UNIT-DOSE DISPENSER

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Abstract
The present invention encompasses a dispenser for unit-doses comprising a fragrance delivery component.
UNIT-DOSE DISPENSER
CROSS REFERENCE TO RELATED APPLICATION

[0001] This application claims the benefit of U.S. Provisional Application Ser. No. 60/851,602 filed Oct. 13, 2006, the disclosure of which is incorporated by reference.

FIELD OF THE INVENTION

[0002] The present invention relates to a dispenser for detergent unit-doses comprising a storage compartment containing at least one detergent unit-dose; a dispensing means for dispensing said detergent unit-dose; and a fragrance delivery component. The dispenser herein provides excellent fragrance delivery performance.

BACKGROUND OF THE INVENTION

[0003] Detergent unit-doses represent a convenient way of delivering detergent products to an end-user. Indeed, such detergent unit-doses, including tablets and water-soluble capsules comprising solid and/or liquid compositions, can be directly used by an end-user without the inconvenience for the end-user to determine the adequate dosage in grams or milliliters of the detergent. The manufacturer of such detergent unit-doses provide simplified usage instructions, instructing an end-user to dose one, two or a multitude of such detergent unit-doses. Therefore, detergent unit-doses are the preferred detergent forms by a large number of end-users.

[0004] Detergent unit-doses may be used in the field of hard surface cleaning, for example, for all purpose cleaners, floor cleaners and lavatory bowl cleaners.

[0005] Containers for such detergent unit-doses are well known in the art. Indeed, tablets are frequently packed in carton boxes or plastic tubs. Water-soluble capsules comprising solid and/or liquid compositions may be packed in plastic tubs or pouches. WO 03/047998 describes a plastic pouch for water-soluble capsules.

[0006] A known drawback with the currently known containers for such detergent unit-doses, such as carton boxes, plastic tubs, pouches, etc., is their inconvenience for the end-user in dispensing the detergent unit-dose. Indeed, the end-user attempting to use a detergent unit-dose has to open the container and finger one or more of said portions out of the container.

[0007] In addition to the convenience drawback associated with current unit-dose containers upon dispensing of the detergent unit-doses, it is desirable that such containers provide fragrance (i.e., perfume and/or deodorant) delivery into the atmosphere or ambiance air of the room wherein such containers are stored and/or used. Indeed, such rooms, including lavatories, bathrooms, kitchens, basements, garages, broom closets and the like, are prone to developing an undesirable or bad smell due to the activities performed therein and/or the soiled hard surfaces found therein and/or other items stored therein. This applies in particular to bathrooms and/or lavatories due to the presence of toilets and urinals in such rooms.

[0008] In view of the above, a container for detergent unit-doses that provides a combination of ongoing fragrance (i.e., perfume and/or deodorant) delivery into atmosphere (ambient air of the room wherein said dispenser is used/stored) with a convenient way of dispensing the detergent unit-doses is desired.

SUMMARY OF THE INVENTION

[0009] The present invention is directed to a dispenser for detergent unit-doses wherein a fragrance (i.e., perfume and/or deodorant) is dispensed continuously into the ambient air wherein said container provides a convenient means of dispensing the detergent unit-doses.

[0010] The dispenser according to the present invention also improves the handling of detergent-unit doses by the end user. Indeed, usually detergent-unit doses are individually packed in a flow-wrap to protect them from moisture or degradation (in particular in the case of tablets). Opening such flow-wraps is often a messy operation, which requires the end user to touch the product. For the dispensers herein, no individual package is needed for each detergent unit-dose, which simplifies the dispensing by the end user of the detergent unit-dose by the end user. Furthermore, due to the use of a dispenser herein, there is no need for the end user to touch the detergent unit-dose whereby direct contact is prevented, which has a beneficial effect on the stability of the detergent unit-dose and the potential for skin irritation caused by the detergent unit-dose is reduced.

[0011] The present invention encompasses a dispenser for detergent unit-doses comprising: a) a storage compartment containing at least one detergent unit-dose; b) a dispensing means for dispensing said detergent unit-dose from said storage compartment; and c) a fragrance delivery component wherein said fragrance delivery component delivers fragrance independently from said at least one detergent unit-dose and delivers said fragrance into the ambiance over a prolonged period of time.

[0012] The present invention further encompasses a process of applying a lavatory bowl cleaning detergent unit-dose into a lavatory bowl wherein said process comprises the step of dispensing said lavatory bowl cleaning detergent unit-dose from the dispenser according to the present invention into said lavatory bowl.

[0013] In addition, the present invention further encompasses a process of deodorizing the ambient air in a lavatory wherein said process comprises the step of continuously dispensing a fragrance from the dispenser according to the present invention into the ambient air in a lavatory.

BRIEF DESCRIPTION OF THE DRAWINGS

[0014] FIG. 1 is a perspective front-side view of a preferred embodiment of the dispenser for detergent unit-doses according to the present invention.

[0015] FIG. 2 is a perspective back-side view of a preferred embodiment of the dispenser for detergent unit-doses according to the present invention.

DETAILED DESCRIPTION OF THE INVENTION

[0016] The dispenser 1 for detergent unit-doses 3 herein is typically used and/or stored in rooms, such as lavatories, bathrooms, kitchens, basements, garages, broom closets and
the like. Such rooms are prone to developing an undesirable or bad smell due to the activities performed therein and/or the soiled hard surfaces found therein and/or other items stored therein. This applies in particular to bathrooms and/or lavatories due to the presence of toilets and urinals in such rooms.

In one embodiment, wherein the detergent unit-dose herein is a lavatory bowl cleaning detergent unit-dose, the lavatory bowl cleaning detergent unit-dose is used to clean a lavatory bowl, such as toilet bowls, urinals, and the like. The lavatory bowl cleaning detergent unit-dose herein can be dispensed directly from the dispenser 1, according to the present invention, into the inside portion of a lavatory bowl, such as toilet bowls, urinals, and the like. In one embodiment herein, the lavatory bowl cleaning detergent unit-dose is dispensed directly from the dispenser 1, according to the present invention, into the inside portion of a toilet bowl.

The lavatory bowl surfaces herein may be made of different materials like ceramic, enamel, vinyl, no-wax vinyl, linoleum, melamine, glass, Inox®, Formica®, any plastics, plasticized wood, metal or any printed or varnished or sealed surface and the like.

Dispenser for Detergent Unit-Doses

The dispenser 1 for detergent unit-doses 3 herein comprises: a) a storage compartment 2 containing at least one detergent unit-dose 3; b) a dispensing means 4a, 4b, 4c for dispensing said detergent unit-dose 3 from said storage compartment 2; and c) a fragrance delivery component 5.

The dispenser 1 for detergent unit-doses 3 herein may be made of a thermoplastic material, alternatively a material selected from group consisting of Polyethylene Terephthalate (PET), Polyethylene Terephthalate-G (PETG), Polyvinyl Chloride (PVC), Polypropylene (PP), Polystyrene (PS), High Impact Polystyrene (HIPS), Polycarbonate, Chloride (PVDC), Low density Polyethylene (LDPE) or high density Polyethylene (HDPE), and mixtures thereof or laminated structures like co-injected materials, barrier films or foils including metal foils (such as aluminum), sputtered or vaporized aluminum, Nylon, Teflon®, Ethyl Vinyl Alcohol (EVOH), Surlyn®, and the like.

Furthermore, said dispenser 1 is at least partially transparent, alternatively the storage compartment 2 portion of the dispenser 1 herein is at least partially transparent, which allows its user to visualize when said storage compartment 2 is empty.

In one embodiment herein, the storage compartment 2 and/or the fragrance delivery component 5 herein, alternatively both, are refillable. By “refillable” it is meant that either the original elements can be refilled with new material or the elements can be replaced with new elements comprising new material.

The shape of the dispenser 1 can be formed via injection molding, extrusion blow molding, extrusion stretch blow molding, thermoforming, vacuum forming or any other technique known in the art.

Said dispenser 1 may contain various openings, holes, or cut-outs 6a, 6b, 6c that form part of the storage compartment 2 (as described below) or the dispensing means 4a, 4b, 4c (as described below). Alternatively, such openings, holes, or cut-outs 6a, 6b, 6c may be in the outer casing, if any, and may be in communication with aperture 4b of the storage compartment 2 (as described below) or the dispensing means 4a, 4b, 4c (as described below).

In addition, said dispenser 1 may contain openings, holes, cut-outs 6a, 6b, 6c that form part or are in communication with the fragrance delivery component 5 as described herein below.

The dispenser 1 for detergent unit-doses 3 herein comprises as a first essential element a storage compartment 2 containing at least one detergent unit-dose 3. The storage compartment 2 may be made of the same material as the dispenser 1 or may partially or completely be made of an alternative material selected from the list of materials detailed herein above.

Said storage compartment 2 may be of any suitable volume (size) to hold the at least one detergent unit-dose 3 contained therein. Alternatively, the storage means has a volume of from about 50 ml to about 1500 ml, alternatively a volume of from about 100 ml to about 1000 ml, alternatively a volume of from about 200 ml to about 800 ml, and alternatively a volume of from about 300 ml to about 600 ml.

The storage compartment 2 of the dispenser 1 for detergent unit-doses 3 herein contains at least one detergent unit-dose, alternatively a multitude of detergent unit-doses, alternatively from about 1 to about 50 detergent unit-doses, alternatively about 10 to about 30 detergent unit-doses, alternatively about 15 to about 25 detergent unit-doses.

In one embodiment herein, the storage compartment 2 of the dispenser 1 herein is refillable. Indeed, the storage compartment 2 may be refilled with separately sold detergent unit-doses 3. The storage compartment 2 may be refilled through an aperture 4b in the dispenser 1 with the storage compartment 2 provided in a separate container, such as a carton box, plastic tub or plastic pouch. Alternatively, the storage compartment 2 as a whole, including the detergent unit-doses 3 present therein, may be replaceable, i.e., the subject of a refill.

The dispenser 1 of the present invention comprises as a second element a dispensing means 4a, 4b, 4c for dispensing said detergent unit-dose 3 from said storage compartment 2. Alternatively, said dispensing means 4a, 4b, 4c is connected to said storage compartment.

The dispensing means 4a, 4b, 4c herein may be any suitable means to dispense the at least one detergent unit-dose 3 from the storage compartment 2 into for example a lavatory bowl (or a bucket, in case of an all purpose or floor cleaner). In one embodiment, the dispensing means 4a, 4b, 4c provides a communication from the storage compartment 2 to the exterior of the dispenser 1 herein.

Suitable dispensing means for the at least one detergent unit-dose 3 from the storage compartment 2 are: simple apertures; a flap covering an aperture; an actuator (e.g., push-button) activated flap covering an aperture in a disengaged configuration; multiple (alternatively two) rotating discs with holes that need to be aligned to dispense; a
rotating base to open an aperture; spring-loaded buttons that open and automatically close the aperture via moving a flipper; and the like. Alternatively, the dispensing means 4a, 4b, 4c contains a dispensing aperture 4b, alternatively of a size suitable to dispense the detergent unit-dose herein.

In one embodiment, the storage compartment 2 and the dispensing means 4a, 4b, 4c are in communication with each other and are located in close proximity to each other within the dispenser 1 herein. Indeed, the storage compartment 2 may contain an aperture 4b that is connected by means of for example a tube or passage to the dispensing means 4a, 4b, 4c.

In another embodiment herein, the dispensing means 4a, 4b, 4c forms part of the storage compartment 2. Indeed, in this embodiment said dispensing means 4a, 4b, 4c may be an aperture 4b (alternatively a re-closeable and actuator openable aperture) forming part of the storage compartment 2.

In another embodiment herein, said dispensing means 4a, 4b, 4c is located at the periphery of the dispenser 1, alternatively at the lower periphery of the dispenser 1 (upon normal usage and/or storage orientation).

Indeed, in one embodiment, said dispensing means 4a, 4b, 4c is oriented in the downwards direction (upon normal usage and/or storage orientation of the dispenser 1) with a dispensing aperture 4b opening, if any, alternatively at the lower periphery of the dispenser 1, to limit the diffusion of ambient humidity inside the dispenser 1 and thereby to protect the storage stability of the detergent unit-doses 3 therein. Indeed, detergent unit-doses 3, such as tablets or water-soluble capsules, are prone to reduced storage stability (i.e., premature, partial dissolution) when exposed to increased levels of ambient humidity.

In another embodiment herein, the dispensing means 4a, 4b, 4c is designed to be activated by the end-user. Such an activation may be achieved by any suitable means known to the skilled person and may comprise an actuator to actively open a closure such as a flare 4c over an aperture 4b (as described above). Such actuators may be by a push button 4a or a lever that is in communication with a flare 4c covering the aperture 4b. Such actuators may be combined with a spring or a similar means that allows for automatic closure of the flares 4c after activation, in order to avoid accidental dispensing of the detergent unit-doses 3 and protect the detergent unit-doses 3 from moisture or degradation. Therefore, in one embodiment, the dispenser 1 herein additionally comprises an actuator, alternatively located at the outer periphery of the dispenser 1.

In another embodiment herein, the dispensing means 4a, 4b, 4c additionally includes a moisture (coming from ambient humidity) protection means. Any suitable moisture protection means, which prevents or reduces the diffusion of moisture into the dispenser 1, alternatively into the storage compartment, may be suitable for use herein. Suitable moisture protection means includes a seal, alternatively a plastic and/or silicone seal. Alternatively, moisture protection means is a seal located at the outer periphery of the dispensing aperture 4b, if any. By limiting the diffusion of ambient humidity/moisture into the dispenser 1, the storage stability of the detergent unit-doses 3 therein is increased. Indeed, detergent unit-doses 3, such as tablets or water-soluble capsules, are prone to reduced storage stability (i.e., premature, partial dissolution) when exposed to increased levels of ambient humidity/moisture.

Elements of dispensing means 4a, 4b, 4c may be made of thermoplastic material, more alternatively a material selected from group consisting of Polyethylene Terephthalate (PET), Polyethylene Terephthalate-G (PETG), Polyvinyl Chloride (PVC), Polypropylene (PP), Polystyrene (PS), High Impact Polystyrene (HIPS), Polymaxidene Chloride (PVDC), engineering grade plastics like Acrylonitrile butadiene styrene (ABS) or Polyoxyethylene (such as Delrin™ and Celcon™), Low density Polyethylene (LDPE) or high density Polyethylene (HDPE) thermoplastic elastomers (TPE), and mixtures thereof or laminated structures like carton, barrier carton, co-injected materials, barrier films or foils including metal foils (aluminum), sputtered or vaporized aluminum, Polymides (Nylon), Teflon®, Ethyl Vinyl Alcohol (EVOH), Surlyn®, and the like. Alternatively, other materials, such as metals (in particular for spring elements) may be used.

The dispenser 1 herein may comprise other elements as optional elements.

In one embodiment herein, the dispenser 1, additionally comprises an outer casing. Such an outer casing may provide a supporting structure to the dispenser 1 and/or hide certain mechanical elements (like the dispensing means 4a, 4b, 4c). Furthermore, such an outer casing may provide the dispenser 1 with an overall appearance of being a single object.

The outer casing may be partially or fully transparent, translucent, or of non-transparent appearance. Furthermore, all combinations of transparency, translucency and non-transparency may be provided for the outer casing.

 Said outer casing may also provide good standing properties to the dispenser 1, by including flaps upon which the dispenser 1 rests upon storage.

 Said outer casing may contain various openings, holes, cut-outs 6a, 6b, 6c that form part of the storage compartment 2 (as described above) or the dispensing means 4a, 4b, 4c (as described above). Alternatively, such openings, holes, or cut-outs 6a, 6b, 6c in the outer casing may be in communication with apertures 4b of the storage compartment 2 (as described above) or the dispensing means 4a, 4b, 4c (as described above).

 In addition, said outer casing may contain openings, holes, cut-outs 6a, 6b, 6c that form part or are in communication with the fragrance delivery component 5 as described herein below.

 **Fragrance Delivery Component**

The dispenser 1 according to the present invention comprises as a third element a fragrance delivery component 5 wherein said fragrance delivery component 5 delivers fragrance independently from said at least one detergent unit-dose 3 and delivers said fragrance, alternatively directly and on an ongoing basis, into the ambiance over a prolonged period of time.

The fragrance delivery component 5 herein, may be a single component or may be a multitude of the same or different components. Alternatively, the fragrance delivery
component 5 herein comprises a perfume and/or a deodorant, alternatively a perfume. The fragrance delivery component 5 is comparable in its performance to an air freshener device.

By “fragrance” it is meant herein any chemical compound or mixture thereof that can alter the detectable character (smell) of air. This includes perfumes that create a (pleasant) smell, wherein the smell masks malodor. It also includes compounds, which directly remove malodors from the air (i.e., deodorants), or combinations of both perfumes and deodorants.

By “ambiance” it is meant herein the atmosphere of the environment or room, alternatively bathroom or lavatory, wherein the dispenser 1 is present (i.e., used and/or stored).

By “delivery over a prolonged period of time” it is meant herein that the fragrance delivery component 5 delivers a fragrance directly into the ambiance on an ongoing basis and for a period of time that exceeds at least about 24 hours. Alternatively, the fragrance delivery component 5 herein delivers a fragrance into the ambiance from about 48 hours to about 100 days, alternatively from about 7 days to about 100 days, alternatively from about 14 days to about 80 days, alternatively from about 17 days to about 60 days and alternatively from about 21 days to about 42 days.

By “said fragrance delivery component delivers fragrance independently from said at least one detergent unit-dose” it is meant herein that the fragrance delivery component 5 herein delivers the fragrance into the atmosphere (alternatively the bathroom or lavatory) without interaction with the detergent unit-doses 3 herein. Indeed, even though the detergent unit-doses 3 may contain a fragrance that may or may not be released upon storage of the portions, it is understood that this release is not to be considered as the fragrance delivery of the fragrance delivery component 5 herein. The optional fragrance release of the detergent unit-dose upon storage and/or use works independently from the fragrance delivery into the ambiance of the fragrance delivery component 5 that forms part of the dispenser 1 according to the present invention.

The fragrance delivery component 5 herein may be attached to the outside portion of the dispenser 1 or may form part of the interior portion of the dispenser 1 or may be in a separate compartment (if any of the dispenser 1).

Alternatively, the fragrance delivery component 5 may be combined with the storage compartment 2 herein. Indeed, said fragrance delivery component 5 may be located in a separate compartment that forms part of the storage compartment. In this case, a refill of the storage compartment 2 as a whole (as described herein) would also include a refill of the fragrance delivery component 5, which provides a user-friendly and economical way of refilling the dispenser 1 herein.

In one embodiment, wherein the fragrance delivery component 5 herein forms part of the interior portion of the dispenser 1 according to the present invention, the dispenser 1 may contain a means of communication for air flow between the fragrance delivery component 5 and the ambiance. Indeed, the dispenser 1 and/or the outer casing, if any, may contain openings, holes, or cut-outs 6a, 6b, 6c permitting air flow between the fragrance delivery component 5 and the ambiance.

Additionally, the fragrance delivery component 5 may also be present in a separate compartment of said dispenser 1, having a means of communication for air flow with the ambiance. Indeed, the dispenser 1 and/or the outer casing, if any, may contain openings, holes, cut-outs 6a, 6b, 6c permitting air flow between the fragrance delivery component 5 and the ambiance.

In one embodiment herein, the fragrance delivery component 5 is in communication with the exterior of the dispenser 1 herein/the ambiance, allowing for air flow there between.

Any fragrance delivery component 5 suitable of delivering a fragrance into the ambiance over a prolonged period of time may be used in the dispenser 1 herein. Suitable fragrance delivery components are selected from the group consisting of: gelled fragrance; fragrances. A wick delivery system comprising a fragrance-containing liquid; permeable film delivery systems combined with a fragrance gell or a fragrance-containing liquid; and battery powered/electrical fragrance release systems or gravity driven fragrance release cartridges; and combinations thereof. The fragrance delivery component 5 can be incorporated into the dispenser 1 of the present invention in a variety of different ways. Suitable non-limiting examples are shown herein below:

Fragranced Gel

In one embodiment of the present invention, the fragrance delivery component 5 herein may be a fragranced gel that alternatively continuously releases a fragrance for a prolonged period of time. Alternatively, the fragrance delivery component 5 herein is a perfumed gel.

By “fragranced/perfumed gel” it is meant herein any wax- and/or gel-based substance that contains a fragrance/perfume and is capable of releasing the fragrance/perfume into the atmosphere.

Fragranced gels include any type of wax- and/or gel-based substances suitable to release a fragrance. Alternatively, the fragranced gel herein is an anhydrous or an aqueous fragranced gel.

Alternatively, the wax- and/or gel-based substances for use herein are selected from the group consisting of: anhydrous wax- and/or gel-based substances; and aqueous wax- and/or gel-based substances; and mixtures thereof.

Suitable anhydrous wax- and/or gel-based substances for use herein are selected from the group consisting of: polyamide polymers; waxes; styrene polymers; stearates; ester-terminated dimmer acid-based polyamides; maleinized polybutadienes in combination with dihydroxypolybutadienes and an ethoxylated primary amine; maleinized polysisoprenes in combination with dihydroxypolybutadienes and an ethoxylated primary amine; and mixtures thereof.

Suitable aqueous wax- and/or gel-based substances for use herein are selected from the group consisting of: water and a gelling agent such as carrageenan gum or gellan gum; water in combination with polyvinyl alcohol or polyvinyl acetate and dimethyl sulfoxide; water in combination with a polymer such as a polycrylamide; water in combination with stearic acid, propylene glycol and activated carbon; and anhydrous sodium polycrylate and mixtures thereof.
These wax- and/or gel-based substances for use herein are typically manufactured by processing them initially in their liquid form, often by heating. Indeed, the gels are typically heated to melt the gel, or the gel is polymerized or gelified in the liquid state at high temperature. A fragrance, alternatively a perfume, is subsequently added to the heated gel, and the heated, fragmented liquid is then being cooled to form the gel structure.

In one embodiment herein, the fragmented gel herein is an anhydrous fragmented gel, more alternatively the fragmented gel herein is selected from the group consisting of: polyamide polymers additionally containing up to about 90% by weight of the fragmented gel of fragrance; waxes additionally containing up to about 90% by weight of the fragmented gel of fragrance; styrene polymers additionally containing up to about 90% by weight of the fragmented gel of fragrance; ester terminated dimmer acid-based polyamides additionally containing up to about 90% by weight of the fragmented gel of fragrance; maleinized polybutadienes in combination with dihydroxy polybutadienes and an ethoxylated primary amine additionally containing up to about 95% by weight of the fragmented gel of fragrance; maleinized polyisoprenes in combination with dihydroxy polybutadienes and an ethoxylated primary amine additionally containing up to about 95% by weight of the fragmented gel of fragrance; and mixtures thereof. Suitable fragmented gels are for example described inWO 02/066084, WO 98/17245, U.S. Pat. No. 5,780,527, andWO 01/78794 (all of which are incorporated herein by reference). Suitable perfumed gels are commercially available under the trade name of Crystal Air® by Reckitt Benckiser or under the names SylvaClear®, Sylvacone® or Uniclear® resins, by Arizona Chemical. Similar performing gels to those listed above may also be used. Anhydrous sodium polycrylate or similar gel compositions are detailed in US 2002/0041860 A1 (incorporated herein by reference).

In one embodiment of the present invention, the fragmented gel herein is a polymeric composition obtained by combining a low melting point polyamide polymer with a polar thermoplastic elastomer and a fragrance. Such polymeric compositions are described for example in US-A1-2006/0099168 (incorporated herein by reference).

The term “low melting point polyamide polymers” includes all polyamides having a melting point below about 130° C, alternatively below about 110° C, more alternatively below about 100° C. Typically and alternatively, the low melting point polyamides for use in the present invention are solid at room temperature. Preferred polyamides are terminated polyamides, particularly preferred are ester terminated polyamides. Examples of these low melting point polyamides include those marketed by Arizona Chemicals under the trade name of SylvaClear®.

The term “polar thermoplastic elastomer” includes multiphase polymers that comprise “hard” and “soft” phases chemically bonded together in the polymer chain. The “hard” phase is solid at room temperature and flows upon heating. Examples include blocks of amide, ester and urethane groups. The “soft” phase is rubbery at room temperature. Examples include polyether blocks such as poly(ethylene glycol), poly(propylene glycol) or poly(1,6-hexanediol). At room temperature, the presence of the “hard” phases in the polymer imparts strength and good mechanical properties. When the polymer is heated, these phases become liquid and the polymer melts, allowing for processing in the molten state. Upon re-cooling to room temperature, the phases solidify and the good mechanical properties are regained. A comprehensive definition of thermoplastic elastomers can be found in Vol 9 of the Kirk-Othmer Encyclopedia of Chemical Technology (4th Edition-Wiley-Interscience, 1996)—under the voice “Elastomers”, sub-voice “Thermoplastic Elastomers” (incorporated herein by reference). Among these polymers those which are suitable for the present invention are those comprising at least one polar monomer. Polar monomers are those monomers which comprise at least a C—X linkage in the molecule wherein said C—X linkage is a polar linkage. Alternatively X is an N, S, F, Cl or O atom. More alternatively said polar linkage is part of a carbonyl group and, more alternatively, of an ester group. Preferred polar monomers for the present invention are vinyl acetate, vinyl alcohol, ethyl acrylate, ethyl acrylate, butyl acrylate, acrylic acid and salts formed therefrom, methacrylic acid and salts formed therefrom, maleic anhydride, glycidyl methacrylate and carbon monoxide. More alternatively the hard phases alternatively comprise blocks of amide, ester or urethane groups and the soft phases alternatively comprise polyester blocks. Examples of these polar thermoplastic elastomers include thermoplastic polyurethanes, such as those produced under the trade names ESTANE® by Noveon, and PELLETHANE® by Dow Chemicals; thermoplastic polyesters, also known as polyester ester copolymers, such as those produced under the trade name HYTREL® by DuPont and ARNITEL® by DSM, and thermoplastic polyamides, also known as polyamide amide copolymers, such as those produced under the trade name PEBAX® by Atofina.

In one embodiment of the present invention, the fragmented plastic herein is a polymeric composition obtained by combining a low melting point polyamide polymer with a polar thermoplastic elastomer as described above, the fragrance is a perfume composition obtained by combining an ester terminated polyamide, a thermoplastic polyether amide copolymer and a perfume, according to the method described in US-A1-2006/0099168 (incorporated herein by reference).

In one embodiment herein, wherein the fragrance delivery component 5 herein is a fragmented gel, the fragmented gel, alternatively initially, comprises up to about 95%, alternatively from about 10% to about 95%, alternatively from about 50% to about 95% by weight of fragrance, alternatively perfume.

The shape of the gel may be any design suitable to deliver a fragrance into the ambiance. The fragmented gel may be placed directly into any appropriate position or portion on the dispenser 1. This includes combining the fragmented gel with the dispenser 1 and/or the outside portion of the storage compartment 2 and/or with its outer casing, if any. For combining the fragmented gel with the dispenser 1 and/or the outside portion of the storage compartment 2 and/or with its outer casing, if any, a recess may be created on the outer surface of the dispenser 1 and/or the outside portion of the storage compartment 2 and/or with the outer casing, if any, to create a region that may be filled with the fragmented gel. This recess can easily be created during the
dispenser forming process (e.g., via extrusion blow molding, extrusion stretch blow molding, injection molding, thermo-forming or vacuum forming process). The recess may be molded into the outer surfaces of the dispenser 1 or its outer casing, if any (on its front panel, top panel, sides, bottom or back panel, if any). This recess is filled with liquid fragranced gel, which is solidified into the recess. Alternatively a recess could be created on the outer surface of the storage compartment. For pieces, which are typically injection molded, blow molded, thermoformed or vacuum formed, a recess can easily be created within the surface of the piece during the molding process itself.

In one embodiment herein, said fragrance delivery component 5 is a fragranced gel, alternatively a perfumed gel, which is alternatively present in a recess on the outside portion of the dispenser 1 and/or its outer casing (if any).

In one embodiment, wherein the fragranced gel is present in a recess of the dispenser 1 and/or its outer casing (if any) herein, setting the fragranced gel into the recess may be achieved by pouring the heated fragranced gel directly into the recess and allowing it to cool. A small peel-able and alternatively transparent film with a high barrier may be placed over the fragranced gel in the recess and sealed to the outer part of the recess in the dispenser 1 and/or its outer casing (if any). This embodiment has the advantage that it protects the fragranced gel prior to use. Indeed, the fragranced gel is replaced at the same time as when the dispenser 1 is replaced, and the peel-able film is removed to expose the gel upon first use.

In addition, two or more layers of gel may be filled on top of each other. This has the advantage of the lower layer acting as an adhesive to the upper layers. This can more effectively stick the fragranced gel into the dispenser 1 and/or its outer casing (if any) so that it does not drop out due to mechanical agitation, or to prevent undue shrinkage of the gel as the fragrance evaporates. In addition, the level (%) of fragrance can be altered in these layers to better control the release of fragrance from the gel. Alternatively, two or more different gels can be cast into the dispenser 1 herein (or its outer casing, if any) side by side. This has the advantage of creating better aesthetics for the consumer. In addition, different fragrance or ingredients can be added to each gel (e.g. perfume in one gel and de-odorant in the other gel).

In an alternative embodiment of the present invention, multiple pieces of fragranced gel in the form of small beads or other similar designs may be used. Indeed, the fragranced gel is present in the form of at least one, alternatively a multitude of fragranced gel beads. In such an embodiment, such fragranced gel beads have an increased consistency and/or a limited stickiness, which prevents the single beads from agglomerating together and leaves the beads as substantially individual items. Beads herein may be of a regular globular or elliptical or even square shape or of an irregular rounded shape. Using beads maximizes the surface area of the pieces and facilitates the release of fragrance. These beads are alternatively included in the dispenser 1 in a recess in the surface of the dispenser 1 and/or its outer casing (if any), wherein alternatively said recess is covered using a gas-permeable cover, alternatively a perforated cover. This gas-permeable cover holds the beads in place prior to usage. The covering may consist of a rigid plastic grid that may be clipped into the recess over the beads to hold it in place or a perforated film that is heat sealed or glued over the recess. A further alternative is to create a cage like device that holds the beads and can be attached to the dispenser 1 or parts thereof via various means. Alternatively, the cage may be integrally molded into parts of the dispenser 1 (or its outer casing, if any). Indeed, the beads may be placed within the dispenser 1, alternatively in a separate compartment. A further alternative is to contain the beads in an open top container. This container may be positioned either adjacent to or above the said storage compartment. This allows the beads-container to be easily refilled along with the container for the liquid, perfumed composition because both containers could be inserted into the dispensing means 4a, 4b, 4c at the same time.

In one embodiment, such fragranced gel beads are self-disincarcinating, wherein due to the release of perfume the gel beads are reduced in size over time. Suitable fragranced gel beads are commercially available from IFF.

In one embodiment herein, one or a multitude of such fragranced gel beads are placed within the dispenser 1 in a separate compartment and are alternatively partially visible for a user due to the use of transparent material in making the dispenser 1 or through openings.

For all embodiments herein containing a fragranced gel, and in particular for the embodiment herein, wherein the fragrance delivery component 5 is at least one, alternatively a multitude of fragranced gel beads, that the fragranced gel is (alternatively the fragranced gel beads are) colored.

For all of the fragranced gel-based embodiments, the fragranced gel may optionally be protected from releasing its fragrance into the atmosphere prior to usage of the dispenser 1. This can be solved by packaging the dispenser 1 in a package that has a high gas barrier. A preferred option would be a transparent thermoformed blister pack made from PET, PVC or other similar materials having a high
oxygen barrier film over the top of the blister made from laminates of aluminum, metallised PET, metallised biaxially oriented polypropylene, EVOH, Polyamides (Nylon) and/or other similar film materials. An alternative would be to seal a high gas barrier peel-able film onto the dispenser 1 (or its outer casing, if any) so that it covers the perfumed gel on the surface of the dispenser 1 and/or its outer casing (if any), or alternatively onto the separate piece so that it covers the gel container within the separate piece or still alternatively onto the openings, holes, cut-outs 6a, 6b, 6c of the dispenser 1 and/or its outer casing (if any) permitting air flow between the fragrance delivery component 5 and the ambiance. This film would then be removed by the user upon the first use of the dispenser 1 and/or its outer casing (if any). Alternatively, the peel-able film would be transparent to allow the consumer to also see the gel on shelf. A suitable film would be a laminated film using Al2O3, SiO2, EVOH, Nylon or PVDC coatings or other similar high gas barrier transparent films.

[0082] For all embodiments herein containing a fragranced gel, the perfumed gel can be placed in a recess, alternatively on the outward-facing section of the dispenser 1 and/or its outer casing (if any). By “outward-facing section” it is meant the visible outside portion of the dispenser 1 and/or its outer casing (if any).

Fragranced Plastics

[0083] In one embodiment of the present invention, the fragrance delivery component 5 herein may be a fragranced plastic that alternatively continuously releases a fragrance for a prolonged period of time. Alternatively, the fragrance delivery component 5 herein is a perfumed plastic.

[0084] By “fragranced/perfumed plastic” it is meant herein any plastic material that contains a fragrance/perfume and is capable of releasing the fragrance/perfume into the atmosphere of the bathroom or lavatory.

[0085] Fragranced plastics include any type of plastic material suitable to release a fragrance. Suitable plastic materials for use as a fragranced plastic are selected from the group consisting of: polyethylene terephthalate (PET); polyethylene (PE); polypropylene (PP); polystyrene (PS); high impact polystyrene (HIPS); polystyrene (PS); thermoplastic elastomers (TPE), ethyl vinyl acetate (EVA) and the like.

[0086] The plastic material herein contains a fragranced, alternatively perfumed, masterbatch. By “fragranced masterbatch” it is meant herein a portion of material consisting of a carrier resin such as PET, PE, PP, PVC, HIPS and/or PS and a high level of fragrance (alternatively perfume) alternatively up to about 95%, from about 10% to about 90%, more alternatively from about 50% to about 85% by weight of the total masterbatch of a fragrance (alternatively perfume). The masterbatch is added during the normal manufacture of plastic pieces via additions in the extruder for injection molding, blow molding, sheet forming, blown film and other similar plastic processes. The plastics may also be foamed to maximize the amount of fragrance that may be added to the plastic piece and to further encourage its release into the atmosphere. The technology is detailed in WO 00/08095, U.S. Pat. No. 4,411,855, GB 2,180,157 and U.S. Pat. No. 3,797,742 (all of which are incorporated herein by reference).

[0087] The fragranced masterbatch herein may be used during the manufacture of the dispenser 1 herein or parts thereof, such as the storage compartment, or the outer casing (if any). This creates a dispenser 1 that delivers a fragrance into the atmosphere upon use by releasing a fragrance directly from either the dispenser 1 or parts thereof. Alternatively, the fragranced masterbatch is used during the manufacture of the outer casing herein.

[0088] An alternative approach is to use the fragranced masterbatch for the manufacture of a separate plastic piece or pieces. This piece(s) (“insert(s)”) may then be fastened to any part of the dispenser 1 and/or its outer casing (if any). The insert (or inserts) may be injection molded or manufactured by similar plastic processes. This method of using a separate insert as compared to using the fragranced masterbatch for the manufacture of the dispenser 1 itself has the advantage of allowing more control of the amount of fragrance as well as control of the type of plastic used to maximize the amount of fragrance delivery. This is due to the fact that these plastic piece(s) only need to dispense fragrance. They do not need to have additional functions such as to provide stability to the dispenser 1. In addition, the plastic pieces may be coloured and/or may be made from different designs to provide aesthetic improvements. Fastening of such inserts may be achieved by clipping the separate piece(s) to parts of the dispenser 1 and/or its outer casing (if any), or by using adhesive or similar techniques. Such pieces could be sold as refills either in a separate package or in a multi-pack combined with a detergent unit-doses 3 refill. Both packs would have a high oxygen barrier package (as described herein above) to keep the fragrance in the pieces prior to usage.

[0089] In an alternative embodiment of the present invention, multiple pieces of fragranced plastic in the form of small beads or other similar designs, may be used. Beads herein may be of a regular globular or elliptical or even square shape or of an irregular rounded shape. Using fragranced plastic beads maximizes the surface area of the pieces and facilitates the release of fragrance. These beads are alternatively included in the dispenser 1 in a recess in the surface of the dispenser 1 and/or its outer casing (if any), wherein alternatively said recess is covered using a gas-permeable cover, alternatively a perforated cover. This gas-permeable cover holds the beads in place prior to usage. The covering may consist of a rigid plastic grid that may be clipped into the recess over the beads to hold it in place or a perforated film that is heat sealed, stretch- or shrink-wrapped or glued over the recess. A further alternative is to create a cage like device that holds the beads and can be attached to the dispenser 1 or parts thereof via various means. Alternatively, the cage may be integrally molded into parts of the dispenser 1 (or its outer casing, if any). Indeed, the beads may be placed within the dispenser 1, alternatively in a separate compartment. A further alternative is to contain the beads in an open top container. This container may be positioned either adjacent to or above the said storage compartment. This allows the beads-container to be easily refilled along with the container for the liquid, perfumed composition because both containers could be inserted into the dispensing means 4a, 4b, 4c at the same time. In addition, the fragranced plastic beads may be colored and/or may be made from different designs.

[0090] In one embodiment herein, one or a multitude of such fragranced plastic beads are placed within the dispenser 1 in a separate compartment and are alternatively partially
visible for a user due to the use of transparent material in making the dispenser 1 or through openings.

Permeable Films

[0091] In one embodiment of the present invention, the fragrance delivery component 5 herein may be a permeable film delivery system over a fragrance-releasing medium.

[0092] By “permeable film” it is meant herein a film-based material that has a high permeation rate to fragrance. Alternatively said permeable film is a film-based material that has a high permeation rate to fragrance or a micro porous membrane material (preferable with a hydrophobic coating) that has sufficient voids within the film structure to allow the passage of perfume to the atmosphere. These films allows perfume vapor to escape the dispenser 1 herein to the bathroom/lavatory atmosphere while preventing the fragrance/perfume, if any, to escape. They also allow control of the release rate of fragrance from the dispenser 1 since the release rate can be controlled by film thickness and film/membrane material section. Suitable permeable films include highly permeable films such as low density polyethylene (LDPE), ethyl vinyl acetate (EVA), and the like, along with micro porous membranes such as those supplied by Gelman, Gore, Pall and other similar membrane suppliers. This technology is described in U.S. Pat. No. 4,898,328, WO 97/42093 and EP-A-0 596 212 (all of which are incorporated herein by reference).

[0093] By “fragrance releasing medium”, it is meant herein a medium that is capable of releasing a fragrance; alternatively perfume, over a prolonged period of time. Suitable fragrance releasing mediums are selected from the group consisting of: fragranced gels as described herein above; fragranced plastics including beads as described herein above; and fragrance-containing liquid compositions alternatively solvent based liquid compositions containing alcohols and other volatile ingredients; and pods impregnated with a fragrance-containing liquid composition; and combinations thereof.

[0094] The fragrance releasing medium herein with a covering permeable film may be placed directly into any appropriate position within the dispenser 1 of the present invention, including combining the perfume releasing medium with a covering permeable film into the interior or exterior of the dispenser 1 and/or the inside or outside portion of its outer casing, if any. In a preferred embodiment herein, the fragrance-releasing medium is contained in a recess on the outer surface of the dispenser 1 herein and the recess is covered with a permeable film. Alternatively, the fragrance-releasing medium is contained in an open top container and covered with a permeable film. This container may be positioned either adjacent to or above the storage compartment. This allows the container for the fragrance-releasing medium sealed with a permeable film to be easily refilled. Alternatively, a small flat container for the perfume-releasing medium sealed with permeable film may be attached directly to the surface of the dispenser 1 herein or a part thereof, by a clamping mechanism, or an adhesive or similar method.

[0095] For all of the permeable film based embodiments, the product contained by the film may be protected from releasing its perfume into the atmosphere prior to purchase and usage of the dispenser 1. This can be achieved by packaging the dispenser 1 in a package that has a high gas barrier as described herein above in the section titled “Fragranced gel”.

[0096] In one embodiment, a high barrier film would be laminated directly to the permeable film such that this film exists as a single structure. The bond between the barrier film and the permeable film would be very low such that when the film structure is sealed to the dispenser 1 to encase the fragrance releasing medium, the bond between the permeable film and the dispenser 1 is higher as compared to the bond between the permeable film and the barrier film and the bond between the permeable film and the barrier film is sufficiently low to allow easy peeling by the user. This system not only allows the user to easily remove the barrier film prior to using the dispenser 1, but also provides a much simpler manufacturing means to seal the permeable and barrier film in one simple step onto the dispenser 1.

Wicks

[0097] In one embodiment of the present invention, the fragrance delivery component 5 herein may be a wick delivery system comprising fragrance-containing liquid composition. Alternatively, the fragrance delivery component 5 herein is a wick delivery system comprising a perfumed liquid composition.

[0098] By “wick delivery system” it is meant herein a system wherein an absorbent substrate (“wick”), such as a cotton or similar material, is part of a container wherein one end of the wick lies in a liquid composition containing a fragrance, alternatively a perfume, while the other end of the wick lies either outside or at the very top of the opening of the container, and wherein the wick draws the fragrance-containing liquid into the wick via capillary forces and transports it to the end of the wick situated at the opening of the container. This causes the liquid composition containing a fragrance to evaporate and therefore the liquid continuously releases fragrance into the atmosphere of the bathroom/lavatory. Wick technology is well known in the prior art and is described in U.S. Pat. No. 5,014,912, U.S. Pat. No. 6,514,467 and U.S. Pat. No. 5,000,383 (all of which are incorporated herein by reference).

[0099] In one embodiment herein, a wick delivery system being a container such as a bottle, having an opening and holding a volatile liquid containing a perfume wherein the container additionally contains a wick is part of the dispenser 1 herein. This includes a container of a wick delivery system attached to the dispenser 1 and/or its outer casing (if any). The bottle may be attached to the dispenser 1 and/or its outer casing (if any) via clipping, adhesive tape etc.

[0100] The container of a wick delivery system itself can additionally be sold as a sealed unit with a cap as a refill.

Battery Powered/Electrical Fragrance Release Systems and Gravity Driven Fragrance Release Cartridges

[0101] In one embodiment of the present invention, the fragrance delivery component 5 herein may be a battery powered/electrical fragrance release system or a gravity driven fragrance release cartridge. In this embodiment the dispenser 1 herein contains a system that dispenses fragrance using an electrically or battery powered means to dispense a fragrance; alternatively a perfume. Alternatively, fragrance is released through a membrane from a cartridge by means of gravity.
Any means suitable to dispense a fragrance using an electrically or battery powered means can be used herein. Alternatively, said battery/electrical fragrance release system is an electrical or battery driven pumping means that distributes a fragrance over a prolonged period of time. In a highly preferred embodiment, said battery/electrical fragrance release system includes a cartridge for housing a liquid composition comprising a fragrance, a means for releasing the liquid composition from the cartridge and a means for forcing the liquid out of the cartridge using a gas-generating cell. The gas-generating cell herein alternatively is an electrochemical cell (battery) that generates gas over a prolonged period of time. The means for forcing the liquid out of the cartridge is alternatively a piston pump that presses the liquid composition comprising a perfume out of the cartridge. Suitable gas-generating cells as well as battery/electrical fragrance release systems are described in U.S. Pat. Nos. 6,045,055, U.S. Pat. Nos. 6,109,539, WO 97/13007, WO 99/06614, WO 00/72951, U.S. Pat. Nos. 5,681,435, U.S. Pat. Nos. 5,899,381, WO 02/069935, WO 00/76645 and WO 02/16048 (all of which are incorporated herein by reference). The above reference encompasses also gravity driven fragrance release cartridges. Such gravity driven fragrance release cartridges may also be included as fragrance delivery component 5 according to the present invention.

In one embodiment of the present invention, a battery/electrical fragrance release system or gravity driven fragrance release cartridge is contained in the dispenser 1 herein. Indeed, the battery/electrical fragrance release system or a gravity driven fragrance release cartridge may be combined with the dispenser 1 and/or its outer casing. The battery/electrical fragrance release system or gravity driven fragrance release cartridge may be attached to the dispenser 1 via clamping, adhesive tape, etc. Furthermore, the battery/electrical fragrance release system or gravity driven fragrance release cartridge may be housed in a separate compartment that is part of the dispenser 1 herein.

The battery powered/electrical fragrance release system or gravity driven fragrance release cartridge may be sold as a separate refill device to be combined with the dispenser 1. Refills may be sold either separately or in a multi pack with the detergent unit-dose refills to provide continuity of fragrance.

Other Fragrance Delivery Components

Other suitable fragrance delivery components 5 herein include piezo fragrance dispensing technology and aerosol dispensers integrated into the dispenser 1.

Detergent Unit-Doses

The dispenser 1 herein comprises (in said storage compartment) at least one (alternatively a multitude of) detergent unit-doses 3. Alternatively, said detergent unit-doses 3 are hard surface cleaning detergent unit-doses 3, more alternatively lavatory bowl cleaning detergent unit-doses 3.

The detergent unit-doses 3 provide a cleaning, disinfecting and/or deodorizing effect on the surfaces to which they are applied (alternatively upon dissolution in water). Indeed, the detergent unit-doses 3 are typically dispensed into an effective amount of water and dissolve therein to provide a cleaning, disinfecting and/or deodorizing solution. Indeed, the detergent unit-doses 3 are used to clean in their dissolved form. By “in their dissolved form” it is meant herein that the detergent unit-dose herein may be dissolved in up to about 5000 times its weight in water dissolution level, alternatively from about 5 times to about 5000 times its weight in water, more alternatively from about 7 times to about 2500 times its weight in water, even more alternatively from about 10 times to about 1000 times its weight in water, and most alternatively from about 20 to about 500 times its weight in water.

Upon use by the end-user, a single detergent unit-dose or a multitude (alternatively about 2 or about 3) of detergent unit-doses 3 are dispensed for one cleaning operation.

By a “detergent unit-dose” it is meant herein a detergent article providing a predefined dosage of said detergent (i.e., a single dose), as compared to free-flowing liquid, solid or granular compositions that have to be metered. The detergent unit-dose may be or contain a detergent composition of any form, such as liquids (incl. pastes) and solids (compressed or non-compressed) as well as combinations thereof. Indeed, detergent unit-doses 3 encompass water-soluble capsules filled with a liquid composition. Furthermore, detergent unit-doses 3 herein are not limited in term of their compressibility or rigidity. Indeed, detergent unit-doses 3 based on water-soluble capsules filled with liquid and/or solid compositions may to a certain degree be compressible and less rigid detergent portions are expressly not excluded from the scope of the present invention.

Detergent unit-doses 3 include tablets. Suitable tablets herein include tablets made from compressed powders and/or granules, solidified molten material, extruded and combinations thereof, such as a compressed moulded tablet wherein the mould is filled by solidified molten material. Detergent tablets and their manufacture are well known to the skilled person, e.g., WO 98/54283 (incorporated herein by reference) relates to swelling agents for use in detergent tablets.

Suitable tablets herein can be of any shape or form suitable for being dispensed with the dispenser 1 herein. Indeed, the tablets can have a cylindrical or rectangular shape. Furthermore, the tablets herein can have a rounded shape, such as a bead, or a globular shape or an elliptical shape. Furthermore, such tablets may be single or multilayer materials and may optionally have a core and shell configuration or may be coated.

In one embodiment wherein the detergent unit-dose herein is a tablet, said tablet has a weight of from about 5 grams to about 20 grams, alternatively from about 10 grams to about 15 grams. Furthermore, said tablet may be of cylindrical shape with a diameter of from about 10 mm to about 40 mm, alternatively from about 15 mm to about 25 mm and a thickness of from about 5 mm to about 20 mm, alternatively about 10 mm to about 15 mm. Alternatively, said tablet may be of substantially regular globular shape with a diameter of from about 15 mm to about 30 mm, alternatively from about 17 mm to about 28 mm.

The detergent unit-dose 3 herein further includes water-soluble capsules. The water-soluble capsules herein may comprise a liquid composition, a solid composition (such as a powder in compressed or non-compressed con-
figuration), or a combination thereof. The water-soluble capsules may be single- or multi-compartment capsules.

Suitable water-soluble capsules may be of any shape or form suitable for being dispensed with the dispenser 1 herein, such as cushion shaped or substantially globular shaped.

Suitable water-soluble capsules and their manufacture are well known to the skilled person, e.g., EP-A-0 608 340 (incorporated herein by reference) describes such capsules.

Water-soluble capsules are formed by placing a solid and/or liquid composition(s) within a closed (e.g., sealed) capsule (or bag) of a water-soluble material. Such a water-soluble material may be a water-soluble film, such as polyvinyl alcohol (PVA) film.

Suitable water-soluble capsules may be rigid capsules having rigid structure provided by a thick water-soluble film or a multilayer film. Alternatively, the water-soluble capsules may be formed using a single layer, thin water-soluble film and therefore have a compressible (low rigidity) structure.

Depending on their form (tablet or water-soluble capsule), the composition in/of the detergent unit-dose may be a solid or a liquid composition or a combination thereof. Liquid compositions herein include compositions having a water-like viscosity or having an increased viscosity and gels or pasty compositions and combinations thereof. Liquid compositions herein may be single- or multi-phased compositions. As detailed above, solid compositions may be compressed powders, non-compressed powders, compressed granules, non-compressed granules, solidified melts, extrudates, and the like and combinations thereof.

In one embodiment herein, the liquid compositions of the detergent unit-doses 3 herein are non-aqueous compositions and are alternatively substantially free of water, alternatively free of water. By “substantially free of water” it is meant that the water-content in the liquid composition is alternatively below about 15%, more alternatively below about 5% by weight of the total composition.

In one embodiment, no water as such is added to the liquid composition of the detergent unit-dose. However, the composition may comprise traces of water added to the composition through the raw materials used to produce the composition.

The pH of the liquid composition of the detergent unit-dose as such and the pH of the solid composition present in the detergent unit-dose upon a 1% (w/w) solution in distilled water may typically be from about 0 to about 14. Alternatively, the pH of the compositions herein (as such for liquid or 1% (w/w)-solution in distilled water for solid), as is measured at 25° C., is acidic, alternatively from pH about 0 to about 3.

Accordingly, the composition of the detergent unit-dose herein may further comprise an acid or base to adjust pH as appropriate. Acidity, if present, may further contribute to formulate compositions according to the present invention that exhibit good limescale removal performance whilst exhibiting also good disinfecting properties.

Accordingly, the composition of the detergent unit-dose may comprise organic and/or inorganic acids. Particularly suitable organic acids to be used herein are aryl and/or alkyl sulfone, such as methane sulfonic acids, citric acid, succinic acid, sulfamic acid, maleic acid and the like. Particularly suitable inorganic acids are sulfuric, phosphoric, nitric acids and the like.

A typical level of such an acid, when present, is of from 0 about 0.001% to about 15%, alternatively from about 0.001% to about 10% and more alternatively from about 0.01% to about 7% by weight of the total composition.

Suitable bases for use herein are the caustic alkalis, such as sodium hydroxide, potassium hydroxide and/or lithium hydroxide, and/or the alkali metal oxides such as sodium and/or potassium oxide or mixtures thereof. Other suitable bases include ammonia, ammonium carbonate and hydrogen carbonate.

Typical levels of such bases, when present, are of from about 0.001% to about 5% by weight, alternatively from about 0.01% to about 3% and more alternatively from about 0.1% to about 2% by weight of the composition.

The detergent compositions of the detergent unit-dose herein may further comprise a variety of ingredients including acids, bases, dyes, optical brighteners, builders, pigments, solvents, buffering agents, radical scavengers, polymers, stabilizers, anionic surfactants, nonionic surfactants, amphoteric surfactants, cationic surfactants, zwitterionic surfactants, bleaches, fragrance, and effervescent systems and mixtures thereof.

Indeed, the composition of the detergent unit-dose may also comprise an effervescent system.

Effervescence as defined herein means the evolution of bubbles of gas from the composition upon use, as the result of a chemical reaction between a soluble acid source and an alkali metal carbonate, to produce carbon dioxide gas, such as mixtures of acids, such as citric acid, or mixtures thereof with another acid, with carbonate (such as Na carbonate) and/or bicarbonate (such as Na bicarbonate), e.g., C₆H₁₂O₇+3NaHCO₃→Na₈C₆H₁₂O₇+3CO₂+3H₂O

Further examples of acid and carbonate sources and other effervescent systems may be found in: Pharmaceutical Dosage Forms: Tablets Volume 1 Page 287 to 291 (incorporated herein by reference).

Alternatively, the effervescent system herein may be the combination of monopersulfate with a source of hydrogen peroxide or a mixture thereof, such as percarbonate or perborate.

An effervescent may be added to the detergent unit-dose as described herein. The addition of this effervescent to the detergent unit-dose may improve the disintegration time of the detergent unit-dose and/or contribute to the cleaning performance of the detergent unit-dose herein by providing turbulence to loosen soil. The amount will be between about 5% and about 20%, alternatively between about 10% and about 20% by weight of the detergent unit-dose. Alternatively, the effervescent should be added as an agglomerate of the different particles or as a compact, and not as separated particles.

Fragrance

The composition of the detergent unit-dose may comprise a fragrance, alternatively a perfume and/or a
deodorant, alternatively a perfume. Furthermore, the fragrance delivery component \(^5\) alternatively comprises a fragrance, alternatively a perfume and/or a deodorant, alternatively a perfume.

[0134] The fragrance of the composition of the detergent unit-dose and the fragrance of the fragrance delivery component \(^5\) are independent from each other.

[0135] In a preferred embodiment, the perfume, if any, of the fragrance delivery component \(^5\) herein and the fragrance (if any) of the composition of the detergent unit-dose herein may be chemically identical compositions or at least having a similar odor. This provides continuity of perfume for the consumer.

[0136] In one embodiment herein, the fragrance, alternatively the perfume and/or deodorant, of the fragrance delivery component \(^5\) herein and the fragrance (if any) of the composition of the detergent unit-dose are different from each other. This provides the potential for a “soft” perfume and/or a deodorant to be continuously released from the fragrance delivery component \(^5\) into the air to provide a pleasant smell and/or remove malodors, and a “harder” fragrance (if any) to be used in the composition of the detergent unit-dose to be released upon cleaning.

Perfume

[0137] Any perfume suitable for incorporation into a detergent unit-dose may be used herein for use in the detergent unit-dose. Furthermore, any perfume suitable of being dispensed by the fragrance delivery component \(^5\) herein may be used herein in the fragrance delivery component \(^5\).

[0138] Examples of the highly volatile, low boiling, perfumes are: anethole, benzaldehyde, benzyl acetate, benzy alcohol, benzyl formate, iso-bornyl acetate, camphene, ciscitral (neral), citronellol, citronellol, citronellyl acetate, p-cymene, decanal, dihydroinalool, dihydromyrcenol, dimethyl phenyl carbilinol, eucaliptol, geranial, geraniol, geranyl acetate, geranyl nitrile, cis-3-hexenyl acetate, hydroxycitronellol, d-limonene, linalool, linalool oxide, linalyl acetate, linalyl propionate, methyl anthranilate, alpha-methyl ionone, methyl nonyl acetaldehyde, methyl phenyl carbinyl acetate, laevo-methyl acetate, menthone, iso-mertenone, myrcene, myrcenyl acetate, myrcenol, neol, neryl acetate, neryl propionate, phenyl ethyl alcohol, alpha-pinene, beta-pinene, gamma-terpinene, alpha-terpinene, beta-terpinol, terpinyl acetate, and vertenex (p-tertiary-butyl cyclohexyl acetate). Some natural oils also contain large percentages of highly volatile perfume ingredients. For example, lavender contains as major components: linalool; linalyl acetate; geraniol; and citronellol. Lemon oil and orange terpenes both contain about 95% of d-limonene.

[0139] Examples of moderately volatile perfumes are: amyl cinnamic aldehyde, iso-amyl salicylate, beta-caryophyllene, cedrene, cinnamic alcohol, coumarin, dimethyl benzyl carbilin acetate, ethyl vanillin, eugenol, iso-eugenol, floracetate, heliotropine, 3-cis-hexenyl salicylate, hexyl salicylate, lilial (p-tertiarybutyl-alpha-methyl hydrocin- namic aldehyde), gamma-methyl ionone, nerolidol, patchouli alcohol, phenyl hexanol, beta-selinene, trichlo- romethyl phenyl carbilin acetate, triethyl citrate, vanillin, and veratraldehyde. Cedarwood terpenes are composed mainly of alpha-cedrene, beta-cedrene, and other C\(_{13}\)H\(_{20}\) sesquiterpenes.

[0140] Examples of the less volatile, high boiling, perfumes are: benzophenone, benzyl salicylate, ethylene brassylate, galaxolide (1,3,4,6,7,8-hexahydro-4,6,6,7,8,8-hexamethyl-cyclopenta-gama-2-benzopyran), hexyl cinnamic aldehyde, linal (4-(4-hydroxy-4-methyl pentyl)-3-cyclohexene-10-carboxaldehyde), methyl cedrylone, methyl dihydro jasmonate, methyl-beta-naphthyl ketone, musk indanone, musk ketone, musk tibetane, and phenylethyl phenyl acetate.

[0141] Suitable perfumes are selected from the group consisting of: a cyclic terpene/sesquiterpene perfume, such as eucalyptol, eedrol, pinocarveol, sesquiterpene globul alcohol, linalo; tetrahydroalcal; verdox (cyclohexadiyl 2 teryl butyl acetate); 6,3 hexanol; and citronellol, and mixtures thereof.

[0142] The detergent composition of the detergent unit-dose herein may comprise from about 0.01% to about 40%, alternatively from about 0.01% to about 35%, alternatively from about 0.1% to about 30%, and alternatively from about 0.1% to about 25% by weight of the total composition of said perfume.

Deodorants

[0143] Any deodorant or deodorizing agent (used herein as synonymous terms) suitable for incorporation into a detergent unit-dose may be used herein for use in the detergent unit-dose. Furthermore, any deodorant or deodorizing agent suitable of being dispensed by the fragrance delivery component \(^5\) herein may be used herein in the fragrance delivery component \(^5\).

[0144] Any deodorant or deodorizing agent suitable of absorbing or at least reducing odors may be used for the present invention. Solid deodorants or deodorizing agents may be solublised (e.g., dissolved in a suitable solvent, such as water) prior to incorporating into liquid compositions and/or the fragrance delivery component \(^5\) herein.

[0145] Suitable deodorants or deodorizing agents for use herein are selected from the group consisting of: cyclodextrins; metal salts of branched or straight chain, saturated or unsaturated, one- or multiply hydroxylated fatty acids having at least about 16 carbon atoms; metal salts of resinous acids; urease inhibitor complexes formed from a divalent metal ion and a polyionic, alternatively amine-based, chelating agent and mixtures thereof.


[0147] In one embodiment, the deodorant or deodorizing agent comprises a urease inhibitor complex formed from a divalent metal ion and a polyionic, alternatively amine-based, chelating agent, as specifically described in EP 1,214,878 A1 (sections [0008] to [0017])—incorporated herein by reference.

[0148] Suitable deodorants or deodorizing agents also include compounds that are able to act on nose receptors to decrease their sensitivity to certain malodorous compounds.
The present invention encompasses a process of dispensing a lavatory bowl cleaning detergent unit-dose into a lavatory bowl wherein said process comprises the step of dispensing said lavatory bowl cleaning detergent unit-dose from the dispenser 1 according to any of the preceding claims into said lavatory bowl. Additionally, said process may comprise the steps of cleaning said lavatory bowl using a suitable implement, such as a toilet brush.

The present invention also encompasses a process of deodorizing the ambient air in a lavatory wherein said process comprises the step of continuously dispensing a fragrance from the dispenser 1 according to any of the preceding claims into the ambient air in a lavatory.

By "deodorizing the ambient air" it is meant herein masking odor (using a perfume) and/or neutralizing odor (using a deodorant).

The present invention also encompasses a process of dispensing hard surface cleaning detergent unit-dose wherein said process comprises the step of dispensing said hard surface cleaning detergent unit-dose from the dispenser 1 according to any of the preceding claims into a container.

In one embodiment of dispensing a hard surface cleaning detergent unit-dose, said container is alternatively a bucket. Furthermore, the process may additionally comprise the step of adding water (tap-water) to said container before, after and/or during the dispensing of said hard surface cleaning detergent unit-dose from the dispenser 1 into said container. Additionally, said process may comprise the steps of cleaning said hard surface using a suitable implement, such as a brush or mop.

The processes according to the present invention further include the step of activating the dispensing means 4a, 4b, 4c to dispense one or more detergent unit-doses 3. In one embodiment herein, a one time activation of the dispensing means 4a, 4b, 4c herein dispenses one detergent unit-dose.

Furthermore, the present invention encompasses the manufacture of a dispenser 1 for use in one of the processes as described herein above.

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".

All documents cited in the Detailed Description of the invention are, in relevant part, incorporated herein by reference; the citation of any document is not to be construed as an admission that it is prior art with respect to the present invention. To the extent that any meaning or definition of a term in this written document conflicts with any meaning or definition of the term in a document incorporated by reference, the meaning or definition assigned to the term in this written document shall govern.

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.

1. A dispenser for detergent unit-doses comprising:
   a) a storage compartment containing at least about one detergent unit-dose;
   b) a dispensing means for dispensing said detergent unit-dose from said storage compartment; and
   c) a fragrance delivery component;

   wherein said fragrance delivery component delivers fragrance independently from said at least one detergent unit-dose and delivers said fragrance into the ambiance over a prolonged period of time.

2. A dispenser according to claim 1, wherein said detergent unit-doses are hard surface cleaning detergent unit-doses.

3. A dispenser according to claim 1, wherein said detergent unit-doses are lavatory bowl cleaning detergent unit-dose.

4. A dispenser according to claim 1, wherein said dispenser additionally comprises an outer casing.

5. A dispenser according to claim 1, wherein said fragrance delivery component is selected from the group consisting of: fragranced gels, fragranced plastics; a wick delivery system comprising a fragrance-containing liquid; permeable film delivery systems combined with a fragranced gel or a fragrance-containing liquid; and battery powered/electrical fragrance release systems or gravity driven fragrance release cartridges; and combinations thereof.

6. A dispenser according to claim 1, wherein said fragrance delivery component is present in a separate compartment of said dispenser.

7. A dispenser according to claim 1, wherein said fragrance delivery component is present in a separate compartment of said dispenser and wherein said separate compartment has a means of communication for air flow with the ambiance.

8. A dispenser for detergent unit-doses comprising:
   a) a storage compartment containing at least about one detergent unit-dose;
   b) a dispensing means for dispensing said detergent unit-dose from said storage compartment; and
   c) a fragrance delivery component;

   wherein said fragrance delivery component delivers fragrance independently from said at least one detergent unit-dose and delivers said fragrance into the ambiance over a prolonged period of time and wherein said fragrance delivery component is present in a separate compartment.
compartment of said dispenser and wherein said separate compartment has a means of communication for air flow with the ambiance.

9. A dispenser according to claim 1, wherein said fragrance delivery component is a fragranced gel.

10. A dispenser according to claim 1, wherein said fragrance delivery component is a perfumed gel.

11. A dispenser according to claim 9, wherein said fragranced gel is present in the form of a multitude of fragranced gel beads present in a in a separate compartment of said dispenser.

12. A dispenser according to claim 9, wherein said fragranced gel is present in the form of a multitude of fragranced gel beads present in a in a separate compartment of said dispenser, and wherein said separate compartment has a means of communication for air flow with the ambiance.

13. A dispenser according to claim 9, wherein said fragranced gel is present in the form of a multitude of fragranced gel beads, present in a in a separate compartment of said dispenser, and wherein said separate compartment has a means of communication for air flow with the ambiance.

14. A dispenser for detergent unit-doses comprising:

   a) a storage compartment containing at least about one detergent unit-dose;
   
   b) a dispensing means for dispensing said detergent unit-dose from said storage compartment; and
   
   c) a fragrance delivery component;

   wherein said fragrance delivery component delivers fragrance independently from said at least one detergent unit-dose and delivers said fragrance into the ambiance over a prolonged period of time and wherein said fragrance delivery component is present in a separate compartment of said dispenser, and wherein said fragrance delivery component is a fragranced gel and wherein said fragranced gel is present in the form of a multitude of fragranced gel beads, present in a in a separate compartment of said dispenser, and wherein said separate compartment has a means of communication for air flow with the ambiance.

15. A dispenser according to claim 1, wherein said fragrance delivery component is a fragranced plastic based on a plastic material selected from the group consisting of polyethylene terephthalate (PET); polyethylene (PE); polypropylene (PP); polyvinyl chloride (PVC); high impact polystyrene (HIPS); and polystyrene (PS) and mixtures thereof.

16. A dispenser according to claim 1, wherein said fragrance delivery component is a permeable film delivery system combined with a fragranced gel or fragrance-containing liquid medium.

17. A dispenser according to claim 1, wherein said fragrance delivery component is a wick delivery system comprising a fragrance-containing liquid composition.

18. A dispenser according to claim 1, wherein said fragrance delivery component is a battery powered/electrical fragrance release system.

19. A dispenser according to claim 1, wherein said fragrance dispensed by the fragrance delivery component is selected from the group consisting of a perfume, a deodorant, and mixtures thereof.

20. A dispenser according to claim 19, wherein the perfume dispensed by the fragrance delivery component is selected from the group consisting of: a cyclic terpene/sesquiterpene perfume, such as eucalyptol, cedrol, pinocarveol, sesquiterpenic globulut alcohol, linalol; tetrahydro-linalol; verdox (cyclohexadiyl 2 teryl butyl acetate); 6,3 hexanol; and citronellol and mixtures thereof.

21. A dispenser according to claim 19, wherein the deodorant dispensed by the fragrance delivery component is selected from the group consisting of: cycloexdetrins; metal salts of branched or straight chain, saturated or unsaturated, one- or multiply hydroxylated fatty acids having at least about 16 carbon atoms; metal salts of resinous acids; urease inhibitor complexes formed from a divalent metal ion and a polyanionic, alternatively amine-based, chelating agents; and mixtures thereof.

22. A dispenser according to claim 1, wherein said at least one detergent unit-dose is selected from the group consisting of: tablets and water-soluble capsules comprising solid and/or liquid compositions.

23. A dispenser according to claim 1, wherein said at least one detergent unit-dose comprises at least one active selected from the group consisting of: acids, bases, dyes, optical brighteners, builders, pigments, solvents, buffering agents, radical scavengers, polymers, stabilizers, anionic surfactants, nonionic surfactants, amphoteric surfactants, cationic surfactants, zwitterionic surfactants, bleaches, fragrance, and effervescent systems, and mixtures thereof.

24. A process of dispensing a lavatory bowl cleaning detergent unit-dose into a lavatory bowl wherein said process comprises the step of dispensing said lavatory bowl cleaning detergent unit-dose from the dispenser according to claim 1 into said lavatory bowl.

25. A process of dispensing hard surface cleaning detergent unit-dose wherein said process comprises the step of dispensing said hard surface cleaning detergent unit-dose from the dispenser according to claim 1 into a container.

26. A process of deodorizing the ambient air in a lavatory wherein said process comprises the step of continuously dispensing a fragrance from the dispenser according to claim 1 into the ambient air of a lavatory.