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(54) Title: LAUNDRY COMPOSITION

(57) Abstract: A laundry composition comprising: • a. oil • b. colloidal stabilisation system comprising a sorbitan ester or an ethoxylated sorbitan ester • c. cationic deposition aid.

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LAUNDRY COMPOSITION

Field of Invention

The present invention relates to novel laundry compositions suitable for providing benefits to fabric during the laundry process.

Background of the Invention

There remains a need for ancillary laundry compositions which deliver new and improved benefits to fabrics during the laundry process, in particular anti-malodour, that is, the reduction of malodour.

Summary of the Invention

In a first aspect of the present invention is provided a laundry composition comprising:

a) oil
b) stabilisation system comprising a sorbitan ester or an ethoxylated sorbitan ester
c) cationic deposition aid

In a further aspect of the present invention is provided a method of laundering clothes, wherein the composition as described herein is added in the wash or rinse stage.

In addition, the consumer preference for ancillary laundry products is growing. Consumers increasingly are looking for laundry products to use in addition to their laundry detergent and fabric conditioner to provide additional or alternate benefits to their fabrics. Such products allow the consumer to tailor their laundry process to suit their needs and preferences.

In a further aspect of the present invention is provided a method of laundering clothes, wherein a composition as described herein is an ancillary and used in combination with a second laundry composition in the wash or rinse stage.

In a further aspect of the present invention is provided a use of a composition as described herein to reduce malodour.

These and other aspects, features and advantages will become apparent to those of ordinary skill in the art from a reading of the following detailed description and the appended claims. For the avoidance of doubt, any feature of one aspect of the present invention may be utilised in any other aspect of the invention. In other words, the listed steps or options need not be exhaustive. It is noted that the examples given in the description below are intended to clarify the invention and are not intended to limit the invention to those examples per se. Similarly, all percentages are weight/weight percentages unless otherwise indicated. Except in the operating and comparative examples, or where otherwise explicitly indicated, all numbers in this description indicating amounts of material or conditions of reaction, physical properties of materials and/or use are to be understood as modified by the word “about”. Numerical ranges expressed in the format "from x to y" are understood to include x and y. When for a specific feature multiple preferred ranges are described in the format "from x to y", it is understood that all ranges combining the different endpoints are also contemplated.

Ancillary Laundry Compositions

When used as an ancillary, a laundry composition in the context of the present invention is a laundry composition intended for use in addition to a traditional detergent or fabric conditioner formulation. As an anciliary laundry composition, it provides an additional benefit over and above those delivered by a detergent or fabric conditioner and they provide the consumer with the ability to customise the levels of benefit agents delivered in the wash.

The ancillary laundry composition may be in a liquid form.

Oil

Natural oils

Natural oils preferably comprise plant oils, and exclude mineral oils derived from petroleum.

Plant oils

Plant oils include vegetable, nut and seed oils. Plant oils include microbial oils, which are oils that produced by microbes or other organisms, including algal oils and including genetically modified or engineered microbes that produce oils.

Plant oils preferably include triglycerides, free fatty acids, or a combination of both.

Seed oils

Seed oils include almond, argan, babassu, borage, camelina , canola ®, castor, chia, cherry, coconut, corn, cotton, coffee, Cuphea Viscosissima , flax (linseed), grape, hemp, hepar, jatropha, jojoba, Lesquerella Fendleri oil, Moringa Oleifera oil, macadamia, mango, mustard, neem, oil palm, perilla, rapeseed, safflower, sesame, shea, stillingia, soybean, sunflower, tonka bean, tung.

Vegetable Oils

Vegetable oils include olive oil, palm, rice bran oils.

The natural oil may comprise a triglyceride or mixtures of triglycerides with varying degrees of alkyl chain length and unsaturation. Or each triglyceride comprises one or two or more, preferably three fatty acids, bonded by a glycerol bridge. The natural oil may be modified to alter level of unsaturation or branching.

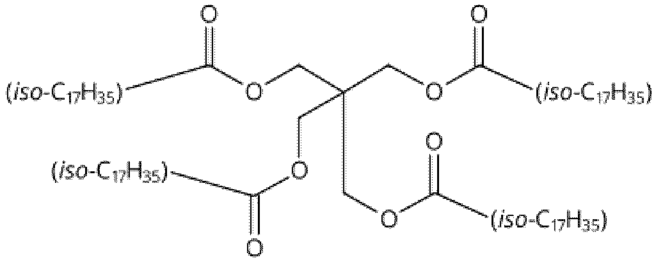
Ester Oil

The oil preferably comprises ester oils. The ester oils are preferably hydrophobic.

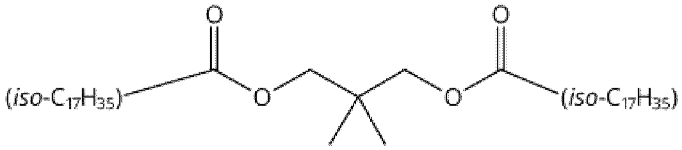
The ester oil may be a sugar ester oil or an oil with substantially no surface activity. Preferably the ester oil is a liquid or soft solid.

Preferably, the oil is polyol ester (i.e. more than one alcohol group is reacted to form the polyol ester). Preferably the polyol ester is formed by esterification of a polyol (i.e. reacting a molecule comprising more than one alcohol group with acids). Preferably the polyol ester comprises at least two ester linkages. Preferably the polyol ester comprises no hydroxyl groups.

Preferably the ester oil is a pentaerythritol ester oil, i.e. an ester oil formed from pentaerythritol e.g. a pentaerythritol tetraisostearate. Exemplary structures of the compound are (I) and (II) below:



(I)



(II)

Preferably the oil is saturated.

Preferably, the ester oils are esters containing straight or branched, saturated or unsaturated carboxylic acids.

Suitable ester oils are the fatty ester of a mono or polyhydric alcohol having from 1 to about 24 carbon atoms in the hydrocarbon chain and mono or polycarboxylic acids having from 1 to about 24 carbon atoms in the hydrocarbon chain with the proviso that the total number of carbon atoms in the ester oil is equal to or greater than 16 and that at least one of the hydrocarbon radicals in the ester oil has 12 or more carbon atoms.

Preferably the viscosity of the ester oil or mineral oil is from 2 mPa. s to 2000 mPa. s at a temperature of 25 C, more preferably a viscosity from 100 to 1500 mPa. s, most preferably a viscosity from 100 to 1000 mPa. s.

Preferably the refractive index of the oil is from 1.445 to 1.490, more preferred from 1.460 to 1.485.

The ester oil of the current invention may be in the form of a free oil or an emulsion.

The compositions described herein comprise 15 – 40wt.% ester oil. Preferably 0.5 to 10 wt. % ester oil, more preferably 0.5 to 6 wt.% ester oil.

Non-volatile

Preferred oils are non-volatile oils. Non-volatile oils provide technical benefits which differ those coming from volatile actives such as fragrances. Non-volatile agents do not rely on olfactory perception but instead provide tactile or visual effects e.g. softness or colour benefits such as a reduction in colour fade.

In this specification a “non-volatile oil” means an oil that when applied to a surface and left at 25 °C a non-volatile material will lose less than 50% of its mass over a time of 7 days. A non-volatile functional material typically has a boiling point greater than 250 °C.

Examples of non-volatile benefit agents include silicone oils or natural e.g. ester oils. Such oils can provide care benefits arising from non-volatile actives (so not olfactory but tactile or visual effects) e.g. softness or colour benefits such as a reduction in colour fade.

Stabilisation System

The stabilisation system is preferably a colloidal stabilisation system – that is to say, a stabilization system that works to provide a stable colloid.

Non-ionic Surfactant Stabilizers

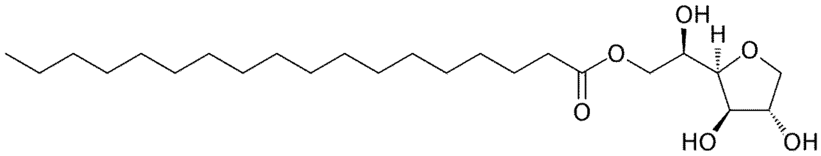
Alternatively or additionally the stabilizer may comprise a nonionic surfactant.

Sorbitan esters

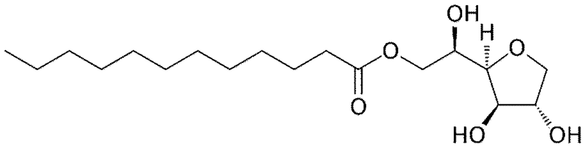
The stabilizer may comprise a sorbitan ester which may be ethoxylated.. The sorbitan ester is preferably present from 0.5 to 20%wt, more preferably from 5 to 15%wt, even more preferably from 7 to 12 %wt most preferably from 7.5 to 10%wt.

Examples include

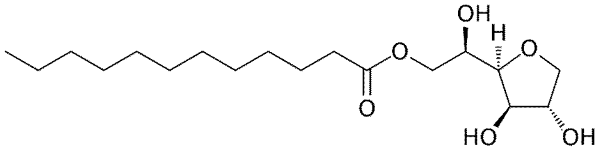
(i) Sorbitan monostearate (Span 60)



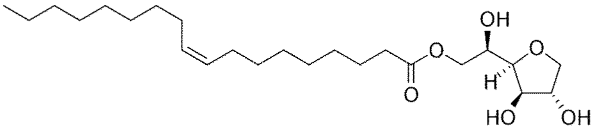
(ii) Sorbitan tristearate (Span 65),



(ii) Sorbitan monolaurate (Span 20)



(iii) sorbitan mono oleate (Span 80)



Ethoxylated sorbitan esters.

The stabilizer may comprise an ethoxylated sorbitan ester having an average exthoxylation from 15 – 25.

The at least one ethoxylated sorbitan ester may have general formula (II):

$$\text{Sorb-}(EO_{n1}R_1)(EO_{n2}R_2)(EO_{n3}R_3)(EO_{n4}R_4) \qquad (II)$$

in which:

Sorb represents a residue obtained by removing four hydroxyl H atoms from sorbitan; EO represents an ethyleneoxy group; R_1,R_2,R_3 and R_4 are each independently selected from H or a -C(O)R_5 group in which R_5 is selected from straight or branched chain monovalent hydrocarbyl radicals having from 8 to 22 carbon atoms and mixtures thereof (provided that at least one of R_1 to R_4 is -C(O)R_5); n_1, n_2, n_3 and n_4 each independently represent average values from 0 to 10; and the total $[n_1 + n_2 + n_3 + n_4]$ has an average value from 5 – 25.

Sorbitan is a generic name for anhydrides derived from sorbitol, a naturally occurring crystalline hexahydric alcohol found in fruits, seaweed, and algae. In formula (II) above, the residue ‘Sorb’ is obtained by removing four hydroxyl H atoms from sorbitan,and will typically be a mixture of residues of 1,4-anhydrosorbitol, 1,5-anhydrosorbitol, and 3,6-anhydrosorbitol. The ethoxylated fatty acid ester is formed by each of the removed H atoms being substituted with the groups ($EO_{n1}R_1$), ($EO_{n2}R_2$), ($EO_{n3}R_3$), and ($EO_{n4}R_4$). Preferably, one of R_1 to R_4 is -C(O)R_5 and the remaining 3 are hydrogen. However, esters with more than one -C(O)R_5 group (e.g. diesters and triesters) will also usually be present in the products as synthesised. Thus the products will often have non-integral ratios of Sorb and R_5 residues as defined in formula (II). For example, an average of 1.4 to 1.5 of the R_1,to R_4 groups may be -C(O)R_5 and the remaining 2.5 to 2.6 hydrogen.

The individual oligoethoxylate chain lengths corresponding to the individual indices n_1, n_2, n_3 and n_4 in formula (II) are preferably each within the range from 0.5 to 6 and more preferably from 1 to 5. As the indices represent average values for the oligoethoxylate chain lengths, they may individually and in total be non-integral. The total $[n_1 + n_2 + n_3 + n_4]$ in formula (II) preferably has an average value (an “average ethoxylation value” as used herein, from 15 to 25, more preferably from 18 to 22 and most preferably 20. Higher ethoxylation values can reduce cleaning efficiency due to increased hydrophilicity and lower ethoxylation values reduce cleaning efficiency as the molecule becomes less soluble.

R_5 in formula (II) is preferably selected from linear or branched, alkyl or alkenyl groups having from 10 to 20 carbon atoms and 0 or 1 double bond. More preferably, R_5 in formula (II) is selected from linear alkyl or linear alkenyl groups containing from 12 to 18 carbon atoms and 0 or 1 double bond, such as lauryl, myristyl, palmityl, cetyl, oleyl and stearyl and mixtures thereof. Most preferably, R_5 in formula (II) is selected from oleyl, stearyl and lauryl and mixtures thereof (as may for example be derived from natural fats and/or optionally hydrogenated natural oils such as palm oil, soybean oil, rapeseed oil, sunflower oil and tallow).

Examples of suitable ethoxylated fatty acid sorbitan esters (ii) for use in the invention include polyoxyethylene (20) sorbitan monolaurate, polyoxyethylene (20) sorbitan monopalmitate, polyoxyethylene (20) sorbitan monostearate, polyoxyethylene (20) sorbitan monooleate and mixtures thereof.

Additionally, the stabilization system may further include a polysaccharide stabilizer.

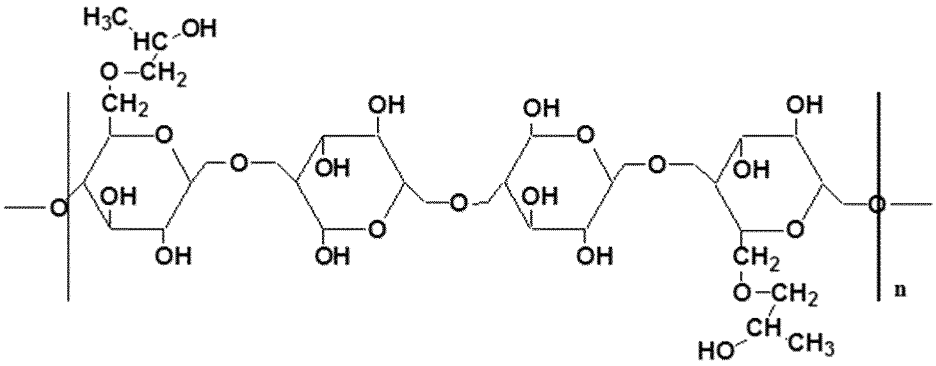
Preferably the polysaccharide is a non-ionic polysaccharide. Preferably the non-ionic polysaccharide comprises a modified cellulose or cellulose derivative.

HPC Hydroxypropyl Cellulose

A preferred stabilizing polymer is hydroxypropyl cellulose.

Preferably the molecular weight is in excess of 40 kDa.

Hydroxypropyl Cellulose (HPC) has the repeat structure shown in generalised terms below:



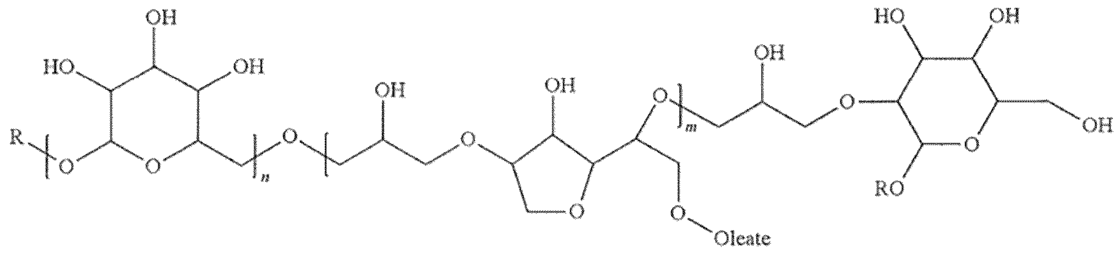
Especially good results may be obtained when the HPC is one with a viscosity in 2 wt% aqueous solution of 1000 to 4000 mPa.s. Viscosity measurements are done using a Brookfield viscometer, Spindle #3, @30 rpm. Lower viscosity materials are measured using Spindle #2, @60 rpm.

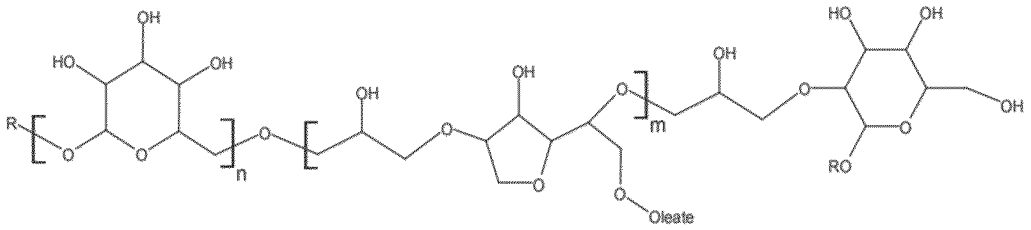
HPC is an ether of cellulose in which some of the hydroxyl groups in the repeating glucose units have been hydroxy-propylated forming $-OCH_2CH(OH)CH_3$ groups using propylene oxide. The average number of substituted hydroxyl groups per glucose unit is referred to as the degree of substitution (DS). Complete substitution would provide a DS of 3. However, as the hydroxy-propyl group itself contains a hydroxyl group, this can also be etherified during preparation of HPC. When this occurs, the number of moles of hydroxy-propyl groups per glucose ring, moles of substitution (MS), can be higher than 3.

The majority (typically around 75% for a DS of 3) of the mass of HPC is found in the substituent groups rather than the backbone.

Polysugamulse

The stabilisation system may further comprise a functionalized alkylpolyglucoside which may include sorbitan ester alkylpolyglucoside crosspolymers. Suitable sorbitan esters include, without limitation, oleate, laurate, stearate, and palmitate. The general structure of a sorbitan oleate polyglucoside crosspolymer is shown below:





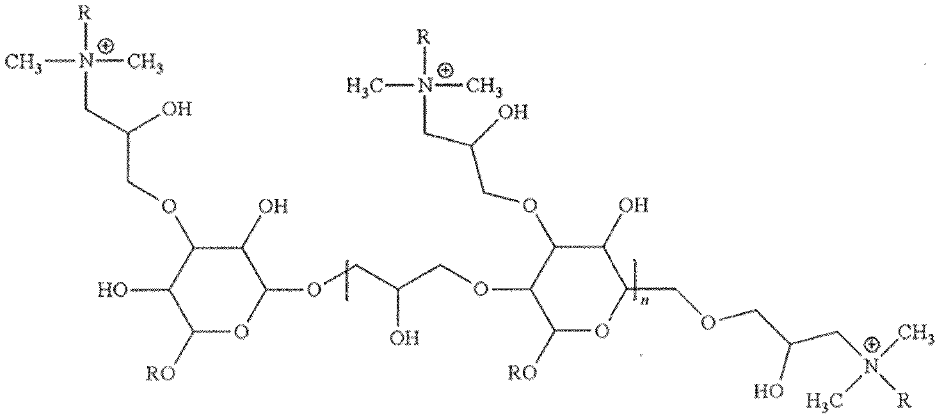
In the formula above, n may be between about 2 to about 20, each R group is an alkyl group having 8 to 24 carbons, wherein the R groups can be the same or different, and the range of m is between 1 to about 10 (for the sorbitan oleate units). For example, each R group can be a C10 alkyl group.

The alkylpolyglucoside derivatives can include, without limitation, sorbitan oleate decylpolyglucoside crosspolymers, such as those commercially available from Colonial Chemicals, Inc. (US) as PolySuga®Mulse D-3I, PolySuga®Mulse D-6, and PolySuga®Mulse D-9, sorbitan laurate decylpolyglucoside crosspolymers, sorbitan stearate decylpolyglucoside crosspolymers, and sorbitan palmitate decylpolyglucoside crosspolymers. These and related compounds can be synthesized according to methods known in the art.

Deposition Aid

Functionalised alkylpolyglucoside.

Preferably the stabilization system comprises a functionalised alkylpolyglucoside (which may also be termed a alkylpolyglucoside derivative). These can include, without limitation, quaternized alkylpolyglucoside crosspolymers, and inorganic salts thereof. A representative structure of quaternized functionalized alkylpolyglucoside crosspolymers is shown below.



In certain embodiments of the present disclosure, in the formula above, n is between about 2 to about 11, R is a C2 -C24 alkyl group, and the quaternary compound is a stearyldimonium, hydroxypropyltrimonium, or lauryldimonium moiety. Accordingly, in certain embodiments, the alkylpolyglucoside derivatives of the present disclosure can include poly(cocoglucosides hydroxypropyltrimonium chloride), poly(stearyldimonium hydroxypropylpropyldecylglucosides chloride), poly(lauryldimonium hydroxypropyl decylglucosides chloride), poly(lauryldimonium hydroxypropyl laurylglucosides chloride), and poly(laurylglucosides hydroxypropyltrimonium chloride), which are commercially available from Colonial Chemicals, Inc. (US) as Poly Suga® Quat TM8610P, Poly Suga® Quat S1010P, Poly Suga® Quat L1010P, Poly Suga® Quat L1210P, and Poly Suga® Quat TM1218P, respectively. These and related compounds can be synthesized according to methods known in the art e.g. as described in US7507399.

Cationic Inulin

The deposition may comprise a cationic derivate of fructan.

For the purpose of the present application “a cationic derivate of fructan” is understood to be a derivate of fructan comprising a cationic group. The cationic group may comprise an ammonium group, a quaternary ammonium group, a sulfonium group, a phosphonium group, a transitional metal or any other positively charged functional group. A preferred cationic group is a quaternary ammonium group. In highly preferred embodiments the cationic derivative of fructan is hydroxypropyltrimonium inulin.

For the purpose of this application “fructans” are understood to comprise all polysaccharides which have a multiplicity of anhydrofructose units. The fructans can have a polydisperse chain length distribution and can be straight-chain or branched. The fructans comprise both products obtained directly from a vegetable or other source and products in which the average chain length has been modified (increased or reduced) by fractionation, enzymatic synthesis or hydrolysis. The fructans have an average chain length (=degree of polymerization, DP) of at least 2 to about 1000, in particular between 3 and 60, for example 3, 4, 5, 6, 7, 8, 15 or 25.

Surprisingly it has been found, that the cationic derivate of fructan has preferably an average molecular weight lower than 30000 g/mol and more preferably an average molecular weight ranging between 500 g/mol and 30000 g/mol. In preferred embodiments the average molecular weight of the cationic derivative of fructan ranges between 1000 g/mol and 15000 g/mol and more preferably between 2000 g/mol and 5000 g/mol.

Cationic compounds known in the art for use in cosmetic compositions generally have a molecular weight higher than 100 000 g/mol or even higher than 1 000 000 g/mol.

For the purpose of this application “average molecular weight” is understood to mean “weight average molecular weight” and is defined by the following formula:

$$Mw=\sum NiMi2\sum NiMi$$

With Mi : the molecular weight of a chain

Ni: the number of chains of that molecular weight.

The average molecular weight may be calculated based on the average molecular weight of the cationic derivative of frutan, preferably inulin, as determined by a chromatographic method such as HPAEC-PAD (high-performance anion exchange chromatography coupled to pulsed amperometric detection) before quaternization, and the weight increase based on the degree of substitution determined after quaternization.

The degree of substitution of the cationic derivate of fructan ranges preferably between 0.01 and 3. More preferably, the degree of substitution of the cationic derivate of fructan ranges between 0.05 and 2.5, for example between 0.1 and 2, between 0.15 and 2, between 0.15 and 1.5, or between 0.3 and 1.3.

The “degree of substitution” is defined as the cationic group content per monosaccharide unit, i.e. the cationic group content per cationic derivate of fructan.

The solubility of the cationic derivate of fructan in water at a temperature of 25° C. is preferably higher than 20 wt %, for example higher than 30 wt %, higher than 40 wt %, higher than 45 wt %, higher than 50 wt %, higher than 60 wt % or higher than 70 wt %.

“Solubility” is defined as the maximum percentage (by weight) of a substance that will dissolve in a unit of volume of water at a certain temperature.

Preferred cationic derivates of fructan have an average molecular weight ranging between 1000 g/mol and 15000 g/mol and a degree of substitution ranging between 0.15 and 2. Even more preferred cationic derivates of fructan have an average molecular weight ranging between 2000 g/mol and 5000 g/mol and a degree of substitution ranging between 0.30 and 1.3.

A preferred group of fructans comprises inulins. For the purpose of this application “inulins” are understood to comprise polysaccharides comprising β(2,1) linked fructofuranose units and a glucopyranose unit. The degree of polymerization ranges preferably between 2 and 60. Inulin can for example be obtained from chicory, dahlias and Jerusalem artichokes.

A preferred group of cationic derivates of fructans comprises cationic inulin. For the purpose of the present application “a cationic derivate of inulin” is understood to be a derivate of inulin comprising a cationic group. The cationic group may comprise an ammonium group, a quaternary ammonium group, a sulfonium group, a phosphonium group, a transitional metal or any other positively charged functional group. A preferred cationic group is a quaternary ammonium group. In case the cationic group is a quaternary ammonium group, the degree of substitution may be determined based on the nitrogen content calculated using Kjeldahl method. Cationic inulin is known and sold under the trademark Quatin® (ex Cosun Biobased Products).

Anionic and Cationic Surfactants

The compositions of the present invention are not a traditional laundry detergent or fabric conditioning compositions. The compositions of the present invention preferably comprise low levels or most preferably no anionic surfactant.

Except for the surfactant stabilizers mentioned above, the compositions preferably comprise 0 to 4 wt.% anionic and/or cationic surfactant, preferably 0 to 2 wt.% anionic and/or cationic surfactant, more preferably, 0 to 1 wt.% anionic and/or cationic surfactant, even more preferably 0 to 0.85 wt. % and most preferably 0 to 0.5 wt. % anionic and/or cationic surfactant. The composition can be completely free of anionic and cationic surfactant.

Perfume

The compositions of the present invention comprise perfume i.e. free oil perfume or non-confined perfumes. The compositions my preferably also comprise perfume microcapsules.

The compositions of the present invention may comprise one or more perfume compositions. The perfume compositions may be in the form of a mixture of free perfume compositions or a mixture of encapsulated and free oil perfume compositions.

Preferably the compositions of the present invention comprise 0.5 to 20 wt.% perfume ingredients, more preferably 1 to 15 wt.% perfume ingredients, most preferably 2 to 10 wt.

% perfume ingredients. By perfume ingredients it is meant the combined free perfume and any encapsulated perfume.

Useful perfume components may include materials of both natural and synthetic origin. They include single compounds and mixtures. Specific examples of such components may be found in the current literature, e.g., in Fenaroli's Handbook of Flavor Ingredients, 1975, CRC Press; Synthetic Food Adjuncts, 1947 by M. B. Jacobs, edited by Van Nostrand; or Perfume and Flavor Chemicals by S. Arctander 1969, Montclair, N.J. (USA). These substances are well known to the person skilled in the art of perfuming, flavouring, and/or aromatizing consumer products.

Particularly preferred perfume components are blooming perfume components and substantive perfume components. Blooming perfume components are defined by a boiling point less than 250°C and a LogP greater than 2.5. Substantive perfume components are defined by a boiling point greater than 250°C and a LogP greater than 2.5. Preferably a perfume composition will comprise a mixture of blooming and substantive perfume components. The perfume composition may comprise other perfume components.

It is commonplace for a plurality of perfume components to be present in a free oil perfume composition. In the compositions for use in the present invention it is envisaged that there will be three or more, preferably four or more, more preferably five or more, most preferably six or more different perfume components. An upper limit of 300 perfume ingredients may be applied.

Free perfume may preferably be present in an amount from 0.01 to 20 wt. %, more preferably 0.1 to 15 wt.%, more preferably from 0.1 to 10 wt.%, even more preferably from 0.1 to 6.0 wt.%, most preferably from 0.5 to 6.0 wt. %, based on the total weight of the composition.

Preferably some of the perfume components are contained in a microcapsule. Suitable encapsulating materials may comprise, but are not limited to; aminoplasts, proteins, polyurethanes, polyacrylates, polymethacrylates, polysaccharides, polyamides, polyolefins, gums, silicones, lipids, modified cellulose, polyphosphate, polystyrene, polyesters or combinations thereof.

Perfume components contained in a microcapsule may comprise odiferous materials and/or pro-fragrance materials.

Particularly preferred perfume components contained in a microcapsule are blooming perfume components and substantive perfume components. Blooming perfume components are defined by a boiling point less than 250°C and a LogP greater than 2.5. Substantive perfume components are defined by a boiling point greater than 250°C and a LogP greater than 2.5. Preferably a perfume composition will comprise a mixture of blooming and substantive perfume components. The perfume composition may comprise other perfume components.

It is commonplace for a plurality of perfume components to be present in a microcapsule. In the compositions for use in the present invention it is envisaged that there will be three or more, preferably four or more, more preferably five or more, most preferably six or more different perfume components in a microcapsule. An upper limit of 300 perfume ingredients may be applied.

Encapsulated perfume may preferably be present in an amount from 0.01 to 20 wt.%, more preferably 0.1 to wt.15 %, more preferably from 0.1 to 10 wt.%, even more preferably from 0.1 to 6.0 wt.%, most preferably from 0.5 to 6.0 wt.%, based on the total weight of the composition.

Optional Ingredients

The compositions of the present invention may contain further optional laundry ingredients. Such ingredients include pH buffering agents, perfume carriers, hydrotropes, polyelectrolytes, anti-shrinking agents, anti-oxidants, anti-corrosion agents, drape imparting agents, anti-static agents, ironing aids, antifoams, colorants, pearlisers and/or opacifiers, natural oils/extracts, processing aids, e.g. electrolytes, hygiene agents, e.g. anti-bacterials and antifungals, thickeners, low levels of cationic surfactants such as quaternary ammonium compounds and skin benefit agents.

Form of Composition

When the composition is a liquid, the viscosity of the laundry composition is preferably 30 to 15000 mPa.s, more preferably 50 to 1000 mPa.s, most preferably 80 to 800 mPa.s. This viscosity provides the benefit that a laundry liquid can carry the ancillary composition into the laundry process. The viscosity measurement can be carried out at 25°C, using a 4cm diameter 2°cone and plate geometry on a DHR-2 rheometer ex. TA instruments. In detail, the measurement can be conducted using a TA-Instruments DHR-2 rheometer with a 4cm diameter 2 degree angle cone and plate measuring system. The lower Peltier plate is used to control the temperature of the measurement to 25°C. The measurement protocol is a ‘flow curve’ where the applied shear stress is varied logarithmically from 0.01Pa to 400 Pa with 10 measurement points per decade of stress. At each stress the shear strain rate is measured over the last 5 seconds of the 10 second period over which the stress is applied with the viscosity at that stress being calculated as the quotient of the shear stress and shear rate.

The liquid composition as described herein may be manufactured simply by adding the ingredients to the liquid carrier (i.e. water) with stirring.

In Use

Ancillary laundry compositions of the invention may be added to the laundry process in either the wash or the rinse phase of the laundry process. Preferably the ancillary laundry composition is added during the rinse phase of the laundry process.

The compositions comprise less than 4 wt. % cationic and/or anionic surfactant (i.e. 0 to 2 wt.%). Therefore, the ancillary composition alone does not deliver any detersive action, nor does it deliver fabric softening cationic surfactants. The compositions are intended for use in combination with traditional laundry liquids (detergent or fabric conditioner) or powder.

Example Compositions:

FORMULATION – 44% solids, 30% active oil				As total formulation	
	Name	Active	As 100%	As received	Weight
		(%)	(%)	(%)	(g)
1	Demin water	100.0	56.0	56.0	56.0
2	Natrasurf 265	100.0	3.75	3.8	3.75
3	Span 80	100.0	8.75	8.8	8.75
	Aqueous Phase		68.5	68.5	68.5
Mixed together and stirred (cloudy appearance)					
4	Priolube 3987	100.0	31.5	31.5	31.5
	Oil Phase				
Oil phase added to aqueous phase and homogenised at 16,000rpm for 2 minutes to generate emulsion					
	TOTAL		100.0	100.0	100.00

Anti-Maldour Tests

Anti-malodour was tested by dosing malodourous components: butyric acid and 4-methyl valeric acid onto knitted cotton with a background of laundry liquid. Compositions of the invention comprising castor oil and ester oil Priolube 3987 versus and a control of ester quat, both at 8%wt based on total weight (wt) of composition.

The “suppression” of malodour signal into the headspace is compared the percentage suppression determined when compared to no treatment.

The fabrics were washed to determine removal differences with different treatments.

Results - Knitted Cotton
The results are shown in Figure 1.

In the case of 70D (priolube) there is a statistically significance reduction in the result for both malodour components available in the headspace above the equilibrated wet knitted cotton fabric

If we think of % reduction when compared to no product it looks like this:

EQ	70C - CASTOR OIL	70D - PRIOLUBE 3987	COMPONENT
46.20	40.89	32.49	4-methyl valeric acid
42.23	28.93	28.97	butyric acid

CLAIMS

1. A laundry composition comprising:
    a. oil
    b. stabilisation system comprises a non-ionic surfactant comprising a sorbitan ester or an ethoxylated sorbitan ester.
    c. cationic deposition aid

2. A laundry composition according to claim 1 wherein the oil is an ester oil.

3. A laundry composition according to claim 1 or claim 2 wherein the ester oil is a polyol ester.

4. A laundry composition according to any preceding claim, wherein the oil comprises castor oil.

5. An laundry composition according to any preceding claim, wherein the stabilization system comprises non-ionic polysaccharide.

6. A laundry composition according to any preceding claim, wherein the stabilization system comprises a modified cellulose or cellulose derivative.

7. A laundry composition according to any preceding claim, wherein the stabilization system comprises a functionalized alkylpolyglucoside.

8. A laundry composition according to any preceding claim, wherein the stabilization system comprises sorbitan ester alkylpolyglucoside crosspolymers.

9. A laundry composition according to any preceding claim, wherein the cationic deposition aid comprises a functionalised alkylpolyglucoside, preferably quaternized alkylpolyglucoside crosspolymers and inorganic salts thereof.

10. A method of laundering clothes, wherein a composition according to any preceding claim is added in the wash or rinse stage.

11. A method of laundering clothes, wherein a composition as described herein is an ancillary and used in combination with a second laundry composition in the wash or rinse stage.

12. Use of a composition as described herein to reduce malodour.

INTERNATIONAL SEARCH REPORT

International application No

PCT/EP2023/069194

A. CLASSIFICATION OF SUBJECT MATTER

INV. C11D1/62 C11D1/66 C11D1/74 C11D1/835 C11D3/00
C11D3/20 C11D3/37 C11D11/00

ADD.

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

C11D

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X,P	WO 2023/067041 A1 (GIVAUDAN SA [CH]) 27 April 2023 (2023-04-27) page 2, line 25 - page 3, line 9 examples 4, 11, 15-17; table 1 claims -----	1,5-11
X	WO 2014/081939 A1 (DOW CORNING [US]) 30 May 2014 (2014-05-30) emulsion 9, example 9; pages 40, 48 -----	1,5-7
X	WO 2020/065541 A1 (MOROCCANOIL ISRAEL LTD [IL]) 2 April 2020 (2020-04-02) examples 3, 4, 12, 13, 24 claims paragraphs [0189] - [0195] ----- -/--	1-3,5-8, 10,11

☒ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance;; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance;; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search 6 October 2023	Date of mailing of the international search report 17/10/2023
Name and mailing address of the ISA/ European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Authorized officer Bertran Nadal, Josep

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INTERNATIONAL SEARCH REPORT

International application No
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C(Continuation). **DOCUMENTS CONSIDERED TO BE RELEVANT**

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

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