ABSTRACT

Packaging means made of plastic, in particular, for a free-flowing or pourable surfactant-containing and/or bleach-containing material, for example detergent or cleaning agent powder, comprising a base, a top and a body, wherein the packaging means has a water vapor permeability level<15 g/(m²·d) and wherein at least the body of the packaging means is covered over, in part, by a sheet-like presentation and identification means which butts against the outer surface of the packaging means and has a water vapor permeability level<15 g/(m²·d).
PACKAGING WITH IMPROVED WATER VAPOUR BARRIER RATING

CROSS REFERENCE TO RELATED APPLICATIONS


[0002] The present invention relates to packaging or containers made of plastic with a water vapor permeability > 15 g/(m²·d), wherein the external surface of the packaging is enclosed, at least in sections, by a presentation and identification means that fits the external surface of the packaging and has a water vapor permeability ≤ 15 g/(m²·d).

[0003] Plastic containers are used in various forms and designs as packaging for the transport and storage of a variety of most diverse packaged goods.

[0004] Many packaged goods require that the plastic packaging provides a water vapor barrier adequate to firstly prevent ingress of moisture through the package walls into the packaged goods, and secondly from the inside of the packaging into the surroundings.

[0005] In the case of ingress of moisture, dispersible packaged goods can become clumped, for example, so that the thus-damaged packaged goods can no longer be conveniently removed from the package. Moreover, the packaged goods can also be chemically modified by the ingress of water vapor. For example, penetrating water vapor deactivates or decomposes bleaches and/or enzymes in powdered laundry detergents and cleaning agents. Unwanted biological effects, such as bacterial growth or mold in the packaged goods, are also possible from an increased ingress of water vapor.

[0006] Considering the egress of moisture, particularly with aqueous packaged goods, an inadequate water vapor barrier can lead to a thickening of the packaged goods if water vapor can escape through the package wall into the surroundings. This is particularly relevant in warm temperatures or in direct sunshine for this kind of packaged goods. This then leads to a modified flow behavior and concentrations in the liquid packaged goods which render an exact dosage difficult for the consumer. The volume loss that results from the escape of water vapor can lead to an aesthetically, unwanted dent in the relevant container.

[0007] Furthermore, due to the loss of liquid, soluble ingredients in the liquid product may precipitate out and settle on the bottom of the container. Finally, the subtle lowering of the level that accompanies the loss of water is undesirable, especially when the bottle is transparent and a lower fill level can be perceived by the consumer.

[0008] This is particularly critical for plastics of non-fossil origin, such as plastics based on starch or polylactic acid, which generally have comparatively low water vapor barrier, so that these so-called bioplastics are not suitable for many packaged goods.

[0009] Sustainable, renewable resources are usually used to manufacture these types of bioplastics. In addition to the possible use of the respective regionally available agricultural raw materials for manufacturing bioplastics, there is a further advantage that after use for the intended purpose, they are comparatively easily and quickly biodegradable according to the German Institute for Standardization packaging requirement DIN EN 13432, for example, by composting, so that a generally increased use and wider employment of bioplastics is desirable.

[0010] In order to improve the water vapor barrier, it has often been proposed in the prior art to vapor-coat this type of bioplastic with, for example, SiO, or aluminum, with the consequence that the total surface of the packaging made from this has a suitable coating. However, vapor coating with aluminum in particular has a number of disadvantages. Firstly, a metallized plastic film loses its transparency and, secondly, they are usually unsuitable for use in a typical domestic microwave, with the result that any use for the packaging and preparation of hot foods is generally excluded. Furthermore, the vapor coated layer does not contribute to an increased structural stability of the molded container.

[0011] Moreover, metallized or SiO vapor-coated bioplastics with increasing metal or SiO levels significantly reduce their inherent biodegradability. In particular, for metallized bioplastics one must ask whether it makes ecological sense to introduce metals like aluminum into the environment where they do not naturally degrade but rather only accumulate, especially when considering recent research results indicating a direct relationship between an increased exposure of biologically resorbable aluminum with illnesses such as Parkinson’s syndrome or Alzheimer’s disease.

[0012] Accordingly, the present invention provides an improved water vapor barrier for plastic packaging with a low water vapor barrier of resource-saving, cost-efficient and easily manufacturable manner.

[0013] This is achieved by a packaging made of plastic, especially for free-flowing or pourable surfactant-containing and/or bleach-containing packaged goods such as for example laundry detergent or cleaning agent, wherein the packaging has a water vapor permeability > 15 g/(m²·d). The packaging includes a base, a top, wherein an opening for removing product from the packaging is located on or in the top and the opening can be closed with a closing means, and a body. At least the body of the packaging is covered, at least in sections on the external surface of the packaging, by a film-like presentation and identification means that has a water vapor permeability ≤ 15 g/(m²·d). The film-like presentation and identification means covers between 50% and 95% of the packaging surface and is fixed on the packaging by adhesion.

BRIEF DESCRIPTION OF THE DRAWINGS

[0014] FIG. 1 is a side elevation of one embodiment of a plastic bottle according to the invention with a label conforming to the bottle contour.

[0015] FIG. 2 is a side elevation of another embodiment of a plastic bottle according to the invention with a label conforming to the bottle contour, closure and opening aid.

[0016] The advantages of the invention include firstly an improvement in water vapor barrier properties. Secondly, plastic packaging according to the invention enables separation of biodegradable plastic materials and either non-degradable or only difficultly degradable plastic materials after the carton package has been used.

[0017] Packaging according to the invention can be produced in a cost-efficient manner by use of industrially established processes for manufacturing carton packaging. The packaging according to the invention is especially suitable for filling, storing, transporting and dispensing free-flowing or dispersible products of filled goods such as laundry deter-
gents, laundry cleaning agents and laundry care agents, dish-
washer detergents, body care agents, pharmaceuticals, agri-
cultural auxiliaries, building materials, colorants, adhesives
or foodstuffs.

Packaging

[0018] The invention is particularly suitable for substan-
tially dimensionally-stable plastic packaging, such as bea-
kers, cans, buckets, barrels, bottles, canisters, jugs, drums or
tubes. It can also be used for flexible containers such as
pouches or sachs.

[0019] The packaging can assume any shape. Round or
rounded cross sectional shapes are advantageous, as "sharp
edges" on packaging lead to unwanted stress peaks in the
enveloping film-like presentation and identification means,
and thus can cause an unintentional tearing of the film-like
presentation and identification means.

[0020] In order for the presentation and identification
means to fit without difficulty onto the surface of the pack-

ing, the outline of the packaging should be as flat as possible.
However, it is possible to shape the presentation and iden-
tification means such that it fits closely to the outline of the
packaging.

Beakers, Cans and Barrels

[0021] In terms of the present application, a "beaker" is a
substantially dimensionally-stable container for holding a
free-flowing or pourable product having a filling volume
delimited by a floor and a lateral wall, wherein the cross-
section of the floor substantially corresponds to the cross-
section of the opening of the beaker.

[0022] Cans can include an extended can, tear-open can,
press-in lid can, threaded can, folding lid can, folding lid can
with filling hole, folded can, drawn can, lobed can, sleeved
can, ripcord can, crimped can, sliding lid can or raised-rim

[0023] Barrels or drums can be chosen from belly barrels,
staved barrels, pressurized barrels, garage drums, semi-press-
urized barrels, kegs, tire-shod roller drums, heavy-duty

Bottles

[0024] For the present application, a 'bottle' is a closable,
substantially dimensionally-stable container for holding a
free-flowing or pourable product having a filling volume
delimited by a base and a lateral wall, wherein the filling
volume can be filled or emptied through an opening in the

[0025] A bottle can be designed, for example, as an aerosol
bottle, transparent bottle, drinks bottle, in particular, ale
bottle, various wine bottles, stone bottle, stubby bottle, Vichy
bottle, broad-necked bottle as well as flat bottle, squeeze
bottle, droplet bottle, packaging bottle such as a flagon.

[0026] The wall thickness of the bottle is chosen such that
the bottle is substantially dimensionally stable. In one
embodiment, the walls or the lateral wall surface can be
elastically deformable so that pressure can be exerted on the
product located in the bottle, facilitating the release of prod-

[0027] In a further advantageous development of the inven-
tion, the bottle can also be designed as a two- or multi-
chamber container. Then, in an advantageous manner, each of
the chambers can contain different products. For example, a
liquid product can be stored in one chamber and a granular

[0028] In another embodiment of the invention, the closure
of the bottle is at least partially or sectionally covered by
presentation and identification means. A tamper evident seal
or closure, for example, can be easily realized in this way.

Pouch

[0029] In the context of this application, flexible packaging
is packaging that substantially changes its shape under mild
force during normal use. Such flexible packaging can be
designed as a pouch or sack.

[0030] The pouch can be chosen from a bottom pouch,
block pouch, brick pouch, block bottom pouch, floor standing
pouch, folded bottom pouch, round bottom pouch, upright
pouch, double pouch, window pouch, flat pouch, valve pouch,
valve pocket pouch, conical pouch, tubular pouch, side-fold
pouch, folded pouch, sealed edge pouch, three edge sealed

[0031] The sack can be chosen from push-in sacks, sus-
pended sacks, folded sacks, flat sacks, crossed bottom
sacks, multi-ply sacks, round bottom sacks and/or valve
sacks.

Packaging Material of the Packaging

[0032] The inventive packaging is molded from a plastic.
The plastic packaging has a water vapor barrier of less than 15
g/ (m²* d).

[0033] Suitable, exemplary packaging materials for the
packaging include polyolefins, polyethylene terephthalates,
acrylonitrile-butadiene-styrene copolymers, cellulose
acetates, ionomers, polyacrylonitriles, polyamides, polycarbonates, polyesters, polystyrenes, polyterephthalic acid esters, polyurethanes, polyvinyl alcohols, polyvinyl chlorides.

[0034] It is particularly advantageous to choose packaging material from bioplastics that are substantially manufactured from renewable, sustainable resources. These include celluose-based plastics, plastics based on polyactic acid (PLA), polyhydroxybutyrates (PHB), polyhydroxyvalerates (PHV), polyhydroxyalkanoates (PHA), thermoplastic starch blends, polysaccharides (PLC).

[0035] It is particularly advantageous to mold the packaging out of a PLA plastic. Firstly, PLA is highly transparent, such that packaging molded from PLA is optically high-grade and attractive. Secondly, PLA is sufficiently rigid and can be processed in standard molding machines.

[0036] Ecologically, it is advantageous if the packaging material is easily and as completely as possible biodegradable.

[0037] In order to further reduce the weight of the packaging and therefore the primary material requirement, the packaging can be manufactured from foamed plastics.

Presentation and Identification Means

[0038] In the context of the present application, a “presentation and identification means” is a film-like packaging auxiliary suitable for covering at least a section of the packaging so that it fits on the external surface of the packaging.

[0039] “To fit” in this context means that the surface of the presentation and identification means facing the packaging touches the outwardly oriented surface of the packaging, wherein the intermediate location of an adhesive layer between the packaging surface and presentation and identification means is also covered.

[0040] The presentation and identification means is made of a film that has a water vapor permeability of <15 g/(m²·d).

[0041] The presentation and identification means and the packaging are designed to ensure a permanently good physical contact between the presentation and identification means and the packaging, as well as preventing the presentation and identification means from being easily damaged when manipulating the packaging.

[0042] The bond between the presentation and identification means and the packaging can be designed to be friction locked, interlocking and/or cohesive. A friction locked bond can be realized, for example, by shrinking the presentation and identification means onto the packaging. A cohesive bond can be effected by means of an adhesive bond. It is also conceivable to cohesively bond the presentation and identification means with the packaging by an “in-mold” process.

[0043] The thickness of the film-like presentation and identification means is preferably between 5 μm and 100 μm, particularly preferably between 5 μm and 75 μm, and most preferably between 10 μm and 60 μm.

[0044] The ratio of the thickness of the packaging wall to that of the presentation and identification means is preferably >1. The ratio of the thickness of the packaging wall to that of the presentation and identification means is particularly preferably between 1.5 and 100.

[0045] Films include co-extruded film, stretch- or drawn film, extruded film, flat sheet, stretched or orientated film, cast film, calendared film, foamed film, tubular film or blown film, or shrink film.

[0046] The presentation and identification means is preferably arranged as a single layer around the packaging.

[0047] In a further advantageous development of the invention, the presentation and identification means is detachably arranged on the packaging. In this way the presentation and identification means can be easily removed from the packaging and separately disposed of, such that packaging consisting of an easily biodegradable bioplastic can be composted, while the presentation and identification means made of a plastic film of fossil origin can be subjected to a thermal recovery.

[0048] The presentation and identification means can be attached to the packaging by one or more cohesive bonds. The cohesive bond can be designed such that on removing the presentation and identification means from the packaging, the cohesive bond is destroyed and cannot be re-established, such that the presentation and identification means, once removed from the packaging, no longer adheres to the packaging through the original cohesive bond. Separately, the cohesive bond can be designed such that a repeated removal and adhesion of the presentation and identification means to the closure cap is possible.

[0049] The cohesive bond can be chosen from adhesive joints, welded joints or sealed joints.

[0050] It is particularly advantageous if the employed adhesive layer provides a water vapor barrier. Therefore, it is also conceivable for the water vapor barrier of the adhesive layer to be greater than that of the presentation and identification means located on top of the adhesive layer. In this regard it is advantageous to form a closed surface between the presentation and identification means and the packaging.

[0051] In order to facilitate removal of the presentation and identification means, an opening aid such as scissors or a knife can be provided on the presentation and identification means, allowing the presentation and identification means to be detached without need for opening means.

[0052] These types of opening aids can be formed, for example, as perforations, tear-off tabs, rip tapes, rip threads, pull tabs, tear-off seams, tear-off scratch lines or body rip-off tapes.

[0053] It is particularly advantageous for the presentation and identification means to substantially cover the lateral walls of the packaging, with the base of the packaging remaining substantially unenclosed by the presentation and identification means. In a further preferred embodiment of the invention, 50 to 95% of the packaging surface are covered by the presentation and identification means. It is particularly preferred to cover 65 to 90% of the packaging surface with the presentation and identification means. Doing so produces a water vapor barrier that is adequate for a large majority of possible applications.

[0054] In a further advantageous development of the invention, the presentation and identification means can be interlockingly joined to the packaging by an “in-mold” labeling process.

Packaging Material for Presentation and Identification Means

[0055] The presentation and identification means is molded from a packaging material that has a water vapor permeability of less than 15 g/(m²·d).

[0056] The packaging material of the presentation and identification means should possess a good printability. The packaging material can be printed substantially over its whole surface and therefore can be substantially opaque, thereby
forming a correspondingly good UV-barrier that protects the contents of the packaging against environmental UV irradiation. This is of particular advantage for packaged goods containing UV-sensitive ingredients, such as enzymes, vitamins, colorants or fragrances.

[0057] The packaging material can also comprise specific UV-barrier substances and/or UV stabilizers. This can be advantageous for protecting UV-sensitive packaged goods, particularly when too high a fraction of transparent presentation and identification means is used. The use of UV-barrier substances in the presentation and identification means has moreover the advantage that for a given UV-barrier effect, comparatively less UV-barrier substances need to be incorporated in the presentation and identification means than in the packaging material, with the result that the corresponding UV-barrier can be manufactured more cost effectively. However, it is also conceivable to print the surface of the packaging and to enclose it in a transparent presentation and identification means.

[0058] Suitable, exemplary packaging materials for the presentation and identification means include polyolefins, polyethylene terephthalates, acrylonitrile-butadiene-styrene copolymers, cellulose acetates, ionomers, polycarbonates, polyesters, polystyrenes, polycarbonate acid esters, polyurethanes, polystyrene, and polypropylene. In particular, the packaging material for the presentation and identification means can be polyethylene and/or polypropylene.

[0059] In order to obtain a particularly good water vapor barrier, multi-layered and/or composite films can also be used as the presentation and identification means. In this regard, multi-layered films or composites consisting of PET-PE, PET-PE or BOPP-PE are particularly preferred.

Packaged Goods

[0060] When the packaging according to the invention is used, free-flowing and pourable packaged goods are particularly preferred. Pourable packaged goods include laundry detergent powder, laundry detergent granulates, cleaning agent granulates, salt or the like. Free-flowing packaged goods are preferably liquid or gelled laundry detergents and/or cleaning agents, body-care products, adhesives, building materials or the like.

[0061] The invention is described below in more detail with reference to illustrative drawings of some embodiments. Particularly preferred developments and particularly preferred combinations of characterizing features will also be described below in detail.

[0062] FIG. 1 shows a packaging 1 in the form of a bottle that possesses a handle located in the body 4 of the bottle 1. The bottle is partially covered by a film-like presentation and identification means 5.

[0063] In FIG. 2 is shown a further development of the invention: a packaging 1 shaped as a bottle with a base 3 and a top 2, on which is found the closure 7, as well as a body 4 that extends between base 3 and top 2. The bottle 1 has a waist at about half the way up the bottle 1. The body 4 is covered by a presentation and identification means 5 that follows the contours of the bottle on the front and rear sides of the bottle. As can be seen in FIG. 2, areas on the base 3 and top 2 are not covered by the presentation and identification means 5. In order to realize a user-friendly removal of the presentation and identification means 5 from the bottle 1, an opening aid 6 designed as a tear-off strap is provided on the presentation and identification means 5.

We claim:

1. Packaging for free-flowing or pourable surfactant-containing and/or bleach-containing packaged goods agent comprising:
   a base,
   a top, wherein an opening for removing product from the packaging is located on or in the top and the opening can be closed with a closing means, and
   a body,
   wherein the packaging is made of plastic and has a water vapor permeability ≥ 15 g/(m²·d),
   wherein at least the body of the packaging is covered, at least in part on the external surface of the packaging, by a film-like presentation and identification means having a water vapor permeability ≤ 15 g/(m²·d), the presentation and identification means covers 50% to 95% of the packaging surface, and the presentation and identification means is fixed on the packaging by adhesion.

2. Packaging according to claim 1 wherein the film-like presentation and identification means completely encloses the body surface and at least leaves part of the base uncovered.

3. Packaging according to claim 1 wherein the film-like presentation and identification means at least covers sections of the base and/or the top of the packaging.

4. Packaging according to claim 1 wherein the film-like presentation and identification means at least covers sections of the closing means.

5. Packaging according to claim 1 wherein the adhesive layer has a water vapor permeability that is lower than that of the packaging.

6. Packaging according to claim 1 wherein the adhesive layer has a water vapor permeability that is lower than that of the film-like presentation and identification means.

7. Packaging according to claim 1 wherein the adhesive layer is applied onto substantially the whole surface between the film-like presentation and identification means and the packaging.

8. Packaging according to claim 1 wherein the film-like presentation and identification means is interlockingly joined to the packaging by means of in-mold labeling.

9. Packaging according to claim 1 wherein the thickness of the film-like presentation and identification means is between 5 μm and 100 μm.

10. Packaging according to claim 1 wherein the ratio of the wall thickness of the packaging to that of the film-like presentation and identification means is > 1.

11. Packaging according to claim 1 wherein the film-like presentation and identification means is arranged in at least a single layer around the packaging.

12. Packaging according to claim 1 wherein the film-like presentation and identification means is printed.

13. Packaging according to claim 1 wherein the film-like presentation and identification means is printed on the surface of the packaging.

14. Packaging according to claim 1 wherein the film-like presentation and identification means is detachably arranged on the packaging.

15. Packaging according to claim 1 wherein an opening aid is provided on or in the film-like presentation and identification means.
16. Packaging according to claim 1 wherein the film-like presentation and identification means is fixed on the packaging by means of a detachable adhesive bond.

17. Packaging according to claim 1 wherein the ratio of body surface to the surface of the top and the base is greater than 2.

18. Packaging according to claim 1 wherein the packaging is molded from a bioplastic.

19. Packaging according to claim 18 wherein the bioplastic is cellulose-based plastic, plastic based on polylactic acid (PLA), polyhydroxybutyrate (PHB), polyhydroxyvalerate (PHV), polyhydroxyalkanoate (PHA), thermoplastic starch blends, polycaprolactone (PLC) or any blends thereof.

20. Packaging according to claim 1 wherein the packaging is not printed.

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