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(54) **Detergent package**

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Emballage pour détergent

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(56) References cited:
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DescriptionTechnical field

[0001] The present invention is in the field of dishwashing, in particular it relates to a pack for the storage, distribution and display of a water soluble multi-compartment pouch adapted to fit the dishwasher dispenser and to deliver product into the pre-wash, main wash and/or post-rinse cycles of the dishwashing machine. The pouch contains a cleaning composition for release on dissolution of the pouch.

Background of the invention

[0002] Unitised doses of dishwashing detergents are found to be more attractive and convenient to some consumers because they avoid the need of the consumer to measure the product thereby giving rise to a more precise dosing and avoiding wasteful overdosing or underdosing. For this reason automatic dishwashing detergent products in tablet form have become very popular. Detergent products in pouch form are also known in the art, they have the advantage over tablets of avoiding the contact of the consumer fingers with the dishwashing composition which may contain bleach and/or other irritant substances.

[0003] The automatic dishwashing process usually involves a initial pre-wash cycle, main-wash cycle and several hot rinse cycles. Better performance is obtained when the detergent is delivered at the beginning of the main-wash cycle than when the detergent is delivered in the pre-wash cycle since it can be lost with the initial water. In laundry washing machines the detergent can be placed in the drum or in the dispenser, however, in dishwashers the detergent is generally delivered into the main wash via the dispenser to avoid premature dissolution in the pre-wash. The amount of detergent is therefore limited by the volume of the dispenser. Dispensers vary in volume and shape from manufacturer to manufacturer. In the case of detergent in loose form (i.e., powders, paste and liquids), the volume of the dispenser is a decisive factor. In the case of unit dose forms, such as tablet, the geometry and shape of the dispenser plays also a very important role.

[0004] Tablets can be designed to have a size and shape which fit all machines. One of the drawbacks of detergent tablets is the fact that their manufacturing process requires the additional step of powder compaction. This decreases enzyme activity and slows down the dissolution rate of the ingredients forming the tablet, or requires the use of complex and expensive disintegrant systems, or makes it difficult to achieve differential dissolution of the detergent active ingredients.

[0005] Some detergent ingredients used in dishwashing detergent compositions are liquids. These liquid ingredients can be difficult or costly to include in a solid detergent composition. Also, certain ingredients are preferably transported and supplied to detergent manufacturers in a liquid form and require additional, and sometimes costly, process steps to enable them to be included in a solid detergent composition. An example of these detergent ingredients is surfactant, especially nonionic surfactant which are typically liquid at room temperature or are typically transported and supplied to detergent manufacturers in liquid form. Another example is organic solvents.

[0006] Current methods of incorporating liquid ingredients into solid detergent compositions include absorbing the liquid ingredient onto a solid carrier, for example by mixing, agglomeration or spray-on techniques. Typically, solid detergent compositions comprise only low amounts of these liquid detergent ingredients due to the difficulty and expense of incorporating these liquid ingredients into a solid detergent. Furthermore, the incorporation of liquid ingredients into solid detergent compositions can impact on the dissolution characteristics of the composition (for example as the result of forming surfactant gel phases), can increase the moisture pick-up by water sensitive ingredients and can also lead to problems of flowability. It would be advantageous to have a detergent composition which allows the different ingredients to be in their natural state i.e., liquid or solid. This would facilitate the manufacturing process, increase the component stability and furthermore allow the delivery of liquid ingredients prior or post ' to the delivery of solid ingredients. For example differential dissolution of active ingredients would be beneficial in the case of enzyme/bleach compositions to avoid oxidation of enzymes by the bleach in the dishwashing liquor. It would also be advantageous to separate bleach from perfume.

[0007] Another factor that can contribute to the inefficient delivery of actives to the wash, in the case of tablets, is the need for adding carrier materials, as for example porous materials able to bind active liquid materials, binders and disintegrants. In particular, the incorporation of liquid surfactants to powder form detergent compositions can raise considerable processing difficulties and also the problem of poor dissolution through the formation of surfactant gel phases.

[0008] There is still the need for a multi-compartment unitised dose form capable of fitting the dispensers of different dishwashing machine types and which allows for the simultaneous delivery of incompatible ingredients and ingredients in different physical forms. There is also need for a simplified manufacturing process for multi-compartment pouch production and for multi-compartment pouches with improved strength, handling and dissolution characteristics as well

as excellent aesthetics.

[0009] WO97/26315 describes a tinted or untinted transparent container, such as a bottle, containing a tinted cleaning liquid. In particular, it discloses a frilled package of blue or violet tinted transparent liquid cleaning composition disposed in a transparent blue or violet tinted or untinted container such that the appearance of the filled package is substantially transparent and neutral in colour or slightly blue/green or slightly yellow green in appearance.

[0010] GB2235206 describes a detergent system comprising two or more components each packaged and dosed individually, and wherein each of the components have a distinctive colour to distinguish them from one another.

[0011] EP0414462 discloses a laundry treatment product in the form of a single compartment or multi-compartment sachet capable of releasing its contents into the wash liquor during the laundry process. D4 also discloses a multi-compartment sachet; however, like EP0414462 it is wholly silent about see-through packages for storing said sachets.

Summary of the invention

[0012] The present invention provides a display pack comprising a see-through container, for example a transparent or translucent carton or bottle which contains a plurality of unit doses of detergent product in a multiplicity of visually or otherwise sensorially distinctive groups. By visually distinctive herein is meant that the groups can be distinguished in terms of shape, colour, size, pattern, ornament, etc. Otherwise the groups are distinctive in terms of providing a unique sensorial signal such as smell, sound, feel, etc.

[0013] In a preferred embodiment there is provided a see-through, preferably transparent, dishwashing detergent pack wherein the number of distinctive groups of pouches or other unit doses is at least 2, preferably at least 3, more preferably at least 4, and especially at least 6 and wherein the number of unit doses per pack is at least 10, preferably at least 16 and more preferably at least 20. Preferably the unit doses are multi-compartment pouches, each compartment itself possibly being visually or otherwise distinctive from the remainder of the compartments in an individual pouch. In a preferred embodiment, groups of pouches are distinctive in terms of colour. In the case of multi-compartment pouches at least one group of pouches has one compartment which is visually distinctive, for example in terms of colour, from the corresponding compartment in one or more other groups of pouches. Preferably in such embodiments, all pouch groups have at least one 'common' compartment, i.e. the appearance of which is the same from group to group. Preferably the visually distinctive compartment contains a liquid, gel or paste; the common compartment contains a powder or tablet. The pouches can be arranged in any form in the pack, either randomly or following an order, for example suitable arrangements including layers wherein each pouch comprises at least one compartment of a different colour to any of the compartments of the remainder of the pouches on the same layer. The pack can be made of plastic or any other suitable material, provided the material is strong enough to protect the pouches during transport. This kind of pack is also very useful because the user does not need to open the pack to see how many pouches there are left, the different colour pouches are very easy to identify from the exterior. Alternatively, the pack can have non-see-through outer packaging, perhaps with indicia or artwork representing the visually-distinctive contents of the pack.

[0014] In another embodiment distinctive groups of pouches contain different perfumes. The perfumes can be colour associated perfumes, for example, yellow with lemon smell, pink with strawberry smell, blue with sea smell, etc.

[0015] The pouch preferably has a volume of from 5 to 70 ml, preferably from 15 to 60 ml, more preferably from 18 to 57 ml, and a longitudinal/transverse aspect ratio in the range from 2:1 to 1:8, preferably from 1:1 to 1:4. The longitudinal dimension is defined as the maximum height of the pouch when the pouch is lying on one of the bases which has the maximum footprint with the pouch compartments superposed in a longitudinal direction, i.e. one over another, and under a static load of about 2 Kg. The transverse dimension is defined as the maximum width of the pouch in a plane perpendicular to the longitudinal direction under the same conditions. These dimensions are adequate to fit the dispensers of the majority of dishwashers. Although the shape of the pouch can vary widely, in order to maximise the available volume, preferred pouches have a base as similar as possible to the footprint of the majority of the dispensers, that is generally rectangular.

[0016] In one embodiment the plurality of compartments of the water-soluble pouch are in generally superposed relationship and the pouch comprises upper and lower generally opposing outer walls, a skirt-like side walls, forming the sides of the pouch, and one or more internal partitioning walls, separating different compartments from one another, and wherein each of said upper and lower outer walls and skirt-like side wall are formed by thermoforming, vacuum forming or a combination thereof.

[0017] In a preferred embodiment each internal partitioning wall of the water-soluble multi-compartment pouch is secured to an outer or side wall of the pouch along a single seal line or to both an outer and a side wall of the pouch along a plurality of seal lines that are at least partially non-overlapping. Preferably each partitioning wall is secured to one or more outer or sides wall by heat or solvent sealing.

[0018] In especially preferred embodiments at least one internal partitioning wall of the multi-compartment pouch is secured to an upper or lower outer wall along a first continuous seal line and one or both of said outer wall and said partitioning wall are secured to the skirt-like side wall along a second continuous seal line and wherein the seal lines in

the case of heat seals are essentially non-overlapping and in the case of solvent seals are at least partially non-overlapping.

[0019] Non-overlapping seal lines are particularly advantageous in the case of multi-compartment pouches made by a process involving several non-simultaneous heat sealing steps. Without wishing to be bound by theory, it is believed that the heat seal mechanism involves the step of water evaporation from the film, therefore it is very difficult to achieve a good overlapping seal unless the two seals are formed simultaneously. Heat sealing is preferred in cases in which the pouches are filled with water sensitive components. Solvent sealing can reduce processing cost, can produce stronger seals and can make the process faster. Partially non-overlapping seals allow for the superposition of a plurality of compartments of different sizes.

[0020] Preferably, at least one internal partitioning wall of the multi-compartment pouch is secured to the upper outer wall along a first seal line defining the waist line of the skirt-like wall and wherein the second non-overlapping or at least partially non-overlapping seal is preferably off-set below the waist line-defining seal line in the direction of the lower outer wall. The skirt-like side wall is also preferably slightly gathered or puckered in the final pouch to provide a mattress-like appearance.

[0021] In another embodiment the water-soluble pouch comprises a plurality of compartments in side-by-side but generally superposable relationship (for example, the compartments can be folded over each other). The pouch comprises upper and lower generally opposing outer walls, one or more skirt-like side walls and one or more external partitioning walls, and wherein each of said upper and lower outer walls and skirt-like side walls are formed by thermoforming, vacuum forming or a combination thereof.

[0022] In one embodiment at least one of the plurality of compartments of the water-soluble pouch comprises a powder or densified powder composition. The powder composition usually comprises traditional solid materials used in dishwashing detergent, such as builders, alkalinity sources, enzymes, bleaches, etc. The powder composition can be in the form of dry powder, hydrated powder, agglomerates, encapsulated materials, extrudates, tablets or mixtures thereof. It is also useful to have water-soluble pouches with several compartments comprising different powder compositions, usually compositions in different compartments comprise incompatible actives or actives which need to be delivered at different times of the dishwashing process. It is advantageous to have bleach and enzymes in different compartments.

[0023] In a preferred embodiment at least one of the powder compartments comprises particulate bleach. The bleach is preferably selected from inorganic peroxides inclusive of perborates and percarbonates, organic peracids inclusive of preformed monoperoxy carboxylic acids, such as phthaloyl amido peroxy hexanoic acid and di-acyl peroxides.

[0024] In the case of powder compositions differential dissolution can be obtained, for example, by varying the degree of powder compression and/or particle size of the powder compositions in the same or different compartments. Another way to obtain differential dissolution is to use water-soluble films of different thickness or different degree or rate of solubility under in-use conditions. Film solubility can be controlled by for example pH, temperature, ionic strength or any other means. For purposes of achieving phased or sequential delivery of detergent actives, it is preferred that each of the compartments of the pouch have a different disintegration rate or dissolution profile under in-use conditions.

[0025] In another embodiment at least one of the plurality of compartments of the water-soluble pouch comprises a liquid composition. The liquid compositions comprise traditional liquid materials used in dishwashing detergents, such as non-ionic surfactants or the organic solvents described hereinbelow. In preferred embodiments the liquid composition comprises detergency enzyme. Especially useful are water-soluble pouches having one compartment comprising a liquid composition and another compartment comprising a solid composition. In the case of liquid compositions, especially liquid compositions enclosed within a secondary pack, it is desirable to have a water content in the composition similar to the water content in the film in order to avoid transfer of water from one to another. In cases in which the content of water is lower in the composition than in the film, water can migrate from the film to the composition making the water-soluble pouch brittle. For similar reasons, it is also desirable to have a similar amount of plasticiser in the composition and in the film.

[0026] In another embodiment at least one of the plurality of compartments of the water-soluble pouch comprises a composition in the form of a paste. The multi-compartment pouches can also include compositions in the form of a gel or a wax.

[0027] In preferred embodiments at least one of the plurality of compositions of the water-soluble pouch comprises an organic solvent system compatible with the water-soluble pouch. The organic solvent system can simply act as a liquid carrier, but in preferred compositions, the solvent can aid removal of cooked-, baked- or burnt-on soil and thus has detergent functionality in its own right. The organic solvent system (comprising a single solvent compound or a mixture of solvent compounds) preferably has a volatile organic content above 1 mm Hg and more preferably above 0.1 mm Hg of less than about 50%, preferably less than about 20% and more preferably less than about 10% by weight of the solvent system. Herein volatile organic content of the solvent system is defined as the content of organic components in the solvent system having a vapor pressure higher than the prescribed limit at 25°C and atmospheric pressure.

[0028] The organic solvent system for use herein is preferably selected from organoamine solvents, inclusive of alkanolamines, alkylamines, alkyleneamines and mixtures thereof; alcoholic solvents inclusive of aromatic, aliphatic

(preferably C₄-C₁₀) and cycloaliphatic alcohols and mixtures thereof; glycols and glycol derivatives inclusive of C₂-C₃ (poly)alkylene glycols, glycol ethers, glycol esters and mixtures thereof; and mixtures selected from organoamine solvents, alcoholic solvents, glycols and glycol derivatives. In one preferred embodiment the organic solvent comprises organoamine (especially alkanolamine) solvent and glycol ether solvent, preferably in a weight ratio of from about 3:1 to about 1:3, and wherein the glycol ether solvent is selected from ethylene glycol monobutyl ether, diethylene glycol monobutyl ether, ethylene glycol monomethyl ether, ethylene glycol monoethyl ether, diethylene glycol monomethyl ether, diethylene glycol monoethyl ether, propylene glycol monobutyl ether, and mixtures thereof. Preferably, the glycol ether is a mixture of diethylene glycol monobutyl ether and propylene glycol butyl ether, especially in a weight ratio of from about 1:2 to about 2:1.

Detailed description of the invention

[0029] The invention envisages a detergent pack having improved display attributes and which makes it very easy for the consumer to evaluate the amount of pouches in the pack.

[0030] The dishwashing composition, or components for use herein, are contained in the internal volume space of the pouch, and are typically separated from the outside environment by a barrier of water-soluble material. Typically, different components of the composition contained in different compartments of the pouch are separated from one another by a barrier of water-soluble material.

[0031] The compartments of the water-soluble pouch may be of a different colour from each other, for example a first compartment may be green or blue, and a second compartment may be white or yellow. One compartment of the pouch may be opaque or semi-opaque, and a second compartment of the pouch may be translucent, transparent, or semi-transparent. The compartments of the pouch may be the same size, having the same internal volume, or may be different sizes having different internal volumes.

[0032] Suitable water-soluble pouches include for example dual-compartment pouches comprising loose powder, densified powder or a tablet in a first compartment and a liquid, paste, or waxy or translucent gel detergent in a second compartment. The second liquid, paste or gel compartment could also contain a separate packed powder, for example in the form of micro-beads, noodles or one or more pearlized balls allowing a delayed or sequential release effects. If the first compartment comprises a tablet, this tablet can have a recess of a size and geometrical shape, (e.g. square, round or oval) so as to partially or totally house the second compartment. In pouches comprising powder in the first compartment, the powder can be arranged in layers that can be of different colours.

[0033] Alternatively, dual compartment pouches can comprise powder of the same or different colours in the two compartments, the powder comprising flecks of one or more colours or having a uniform colour. One of the two compartments could also comprise a separate densified powder phase (allowing delayed or controlled release), for example in the form of micro-beads, noodles or one or more pearlized balls. Other dual compartment pouches comprise a single or multi-phase liquid, paste or waxy or translucent gel detergent in the two compartments, each compartment either comprising multi-phase liquid or gels being of the same or different colour and/or density. Either or both of these compartments can also comprise a separate densified powder phase (allowing delayed or controlled release), for example in the form of micro-beads, noodles or one or more pearlized balls. The compartments of all the above described dual compartment pouches can be superposed or be in superposable (e.g. side by side) relationship.

[0034] Multi-compartment pouches, having three compartments, can have superposed compartments of any geometrical shape in a sandwich like disposition, for example having either loose or compacted powder in the two outer compartments and having a liquid, paste or waxy or translucent gel in the middle compartment. Contrary, the liquid, paste or waxy or translucent gel can be in the two outer compartments, perhaps containing suspended solids and speckles, and the powder can be in the middle compartment. A multi-compartment pouch can also have a tablet with more than one recess in the first compartment and with multiple other compartments totally or partially housed in the recesses of the tablet.

[0035] The pouches can be packed in a string, each pouch being individually separable by a perforation line. Therefore, each pouch can be individually torn-off from the remainder of the string by the end-user.

[0036] Especially suitable for use herein are multi-compartment pouches having a first compartment comprising a liquid composition and a second compartment comprising a powder composition wherein the weight ratio of the liquid to the solid composition is from about 1:30 to about 30:1, preferably from about 1:1 to about 1:25 and more preferably from about 1:15 to about 1:20.

[0037] For reasons of deformability and dispenser fit under compression forces, pouches or pouch compartments containing a component which is liquid will usually contain an air bubble having a volume of up to about 50%, preferably up to about 40%, more preferably up to about 30%, more preferably up to about 20%, more preferably up to about 10% of the volume space of said compartment.

[0038] The pouch is preferably made of a pouch material which is soluble or dispersible in water, and has a water-solubility of at least 50%, preferably at least 75% or even at least 95%, as measured by the method set out here after

using a glass-filter with a maximum pore size of 20 microns.

[0039] 50 grams $\pm$ 0.1 gram of pouch material is added in a pre-weighed 400 ml beaker and 245ml $\pm$ 1ml of distilled water is added. This is stirred vigorously on a magnetic stirrer set at 600 rpm, for 30 minutes. 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 % solubility or dispersability can be calculated.

[0040] Preferred pouch materials are polymeric materials, preferably polymers which are formed into a film or sheet. The pouch material can, for example, be obtained by casting, blow-moulding, extrusion or blown extrusion of the polymeric material, as known in the art.

[0041] 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 60%.

[0042] The polymer can have any weight average molecular weight, preferably from about 1000 to 1,000,000, more preferably from about 10,000 to 300,000 yet more preferably from about 20,000 to 150,000.

[0043] Mixtures of polymers can also be used as the pouch material. This can be beneficial to control the mechanical and/or dissolution properties of the compartments or pouch, depending on the application thereof and the required needs. Suitable mixtures include for example mixtures wherein one polymer has a higher water-solubility than another polymer, and/or one polymer has a higher mechanical strength than another polymer. Also suitable are mixtures of polymers having different weight average molecular weights, for example a mixture of PVA or a copolymer thereof of a weight average molecular weight of about 10,000- 40,000, preferably around 20,000, and of PVA or copolymer thereof, with a weight average molecular weight of about 100,000 to 300,000, preferably around 150,000.

[0044] Also suitable herein are polymer blend compositions, for example comprising hydrolytically degradable and water-soluble polymer blends such as polylactide and polyvinyl alcohol, obtained by mixing polylactide and polyvinyl alcohol, typically comprising about 1-35% by weight polylactide and about 65% to 99% by weight polyvinyl alcohol.

[0045] Preferred for use herein are polymers which are from about 60% to about 98% hydrolysed, preferably about 80% to about 90% hydrolysed, to improve the dissolution characteristics of the material.

[0046] Most preferred pouch materials are PVA films known under the trade reference Monosol M8630, as sold by Chris-Craft Industrial Products of Gary, Indiana, US, and PVA films of corresponding solubility and deformability characteristics. Other films suitable for use herein include films known under the trade reference PT film or the IC-series of films supplied by Aicello, or VF-HP film supplied by Kuraray.

[0047] The pouch material herein can also comprise one or more additive ingredients. For example, it can be beneficial to add plasticisers, for example glycerol, ethylene glycol, diethyleneglycol, propylene glycol, sorbitol and mixtures thereof. Other additives include functional detergent additives to be delivered to the wash water, for example organic polymeric dispersants, etc.

[0048] The detergent and cleaning compositions herein can comprise traditional detergency components and can also comprise organic solvents having a cleaning function and organic solvents having a carrier or diluent function or some other specialised function. The compositions will generally be built and comprise one or more detergent active components which may be selected from bleaching agents, surfactants, alkalinity sources, enzymes, thickeners (in the case of liquid, paste, cream or gel compositions), anticorrosion agents (e.g. sodium silicate) and disrupting and binding agents (in the case of powder, granules or tablets). Highly preferred detergent components include a builder compound, an alkalinity source, a surfactant, an enzyme and a bleaching agent.

[0049] Unless otherwise specified, the components described hereinbelow can be incorporated either in the organic solvent compositions and/or the detergent or cleaning compositions.

[0050] The organic solvents should be selected so as to be compatible with the tableware/cookware as well as with the different parts of an automatic dishwashing machine. Furthermore, the solvent system should be effective and safe to use having a volatile organic content above 1 mm Hg (and preferably above 0.1 mm Hg) of less than about 50%, preferably less than about 30%, more preferably less than about 10% by weight of the solvent system. Also they should have very mild pleasant odours. The individual organic solvents used herein generally have a boiling point above about 150°C, flash point above about 100°C and vapor pressure below about 1 mm Hg, preferably below 0.1 mm Hg at 25°C and atmospheric pressure.

[0051] Solvents that can be used herein include: i) alcohols, such as benzyl alcohol, 1,4-cyclohexanedimethanol, 2-ethyl-1-hexanol, furfuryl alcohol, 1,2-hexanediol and other similar materials; ii) amines, such as alkanolamines (e.g.

primary alkanolamines: monoethanolamine, monoisopropanolamine, diethylethanolamine, ethyl diethanolamine; secondary alkanolamines: diethanolamine, diisopropanolamine, 2-(methylamino)ethanol; ternary alkanolamines: triethanolamine, triisopropanolamine; alkylamines (e.g. primary alkylamines: monomethylamine, monoethylamine, monopropylamine, monobutylamine, monopentylamine, cyclohexylamine), secondary alkylamines: (dimethylamine), alkylene amines (primary alkylene amines: ethylenediamine, propylenediamine) and other similar materials; iii) esters, such as ethyl lactate, methyl ester, ethyl acetoacetate, ethylene glycol monobutyl ether acetate, diethylene glycol monoethyl ether acetate, diethylene glycol monobutyl ether acetate and other similar materials; iv) glycol ethers, such as ethylene glycol monobutyl ether, diethylene glycol monobutyl ether, ethylene glycol monomethyl ether, ethylene glycol monoethyl ether, diethylene glycol monomethyl ether, diethylene glycol monoethyl ether, propylene glycol butyl ether and other similar materials; v) glycols, such as propylene glycol, diethylene glycol, hexylene glycol (2-methyl-2, 4 pentanediol), triethylene glycol, composition and dipropylene glycol and other similar materials; and mixtures thereof.

Surfactant

[0052] In the methods of the present invention for use in automatic dishwashing the detergent surfactant is preferably low foaming by itself or in combination with other components (i.e. suds suppressers). Surfactants suitable herein include anionic surfactants such as alkyl sulfates, alkyl ether sulfates, alkyl benzene sulfonates, alkyl glyceryl sulfonates, alkyl and alkenyl sulphonates, alkyl ethoxy carboxylates, N-acyl sarcosinates, N-acyl taurates and alkyl succinates and sulfosuccinates, wherein the alkyl, alkenyl or acyl moiety is C₅-C₂₀, preferably C₁₀-C₁₈ linear or branched; cationic surfactants such as chlorine esters (US-A-4228042, US-A-4239660 and US-A-4260529) and mono C₆-C₁₆ N-alkyl or alkenyl ammonium surfactants wherein the remaining N positions are substituted by methyl, hydroxyethyl or hydroxypropyl groups; low and high cloud point nonionic surfactants and mixtures thereof including nonionic alkoxyated surfactants (especially ethoxylates derived from C₆-C₁₈ primary alcohols), ethoxylated-propoxylated alcohols (e.g., BASF Poly-Tergent® SLF18), epoxy-capped poly(oxyalkylated) alcohols (e.g., BASF Poly-Tergent® SLF18B - see WO-A-94/22800), ether-capped poly(oxyalkylated) alcohol surfactants, and block polyoxyethylene-polyoxypropylene polymeric compounds such as PLURONIC®, REVERSED PLURONIC®, and TETRONIC® by the BASF-Wyandotte Corp., Wyandotte, Michigan; amphoteric surfactants such as the C₁₂-C₂₀ alkyl amine oxides (preferred amine oxides for use herein include C₁₂ lauryldimethyl amine oxide, C₁₄ and C₁₆ hexadecyl dimethyl amine oxide), and alkyl amphocarboxylic surfactants such as Miranol™ C2M; and zwitterionic surfactants such as the betaines and sultaines; and mixtures thereof. Surfactants suitable herein are disclosed, for example, in US-A-3,929,678, US-A- 4,259,217, EP-A-0414 549, WO-A-93/08876 and WO-A-93/08874. Surfactants are typically present at a level of from about 0.2% to about 30% by weight, more preferably from about 0.5% to about 10% by weight, most preferably from about 1% to about 5% by weight of composition. Preferred surfactant for use herein are low foaming and include low cloud point nonionic surfactants and mixtures of higher foaming surfactants with low cloud point nonionic surfactants which act as suds suppresser therefor.

Builder

[0053] Builders suitable for use in detergent and cleaning compositions herein include water-soluble builders such as citrates, carbonates and polyphosphates e.g. sodium tripolyphosphate and sodium tripolyphosphate hexahydrate, potassium tripolyphosphate and mixed sodium and potassium tripolyphosphate salts; and partially water-soluble or insoluble builders such as crystalline layered silicates (EP-A-0164514 and EP-A-0293640) and aluminosilicates inclusive of Zeolites A, B, P, X, HS and MAP. The builder is typically present at a level of from about 1% to about 80% by weight, preferably from about 10% to about 70% by weight, most preferably from about 20% to about 60% by weight of composition.

[0054] Amorphous sodium silicates having an SiO₂:Na₂O ratio of from 1.8 to 3.0, preferably from 1.8 to 2.4, most preferably 2.0 can also be used herein although highly preferred from the viewpoint of long term storage stability are compositions containing less than about 22%, preferably less than about 15% total (amorphous and crystalline) silicate.

Enzyme

[0055] Enzymes suitable herein include bacterial and fungal cellulases such as Carezyme and Celluzyme (Novo Nordisk A/S); peroxidases; lipases such as Amano-P (Amano Pharmaceutical Co.), M1 Lipase^R and Lipomax^R (Gist-Brocades) and Lipolase^R and Lipolase Ultra^R(Novo); cutinases; proteases such as Esperase^R, Alcalase^R, Durazym^R and Savinase^R (Novo) and Maxatase^R, Maxacal^R, Properase^R and Maxapem^R (Gist-Brocades); α and β amylases such as Purafect Ox- Am^R (Genencor) and Termamyl^R, Ban^R, Fungamyl^R, Duramyl^R, and Natalase^R (Novo); pectinases; and mixtures thereof. Enzymes are preferably added herein as prills, granulates, or cogranulates at levels typically in the range from about 0.0001 % to about 2% pure enzyme by weight of composition.

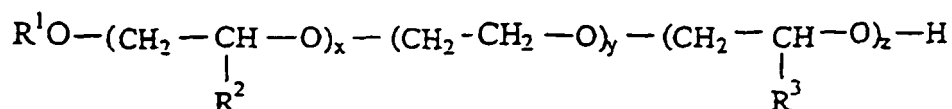
Bleaching agent

[0056] Bleaching agents suitable herein include chlorine and oxygen bleaches, especially inorganic perhydrate salts such as sodium perborate mono- and tetrahydrates and sodium percarbonate optionally coated to provide-controlled rate of release (see, for example, GB-A-1466799 on sulfate/carbonate coatings), preformed organic peroxyacids and mixtures thereof with organic peroxyacid bleach precursors and/or transition metal-containing bleach catalysts (especially manganese or cobalt). Inorganic perhydrate salts are typically incorporated at levels in the range from about 1% to about 40% by weight, preferably from about 2% to about 30% by weight and more preferably from about 5% to about 25% by weight of composition. Peroxyacid bleach precursors preferred for use herein include precursors of perbenzoic acid and substituted perbenzoic acid; cationic peroxyacid precursors; peracetic acid precursors such as TAED, sodium acetoxymethylbenzene sulfonate and pentaacetylglucose; pernonanoic acid precursors such as sodium 3,5,5-trimethylhexanoyloxybenzene sulfonate (iso-NOBS) and sodium nonanoyloxybenzene sulfonate (NOBS); amide substituted alkyl peroxyacid precursors (EP-A-0170386); and benzoxazin peroxyacid precursors (EP-A-0332294 and EP-A-0482807). Bleach precursors are typically incorporated at levels in the range from about 0.5% to about 25%, preferably from about 1% to about 10% by weight of composition while the preformed organic peroxyacids themselves are typically incorporated at levels in the range from 0.5% to 25% by weight, more preferably from 1% to 10% by weight of composition. Bleach catalysts preferred for use herein include the manganese triazacyclononane and related complexes (US-A-4246612, US-A-5227084); Co, Cu, Mn and Fe bispyridylamine and related complexes (US-A-5114611); and pentamine acetate cobalt (III) and related complexes (US-A-4810410).

Low cloud point non-ionic surfactants and suds suppressers

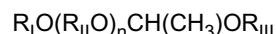
[0057] The suds suppressers suitable for use herein include nonionic surfactants having a low cloud point. "Cloud point", as used herein, is a well known property of nonionic surfactants which is the result of the surfactant becoming less soluble with increasing temperature, the temperature at which the appearance of a second phase is observable is referred to as the "cloud point" (See Kirk Othmer, pp. 360-362). As used herein, a "low cloud point" nonionic surfactant is defined as a nonionic surfactant system ingredient having a cloud point of less than 30° C., preferably less than about 20° C., and even more preferably less than about 10° C., and most preferably less than about 7.5° C. Typical low cloud point nonionic surfactants include nonionic alkoxyated surfactants, especially ethoxylates derived from primary alcohol, and polyoxypropylene/polyoxyethylene/polyoxypropylene (PO/EO/PO) reverse block polymers. Also, such low cloud point nonionic surfactants include, for example, ethoxylated-propoxylated alcohol (e.g., BASF Poly-Tergent® SLF18) and epoxy-capped poly(oxyalkylated) alcohols (e.g., BASF Poly-Tergent® SLF18B series of nonionics, as described, for example, in US-A-5,576,281).

[0058] Preferred low cloud point surfactants are the ether-capped poly(oxyalkylated) suds suppresser having the formula:



wherein R^1 is a linear, alkyl hydrocarbon having an average of from about 7 to about 12 carbon atoms, R^2 is a linear, alkyl hydrocarbon of about 1 to about 4 carbon atoms, R^3 is a linear, alkyl hydrocarbon of about 1 to about 4 carbon atoms, x is an integer of about 1 to about 6, y is an integer of about 4 to about 15, and z is an integer of about 4 to about 25.

[0059] Other low cloud point nonionic surfactants are the ether-capped poly(oxyalkylated) having the formula:



wherein, R_I is selected from the group consisting of linear or branched, saturated or unsaturated, substituted or unsubstituted, aliphatic or aromatic hydrocarbon radicals having from about 7 to about 12 carbon atoms; R_{II} may be the same or different, and is independently selected from the group consisting of branched or linear C_2 to C_7 alkylene in any given molecule; n is a number from 1 to about 30; and R_{III} is selected from the group consisting of:

- (i) a 4 to 8 membered substituted, or unsubstituted heterocyclic ring containing from 1 to 3 hetero atoms; and
- (ii) linear or branched, saturated or unsaturated, substituted or unsubstituted, cyclic or acyclic, aliphatic or aromatic hydrocarbon radicals having from about 1 to about 30 carbon atoms;

(b) provided that when R^2 is (ii) then either: (A) at least one of R^1 is other than C_2 to C_3 alkylene; or (B) R^2 has from 6 to 30 carbon atoms, and with the further proviso that when R^2 has from 8 to 18 carbon atoms, R is other than C_1 to C_5 alkyl.

[0060] Other suitable components herein include organic polymers having dispersant, anti-redeposition, soil release or other detergency properties invention in levels of from about 0.1% to about 30%, preferably from about 0.5% to about 15%, most preferably from about 1% to about 10% by weight of composition. Preferred anti-redeposition polymers herein include acrylic acid containing polymers such as Sokalan PA30, PA20, PA15, PA10 and Sokalan CP10 (BASF GmbH), Acusol 45N, 480N, 460N (Rohm and Haas), acrylic acid/maleic acid copolymers such as Sokalan CP5 and acrylic/methacrylic copolymers. Preferred soil release polymers herein include alkyl and hydroxyalkyl celluloses (US-A-4,000,093), polyoxyethylenes, polyoxypropylenes and copolymers thereof, and nonionic and anionic polymers based on terephthalate esters of ethylene glycol, propylene glycol and mixtures thereof.

[0061] Heavy metal sequestrants and crystal growth inhibitors are suitable for use herein in levels generally from about 0.005% to about 20%, preferably from about 0.1% to about 10%, more preferably from about 0.25% to about 7.5% and most preferably from about 0.5% to about 5% by weight of composition, for example diethylenetriamine penta (methylene phosphonate), ethylenediamine tetra(methylene phosphonate) hexamethylenediamine tetra(methylene phosphonate), ethylene diphosphonate, hydroxyethylene-1,1-diphosphonate, nitrilotriacetate, ethylenediaminetetracetate, ethylenediamine-N,N'-disuccinate in their salt and free acid forms.

[0062] The compositions herein can contain a corrosion inhibitor such as organic silver coating agents in levels of from about 0.05% to about 10%, preferably from about 0.1% to about 5% by weight of composition (especially paraffins such as Winog 70 sold by Wintershall, Salzbergen, Germany), nitrogen-containing corrosion inhibitor compounds (for example benzotriazole and benzimidazole - see GB-A-1137741) and Mn(II) compounds, particularly Mn(II) salts of organic ligands in levels of from about 0.005% to about 5%, preferably from about 0.01% to about 1%, more preferably from about 0.02% to about 0.4% by weight of the composition.

[0063] Other suitable components herein include colorants, water-soluble bismuth compounds such as bismuth acetate and bismuth citrate at levels of from about 0.01% to about 5%, enzyme stabilizers such as calcium ion, boric acid, propylene glycol and chlorine bleach scavengers at levels of from about 0.01% to about 6%, lime soap dispersants (see WO-A-93/08877), suds suppressors (see WO-93/08876 and EP-A-0705324), polymeric dye transfer inhibiting agents, optical brighteners, perfumes, fillers and clay.

[0064] Liquid detergent compositions can contain low quantities of low molecular weight primary or secondary alcohols such as methanol, ethanol, propanol and isopropanol can be used in the liquid detergent of the present invention. Other suitable carrier solvents used in low quantities includes glycerol, propylene glycol, ethylene glycol, 1,2-propanediol, sorbitol and mixtures thereof.

[0065] The pouch, when used herein can be of any form, shape and material which is suitable to hold the product prior to use, e.g. without allowing the release of the compositions from the pouch prior to contact of the pouched composition to water. The exact execution will depend on for example the type and amount of the compositions in the pouch, the characteristics required from the pouch to hold, protect and deliver or release the compositions, the number of compartments in the pouch.

[0066] Preferred herein are water-soluble pouches having one compartment comprising a liquid composition and another compartment comprising a powder or densified powder composition. During the manufacture of the liquid compartment an air bubble is typically formed. This air bubble can reduce the compressibility of the pouch and therefore the ease of closing the dispenser after placing the pouch therein. It has been found that ease of closing is increased when the ratio of the air bubble diameter to the maximum lateral dimension of the pouch footprint is from about 1:5 to about 1:2. Preferably, the bubble has a diameter from about 9 to about 16 mm. The bubble dimension can be controlled by process parameters.

[0067] In use, the water-soluble pouch is usually placed within the washing machine dispenser and released during the main cycle of the dishwashing process. However, the dispensers of some dishwashing machines are not completely water tight, mainly for two reasons, either the dispenser has some apertures allowing water ingress or the dispenser is sealed with a rubber band that can deform with time due to the high temperature of the dishwashing process. Water ingress into the dispenser can cause premature leaking of some of the pouch content which is thus lost at the end of the pre-wash. This problem is especially acute in the case of pouches comprising liquid compositions having a low viscosity wherein a considerable amount of the product can be lost before the main-wash cycle. The problem can be overcome by making the pouch or at least the liquid compartment thereof out of a film material which is designated to survive the pre-wash and to release the pouch contents at or after the start of the main-wash cycle. In European machines, the pre-wash is usually a cold water cycle (about 20°C or less) without detergent and lasting for about 10 to 15 min.

[0068] Preferably the film material has a water solubility according to the hereinbelow defined test of less than about 50%, more preferably less than about 20% and especially less than about 5% under cold water conditions (20°C or below) when exposed to the water for at least 10 minutes, preferably at least 15 minutes; and a water solubility of at

least about 50%, more preferably at least about 75% and especially at least about 95% under warm water conditions (30°C or above, preferably 40°C or above) when exposed to the water for about 5 minutes and preferably when exposed to the water for about 3 minutes. Such film materials are herein referred to as being substantially insoluble in cold water but soluble in warm water. Sometimes this is abbreviated simply to "warm water soluble".

[0069] 50 grams $\pm$ 0.1 gram of pouch material is added in a pre-weighed 400 ml beaker and 245ml $\pm$ 1ml of distilled water is added. This is kept at the desired temperature, by using a water bath, and stirred vigorously on a magnetic stirrer set at 600 rpm, for the desired time. Then, the mixture is filtered through a folded qualitative sintered-glass filter with a maximum pore size of 20 μ m. 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 % solubility or dispersability can be calculated.

[0070] Commercially available films insoluble in cold water and soluble in hot water include BP26 available from Aicello, L10 and L15 available from Aquafilm, VF-M and VM-S available from Kuraray and E-2060 available from Monosol.

[0071] In a preferred embodiment a multi-compartment pouch comprises a first compartment comprising a liquid composition and a second compartment comprising a powder or densified powder composition. Preferably, the liquid compartment is made of a warm water-soluble material as described hereinabove and the powder or densified powder compartment is made of cold water-soluble material, i.e., a material which is soluble to an extent of at least 50%, preferably at least 75%, more preferably at least 95% by weight under cold water conditions (20°C or below) when exposed to the water for about 5 minutes and preferably when exposed to the water for about 3 minutes. Due to the way in which European dishwashing machines operate (they are filled with cold water and the cold water is heated by means of a heater), the compartment made of warm water-soluble material takes longer to dissolve than the compartment made of cold water-soluble material. This kind of pouch allows for a delayed release of the liquid composition providing optimised use of the detergent composition. Preferably, the liquid composition comprises detergency enzyme, this being advantageous from the enzyme storage stability viewpoint, the enzyme being separated from the bleach and from highly alkaline materials contained in the powder or densified powder composition. Furthermore, the liquid containing compartment (substantially cold water-insoluble and warm water-soluble) will take longer to dissolve or disintegrate than the solid containing compartment (cold water-soluble), minimizing the negative interaction in the wash liquor between bleach and enzymes and between surfactant and enzymes and providing improved protein soil removal and spotting benefits in the later stages of the dishwashing process.

[0072] Pouch compartments containing solid compositions, in particular oxygen bleach comprising compositions, are usually pin-pricked in order to allow the leakage of any formed oxygen. The holes formed by pin pricking also allow the leakage of perfumes or malodors, however. For example, surfactants often have an unpleasant smell associated with them and when such pouches are packed within a secondary package, the unpleasant surfactant smell can be concentrated into the package head space and released each time that the user open the package. This problem can be avoided by including the surfactant in the liquid composition, since liquid containing compartments must be made free of pin holes. Thus, according to another embodiment, the liquid composition comprises a surfactant. Another advantage of having the surfactant in the liquid phase is to avoid problems of loading the surfactant onto the solid material. A further advantage is that the surfactant is released with a certain delay with respect to the solid composition, this allows better performance of the bleach and enzymes which can be adversely affected by interaction between the surfactant and the table/dishware surfaces.

[0073] Preferably perfume is introduced in the solid composition, pin prickling allowing for slow release of the perfume before the product is used in the dishwasher.

[0074] Films substantially insoluble in cold water and soluble in warm water have relatively low moisture and plasticiser content, therefore the film would require a significant time and temperature in order to seal by means of heat sealing. These requirements can lead to damage of the film such as for example pin-holes at the point where the film is stretched into the mould, causing leakage, especially problematic in the case of pouches containing liquid. Therefore, it is preferred that compartments made of films substantially insoluble in cold water and soluble in warm water and which house liquids are sealed using solvent which partially hydrates the film prior to sealing, lowering the time and temperature required for sealing, generating strong seals and avoiding pin-hole formation. In the preferred embodiment of differential solubility pouches having one compartment comprising a liquid composition and another compartment comprising a powder composition wherein the liquid compartment is made of material substantially insoluble in cold water and soluble in warm water and the powder compartment is made of material which is soluble in cold water, it is preferred that the liquid compartment be sealed by solvent-sealing while the liquid compartment is sealed to the powder compartment by heat sealing.

[0075] The pouch can also be placed outside the dispenser, for example in the cutlery basket, in a net or on the door of the dishwasher. In this case, it is preferred to make the entire pouch of a film material, as for example the one described herein above, which protects the pouch content until at least the start of the main-wash cycle.

[0076] Although the nature of the pouched products is such that it readily dissolves or disperses into the water, it may be preferred that disintegrating agents such as effervescence sources, water-swellaable polymers or clays are present

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in the pouch itself, and/ or in the product therein, in particular effervescence sources based on an acid and a carbonate source. Suitable acids include the organic carboxylic acids such as fumaric acid, maleic acid, malic acid, citric acid; suitable carbonate sources include sodium salts of carbonate, bicarbonate, percarbonate. Preferred levels for the disintegrating aids or effervescence sources or both are from 0.05% to 15% or even from 0.2% to 10% or even from 0.3 to 5% by weight of total pouched composition.

Examples: All of the examples are provided for illustrative purposes.

Abbreviations used in Examples

[0077] In the examples, the abbreviated component identifications have the following meanings:

Carbonate :	Anhydrous sodium carbonate
STPP :	Sodium tripolyphosphate
Silicate :	Amorphous Sodium Silicate ($\text{SiO}_2:\text{Na}_2\text{O}$ = from 2:1 to 4:1)
HEDP :	Ethane 1-hydroxy-1,1-diphosphonic acid
Perborate :	Sodium perborate monohydrate
Percarbonate :	Sodium percarbonate of the nominal formula $2\text{Na}_2\text{CO}_3 \cdot 3\text{H}_2\text{O}_2$
Carbonate :	Anhydrous sodium carbonate
Termamyl :	α -amylase available from Novo Nordisk A/S
Savinase :	protease available from Novo Nordisk A/S
FN3 :	protease available from Genencor
SLF18 :	Poly-Tergent® available from BASF
ACNI :	alkyl capped non-ionic surfactant of formula $\text{C}_{9/11} \text{H}_{19/23} \text{EO}_8$ -cyclohexyl acetal
C_{14}AO :	tetradecyl dimethyl amine oxide
C_{16}AO :	hexadecyl dimethyl amine oxide
Duramyl :	α -amylase available from Novo Nordisk A/S
DPM :	dipropylene glycol methyl ether
DPG :	dipropylene glycol
Methocel :	cellulosic thickener available from Dow Chemical

[0078] In the following examples all levels are quoted as per cent (%) by weight.

Examples 1 to 8

[0079] The compositions of examples 1 to 4 are introduced in a two compartment layered PVA rectangular base pouch. The dual compartment pouch is made from a Monosol M8630 film as supplied by Chris-Craft Industrial Products. 17.2 g of the particulate composition and 4 g of the liquid composition are placed in the two different compartments of the pouch. The pouch dimensions under 2 Kg load are: length 3.7 cm, width 3.4 cm and height 1.5 cm. The longitudinal/transverse aspect ratio is thus 1.5:3.2 or 1:2.47. The pouch is manufactured using a two-endless surface process, both surfaces moving in continuous horizontal rectilinear motion as herein described. According to this process a first web of pouches is prepared by forming and filling a first moving web of open pouches mounted on the first endless surface and closing the first web of open pouches with the second web of filled and sealed pouches moving in synchronism therewith.

[0080] The pouch is introduced in the 25 ml dispenser compartment of a Bosch Siemens 6032 dishwashing machine, the dispenser is closed and the washing machine operated in its normal 55°C program.

Example	1	2	3	4
<u>Particulate composition</u>				
C ₁₄ AO	5		5	
C ₁₆ AO		5		5
ACNI	5			5
SLF18		5	5	
STPP	55	55	56	56
HEDP	1	1	1	1
Termamyl	1.5	1.5		
FN3	2	2		
Percarbonate	15	15	15.5	15.5
Carbonate	9	9	10	10
Silicate	6	6	7	7
Perfume	0.5	0.5	0.5	0.5
<u>Liquid composition</u>				
DPG	99.5	99.5	95	95
FN3 Liquid			2.6	2.4
Duramyl Liquid			2.0	2.4
Dye	0.5	0.5	0.4	0.2

Example	5	6	7	8
<u>Particulate composition</u>				
STPP	60	60	61	61
HEDP	1	1	1	1
Termamyl	1.5	1.5		
FN3	2	2		
Percarbonate	17	17	17.5	17.5
Carbonate	11	11	12	12
Silicate	7	7	8	8
Perfume	0.5	0.5	0.5	0.5
<u>Liquid composition</u>				
DPG	59.5	59.5	55	55
FN3 Liquid			2.6	2.4
Duramyl Liquid			2.0	2.4
C ₁₄ AO	20		20	
C ₁₆ AO		20		20
ACNI		20		20
SLF18	20		20	
Dye	0.5	0.5	0.4	0.2

Claims

1. A display pack comprising a see-through container which contains a plurality of unit-doses of a detergent product in a multiplicity of sensorially distinctive groups, and wherein the groups are distinctive in terms of colour, shape, size, pattern or ornament, or wherein the groups are distinctive in terms of providing a unique sensorial signal such as smell, sound, feel, etc.
2. A display pack according to claim 1 wherein the number of unit-doses is at least 10 and wherein the number of sensorially distinctive groups is at least 2.
3. A display pack according to any of claims 1 or 2 wherein at least two groups are visually distinctive in terms of colour.
4. A display pack according to any of claims 1 to 3 wherein at least two groups are distinctive in terms of perfume.
5. A display pack comprising a see-through container which contains a plurality of unit-doses in the form of water-soluble pouches in a multiplicity of sensorially distinctive groups, each pouch comprising a plurality of compartments in generally superposed or superposable relationship, each containing one or more detergent active or auxiliary components, and wherein each pouch has a volume of from 5 to 70 ml and a longitudinal/transverse aspect ratio in the range from 2:1 to 1:8, preferably from 1:1 to 1:4.

6. A display pack according to claim 5 wherein at least one of the plurality of components comprises a powder composition.
7. A display pack according to claim 5 or 6 wherein at least one of the plurality of compartments comprises a liquid composition.

Patentansprüche

1. Schaupackung, umfassend einen durchsichtigen Behälter, der mehrere Einheitsdosierungen eines Reinigungsmittelprodukts in einer Vielzahl von sensorisch unterschiedlichen Gruppen enthält und wobei die Gruppen hinsichtlich Farbe, Form, Größe, Muster oder Verzierung unterscheidbar sind oder wobei die Gruppen hinsichtlich der Bereitstellung eines einzigartigen sensorischen Signals, wie Geruch, Klang, Anfühlen usw., unterscheidbar sind.
2. Schaupackung nach Anspruch 1, wobei die Anzahl an Einheitsdosierungen mindestens 10 beträgt und wobei die Anzahl an sensorisch unterscheidbaren Gruppen mindestens 2 beträgt.
3. Schaupackung nach einem der Ansprüche 1 oder 2, wobei mindestens zwei Gruppen hinsichtlich der Farbe visuell unterscheidbar sind.
4. Schaupackung nach einem der Ansprüche 1 bis 3, wobei mindestens zwei Gruppen hinsichtlich des Duftstoffes unterscheidbar sind.
5. Schaupackung, umfassend einen durchsichtigen Behälter, der mehrere Einheitsdosierungen in der Form von wasserlöslichen Beuteln in einer Vielzahl von sensorisch unterscheidbaren Gruppen enthält, wobei jeder Beutel mehrere Kammern in generell übereinander angeordneter oder übereinander anordbarer Beziehung umfasst, wobei jeder ein oder mehrere Reinigungswirkstoff- oder Hilfsbestandteile enthält und wobei jeder Beutel ein Volumen von 5 bis 70 ml und ein Seitenverhältnis von Länge zu Breite im Bereich von 2:1 bis 1:8, vorzugsweise von 1:1 bis 1:4 aufweist.
6. Schaupackung nach Anspruch 5, wobei mindestens eines der Vielzahl von Bestandteilen eine Pulverzusammensetzung umfasst.
7. Schaupackung nach Anspruch 5 oder 6, wobei mindestens eine der Vielzahl von Kammern eine flüssige Zusammensetzung umfasst.

Revendications

1. Emballage-présentoir comprenant un récipient transparent qui contient une pluralité de doses unitaires d'un produit de détergence dans une multiplicité de groupes sensoriellement distincts, et dans lequel les groupes sont distincts en termes de couleur, forme, grosseur, motif ou ornement, ou dans lequel les groupes sont distincts en termes de fourniture d'un signal sensoriel unique tel que l'odeur, le son, le toucher, etc.
2. Emballage-présentoir selon la revendication 1, dans lequel le nombre de doses unitaires est au moins 10 et dans lequel le nombre de groupes sensoriellement distincts est au moins 2.
3. Emballage-présentoir selon l'une quelconque des revendications 1 ou 2, dans lequel au moins deux groupes sont visuellement distincts en termes de couleur.
4. Emballage-présentoir selon l'une quelconque des revendications 1 à 3, dans lequel au moins deux groupes sont distincts en termes de parfum.
5. Emballage-présentoir comprenant un récipient transparent qui contient une pluralité de doses unitaires sous la forme de sachets hydrosolubles dans une multiplicité de groupes sensoriellement distincts, chaque sachet comprenant une pluralité de compartiments en relation généralement superposée ou superposable, chacune contenant un ou plusieurs composants de détergence actifs ou auxiliaires, et dans lequel chaque sachet a un volume allant de 5 à 70 mL et un rapport d'aspect longitudinal/transversal dans la gamme allant de 2:1 à 1:8, de préférence de 1:1 à 1:4.

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6. Emballage-présentoir selon la revendication 5, dans lequel au moins une des pluralités de composants comprend une composition de poudre.
7. Emballage-présentoir selon la revendication 5 ou 6, dans lequel au moins une des pluralités de compartiments comprend une composition liquide.

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