, post added, or both.

[0038] As mentioned above, use of the dissolution aid in detergent composition has been found to improve dissolution properties in a washing process in a washing machine. Additional benefits associated with use of the dissolution aid were found to be reduced redeposition characteristics during the washing cycle and improved bleeding behaviour upon storage.

**EXAMPLES**

[0039] The following non-limiting Examples illustrate the invention. Examples identified by numbers are in accordance with the invention, those identified by letter are comparative. Parts and percentages are by weight unless otherwise stated.

**Examples 1-9, Comparative Example A**

[0040] A particulate detergent composition having a bulk density of 830 kg/m<sup>3</sup> was prepared by spray-drying an aqueous slurry to form a base powder (including nonionic surfactants as specified), densifying the base powder in a continuous Lodige high-speed mixer/granulator, spraying-on further nonionic surfactants as specified, and then admixing the remaining ingredients.

[0041] The general formulation, in weight percent, is shown in Table 1.

TABLE 1

Base powder	
Linear alkylbenzene sulphonate	8.60
*Nonionic surfactant (i)	1.92
Zeolite 4A <sup>1</sup>	23.61

wherein:

\* nonionic ethoxylated alcohol, Synperonic A7 (containing 7 EO groups), ex ICI

1: Wessalith (Trade Mark) P powder ex Degussa: percentage is for anhydrous material, the water of hydration being included in the figure for total moisture.

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TABLE 1 (continued)

	Base powder	
5	Acrylic/maleic copolymer <sup>2</sup>	3.51
	Sodium carbonate	7.49
	Minor ingredients <sup>3</sup>	1.35
	Moisture	9.02
10		55.50
	Sprayed-on	
15	**Nonionic surfactant (ii)	4.68
	Admixed	
	Zeolite 4A	5.00
20	Sodium Carbonate	4.30
	Granular sodium silicate	3.75
	TAED <sup>4</sup>	7.75
25	Sodium perborate monohydrate	15.00
	EDTMP <sup>5</sup>	0.37
	Antifoam granules <sup>6</sup>	2.00
	Enzyme granules	1.00
30	Perfume	0.65
		100.00

\*\* nonionic ethoxylated alcohol, 1:1 mixture of Synperionic A3 and A7 (containing 3 and 7 EO groups), ex ICI

2: Sokalan (Trade Mark) CP5, ex BASF.

3: Fluorescer, sodium carboxymethylcellulose, salts, etc.

4: Tetraacetylenediamine, as 83%wt granules.

5: Ethylenediaminetetramethylenephosphonic acid, calcium salt: Dequest (Trade Mark) 2047 ex Monsanto (34%wt active).

6: Antifoam granules in accordance with EP-B-266,863 (Unilever).

[0042] To the thus prepared particulate detergent composition varying -minor- amounts of several types of ethoxylated alcohol containing at least 25 ethylene oxide (EO) groups, were postdosed, as specified in Table 2. Suitable commercially available nonionic materials containing at least 25 EO groups include the LUTENSOL AT [Trade Mark] series ex BASF and the BRIJ [Trade Mark] series ex ICI.

As can be seen, the type of the postdosed nonionic materials is indicated in this Table by number of EO-groups present therein.

TABLE 2

Example	Postdosed high EO	nonionic material
	amount (parts)	type
A	0.000	--
1	0.50	25 EO
2	0.125	25 EO
3	0.50	50 EO
4	0.125	50 EO
5 (Comp.)	1.00	80 EO

TABLE 2 (continued)

Example	Postdosed high EO	nonionic material
	amount (parts)	type
6	0.50	80 EO
7	0.25	80 EO
8	0.125	80 EO
9	0.0625	80 EO

[0043] The delivery characteristics of the thus obtained powders were tested using a model system which simulates the delivery of a powder in an automatic washing machine.

[0044] For this test a cylindrical vessel having a diameter of 4 cm and a height of 7 cm, made of 600 micron pore size stainless steel mesh, and having a top closure made of teflon and a bottom closure made of the above type of mesh, was used. In this top closure, a 30 cm metal rod was inserted to act as a handle, and this handle was attached in an agitator arm positioned above 1 litre water present in a container and having a temperature of 20 C. By means of this agitator apparatus the cylindrical vessel held at 45 degrees, could be rotated through a circle with a 10 cm radius during 2 seconds. Subsequently the vessel could be allowed to rest during 2 seconds before the next rotation-rest cycle started.

[0045] A 50 grams powder sample was introduced in the cylindrical vessel. This vessel was then closed and attached to the agitator arm which was subsequently moved down to a position wherein the top of the cylindrical vessel was just below the water surface. After a ten second delay, the rotation was started, and the apparatus then allowed to operate for 15 rotation-rest cycles.

Subsequently, the cylindrical vessel and handle were removed from the water and the vessel was detached. Surface water was carefully poured off, and any powder residues transferred to a preweighed container. The container was then dried at 100°C for 24 hours, and the weight of dried residue as a percentage of the initial powder weight calculated. The results are shown in Table 3.

TABLE 3

Example	Postdosed high EO nonionic material		Residue (wt%)
	amount (parts)	type	
A	0.000	--	34
1	0.50	25 EO	22
2	0.125	25 EO	20
3	0.50	50 EO	24
4	0.125	50 EO	18
5 (Comp.)	1.00	80 EO	25
6	0.50	80 EO	22
7	0.25	80 EO	16
8	0.125	80 EO	14
9	0.0625	80 EO	21

[0046] It can be seen from Table 3 that the largest reduction of the powder residue as compared to the residue found in example A, could be obtained when applying a detergent powder composition comprising a minor amount of post-dosed ethoxylated alcohol containing 80 ethylene oxide groups.

#### **Examples 10,11, Comparative Example B**

[0047] A particulate detergent composition was prepared in a very similar way and having almost the same formulation as in the above-mentioned Example A, the only difference being that in the present Examples the sprayed-on nonionic surfactant material fully consists of Synperionic A3 (containing 3 EO groups) ex ICI.

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**[0048]** To this detergent powder, varying amounts of ethoxylated alcohol containing 80 EO groups were postdosed. The delivery characteristics of the thus obtained powders were tested using the above-described model system and testing process. The results obtained are shown in Table 4.

TABLE 4

Example	Postdosed high EO nonionic material		Residue (wt%)
	amount (parts)	type	
B	0.000	--	68
10	0.50	80 EO	55
11	0.125	80 EO	42

**[0049]** It can be seen that the dissolution properties of the detergent powder of Example B are inferior as compared to the powder of Example A, and that also in this case an improvement of the delivery characteristics could be obtained by post-dosing minor quantities of ethoxylated alcohol containing 80 EO groups.

### Comparative Examples C,D

**[0050]** To the detergent powder of Example A, varying -minor- amounts of polyethylene glycol having a molecular weight of 4000 (PEG 4000) were postdosed. The delivery characteristics of the thus obtained powders were tested using the above-described model system and testing process. The results obtained are shown in Table 5.

TABLE 5

Example	Postdosed PEG 4000	Residue (wt%)
	amount (parts)	
A	0.000	34
B	0.50	33
C	0.25	35

**[0051]** It can be seen that no improvement of the delivery characteristics of the detergent powder of Example A could be obtained by post-dosing the above-indicated minor amounts of PEG 4000.

### Example 12 and Comparative Example E

**[0052]** A detergent composition having a bulk density of about 900 g/l was prepared by a mixing/granulation process to produce a base powder to which further components were post-dosed into the base powder as listed below.

Base Powder	
Sodium primary alkyl sulphate (PAS)	5.81
Zeolite MAP	36.04
Sodium carbonate	0.96
<sup>a</sup> Synperonic A3 ex ICI	7.15
<sup>a</sup> Synperonic A7 ex ICI	5.81
Stearic acid	2.04
<sup>b</sup> Tallow 80EO	0.20
Sodium carboxymethyl cellulose	0.89

<sup>a</sup> About 55% branched.

<sup>b</sup> Ethoxylated tallow alcohol having an average degree of ethoxylation of 80.

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(continued)

Base Powder	
Moisture	4.98
	63.88

[0053] The nonionic materials (\*) were mixed and then sprayed onto an adjunct comprising PAS, carbonate and part of the zeolite, and sodium carboxymethyl cellulose and stearic acid in a Lodge CB30 "Recycler" mixer. The stearic acid was neutralised by addition of base. The mixture was then layered with the remaining zeolite and passed to a Lodge KM300 "Ploughshare" mixer and then a fluid bed as described in EP-A-367 339 (Unilever) to produce the base powder.

[0054] The following components were then admixed to the base powder (63.88 parts).

Fluorescer	3.00
Sodium silicate	2.90
<sup>c</sup> TAED	4.75
<sup>d</sup> Manganete catalyst	2.40
Sodium Percarbonate	20.50
<sup>e</sup> DEQUEST 2047 ex Monsanto	0.37
Enzyme	1.75
Perfume	0.45

<sup>c</sup> tetraacetyl ethylene diamine

<sup>d</sup> as described in EP 458 397 (Unilever)

<sup>e</sup> sequestrant

[0055] A comparative composition E was prepared by the same process and to the same composition as Example 12 save that the Tallow 80EO in the base was replaced by 0.20 parts SYNPERONIC A3.

[0056] The delivery characteristics of the two powders were tested using the model system described in Examples 1 to 9. The results are shown in Table 6.

TABLE 6

Composition	Residue (wt%)
12	45
E	60

[0057] These results demonstrate that compositions containing a dissolution aid have significantly superior delivery characteristics when compared to a similar composition which does not contain a dissolution aid.

**Detergency**

[0058] The detergencies of the powders of Examples A,D (comparative) and 7 (according to the invention) were compared by means of a washing machine test. The machine used was a Siemens Siwamat (Trade Mark) Plus 3700 front-loading automatic washer.

[0059] 3 kg soiled loads containing white cotton interlock test cloth monitors (which monitors have been pre-washed) were washed at 40°C using the half load main wash programme. The powder samples (104 g dose) predissolved in 250 ml water were introduced via the machine's dispenser. Detergency results (reflectance loss after 10 washes at 460 nm of the test cloth monitors) were as follows:

Composition of	Reflectance loss after 10 washes
Example A	2.1

(continued)

Composition of	Reflectance loss after 10 washes
Example D	1.9
Example 7	1.4

[0060] These results demonstrate the additional benefit associated with the invention, of reduced redeposition.

### Bleeding

[0061] The bleeding characteristics of the powders of Examples A,D (comparative) and 7 (according to the invention) were compared. To that end, Standard VC2 cardboard packs (having a volume of 1.5 litre) were filled up to 80% of their total volume with samples of the above mentioned respective powders. Subsequently the filled cardboard packs were stored at a temperature of 37°C and a relative humidity of 70%, for two months. The part of the total cardboard interior surface which was stained and had obtained a darker colour due to nonionic migration (bleeding) during this two months storage period, was recorded as a percentage, as is shown below:

Composition of	stained part of cardboard pack interior surface (in %)
Example A	18
Example D	19
Example 7	8

[0062] It can be derived from these results that a further benefit associated with the invention, is significantly improved (i.e. reduced) bleeding behaviour of detergent compositions.

### Claims

1. Use of an ethoxylated aliphatic alcohol containing at least 25 ethylene oxide groups as a dissolution aid to improve dissolution and/or dispersion in the wash liquor of a particulate detergent composition, the particulate detergent composition having a bulk density of at least 600 g/l and comprising a surfactant system including one or more nonionic surfactants, optionally one or more anionic surfactants and at least one detergency builder, wherein the surfactant system is present in an amount of from 10 to 50% by weight on the composition, the dissolution aid being present in an amount from 0.05 to 1% by weight as calculated on the composition and the ratio by weight of nonionic surfactant to dissolution aid is greater than 10:1, provided that the particulate detergent composition does not comprise alkylglycoside of general formula R-O-(G)<sub>x</sub>, in which R is a primary straight chain or 2-methyl branched aliphatic residue having 8 to 22 Carbon atoms. G is a glucose chain with 5 to 6 Carbon atoms, and the degree of oligomerisation x is between 1 and 10.
2. The use according to claim 1, wherein the dissolution aid contains at least 50 ethylene oxide groups.
3. The use according to any preceding claim, wherein the surfactant system comprises two nonionic surfactants which are condensation products of ethylene oxide with a C<sub>8</sub>-C<sub>15</sub> aliphatic alcohol having respectively an average degree of ethoxylation of 2 to 5 and of 6.5 to 10.
4. The use according to any preceding claim, wherein the detergent composition comprises from 0.05 to 0.5% by weight of the dissolution aid, calculated on the composition.
5. The use according to any preceding claim, wherein the surfactant system consists essentially of
  - (i) from 40 to 100% by weight of the surfactant system of ethoxylated nonionic surfactant, and
  - (ii) from 0 to 60% by weight of linear alkylbenzene sulphonate or primary C<sub>8</sub>-C<sub>18</sub> alcohol sulphate.
6. The use according to any preceding claim, wherein the detergent composition is essentially free of phosphates.

**Patentansprüche**

- 5 1. Verwendung eines ethoxylierten aliphatischen Alkohols mit wenigstens 25 Ethylenoxidgruppen als Auflösungshilfe zur Verbesserung der Auflösung und/oder Dispersion einer partikulären Reinigungsmittelzusammensetzung in der Waschlöslichkeit, wobei die partikuläre Reinigungsmittelzusammensetzung eine Schüttdichte von wenigstens 600 g/l hat und ein Tensidsystem mit einem oder mehreren nichtionischen Tensid(en), einem oder mehreren anionischen Tensid(en) und wenigstens einem Aufbaustoff umfasst, wobei das Tensidsystem in einer Menge zwischen 10 und 50 Gew.-% der Zusammensetzung vorliegt, wobei die Auflösungshilfe in einer Menge zwischen 0,05 und 1 Gew.-%, berechnet auf die Zusammensetzung, vorliegt und das Gewichtsverhältnis zwischen nichtionischem Tensid und Auflösungshilfe größer als 10:1 ist, vorausgesetzt, die partikuläre Reinigungsmittelzusammensetzung umfasst kein Alkylglycosid der allgemeinen Formel R-O-(G)<sub>x</sub>, wobei R eine gerade Primärkette oder ein verzweigter, aliphatischer 2-Methyl-Rest mit 8 bis 22 Kohlenstoffatomen ist, G eine Glykosekette mit 5 bis 6 Kohlenstoffatomen ist und der Oligomerisierungsgrad x zwischen 1 und 10 liegt.
- 10 2. Verwendung nach Anspruch 1, wobei die Auflösungshilfe wenigstens 50 Ethylenoxidgruppen enthält.
3. Verwendung nach einem der vorherigen Ansprüche, wobei das Tensidsystem zwei nichtionische Tenside umfasst, die Kondensationsprodukte von Ethylenoxid mit einem aliphatischen C<sub>8</sub>-C<sub>15</sub> Alkohol sind, mit jeweils einem durchschnittlichen Ethoxylierungsgrad von 2 bis 5 und von 6,5 bis 10.
- 20 4. Verwendung nach einem der vorherigen Ansprüche, wobei die Reinigungsmittelzusammensetzung zwischen 0,05 und 0,5 Gew.-% der Auflösungshilfe, berechnet auf die Zusammensetzung, umfasst.
- 25 5. Verwendung nach einem der vorherigen Ansprüche, wobei das Tensidsystem im Wesentlichen Folgendes umfasst:
- (i) 40 bis 100 Gew.-% des Tensidsystems an ethoxyliertem, nichtionischem Tensid, und
- (ii) 0 bis 60 Gew.-% an linearem Alkylbenzolsulfonat oder C<sub>8</sub>-C<sub>18</sub> Primäralkoholsulfat.
- 30 6. Verwendung nach einem der vorherigen Ansprüche, wobei die Reinigungsmittelzusammensetzung im Wesentlichen frei von Phosphaten ist.

**Revendications**

- 35 1. Utilisation d'un alcool aliphatique éthoxylé contenant au moins 25 groupes d'oxyde d'éthylène en tant qu'aide à la dissolution pour améliorer la dissolution et/ou la dispersion dans la liqueur de lavage d'une composition de détergent particulaire, la composition du détergent particulaire ayant une masse volumique apparente d'au moins 600 g/l et comprenant un système de tensio-actifs incluant un ou plusieurs tensio-actifs non ioniques, optionnellement un ou plusieurs tensio-actifs anioniques et au moins un adjuvant de détergence, où le système de tensio-actifs est présent dans une quantité allant de 10 à 50% en poids sur la composition, l'aide à la dissolution étant présente dans une quantité allant de 0,05 à 1% en poids telle que calculée sur la composition et la proportion en poids des tensio-actifs non ioniques par rapport à l'aide à la dissolution est supérieure à 10:1 à condition que la composition du détergent particulaire ne comprenne pas d'alkylglycoside de la formule générale R-O-(G)<sub>x</sub>, où R est une chaîne droite primaire ou un résidu aliphatique ramifié de méthyl-2 ayant 8 à 22 atomes de carbone, G est une chaîne de glucose avec 5 à 6 atomes de carbone et le degré de polymérisation x est entre 1 et 10.
- 40 2. L'utilisation selon la revendication 1, où l'aide à la dissolution contient au moins 50 groupes d'oxyde d'éthylène.
- 50 3. L'utilisation selon l'une quelconque des revendications précédentes, où le système de tensio-actifs comprend deux tensio-actifs non ioniques qui sont des produits de condensation de l'oxyde d'éthylène avec un alcool aliphatique C<sub>8</sub> - C<sub>15</sub> ayant respectivement un degré moyen d'éthoxylation de 2 à 5 et de 6,5 à 10.
4. L'utilisation selon l'une quelconque des revendications précédentes, où la composition du détergent comprend de 0,05 à 0,5% en poids de l'aide à la dissolution, calculé sur la composition.
- 55 5. L'utilisation selon l'une quelconque des revendications précédentes, où le système de tensio-actifs consiste essentiellement en

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- (i) de 40 à 100% en poids du système de tensio-actifs des tensio-actifs non ioniques éthoxylés et
- (ii) de 0 à 60% en poids de sulfonate d'alkylbenzène linéaire ou de sulfate d'alcool C<sub>8</sub> - C<sub>18</sub> primaire.

6. L'utilisation selon l'une quelconque des revendications précédentes, où la composition du détergent est essentiellement exempte de phosphates.

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