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(54) **Detergent composition**

(57) The invention provides a detergent composition comprising a surfactant, a particulate foam control agent and a benefit agent. The particulate foam control agent contains 0.1 to 20 wt% of a branched polydimethylsiloxane based antifoam, 60 to 99.9 wt% of a zeolite as

carrier, and 0 to 10 wt% of a polyvinylalcohol as binder. Said composition was found to provide for relatively lower run-off of the benefit agent during washing.

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Description**FIELD OF INVENTION**

5 **[0001]** The present invention relates to detergent compositions, particularly to granular detergent compositions having a benefit-agent.

[0002] The invention has been developed primarily for use in granular detergent compositions, and will be described hereinafter with reference to this application. However, it will be appreciated that the invention is not limited to this particular field of use.

BACKGROUND AND RELATED ART

[0003] Any discussion of the prior art throughout the specification should in no way be considered as an admission that such prior art is widely known or forms part of the common general knowledge in the field.

15 **[0004]** Detergent products containing surfactants particularly suitable for fabric washing by hand generally have a tendency to produce excessive foam. Foam or suds formation is desired e.g. during the process of hand-washing. In detergent compositions, surfactants provide foaming in the wash water. Not only is the formation of foaming or sudsing desirable, but there is also a desire to readily create foam as well as maintain the foam for a desired duration. For example, it may be desired that the foam occurs immediately upon contact of a detergent composition with water.

20 Although there are various reasons as to why foam formation is desired, one known reason is that consumers who use detergent compositions directly associate the formation of foam with the cleaning ability of the detergent composition.

[0005] Although the formation of foam is desired, it may also pose problems during the washing process. For example, drainage of the suds or foam during the washing process may be difficult. Particularly for a machine wash process, the suds or foam may hamper the drainage of the wash solution from the machine before the rinse stage. On the other hand, 25 the number of rinse stages is generally proportional to inter-alia the slipperiness of rinse liquor, clarity of rinse liquor and more importantly the amount of foam that is visible. Therefore, having 3-4 cycles of rinses is very common in a normal hand-wash scenario. As people tend to rinse the fabrics till there is no visible foam or at least till there is very little foam, it also leads to usage of a large amount of water. Therefore, it is desired to gradually suppress foam over time. Accordingly, there is a need to produce foaming or sudsing early in the wash process, such as when the detergent composition first comes into contact with water, as well as to suppress/reduce the foam at later stages, especially during rinsing.

30 **[0006]** It is accordingly usual to include a foam-control agent in detergent formulations. Foam-control agents based on silicones are especially effective in suppressing the foam of many surfactants. Such agents have been disclosed in EP-A 484081 and EP-A-213953.

[0007] In addition to the basic essential ingredients i.e. surfactants which are required for cleaning the fabrics; detergent compositions generally also include one or more "benefit agents". These agents are added for some specific functions e.g., perfume delivery or retention, fabric whiteness, reduction/prevention of re-deposition of dirt onto cleaned fabrics, release of dirt from soiled fabrics, and reduction in creases.

35 **[0008]** While it is intended that these added benefit agents deposit onto the fabrics during the wash, in-practice, it is generally observed that a large amount of the benefit agents are washed-away during the steps of washing and rinsing. This phenomenon is also known in the art as "run-off" of the agent.

[0009] Some attempts have been made in prior art to reduce the run-off of benefit-agents during washing. WO-A-98/00500 discloses detergent compositions in which the benefit-agent is delivered onto fabrics by means of peptide or protein deposition-aid having high affinity for fabrics. The benefit-agent is attached or adsorbed to the peptide or protein deposition-aid. The compositions are said to effectively deposit the benefit-agent onto the fabric during the wash cycle. 45 The detergent compositions disclosed in WO-A-98/00500 have a few drawbacks. The benefit-agent has to be attached/adsorbed to the deposition-aid. If it is to be attached, it is preferably done by means of a linking agent. However, not all benefit agents can be derivatised. Furthermore, linking the benefit-agent to the deposition aid may negatively affect the properties of the benefit-agent. For example, perfumes cannot be covalently bound to larger molecules without negatively affecting their perfume properties.

OBJECT OF THE INVENTION

50 **[0010]** It is an object of the present invention to overcome or ameliorate at least one of the disadvantages of the prior art. It is another object of the present invention to provide for relatively lower run-off of benefit-agent during washing. It is a further object of the present invention to provide for relatively lower run-off of benefit-agent during washing, without necessarily using deposition-aids.

[0011] Other objects of the present invention will become apparent to those skilled in the art by reference to the specification.

[0012] The present inventors have surprisingly found that a composition that includes a benefit-agent and a specific particulate foam control agent provides for relatively lower run-off of the benefit-agent, while washing the fabric with the composition in a conventional manner.

SUMMARY OF THE INVENTION

[0013] According to the first aspect, the present invention provides a detergent composition comprising:

- (i) a surfactant;
- (ii) a particulate foam-control agent comprising:
 - (a) 0.1 to 20 weight% of a branched polydimethylsiloxane based antifoam;
 - (b) 60 to 99.9 weight% of a zeolite as carrier; and
 - (c) 0-10 weight% of a polyvinyl alcohol as a binder; and,
- (iii) a benefit agent.

[0014] According to the second aspect, the present invention provides a process for preparing a detergent composition according to the first aspect, including the steps of:

- (i) preparing a base-powder including the surfactant; and,
- (ii) mixing the benefit agent and the particulate foam-control agent with the base-powder.

[0015] According to the third aspect, the present invention provides a method of washing fabrics comprising the steps of using the detergent composition of the first aspect, and washing in a conventional manner.

[0016] According to the fourth aspect the present invention provides a method for delivering a benefit-agent to a fabric by treating the fabric with the detergent composition according to the first aspect.

[0017] The term "comprising" is meant not to be limiting to any subsequently stated elements but rather to encompass non-specified elements of major or minor functional importance. In other words the listed steps, elements or options need not be exhaustive. Whenever the words "including" or "having" are used, these terms are meant to be equivalent to "comprising" as defined above.

[0018] Except in the operating and comparative examples, or where otherwise explicitly indicated, all numbers in this description indicating amounts of material ought to be understood as modified by the word "about".

[0019] It should be noted that in specifying any range of concentration or amount, any particular upper concentration can be associated with any particular lower concentration or amount.

[0020] For a more complete understanding of the above and other features and advantages of the invention, reference should be made to the following detailed description of preferred embodiments.

DETAILED DESCRIPTION OF THE INVENTION

[0021] The term "weight%" used throughout the specification means percentage by weight.

[0022] When used herein, the term "foaming" means any form of formation of gas bubbles, including sudsing and effervescing. Agitation is not necessary, but may enhance the generation of foam, and thus, may be preferred.

[0023] After the formation of foam, the particulate foam control agent is released in the rinse-stage and foaming is suppressed or otherwise controlled by decreasing the amount of foam. For hand-wash conditions, it is preferred that the particulate foam-control agent gets released in the wash-liquor after 10 to 15 minutes. Preferably for hand wash conditions, the particulate foam-control agent may not reduce the water gas bubbles at the initial stages in the wash, since it may be preferable to maintain the amount of foam for a longer period of time.

[0024] It is preferred that the surfactant is anionic or non-ionic. It is preferred that the surfactant is in the range of 0.5 to 50 weight%, more preferably in the range of 5 to 45 weight%, and most preferably in the range of 10 to 25 weight%. It is preferred that the surfactant is anionic, but it is also preferred that the surfactant is a mixture of anionic and non-ionic surfactants. The detergent composition of the present invention may also include one or more additional detergent-active compounds (surfactants) which may be chosen from soap or non-soap cationic, amphoteric and zwitter-ionic surfactants, and mixtures thereof. Many suitable surfactants are available and are fully described in the literature, for example, in "Surface-Active Agents and Detergents", Volumes I and II, by Schwartz, Perry and Berch.

[0025] Anionic surfactants are well-known to those skilled in the art. Examples include alkylbenzene sulphonates, particularly linear alkylbenzene sulphonates having an alkyl chain length of C₈-C₁₅; primary and secondary alkylsulphates, particularly C₈-C₂₂ primary alkyl sulphates; alkyl ether sulphates; olefin sulphonates; alkyl xylene sulphonates; dialkyl

sulphosuccinates; and fatty acid ester sulphonates. Sodium salts are generally preferred.

[0026] Non-ionic surfactants that may be used include primary and secondary alcohol ethoxylates, especially the C8-20 aliphatic alcohols ethoxylated with an average of from 1 to 20 moles of ethylene oxide per mole of alcohol, and more especially the C₁₀-C₁₅ primary and secondary aliphatic alcohols ethoxylated with an average of from 1 to 10 moles of ethylene oxide per mole of alcohol. Non-ethoxylated nonionic surfactants include alkylpolyglycosides, glycerol monoethers, and polyhydroxy fatty acid amides (e.g. glucamides).

[0027] Detergent compositions according to the invention may be in solid or liquid form. Solid form includes powder/granular form and bars. It is preferred that the composition is in granular form. The detergent composition of the invention may alternatively be in tablet form. Tablets may be prepared by compacting the powders. The composition may be used for washing fabrics, utensils/crockery or hard surfaces. The preferred application is for fabric washing, and more preferably for washing fabrics by hand.

[0028] The detergent composition of the invention will generally also contain one or more detergency builders selected from sodium tripolyphosphate, zeolites, or sodium carbonate. The total amount of detergency builder in the compositions is preferably in the range of 5 to 60 weight%, more preferably in the range of 10 to 40 weight%. Inorganic phosphate builders, for example, sodium orthophosphate and pyrophosphate may also be present, but on environmental grounds these are less preferred. The composition may also include 0 to 50 weight%, preferably 5 to 40 weight% and more preferably 10 to 35 weight% salt selected from Sodium chloride or Sodium sulphate.

[0029] Detergent compositions according to the invention may also contain a bleach system in the range of 5 to 35 weight%, preferably in the range of 10 to 25 weight%. This may desirably include a peroxy bleach compound, for example, an inorganic per-salt or an organic peroxy-acid, capable of yielding hydrogen peroxide in aqueous solution, such as the alkali metal perborates, percarbonates, perphosphates, persilicates and persulphates. Preferred inorganic persalts are sodium perborate monohydrate and tetrahydrate, and sodium percarbonate. The peroxy bleach compound may be used in conjunction with a bleach activator (bleach precursor) to improve bleaching action at low wash temperatures. The bleach precursor is suitably present in an amount of from 1 to 8 weight%, preferably in the range of 2 to 5 weight%. Preferred bleach precursors are peroxycarboxylic acid precursors, more preferably peracetic acid precursors and peroxybenzoic acid precursors; and peroxycarbonic acid precursors. A particularly preferred bleach precursor is N,N,N',N'-tetracetyl ethylenediamine (TAED). A bleach stabiliser (heavy metal sequestrant) may also be present. Suitable bleach stabilisers include ethylenediamine tetraacetate (EDTA) and the polyphosphonates such as DEQUEST[™]. The detergent composition of the invention may also include suds boosters to enhance the formation of suds/foam. Preferred suds boosters include amine oxide, polyethylene glycols, monoethanol amine, diethanol amine, fatty alcohols, sugar, protein, betaines, and mixtures thereof.

[0030] Another preferred ingredient is an enzyme. Preferred enzymes include the commercially available lipases, cutinases, amylases, neutral and alkaline proteases, esterases, cellulases, pectinases, lactases and peroxidases conventionally incorporated into detergent compositions. The enzyme may be incorporated into the composition in accordance with the invention at a level of from 0.0001 to 4 weight% active enzyme by weight of the composition.

[0031] Powder flow may be improved by the incorporation of a small amount of a powder structurant, for example, a fatty acid (or fatty acid soap), a sugar, an acrylate or acrylate/maleate polymer, or sodium silicate. One preferred powder structurant is fatty acid soap, suitably present in an amount of from 1 to 5 weight%.

The particulate foam-control agent

[0032] The detergent composition of the invention includes a particulate foam-control agent comprising:

- (a) 0.1 to 20, preferably 1 to 20 weight%, more preferably 5 to 15 weight% of abranched polydimethylsiloxane based antifoam;;
- (b) 60 to 99.9 weight% of a zeolite as carrier; and,
- (c) 0 to 10 weight% of a polyvinyl alcohol as a binder.

[0033] Silicone antifoams as used in the foam control agent of this invention are known materials and many have been described in several patent specifications. Silicone antifoams are foam regulating compositions which comprise a liquid organopolysiloxane polymer and a filler particle, the surface of which has been rendered hydrophobic. Preferably, the foam-control agent of this invention comprises only one type of antifoam.

[0034] Full description of all options of liquid organopolysiloxanes is not included but can be found in the many publications, including European application EP-A-0578424. Preferred branched polydimethylsiloxane based antifoams are higher viscosity siloxanes (i.e. above 12,500 mm/s at 25°C) as they show an improved ability to control foam in aqueous surfactant solutions.

[0035] It is preferred that this agent is in the range 0.005 to 5 weight%, more preferably in the range of 0.005 to 2 weight% and most preferably in the range of 0.2 to 1 weight%. Preferred foam-control agents have been described in

EP0997180 A1 (Dow Corning, 2000), which is incorporated herein by reference. A particularly preferred foam-control agent is available from Dow Corning under the name GP-4625™.

The benefit-agent

[0036] The detergent composition of the invention includes at least one benefit-agent. The agent is preferably selected from perfume, perfume encapsulate, bentonite clay, fluorescer, shading-dye, photo-bleach, anti-redeposition agents, fabric softener, visual-cue, soil-release agent, anti-wrinkle agent, fabric abrasion reducing polymer, or dye-transfer inhibiting agent. It is preferred that the benefit agent is in the range of 0.001 to 15 weight%, more preferably in the range of 0.01 - 10 weight%, and most preferably in the range of 0.1 - 10 weight%. While it is preferred that the composition includes a combination of benefit-agents, the composition may also include a benefit-agent from the above list.

[0037] Many suitable examples of perfumes are provided in the CTFA (Cosmetic, Toiletry and Fragrance Association) 1992 International Buyers Guide, published by CFTA Publications and OPD 1993 Chemicals Buyers Directory 80th Annual Edition, published by Schnell Publishing Co. Suitable perfumes that may be used in the invention could be in the form of perfumed coloured speckle compositions as described in (WO/03/020867 A1, Unilever), or may be any suitable perfume well-known in the art. Suitable encapsulated perfumes may be encapsulated, e.g. in latex microcapsules or gelatine based co-acervates, and have been described in detail in WO-A-2007/112891.

[0038] Any suitable anti-redeposition agent may be used. These include cellulose esters and ethers, for example sodium carboxymethyl cellulose and derivative thereof.

[0039] Any suitable soil-release agent may be used. These include sulphonated and un-sulphonated PET/POET polymers, both end-capped and non-end-capped, and polyethylene glycol/polyvinyl alcohol graft copolymers such as SOKOLAN™ HP22.

[0040] The dye-transfer inhibiting agents are preferably selected from polyamine N-oxide polymers, copolymers of N-vinylpyrrolidone and N-vinylimidazole, polyvinyl-pyrrolidone polymers or combinations thereof.

[0041] Preferred classes of fluorsceners are: Di-styryl biphenyl compounds, e.g. TINOPAL™ CBS-X, Di-amine stilbene di-sulphonic acid compounds, e.g. TINOPAL™ DMS pure Xtra and BLANKOPHOR™ HRH, and Pyrazoline compounds, e.g. BLANKOPHOR™ SN. Preferred fluorsceners are: Sodium-2-(4-styryl-3-sulfophenyl)-2H-naphthol[1,2-d] triazole; disodium-4,4'-bis[[(4-anilino-6-(N-methyl-N-2-hydroxyethyl)amino-1,3,5-triazin-2-yl)]amino]-Stilbene-2,2'-disulfonate; disodium-4,4'-bis[[(4-anilino-6-morpholino-1,3,5-triazin-2-yl)]amino]-stilbene-2,2'-disulfonate; and disodium-4,4'-bis(2-sulfostyryl)biphenyl. Most preferred are disodium 4,4'-bis [[(4-anilino-6-(N-methyl-N-2-hydroxyethyl)amino-1,3,5-triazin-2-yl)]amino] Stilbene-2,2'-disulfonate, disodium-4,4'-bis[[(4-anilino-6-morpholino-1,3,5-triazin-2-yl)]amino] stilbene-2,2'-disulfonate, and disodium-4,4'-bis-(2-sulfostyryl) biphenyl. A particularly preferred fluorescer is 4,4'-Bis(2-sulfostyryl)-1,1'-biphenyl disodium salt.

[0042] Suitable visual-cues may be in the form of tessellated petals, as described in the un-published applications PCT/EP2008/062872 and PCT/EP2008/062873 (both Unilever).

[0043] Photo-bleaches are often added to detergent compositions to provide bleaching of the washed fabrics to improve their visual appeal. The most common and simplest way of incorporating them into detergent powders is to add them to the slurry prior to spray-drying of the base powder. Examples of suitable photo-bleaches include those described in WO-A-2004/072217 and those in the form of photobleach speckles as described in WO-A-2003/018738.

[0044] Shading-dyes relate to the use of pigment and dye combinations for enhanced whiteness of fabrics during laundering and are used to maintain and re-invigorate whiteness. Suitable shading-dyes have been described in WO-A-2008/090091 and WO-A-2007/096052.

[0045] The sensory feel of a fabric following conventional laundering processes is an important property. In particular, the "softness" of a fabric is a highly desirable quality in the laundered fabric. The term "softness" generally refers, for example, to the feeling of smoothness to the touch and flexibility of the fabric. In addition, the term "softness" refers to the general feeling of comfort registered by the human skin on contact with the fabric. For this purpose, fabric softeners and/or anti-wrinkle agents may be incorporated into the compositions in accordance with the present invention. Suitable fabric softeners include water insoluble tertiary amines or di-long chain amide materials as disclosed in GB-A-1514276, WO-A-2003/055966 and EP-A-0011340.

[0046] Clothes suffer damage due to abrasion in the wash, particularly around seams and hems. On dark cellulosics (such as black or navy blue jeans, for example) this damage exposes fibrillated regions of the textile which scatter light differently than undamaged regions. While the damaged regions may have lost relatively small quantity of dye, they are very easy to perceive and produce a strong visual impact. Fabric abrasion reducing polymers are added to reduce the occurrence of fabric damage. Suitable polymers are described in WO-A-2006/027087.

[0047] The composition of the present invention can comprise dye-transfer inhibiting agents as a benefit-agent. These are well-known, commercially available materials which are designed to improve the appearance of dyed fabrics by minimizing the loss of dye from the fabrics due to washing. Many dye fixatives are cationic and are based on quaternary Nitrogen compounds or on Nitrogen compounds having a strong cationic charge which is formed *in-situ* under the

conditions of usage. Cationic fixatives are available under various trade names from several suppliers. Representative trade names include CROSCOLOR™-PMF and CROSCOLOR™-NOFF from Crosfield, INDOSOL™ E-50 from Sandoz, and SANDOFIX™-TPS from Sandoz.

Preparation of the detergent composition according to the invention

[0048] Detergent compositions of the invention may be prepared by any suitable method known in the art. Granular detergent compositions are suitably prepared by first preparing a slurry of ingredients like surfactants, builders, fillers, anti re-deposition agents, and structuring agents and then spray-drying the slurry by blowing it in a spray-drying tower to give a base-powder. Those ingredients unsuitable for processing via the slurry may be then sprayed on or post-dosed into the base-powder. The benefit agents e.g. perfume, shading-dye, fluorescer, visual cues, and the enzymes, the particulate foam control agent, layering agents and other minors are usually post-dosed in a low shear mixer, but some benefit agents may also be included in the slurry depending upon their heat sensitivity. The low shear mixer can be a Drum Mixer or Double Cone Mixer. Such detergent compositions are called Spray-dried detergent powders. The detergent powders may thereafter be agglomerated to increase its bulk-density (BD). Spray-dried detergent powders usually have bulk density in the range of 150 kg/m³ to about 550 kg/m³.

[0049] In the NTR (Non-Tower Route) method, solids (like builders, fillers, fluorescer and layering agents) are granulated by spraying active ingredients (like anionic surfactants and non-ionic surfactants) onto the solids. Granulation may be performed in granulation mixers like PLOUGH-SHEAR™ mixer or a SIGMA™ mixer. Additionally, the benefit-agents minors (such as perfume, shading-dye, visual-cues), the particulate foam control agent and enzymes are post dosed in a low-shear mixer. In an alternate embodiment, the particulate foam control agent may be admixed directly in the granulation mixer after granulation process. Especially preferred compositions have bulk densities of at least 650 kg/m³, more preferably at least 700 kg/m³. Such powders may be prepared either by post-tower densification of spray-dried powder, or by wholly non-tower methods such as dry mixing and granulation; in both cases a high-speed mixer/granulator may advantageously be used.

[0050] Further details of the invention, its objects and advantages are explained hereunder in greater details with reference to the following non-limiting examples. It would be apparent to a person skilled in the art that many such examples are possible and the examples given under are for illustrative purpose only. These should not be construed so as to limit the scope of this invention in any manner.

EXAMPLES

EXAMPLE-1

[0051] A spray-dried detergent composition in granular (powder) form having the formulation as given in Table-1 below was made.

Table-1

Ingredient	weight%
Sodium alkyl benzene sulphonate	14.0
Sodium sulphate	38.0
C12 Fatty alcohol ethoxylate 7EO	1.0
Zeolite 4A	18.0
Sodium Carbonate	18.0
Alkaline Sodium silicate	3.0
Enzyme	0.2
Moisture	2.0
Particulate foam control agent GP-4625™ Ex. Dow Corning	0.4
Benefit agents	
Anti-redeposition agent	0.5

(continued)

Benefit agents	
Soil release agent	0.2
Sodium carboxy methyl cellulose	0.6
Fluorescer	0.05
Perfume	0.2
Other minors	To 100

[0052] The above spray-dried detergent composition was made by the following process:

[0053] Aqueous slurry of sodium alkyl benzene sulphonate, C12 Fatty alcohol ethoxylate 7EO, Zeolite 4A, sodium carbonate, alkaline sodium silicate, anti-redeposition agent, Sodium carboxy methyl cellulose, soil release agent and the fluorescer) was made, which was spray-dried by blowing the slurry in a spray drying tower, by a process well-known to a person skilled in the art. The remaining benefit-agent viz. perfume, and the enzyme and GP-4625™ were post-dosed in a low shear drum mixer by a process well-known to a person skilled in the art.

[0054] The above composition may provide for relatively lower run-off of at least one of the benefit-agents during washing. The above composition may also provide for relatively lower run-off of at least one of the benefit-agents during washing, without necessarily using deposition-aids.

[0055] It should be understood of course that the specific forms of the invention herein illustrated and described are intended to be representative only as certain changes may be made therein without departing from the clear teachings of the disclosure.

[0056] Although the invention has been described with reference to specific embodiments, it will be appreciated by those skilled in the art that the invention may be embodied in many other forms.

Claims

1. A detergent composition comprising:

- (i) a surfactant;
- (ii) a particulate foam control agent comprising:

- (a) 0.1 to 20 weight% of a branched polydimethylsiloxane based antifoam;
- (b) 60 to 99.9 weight% of a zeolite as carrier; and,
- (c) 0 to 10 weight% of a polyvinyl alcohol as a binder; and,

- (iii) a benefit agent.

2. A detergent composition as claimed in claim 1, wherein said surfactant is anionic or non-ionic.

3. A detergent composition as claimed in claim 1 or 2 wherein said surfactant is in the range of 0.5 to 50 weight%.

4. A detergent composition as claimed in any one of the preceding claims, wherein said particulate foam-control agent is in the range of 0.005 to 5 weight%.

5. A detergent composition as claimed in any one of the preceding claims, wherein said benefit agent is selected from perfumes, perfume encapsulate, bentonite clay, fluorescer, shading-dye, photo-bleach, anti-redeposition agent, fabric softener, visual-cue, soil-release agent, anti-wrinkle agent, fabric abrasion reducing polymer, or dye-transfer inhibiting agent.

6. A detergent composition as claimed in claim 5, wherein said benefit agent is in the range of 0.001 to 15 weight%.

7. A detergent composition as claimed in any one of the preceding claims, comprising 0 to 50 weight% salt selected from sodium chloride or sodium sulphate.

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8. A detergent composition as claimed in any one of the preceding claims, comprising 5 to 50 weight% builder selected from sodium tripolyphosphate, zeolites, or Sodium carbonate.
9. A process for preparing a detergent composition as claimed in claim 1 comprising the steps of:
- (i) preparing a base-powder comprising a surfactant; and,
 - (ii) mixing the benefit agent and the particulate foam-control agent with the base-powder.
10. A method of washing fabrics comprising using the detergent composition as claimed in claim 1, and washing in a conventional manner.
11. A method for delivering a benefit-agent to a fabric by treating the fabric with the detergent composition as claimed in claim 1.



EUROPEAN SEARCH REPORT

Application Number
EP 09 15 0187

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	EP 0 636 685 A (DOW CORNING SA [BE]) 1 February 1995 (1995-02-01) * examples 1,8,10,12 * * page 11, line 1 - line 9; claims 1,8,10,13 *	1-10	INV. C11D3/00 C11D3/12 C11D3/37 C11D3/42 C11D3/50 C11D17/06
Y	* page 8, line 26 * -----	1-11	
Y	WO 2007/004094 A (FIRMENICH & CIE [CH]; VERHOVNIK GLENN [CH]; NGUYEN VAN CUNG [CH]) 11 January 2007 (2007-01-11) * page 6, line 31 - page 7, line 2 * * page 7, line 13 - line 20 * * page 9, line 15 - line 20 * * page 9, line 28 - page 10, line 20 * * page 11, line 1 - page 12, last line ; examples *	1-11	
X	EP 0 718 018 A (DOW CORNING SA [BE]) 26 June 1996 (1996-06-26) * page 10, line 54 - page 11, line 5; claims 9,10; examples 11-22 * * page 8, line 49 - line 52 * * page 4, line 26 - line 27 * * silicone antifoam A ** examples 1,6,7,9,10,17,18,21,22 *	1-10	TECHNICAL FIELDS SEARCHED (IPC) C11D B01D
D,A	EP 0 997 180 A (DOW CORNING SA [BE]) 3 May 2000 (2000-05-03) * paragraphs [0040], [0066] * * page 8, lines 27-30 * * claims 1,4,7; example 2 *	1-10	
A	EP 0 329 842 A (DEGUSSA [DE]) 30 August 1989 (1989-08-30) * claims 1-4; examples *	1-10	
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 4 June 2009	Examiner Loiselet-Taisne, S
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 P : intermediate document		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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**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

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This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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04-06-2009

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