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(54) **ANTI-MITE UNIT DOSE ARTICLE**

(57) An anti-mite unit dose article is provided, which comprises a water-soluble polymeric film formed into a pouch with an internal compartment that encloses a liquid laundry detergent composition therein, while the liquid laundry detergent composition is characterized by a high shear viscosity ranging from 100 to 900 mPa·s measured at a shear rate of 1000 s⁻¹ and at a temperature of 20°C, and while the liquid laundry detergent composition comprises from 20% to 70% of one or more non-soap sur-

factants and from 1% to 20% of benzyl benzoate by total weight of said liquid laundry detergent composition. The presence of benzyl benzoate in the unit dose article at such an amount not only provides an anti-mite benefit, but also reduces liquid stringing that may lead to film sealing failure during the manufacturing process of such unit dose article while not negatively impacting film plasticization properties.

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Description

FIELD OF THE INVENTION

5 **[0001]** The present invention relates to a unit dose article comprising a water-soluble polymeric film formed into a pouch with an internal compartment that encloses a liquid laundry detergent composition therein.

BACKGROUND OF THE INVENTION

10 **[0002]** Water-soluble unit dose articles are becoming more and more popular among consumers as they are convenient to use and reduce accidental spillage during detergent dosage in the wash operation. Such water-soluble unit dose articles typically comprise a water-soluble film, preferably formed of a polyvinylalcohol homopolymer, a polyvinylalcohol copolymer, or mixtures thereof, which is formed into a pouch comprising an internal compartment, which encloses a liquid laundry detergent composition.

15 **[0003]** During manufacture of the above-mentioned unit dose articles, a first film is deformed in a mould to form an open cavity into which the liquid laundry detergent composition is added via a filling nozzle. After filling a second film is laid over the open filled cavity and sealed to the first film about a seal area. One of the challenges during filling is that the liquid laundry detergent composition, especially if it has a relatively high viscosity at high shear, tends to 'string' between the cavity and the filling nozzle. This 'stringing' is the phenomenon wherein due to the rheological properties of the liquid laundry detergent composition it remains attached to the nozzle forming a filament or "string" between the nozzle and the open cavity. As the apparatus moves the filled cavity away from the nozzle and brings a new cavity to be filled into position underneath the nozzle, the distance between the nozzle and filled cavity is sufficient to break the "string". However, the breaking of such "string" may take some time, which may in turn limit the speed at which consecutive filling can take place. As a matter of fact, the breaking time sometimes can be the controlling factor for selecting the maximum speed at which the filling operation can run, because speeding up the filling operation before the "string" breaks up can cause some of the liquid laundry detergent composition from the "string" accidentally falling on the film between cavities, which can in turn affect the ability of the two films to be sealed together and result in premature rupture or failure of the unit dose article.

25 **[0004]** Therefore, there is a need to use a liquid laundry detergent composition for forming such water-soluble unit dose articles whereby the instances of stringing of the liquid laundry detergent composition during manufacture of the unit dose articles are reduced or minimized.

30 **[0005]** Further, upon manufacture of the water-soluble film used for forming the unit dose article, it has certain designed dissolution and tensile properties, which are achieved by carefully balancing the film plasticization properties, so that on one hand the film is not too 'floppy' hence affecting the unit dose article aesthetics and its dissolution characteristics when contacting water, and on the other hand the film is not too brittle leading to unwanted premature rupture of the unit dose article ahead of use. The liquid laundry detergent composition, when enclosed into the internal compartment of the water-soluble unit dose articles, is surrounded by the water-soluble film and in direct contact with the film that forms the inner surface of the internal compartment. Such direct contact between the liquid laundry detergent composition and the water-soluble film may adversely affect the plasticization properties of the film over time.

35 **[0006]** Therefore, there may be additional need to use a liquid laundry detergent composition for forming such water-soluble unit dose articles whereby the negative impact on the film plasticization properties is controlled or mitigated.

40 **[0007]** Dust mites may be one of the most prevalent indoor allergens. They are potentially responsible for from 50 to 80 percent of all asthma cases, and countless cases of eczema, hay fever and other allergic reactions. Dust mites can burrow and cling to fabrics, mostly in carpet, household upholstery, mattress, beddings, and sometimes clothing.

45 **[0008]** Correspondingly, it is desirable to form water-soluble unit dose articles with anti-mite benefits. There are a number of known anti-mite actives to date, including certain plant extracts, certain natural essential oils, phenol derivatives, antibiotic natamycin, zirconium phosphate, gamma-hexachlorocyclohexane, pirimiphos methyl, diethyl-m-toluidide, dibutyl phthalate, benzyl benzoate, thiabendazole, p-menthane-3,8-diol, tannic acid, N-lower alkyl neoalkanamides, propylene glycol monooleate, propylene glycol mono-linoleate, propylene glycol linolenate, and the like.

50 **[0009]** However, formulation of anti-mite actives into the liquid laundry detergent composition in the water-soluble unit dose articles is challenging. First of all, the presence of such anti-mite actives may change the rheological properties of the liquid laundry detergent composition and result in more incidents of film sealing failure caused by liquid stringing during the manufacturing process. Further, addition of such anti-mite actives into the liquid laundry detergent composition may also result in greater impact on the film plasticization properties.

55 **[0010]** It was surprisingly found that a liquid laundry detergent composition containing from about 1% to about 20% of benzyl benzoate as the anti-mite active has reduced liquid stringing effect, in comparison with a similar liquid laundry detergent composition that is substantially free of benzyl benzoate. Such liquid laundry detergent composition is particularly suitable for making the anti-mite unit dose articles of the present invention.

[0011] It was also further surprisingly found that when formed into a water-soluble unit dose article the negative impact on the plasticization properties of the film as manufactured were not significantly increased by contact over time with the anti-mite liquid laundry detergent composition of the present invention that contains about 1-20% of benzyl benzoate, in comparison with a similar liquid laundry detergent composition that is substantially free of benzyl benzoate.

SUMMARY OF THE INVENTION

[0012] A first aspect of the present invention is an anti-mite unit dose article comprising a water-soluble polymeric film formed into a pouch with an internal compartment that encloses a liquid laundry detergent composition therein, wherein said liquid laundry detergent composition is characterized by a high shear viscosity ranging from about 100 to about 900 mPa·s, preferably from about 150 to about 800 mPa·s, more preferably from about 200 to about 600 mPa·s, measured at a shear rate of about 1000 s^{-1} and at a temperature of about 20°C , and wherein said liquid laundry detergent composition comprises from about 20% to about 70% of one or more non-soap surfactants and from about 1% to about 20% of benzyl benzoate by total weight of said liquid laundry detergent composition.

[0013] The liquid laundry detergent composition is preferably a non-Newtonian fluid with shear-thinning properties, wherein said liquid laundry detergent composition is characterized by a high shear viscosity ranging from about 100 to about 900 mPa·s, preferably from about 150 to about 800 mPa·s, more preferably from about 200 to about 600 mPa·s, measured at a shear rate of about 1000 s^{-1} , and by a low shear viscosity ranging from about 1000 mPa·s to about 10000 mPa·s, preferably from about 1500 mPa·s to about 7500 mPa·s, more preferably from about 2000 mPa·s to about 5000 mPa·s when measured at a shear rate of about 0.5 s^{-1} , and at a temperature of about 20°C , following the viscosity method described herein.

[0014] The amount of benzyl benzoate in said liquid laundry detergent composition may range from about 2% to about 15%, preferably from about 3% to about 12%, more preferably from about 4% to about 10%, by total weight of said liquid laundry detergent composition.

[0015] The amount of total non-soap surfactant in said liquid laundry detergent composition may range from about 25% to about 60%, preferably from about 30% to about 50% by total weight of said liquid detergent composition. It may comprise from about 5% to about 45%, preferably from about 10% to about 40%, more preferably from about 20% to about 35% of one or more non-soap anionic surfactants by total weight of said liquid laundry detergent composition, while preferably said non-soap anionic surfactants are selected from the group consisting of linear alkylbenzene sulphonates, alkyl sulphates, alkoxylated alkyl sulphates, and combinations thereof. Further, it may comprise from about 2% to about 25%, preferably from about 4% to about 20%, more preferably from about 5% to about 15% of one or more nonionic surfactants by total weight of said liquid laundry detergent composition, while preferably said one or more nonionic surfactants are selected from the group consisting of fatty alcohol alkoxylates, oxo-synthesized fatty alcohol alkoxylates, and combinations thereof.

[0016] Preferably, the liquid laundry detergent composition further comprises a fatty acid or salt thereof. Preferably, the liquid laundry detergent composition comprises between about 3% and about 10%, more preferably between about 5% and about 7% by weight of the liquid laundry detergent composition of a fatty acid or salt thereof.

[0017] Preferably, the liquid laundry detergent composition further comprises from about 5% to about 30%, preferably from about 10% to about 25%, more preferably from about 15% to about 20% of one or more organic solvents, which are preferably selected from the group consisting of 1,2-propanediol, dipropylene glycol, glycerol, and combinations thereof.

[0018] Preferably, the liquid laundry detergent composition comprises between about 0.5% and about 20%, more preferably between about 1% and about 15%, most preferably between about 5% and about 12% by weight of the liquid laundry detergent composition of water.

[0019] Preferably, the liquid laundry detergent composition comprises an alkanolamine, preferably monoethanolamine. Preferably, the liquid laundry detergent composition comprises between about 5% and about 15%, more preferably between about 6% and about 10% by weight of the liquid laundry detergent composition of the alkanolamine, preferably of monoethanolamine.

[0020] Further, said liquid laundry detergent composition may comprise a shear-thinning rheology structuring agent, which is preferably hydrogenated castor oil. The hydrogenated castor oil is described in more detail below.

[0021] Preferably, the liquid laundry detergent composition has a pH between about 6 and about 10, more preferably between about 6.5 and about 8.9, most preferably between about 7 and about 8. The pH of the liquid laundry detergent composition may be measured as a 10% dilution in deionized water at about 20°C .

[0022] The water-soluble polymeric film comprises at least one polyvinylalcohol homopolymer, or at least one polyvinylalcohol copolymer, or a mixture thereof.

[0023] A second aspect of the present invention relates to the use of from about 1 wt% to about 20 wt% of benzyl benzoate in a liquid laundry detergent composition to provide anti-mite benefit while reducing liquid stringing, wherein said liquid laundry detergent composition is characterized by a high shear viscosity ranging from about 100 to about

900 mPa·s measured at a shear rate of about 1000 s⁻¹ and at a temperature of about 20°C.

DETAILED DESCRIPTION OF THE INVENTION

ANTI-MITE WATER-SOLUBLE UNIT DOSE ARTICLE

[0024] The present invention is related to an anti-mite water-soluble unit dose article, which comprises a water-soluble film and a liquid laundry detergent composition containing about 1-20% by weight of the liquid laundry detergent composition of benzyl benzoate as an anti-mite active. The water-soluble film and the liquid laundry detergent composition according to the present invention are described in more detail below.

[0025] The water-soluble unit dose article comprises at least one water-soluble film shaped such that the unit-dose article comprises at least one internal compartment surrounded by the water-soluble film. The at least one compartment comprises the liquid laundry detergent composition. The water-soluble film is sealed such that the liquid laundry detergent composition does not leak out of the compartment during storage. However, upon addition of the water-soluble unit dose article to water, the water-soluble film dissolves and releases the contents of the internal compartment into the wash liquor.

[0026] The compartment should be understood as meaning a closed internal space within the unit dose article, which holds the liquid laundry detergent. Preferably, the unit dose article comprises a water-soluble film. The unit dose article is manufactured such that the water-soluble film completely surrounds the liquid laundry detergent composition and in doing so defines the compartment in which the liquid laundry detergent resides. The unit dose article may comprise two water-soluble films, which might be identical or different in composition and/or physical properties. A first water-soluble film may be shaped to comprise an open compartment into which the liquid laundry detergent is added. A second water-soluble film is then laid over the first water-soluble film in such an orientation as to close the opening of the compartment. The first and second water-soluble films are then sealed together along a seal region. The water-soluble film is described in more detail below.

[0027] The unit dose article may comprise more than one compartment, even at least two compartments, or even at least three compartments. The compartments may be arranged in superposed orientation, i.e. one positioned on top of the other. Alternatively, the compartments may be positioned in a side-by-side orientation, i.e. one orientated next to the other. The compartments may even be orientated in a 'tyre and rim' arrangement, i.e. a first compartment is positioned next to a second compartment, but the first compartment at least partially surrounds the second compartment, but does not completely enclose the second compartment. Alternatively, one compartment may be completely enclosed within another compartment.

[0028] Wherein the unit dose article comprises at least two compartments, one of the compartments may be smaller than the other compartment. Wherein the unit dose article comprises at least three compartments, two of the compartments may be smaller than the third compartment, and preferably the smaller compartments are superposed on the larger compartment. The superposed compartments preferably are orientated side-by-side.

[0029] In a multi-compartment orientation, the liquid laundry detergent according to the present invention may be comprised in at least one of the compartments. It may for example be comprised in just one compartment, or may be comprised in two compartments, or even in three compartments.

[0030] Each compartment may comprise the same or different compositions. The different compositions could all be in the same form, or they may be in different forms. Preferably all compositions are in liquid form.

[0031] The water-soluble unit dose article may comprise at least two internal compartments, wherein the liquid laundry detergent composition is comprised in at least one of the compartments, preferably wherein the unit dose article comprises at least three compartments, wherein the liquid laundry detergent composition is comprised in at least one of the compartments.

WATER-SOLUBLE FILM

[0032] The film of the present invention is soluble or dispersible in water. The water-soluble film preferably has a thickness of from about 20 to about 150 micron, preferably from about 35 to about 125 micron, even more preferably from about 50 to about 110 micron, most preferably about 76 micron.

[0033] Preferably, the film has a water-solubility of at least about 50%, preferably at least about 75% or even at least about 95%, as measured by the method set out here after using a glass-filter with a maximum pore size of 20 microns: 5 grams $\pm$ 0.1 gram of film material is added in a pre-weighed 3L beaker and 2L $\pm$ 5ml of distilled water is added. This is stirred vigorously on a magnetic stirrer, Labline model No. 1250 or equivalent and 5 cm magnetic stirrer, set at about 600 rpm, for about 30 minutes at 30°C. Then, the mixture is filtered through a folded qualitative sintered-glass filter with a pore size as defined above (max. 20 micron). The water is dried off from the collected filtrate by any conventional method, and the weight of the remaining material is determined (which is the dissolved or dispersed fraction). Then, the percentage solubility or dispersability can be calculated.

[0034] Preferred film materials are polymeric materials. The film material can, for example, be obtained by casting, blow-moulding, extrusion or blown extrusion of the polymeric material, as known in the art.

[0035] Preferred polymers, copolymers or derivatives thereof suitable for use as pouch material are selected from polyvinyl alcohols, polyvinyl pyrrolidone, polyalkylene oxides, acrylamide, acrylic acid, cellulose, cellulose ethers, cellulose esters, cellulose amides, polyvinyl acetates, polycarboxylic acids and salts, polyaminoacids or peptides, polyamides, polyacrylamide, copolymers of maleic/acrylic acids, polysaccharides including starch and gelatine, natural gums such as xanthum and carragum. More preferred polymers are selected from polyacrylates and water-soluble acrylate copolymers, methylcellulose, carboxymethylcellulose sodium, dextrin, ethylcellulose, hydroxyethyl cellulose, hydroxypropyl methylcellulose, maltodextrin, polymethacrylates, and most preferably selected from polyvinyl alcohols, polyvinyl alcohol copolymers and hydroxypropyl methyl cellulose (HPMC), and combinations thereof. Preferably, the level of polymer in the pouch material, for example a PVA polymer, is at least about 60%. The polymer can have any weight average molecular weight, preferably from about 1000 to about 1,000,000, more preferably from about 10,000 to about 300,000 yet more preferably from about 20,000 to about 150,000.

[0036] Preferably, the water-soluble film comprises a polyvinyl alcohol homopolymer or copolymer, preferably a blend of polyvinylalcohol homopolymers and/or polyvinylalcohol copolymers, preferably selected from sulphonated and carboxylated anionic polyvinylalcohol copolymers especially carboxylated anionic polyvinylalcohol copolymers, most preferably a blend of a polyvinylalcohol homopolymer and a carboxylated anionic polyvinylalcohol copolymer.

[0037] Without wishing to be bound by any theory, the term "homopolymer" generally includes polymers having a single type of monomeric repeating unit (e.g., a polymeric chain consisting of or consisting essentially of a single monomeric repeating unit). For the particular case of polyvinylalcohol, the term "homopolymer" further includes copolymers having a distribution of vinyl alcohol monomer units and optionally vinyl acetate monomer units, depending on the degree of hydrolysis (e.g., a polymeric chain consisting of or consisting essentially of vinyl alcohol and vinyl acetate monomer units). In the limiting case of 100% hydrolysis, a polyvinylalcohol homopolymer can include a true homopolymer having only vinyl alcohol units.

[0038] Without wishing to be bound by any theory, the term "copolymer" generally includes polymers having two or more types of monomeric repeating units (e.g., a polymeric chain consisting of or consisting essentially of two or more different monomeric repeating units, whether as random copolymers, block copolymers, etc.). For the particular case of polyvinylalcohol, the term "copolymer" (or "polyvinylalcohol copolymer") further includes copolymers having a distribution of vinyl alcohol monomer units and vinyl acetate monomer units, depending on the degree of hydrolysis, as well as at least one other type of monomeric repeating unit (e.g., a ter- (or higher) polymeric chain consisting of or consisting essentially of vinyl alcohol monomer units, vinyl acetate monomer units, and one or more other monomer units, for example anionic, cationic or nonionic monomer units). In the limiting case of 100% hydrolysis, a polyvinylalcohol copolymer can include a copolymer having vinyl alcohol units and one or more other monomer units, but no vinyl acetate units.

[0039] Preferred films exhibit good dissolution in cold water, meaning unheated distilled water. Preferably such films exhibit good dissolution at temperatures of about 24°C, even more preferably at about 10°C. By good dissolution it is meant that the film exhibits water-solubility of at least about 50%, preferably at least about 75% or even at least about 95%, as measured by the method set out here after using a glass-filter with a maximum pore size of about 20 microns, described above.

[0040] The film may be opaque, transparent or translucent. The film may comprise a printed area.

[0041] The area of print may be achieved using standard techniques, such as flexographic printing or inkjet printing. The area of print might be on the inside or the outside of the water-soluble unit dose article. The printed area may comprise a single colour or a plurality of colours, preferably selected from black, white, red or a mixture thereof.

[0042] The film may comprise an aversive agent, for example a bittering agent. Suitable bittering agents include, but are not limited to, naringin, sucrose octaacetate, quinine hydrochloride, denatonium benzoate, or mixtures thereof. Any suitable level of aversive agent may be used in the film. Suitable levels include, but are not limited to, from about 1 to about 5000ppm, or even from about 100 to about 2500ppm, or even from about 250 to about 2000ppm.

[0043] Preferred films are those supplied by Monosol under the trade references M8630, M8900, M8779, M8310, and their analogous films comprising bittering agent.

[0044] The resulting water-soluble unit dose article may comprise a lubricating coating. The lubricating coating may comprise talc, zinc oxide, silicas, siloxanes, zeolites, silicic acid, alumina, sodium sulphate, potassium sulphate, calcium carbonate, magnesium carbonate, sodium citrate, sodium tripolyphosphate, potassium citrate, potassium tripolyphosphate, calcium stearate, zinc stearate, magnesium stearate, starch, modified starches, clay, kaolin, gypsum, cyclodextrins or mixtures thereof.

LIQUID LAUNDRY DETERGENT COMPOSITION

[0045] The liquid laundry detergent composition enclosed in the internal compartment formed by the above-mentioned water-soluble film comprises, as an anti-mite active, from about 1% to about 20% of benzyl benzoate by total weight of

said liquid laundry detergent composition.

[0046] Benzyl benzoate has been known to have anti-mite benefit when used at a relatively high concentration, e.g., at least about 1%. Although benzyl benzoate has also been used at lower concentrations (i.e., below 1%) as a back filler or solvent for perfume raw materials, such usage of benzyl benzoate does not provide satisfactory anti-mite benefit. Further, at such lower concentrations, the impact of benzyl benzoate on the rheological properties, more particularly liquid stringing properties, of the liquid laundry detergent composition are not significant. Incorporation of benzyl benzoate into the water-soluble unit dose article of the present invention, preferably at an amount ranging from about 1% to about 20%, more preferably from about 2% to about 15%, still more preferably from about 3% to about 12%, most preferably from about 4% to about 10%, by total weight of the liquid detergent composition enclosed in such unit dose article, not only provides anti-mite benefit, but also reduces liquid stringing during manufacturing of such unit dose article and controls the negative impact on film plasticization properties over time after such unit dose article is made.

[0047] The liquid laundry detergent composition is characterized by a high shear viscosity ranging from about 100 to about 900 mPa·s, preferably from about 150 to about 800 mPa·s, more preferably from about 200 to about 600 mPa·s measured at a shear rate of about 1000 s^{-1} and at a temperature of about 20°C , measured following the test method described herein. The fluid is preferably a non-Newtonian fluid with shear-thinning properties, hence is further characterized by a low shear viscosity ranging from about 1000 mPa·s to about 10000 mPa·s, preferably from about 1500 mPa·s to about 7500 mPa·s, more preferably from about 2000 mPa·s to about 5000 mPa·s when measured at a shear rate of about 0.5 s^{-1} . Without wishing to be bound by any theory, non-Newtonian fluids with shear thinning properties are believed to have enhanced physical stability properties, especially enhanced phase separation prevention properties, as well as ability to suspend particles. Viscosity is measured using a rotational rheometer. More particularly, the high shear viscosity is measured at about 20°C at a shear rate of about 1000 s^{-1} and the low shear viscosity is measured at about 20°C at a shear rate of about 0.5 s^{-1} using a TA instruments AR-G2 Rheometer (spindle: 40mm 2° steel cone geometry). The measurement method includes a conditioning step (10 s^{-1} for 10 seconds), a peak hold step (0.05 s^{-1} for 180 seconds) and a shear ramp (180 seconds) from 0.1 to 1200 s^{-1} , all at 20°C . Suitable fluids may include, but are not limited to, detergent compositions, such as those sold under the tradenames TIDE, GAIN, ARIEL, TIDE PODS, GAIN FLINGS, FAIRY and CASCADE manufactured by The Procter & Gamble Company, Cincinnati, Ohio, USA.

[0048] It has been a surprising and unexpected discovery of the present invention that a sufficient high amount of benzyl benzoate, e.g., from about 1 wt% to about 20 wt%, can be used in a liquid laundry detergent composition with a high shear viscosity of about 100-900 mPa·s (measured at a shear rate of about 1000 s^{-1} and at a temperature of about 20°C) to not only provide anti-mite benefit, but also to reduce liquid stringing, which in turn helps to prevent or minimize film sealing failure when such liquid laundry detergent composition is enclosed into a pouch formed by a water-soluble film for making an anti-mite unit dose article.

[0049] The liquid laundry detergent composition of the present invention comprises from about 20% to about 70%, preferably from about 25% to about 60%, even more preferably from about 30% to about 50% by weight of the liquid detergent composition of one or more non-soap surfactants. Soap surfactants are defined as fatty acid surfactants and salts thereof. For example, the liquid detergent composition of the present invention may comprise from about 5% to about 45%, preferably from about 10% to about 40%, more preferably from about 20% to about 35% of one or more non-soap anionic surfactants by total weight of said liquid laundry detergent composition, while preferably said non-soap anionic surfactants are selected from the group consisting of linear alkylbenzene sulphonates, alkyl sulphates, alkoxylated alkyl sulphates, and combinations thereof. Preferably the alkoxylated alkyl sulphate is an ethoxylated alkyl sulphate surfactant. Further, it may comprise from about 2% to about 25%, preferably from about 4% to about 20%, more preferably from about 5% to about 15% of one or more nonionic surfactants by total weight of said liquid laundry detergent composition, while preferably said one or more nonionic surfactants are selected from the group consisting of fatty alcohol alkoxylates, oxo-synthesized fatty alcohol alkoxylates, and combinations thereof.

[0050] In a particularly preferred embodiment of the present invention, the weight ratio of the non-soap anionic surfactant to the non-ionic surfactant is from about 8:1 to about 1:1, preferably from about 6:1 to about 1.25:1, more preferably from about 4:1 to about 1.5:1. Such non-soap anionic-to-nonionic surfactant weight ratio may further reduce the liquid stringing of the liquid laundry detergent composition. For the avoidance of any doubt, by 'weight of the non-soap anionic surfactant' we herein mean the total weight of all non-soap anionic surfactant present. In accordance with the present invention the term 'non-soap anionic surfactant' does not include fatty acids or their corresponding salt (soap).

[0051] The liquid laundry detergent composition may comprise a fatty acid or salt thereof ("soap"). Preferably, the liquid laundry detergent composition comprises between about 3% and about 10%, more preferably between about 5% and about 7% by weight of the liquid laundry detergent composition of a fatty acid or salt thereof. The fatty acid or salt thereof is described in more detail below.

[0052] Preferably, but not necessarily, the liquid laundry detergent composition further comprises from about 5% to about 30%, preferably from about 10% to about 25%, more preferably from about 15% to about 20% of one or more organic solvents, which are preferably selected from the group consisting of 1,2-propanediol, dipropylene glycol, glycerol, and combinations thereof, preferably a combination of 1,2-propanediol and glycerol. In a particularly preferred embod-

iment of the present invention, the weight ratio of 1,2-propanediol to glycerol is between about 1:1 and about 10:1, preferably between about 1:1 and about 5:1, most preferably between about 2:1 and about 4:1. Such weight ratio of 1,2-propanediol to glycerol may further reduce the liquid stringing of the liquid laundry detergent composition.

[0053] The liquid laundry detergent composition comprises between about 0.5% and about 20%, more preferably between about 1% and about 15%, most preferably between about 5% and about 12% by weight of the liquid laundry detergent composition of water.

[0054] The liquid laundry detergent composition may comprise an alkanolamine, preferably the alkanolamine comprises monoethanolamine, triethanolamine or a mixture thereof, most preferably the alkanolamine comprises monoethanolamine. Preferably, the liquid laundry detergent composition comprises between about 5% and about 15%, more preferably between about 6% and about 10% by weight of the liquid laundry detergent composition of the alkanolamine, preferably of monoethanolamine, triethanolamine or a mixture thereof, most preferably of monoethanolamine.

[0055] Preferably, the liquid laundry detergent composition has a pH between about 6 and about 10, more preferably between about 6.5 and about 8.9, most preferably between about 7 and about 8. The pH of the liquid laundry detergent composition may be measured as a 10% dilution in deionized water at about 20°C.

[0056] Further, said liquid laundry detergent composition may comprise a shear-thinning rheology structuring agent, such as hydrogenated castor oil. The hydrogenated castor oil is described in more detail below.

[0057] The liquid laundry detergent composition may comprise an adjunct ingredient preferably selected from hueing dyes, polymers, surfactants, builders, dye transfer inhibiting agents, dispersants, enzymes, enzyme stabilizers, catalytic materials, bleach activators, polymeric dispersing agents, anti-redeposition agents, suds suppressors, aesthetic dyes, opacifiers, perfumes, perfume delivery systems, structurants, hydrotropes, processing aids, pigments and mixtures thereof.

Non-Soap Anionic surfactant

[0058] In accordance with the present invention the term 'non-soap anionic surfactant' does not include fatty acids or their corresponding salt (soap). Preferably, the non-soap anionic surfactant is selected from linear alkylbenzene sulphonate, alkyl sulphate, alkoxyated alkyl sulphate or a mixture thereof.

[0059] Preferably, the anionic surfactant comprises alkylbenzene sulphonate and alkoxyated alkyl sulphate, wherein the weight ratio of alkylbenzene sulphonate to alkoxyated alkyl sulphate is between about 3:1 and about 1:2, more preferably between about 2.5:1 and about 1:1.5. More preferably, the anionic surfactant comprises alkylbenzene sulphonate and ethoxylated alkyl sulphate, wherein the weight ratio of alkylbenzene sulphonate to ethoxylated alkyl sulphate is between about 3:1 and about 1:2, more preferably between about 2.5:1 and about 1:1.5. Suitable non-soap anionic surfactants useful herein can comprise any of the conventional non-soap anionic surfactant types typically used in liquid detergent products. These include the alkyl benzene sulfonic acids and their salts as well as alkoxyated or non-alkoxyated alkyl sulphate materials. Most preferably the ethoxylated alkyl sulphate has a linear alkyl chain comprising a number average alkyl chain length, e.g. number of carbon atoms, of between about 12 and about 14, and a mol average degree of ethoxylation of between about 2 and about 4, preferably about 3.

[0060] Exemplary non-soap anionic surfactants are the alkali metal salts of C₁₀-C₁₆ alkyl benzene sulfonic acids, or C₁₁-C₁₄ alkyl benzene sulfonic acids. In one aspect, the alkyl group is linear and such linear alkyl benzene sulphonates are known as "LAS". Alkyl benzene sulphonates, and particularly LAS, are well known in the art. Especially useful are the sodium, potassium and amine linear straight chain alkylbenzene sulphonates in which the average number of carbon atoms in the alkyl group is from about 11 to 14.

[0061] Specific, non-limiting examples of non-soap anionic surfactants useful herein include the acid or salt forms of: a) C₁₁-C₁₈ alkyl benzene sulphonates (LAS); b) C₁₀-C₂₀ primary, linear or branched-chain and random alkyl sulphates (AS), including predominantly C₁₂ alkyl sulphates; c) C₁₀-C₁₈ secondary (2,3) alkyl sulphates with non-limiting examples of suitable cations including sodium, potassium, ammonium, amine and mixtures thereof; d) C₁₀-C₁₈ alkyl alkoxy sulphates, preferably C₁₀-C₁₈ alkyl ethoxy sulphates (AE_xS) wherein x is about 1-30, preferably about 1-5, more preferably about 2-4; e) C₁₀-C₁₈ alkyl alkoxy carboxylates in one aspect, comprising about 1-5 ethoxy units; f) mid-chain branched alkyl sulphates; g) mid-chain branched alkyl alkoxy sulphates; h) modified alkylbenzene sulphonate; i) methyl ester sulphonate (MES); and j) alphaolefin sulphonate (AOS). Alkyl chains may be linear or branched, and respective starting alcohols might be naturally or synthetically derived.

Non-Ionic Surfactant

[0062] The non-ionic surfactant is selected from a fatty alcohol alkoxyate, an oxo-synthesised fatty alcohol alkoxyate, Guerbet alcohol alkoxyates, alkyl phenol alcohol alkoxyates or a mixture thereof. Alkyl chains may be linear or branched, and the respective starting alcohol might be naturally or synthetically derived.

[0063] The nonionic surfactant may comprise an ethoxylated nonionic surfactant. The ethoxylated nonionic surfactant

may be, e.g., primary and secondary alcohol ethoxylates, especially the C₈-C₂₀ aliphatic alcohols ethoxylated with an average of from about 1 to about 50 moles, or even from about 1 to about 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 about 1 to about 10 moles of ethylene oxide per mole of alcohol.

[0064] The ethoxylated alcohol non-ionic surfactant can be, for example, a condensation product of from about 3 to about 8 mol of ethylene oxide with about 1 mol of a primary alcohol having from about 9 to about 15 carbon atoms.

[0065] The non-ionic surfactant may comprise a fatty alcohol ethoxylate of formula RO(EO)_nH, wherein R represents an alkyl chain between about 4 and about 30 carbon atoms, (EO) represents one unit of ethylene oxide monomer and n has an average value between about 0.5 and about 20.

[0066] Most preferably the non-ionic surfactant is an alcohol ethoxylate nonionic surfactant with a linear alkyl chain comprising a number average alkyl chain length, e.g. number of carbon atoms, of between about 12 and about 14, and a mol average degree of ethoxylation of between about 6 and about 10, preferably between about 6 and about 8, more preferably about 7.

Fatty Acid or Salt Thereof ("Soap")

[0067] The term 'fatty acid' includes fatty acid or fatty acid salts. The fatty acids are preferably carboxylic acids which are often with a long unbranched aliphatic tail, which is either saturated or unsaturated. Suitable fatty acids or salts of the fatty acids for the present invention are preferably sodium salts, preferably C12-C18 saturated and/or unsaturated fatty acids, more preferably C12-C14 saturated and/or unsaturated fatty acids and alkali or alkali earth metal carbonates, most preferably sodium carbonate.

[0068] Preferably the fatty acids are selected from the group consisting of lauric acid, myristic acid, palmitic acid, stearic acid, topped palm kernel fatty acid, coconut fatty acid and mixtures thereof. Most preferred is topped palm kernel fatty acid.

Hydrogenated Castor Oil

[0069] Hydrogenated castor oil (HCO) as used herein most generally can be any hydrogenated castor oil or derivative thereof, provided that it is capable of crystallizing in the liquid laundry detergent composition. Castor oils may include glycerides, especially triglycerides, comprising C₁₀ to C₂₂ alkyl or alkenyl moieties which incorporate a hydroxyl group. Hydrogenation of castor oil, to make HCO, converts the double bonds which may be present in the starting oil as ricinoleyl moieties. As such, the ricinoleyl moieties are converted into saturated hydroxyalkyl moieties, e.g., hydroxystearyl. The HCO herein may be selected from: trihydroxystearin; dihydroxystearin; and mixtures thereof. The HCO may be processed in any suitable starting form, including, but not limited to those selected from solid, molten and mixtures thereof. The corresponding percentage of hydrogenated castor oil delivered into a finished laundry detergent product maybe below 1.0%, typically from about 0.1% to about 0.8%. HCO may be present at a level of between about 0.01% and about 1%, or even between about 0.05% and about 0.8% by weight of the liquid laundry detergent composition.

[0070] HCO of use in the present invention includes those that are commercially available, such as those non-limiting examples from Elementis, Plc.

[0071] While the use of hydrogenated castor oil is preferred, any crystallisable glyceride can be used within the scope of the invention. Preferred crystallisable glyceride(s) have a melting point of from about 40 °C to about 100 °C.

Process of Making

[0072] Those skilled in the art will be aware of processes to make the liquid laundry detergent composition of the present invention. Those skilled in the art will be aware of standard processes and equipment to make the liquid laundry detergent compositions.

[0073] Those skilled in the art will be aware of standard techniques to make the unit dose article. Standard forming processes including but not limited to thermoforming and vacuum forming techniques may be used.

[0074] A preferred method of making the water-soluble unit dose article according to the present invention comprises the steps of moulding a first water-soluble film in a mould to form an open cavity, filling the cavity with the liquid laundry detergent composition, laying a second water-soluble film over the first film to close the cavity, and sealing the first and second films together to produce the water-soluble unit dose article. The second water-soluble film may comprise closed pre-formed and optionally filled compartments such that a "superposed" multi-compartment unit dose article is achieved.

Process of Washing Fabrics

[0075] One aspect of the present invention is a process of washing fabrics comprising the steps of contacting the

liquid laundry detergent composition or unit dose article of the present invention with water such that the liquid laundry detergent composition is diluted in water by at least about 200 fold, preferably up to about 3000 fold, more preferably between about 400 and about 1000 fold, to form a wash liquor, and contacting fabrics with said wash liquor.

[0076] Preferably the wash liquor may comprise between about 10L and about 75L, preferably between about 10L and about 50L, more preferably between about 10L and about 20L of water.

[0077] Preferably, the wash liquor is at a temperature of between about 5°C and about 90°C, preferably between about 10°C and about 60°C, more preferably between about 12°C and about 45°C, most preferably between about 15°C and about 40°C.

[0078] Preferably, washing the fabrics in the wash liquor takes between about 5 minutes and about 50 minutes, preferably between about 5 minutes and about 40 minutes, more preferably between about 5 minutes and about 30 minutes, even more preferably between about 5 minutes and about 20 minutes, most preferably between about 6 minutes and about 18 minutes to complete.

[0079] When using as a laundry detergent, preferably, the wash liquor comprises between about 1kg and about 20 kg, preferably between about 3kg and about 15kg, most preferably between about 5 and about 10 kg of fabrics.

[0080] The wash liquor may comprise water of any hardness preferably varying between 0 gpg to about 40gpg.

[0081] The liquid laundry detergent composition or unit dose article of the present invention can be added to a wash liquor to which laundry is already present, or to which laundry is added. The liquid laundry detergent composition or unit dose article may be used in an automatic washing machine operation and added directly to the drum or to the dispenser drawer. The liquid laundry detergent composition or unit dose article may be used in combination with other laundry detergent compositions such as fabric softeners or stain removers. The liquid laundry detergent composition may be used as pre-treat composition in which it is added directly to a fabric, preferably a fabric stain, ahead of the wash operation.

EXAMPLES

LIQUID STRINGING

[0082] The following shear thinning liquid detergent formulations were prepared using standard mixing techniques and equipment known to those skilled in the art. Benzyl benzoate has been added within the Inventive Composition A, rebalancing 1,2-propanediol compared to the Comparative Composition A to enable free formulation space for benzyl benzoate inclusion. Hydrogenated castor oil has been used as a trimming agent to match the high shear viscosity (at 1000/s) between both test products, the high shear viscosity being approximative for the product viscosity experienced during a liquid filling operation.

Ingredient (wt%)	Inventive Composition A	Comparative Composition A
1,2-propanediol	11.7	19.4
glycerol	5.0	5.0
dipropyleneglycol	0.1	0.1
Water	9.0	9.0
Benzyl benzoate	8.1	-
Monoethanolamine	8.5	8.5
Linear alkylbenzene sulphonic acid	18.7	18.6
C12-14EO3S anionic surfactant	8.8	8.9
C12-14EO7 nonionic surfactant	13.0	13.1
Top palm kernel Fatty Acid	6.1	6.2
Citric acid	0.7	0.7
Ethoxylated polyethyleneimine (PEI600EO20)	5.4	5.4
Hydroxyethyldiphosphonic acid	2.1	2.1
Brightener 49	0.02	0.02
Hydrogenated Castor Oil	0.20	0.12
Mg Cl2	0.3	0.3

(continued)

Ingredient (wt%)	Inventive Composition A	Comparative Composition A
Potassium Sulphite	0.2	0.2
Minors (perfume, dye)	Balance to 100%	Balance to 100%
pH	7.4	7.4
Viscosity (mPa·s)*	400	431
* The viscosity is measured at 20°C at a shear rate of 1000s ⁻¹ using a TA instruments AR-G2 Rheometer (spindle: 40mm 2° steel cone geometry). The measurement method includes a conditioning step (10s ⁻¹ for 10 seconds), a peak hold step (0.05s ⁻¹ for 180 seconds) and a shear ramp (180 seconds) from 0.1 to 1200s ⁻¹ , all at 20°C.		

[0083] The liquid stringing profile of the Inventive Composition A and Comparative Composition A formulations was assessed by measuring the breakup time of a capillary formed upon extension of a test sample to a certain strain using a Haake Caber I extensional rheometer (Caber : capillary break-up extensional rheometer). The sample diameter was set to 6 mm, initial sample height to 3 mm, final sample height to 17.27mm, stretch profile was set to linear and strike time set on 100ms. The data tabulated below illustrate that a liquid formulation according to the invention (Inventive Composition A) comprising benzyl benzoate was less sensitive to liquid stringing, i.e. shows a shorter capillary breakup time, than Comparative Composition A lacking the benzyl benzoate according to the invention. This decreased stringing sensitivity of the Inventive Composition A is present even despite the higher hydrogenated castor oil structuring agent level in formula, a higher structuring agent level typically leading to a slow-down in capillary break-up time.

	Caber capillary breakup time (s)	
	Inventive Composition A	Comparative Composition A
Average	0.45	0.58s
Standard Deviation	0.02	0.03

FILM PLASTICIZATION PROPERTIES

[0084] The following shear thinning liquid detergent formulations were prepared using standard mixing techniques and equipment known to those skilled in the art. Benzyl benzoate has been added within the Inventive Composition B, rebalancing all other formulation actives compared to the Comparative Composition B to enable free formulation space for benzyl benzoate inclusion while keeping overall solvent change minimal between the 2 test formulations.

Ingredient (wt%)	Inventive Composition B	Comparative Composition B
1,2-propanediol	13.0	14.2
glycerol	4.7	5.1
dipropyleneglycol	0.2	0.2
Water	9.0	9.9
Benzyl benzoate	8.3	-
Monoethanolamine	8.0	8.7
Linear alkylbenzene sulphonic acid	17.5	19.0
C12-14EO3S anionic surfactant	8.3	9.1
C12-14EO7 nonionic surfactant	13.6	14.8
Top palm kernel Fatty Acid	5.8	6.3
Citric acid	0.6	0.7
Ethoxylated polyethyleneimine (PEI600EO20)	5.1	5.5
Hydroxyethyldiphosphonic acid	2.0	2.2

(continued)

Ingredient (wt%)	Inventive Composition B	Comparative Composition B
Brightener 49	0.3	0.3
Hydrogenated Castor Oil	0.12	0.13
Mg Cl ₂	0.3	0.3
Potassium Sulphite	0.2	0.2
Sodium formate	0.1	0.1
Hydroxydichlorodiphenyl Ether (Tinosan HP 100)	0.14	0.15
amylase	0.05	0.06
Minors (perfume, perfume capsules, dye)	Balance to 100%	Balance to 100%
pH	7.4	7.4

[0085] The impact of benzyl benzoate addition on water soluble film plasticization properties was assessed, directly comparing Inventive Composition B and Comparative Composition B formulations. A 75 μ m thick polyvinylalcohol based water soluble film, as provided by the Monosol company (e.g. a blend of a polyvinylalcohol homopolymer and a carboxylated anionic polyvinylalcohol copolymer), was used to assess film plasticization dependency upon benzyl benzoate presence in the laundry detergent composition. Film plasticization impact of benzyl benzoate presence in a laundry detergent formulation according to the invention was defined through measuring film elasticity properties (E-modulus) and stress upon 100% strain after having subjected the water-soluble film to an ageing experiment through immersing in respective inventive B and comparative B composition formulations. A film sample of 12cm by 17 cm was immersed within 150 ml of test liquid by 1) selecting a flat clean inert glass recipient, 2) covering the bottom of the recipient with a thin layer of the example formulation to be tested, 3) carefully spreading the film to be tested on the liquid, 4) gently pushing air bubbles trapped under the film towards the sides, 5) gently pouring the remaining example formulation on top of the film, in such a way that the film is fully immersed into the liquid, ensuring that the film is free of wrinkles and that no air bubbles are in contact with the film, and 6) closing the glass container and 7) storing the closed container for 5 days at 35°C followed by 1 night at 21 °C and 40% relative humidity. After ageing, the film was removed from the formulation example and gently wiped dry with a soft dry liquid absorbing paper, followed immediately by measuring the post film immersion stress-strain profile. The film E-modulus and stress upon strain profile was measured using an Instron instrument (system ID #5567J4072 available from the Instron company). Film plasticization properties were defined at constant temperature and relative humidity conditions (21 $\pm$ 1°C and 45 $\pm$ 5 % RH). The gauge length was set to 25 mm. 5 strips of 1 inch width and 12 cm long were cut out of the piece of film in machine direction, i.e. the direction the film moves during the production process (the direction of film movement during manufacture is defined by the direction in which the film is unwound from the roll in which it has been shipped from the manufacturer). The E-modulus and stress-strain curve were defined for these 5 replicates and the average E-modulus and stress at 100% strain value for a strain speed of 500mm/min is reported below. E-modulus and film stress data tabulated below clearly show that film plasticization properties are maintained within the inventive laundry detergent formulation comprising benzyl benzoate according to the invention (Inventive Composition B), compared to the Comparative Composition B formulation outside the scope of the invention lacking the benzyl benzoate. This confirms that the improvement upon addition of the benzyl benzoate technology on the liquid stringing properties does not come at the expense of film plasticization properties.

	Virgin film (not immersed)	Film post immersion in Inventive Composition B	Film post immersion in Comparative Composition B
stress @ 100% strain [MPa] (post film immersion)	17.9s	9.9	10.4
E-modulus [MPa] (post film immersion)	19.3s	3.5	3.6

[0086] The dimensions and values disclosed herein are not to be understood as being strictly limited to the exact numerical values recited. Instead, unless otherwise specified, each such dimension is intended to mean both the recited value and a functionally equivalent range surrounding that value. For example, a dimension disclosed as "40 mm" is

intended to mean "about 40 mm."

[0087] Every document cited herein, including any cross referenced or related patent or application and any patent application or patent to which this application claims priority or benefit thereof, is hereby incorporated herein by reference in its entirety unless expressly excluded or otherwise limited. The citation of any document is not an admission that it is prior art with respect to any invention disclosed or claimed herein or that it alone, or in any combination with any other reference or references, teaches, suggests or discloses any such invention. Further, to the extent that any meaning or definition of a term in this document conflicts with any meaning or definition of the same term in a document incorporated by reference, the meaning or definition assigned to that term in this document shall govern.

[0088] While particular embodiments of the present invention have been illustrated and described, it would be obvious to those skilled in the art that various other changes and modifications can be made without departing from the spirit and scope of the invention. It is therefore intended to cover in the appended claims all such changes and modifications that are within the scope of this invention.

Claims

1. An anti-mite unit dose article comprising a water-soluble polymeric film formed into a pouch with an internal compartment that encloses a liquid laundry detergent composition therein, wherein said liquid laundry detergent composition is **characterized by** a high shear viscosity ranging from 100 to 900 mPa·s measured at a shear rate of 1000 s⁻¹ and at a temperature of 20°C, and wherein said liquid laundry detergent composition comprises from 20% to 70% of one or more non-soap surfactants and from 1% to 20% of benzyl benzoate by total weight of said liquid laundry detergent composition.
2. The anti-mite unit dose article of claim 1, wherein said liquid laundry detergent composition is **characterized by** a high shear viscosity ranging from 150 to 800 mPa·s, preferably from 200 to 600 mPa·s measured at a shear rate of 1000 s⁻¹ and at a temperature of 20°C.
3. The anti-mite unit dose article of claim 1 or 2, wherein said liquid laundry detergent composition is a non-Newtonian fluid with shear-thinning properties.
4. The anti-mite unit dose article according to any one of the preceding claims, wherein said liquid laundry detergent composition comprises from 5% to 40%, preferably from 10% to 35%, more preferably from 15% to 30% of one or more non-soap anionic surfactants by total weight of said liquid laundry detergent composition; wherein preferably said one or more non-soap anionic surfactants are selected from the group consisting of linear alkylbenzene sulphonates, alkoxylated alkyl sulphates, and combinations thereof.
5. The anti-mite unit dose article according to any one of the preceding claims, wherein said liquid laundry detergent composition comprises from 2% to 25%, preferably from 5% to 20%, more preferably from 10% to 15% of one or more nonionic surfactants by total weight of said liquid laundry detergent composition; wherein preferably said one or more nonionic surfactants are selected from the group consisting of fatty alcohol alkoxylates, oxo-synthesized fatty alcohol alkoxylates, and combinations thereof.
6. The anti-mite unit dose article according to any one of the preceding claims, wherein said liquid laundry detergent composition comprises from 2% to 15%, preferably from 3% to 12%, more preferably from 4% to 10% of benzyl benzoate by total weight of said liquid laundry detergent composition.
7. The anti-mite unit dose article according to any one of the preceding claims, wherein said liquid laundry detergent composition further comprises from 5% to 30%, preferably from 10% to 25%, more preferably from 15% to 20% of one or more solvents selected from the group consisting of 1,2-propanediol, dipropylene glycol, glycerol, and combinations thereof.
8. The anti-mite unit dose article according to any one of the preceding claims, wherein said liquid laundry detergent composition further comprises between 3% and 10%, more preferably between 5% and 7% by weight of the liquid laundry detergent composition of a fatty acid or salt thereof.
9. The anti-mite unit dose article according to any one of the preceding claims, wherein said liquid laundry detergent composition further comprises between 5% and 15%, more preferably between 6% and 10% by weight of the liquid laundry detergent composition of the alkanolamine, preferably of monoethanolamine.

10. The anti-mite unit dose article according to any one of the preceding claims, wherein said liquid laundry detergent composition further comprises between 0.5% and 20%, more preferably between 1% and 15%, most preferably between 5% and 12% by weight of the liquid laundry detergent composition of water.
- 5 11. The anti-mite unit dose article according to any one of the preceding claims, wherein said liquid laundry detergent composition further comprises a shear-thinning rheology structuring agent, which is preferably hydrogenated castor oil.
- 10 12. The anti-mite unit dose article according to any one of the preceding claims, wherein said liquid laundry detergent composition has a pH between 6 and 10, more preferably between 6.5 and 8.9, most preferably between 7 and 8, measured as a 10% dilution in deionized water at 20°C.
- 15 13. The anti-mite unit dose article according to any one of the preceding claims, wherein said liquid laundry detergent composition is **characterized by** a low shear viscosity ranging from 1000 mPa.s to 10000 mPa.s, preferably from 1500 mPa.s to 7500 mPa.s, more preferably from 2000 mPa.s to 5000 mPa.s when measured at a shear rate of 0.5 s^{-1} and at a temperature of 20°C.
- 20 14. The anti-mite unit dose article according to any one of the preceding claims, wherein the water-soluble polymeric film comprises a water-soluble polyvinyl alcohol polymer, a water-soluble polyvinyl alcohol copolymer, or a mixture thereof.
- 25 15. Use of from 1 wt% to 20 wt% of benzyl benzoate in a liquid laundry detergent composition to provide anti-mite benefit while reducing liquid stringing, wherein said liquid laundry detergent composition is **characterized by** a high shear viscosity ranging from 100 to 900 mPa.s measured at a shear rate of 1000 s^{-1} and at a temperature of 20°C.



EUROPEAN SEARCH REPORT

Application Number
EP 19 17 6337

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Place of search The Hague		Date of completion of the search 21 November 2019	Examiner Richards, Michael
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**ANNEX TO THE EUROPEAN SEARCH REPORT
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