CONTAINER FOR THE PREPARATION OF BEVERAGE COMPRISING AN IMPROVED PERFORABLE FOIL AND METHOD FOR PREPARING A BEVERAGE

BEHÄLTER ZUR HERSTELLUNG EINES GETRÄNKS MIT EINER VERBESSERTEN DURCHSTECHBAREN FOLIE UND VERFAHREN ZUR HERSTELLUNG EINES GETRÄNKS

RÉCIPIENT POUR LA PRÉPARATION DE BOISSON COMPRENANT UNE FEUILLE PERÇABLE AMÉLIORÉE ET PROCÉDÉ DE PRÉPARATION D'UNE BOISSON

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Proprietor: Nestec S.A.
1800 Vevey (CH)

Inventors:
• GERBAULET, Arnaud
  F-25160 Oye et Pallet (FR)

Representative: Borne, Patrice Daniel
Nestec S.A.
CT-IAM
Avenue Nestlé 55
1800 Vevey (CH)

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The present invention relates to the field of the preparation of beverages by the use of a portioned beverage container in a beverage preparation device. The invention also relates to a method for preparing a beverage from such a container.

Background of the invention:

The preparation of a beverage such as coffee by means of a portioned beverage container, such as a capsule has become very popular. Many brands and food manufacturers now propose their own beverage capsule system. One principle consists in injecting liquid in a container such as by perforating an entry wall of the container. The liquid then interacts with the beverage ingredients contained in the container and the resulting beverage extract is drained through perforations created in or through the container. Usually, a pressure of liquid is created inside the container to promote the extraction of certain aromatic compounds in particular for coffee. A pressurized extraction of the beverage ingredients can be obtained by forcing liquid in the confined volume of the capsule using a pressure pump or centrifugation, such as by centrifuging the container in a centrifugal preparation device.

In EP1165398, a sealed cartridge is designed to be extracted under pressure. The cartridge comprises a cup with a base containing roasted coffee and a frustoconical wall, a circular lip and a cover welded to the periphery of the lip. The cartridge comprises in the cup near the base, where perforating means are introduced for creating openings for liquid to be fed in the cartridge, a layer such as a fabric or a valve for avoiding the solid substance to leave the capsule when the perforating means, e.g., blades, are retrieved from the cartridge.

Other systems, such as described in WO20080745 or EP1987099, provide a container with a flexible membrane which is perforated by one or several intruding members. The flexible membrane, generally of lower thickness, is easier to perforate than the thicker/more rigid (plastic or aluminum) body of the container.

EP1247756 relates to a capsule with a plastic body and a lid. The plastic body includes an opening for introduction of an emptying device. The opening is closed and sealed by a flexible membrane which has a lower resistance to rupture, than the remainder of the body.

WO2006030461 relates to a capsule for the preparation of beverages within dispensing machines, has a sealing film which is perforated at the time of the use when the pressurized infusion water is supplied to the capsule and deforms the film, bringing it into contact with underlying perforation means fixed to the same capsule.

US2010288131 relates to a single-use mineral composite beverage brewing cup and cartridge. The cup is formed from polymeric materials with calcium carbonate and the lid is made of metal foil laminated to a heat sealable polymeric layer (e.g., metalized polypropylene).

US7552672 discloses a cartridge containing one serving of coffee powder for preparing a coffee beverage. The bottom of the cartridge is provided with a passage covered by a gas-tight foil. The foil is manually removed before the cartridge is inserted into the coffee machine or perforated by an outlet piercing sting. Between the passage and the coffee powder, a filter element is disposed, preventing coffee powder to escape from the cartridge. The passage prevents an hydraulic pressure build-up in the cartridge, which would lead to the formation of froth.

US6607762 relates to an outer container with an access opening. A filter element is received in and configured and arranged to subdivide the interior of the container into first and second chambers. A beverage medium is stored in the first chamber. A lid closes the access opening. The lid has a first section overlying the first chamber and a second section overlying the second chamber. The first section of the lid is yieldably piercable to accommodate an inflow of liquid into the first chamber for infusion with the beverage medium to produce a beverage. The filter element is permeable to accommodate a flow of the beverage from the first chamber into the second chamber, and the second section of the lid is yieldably piercable to accommodate an outflow of the beverage from the second chamber to the exterior of the cartridge.

A capsule for preparing a beverage or liquid food and a system using brewing centrifugal forces is described in WO2008/148604. Typically, the capsule is formed of a body containing a beverage making substance such as coffee powder which is closed by a membrane. The membrane is perforated by a water injection needle of the device in the central part of the membrane for injecting liquid in the capsule and is simultaneously perforated in the peripheral part of the membrane by many smaller needles for extracting the beverage out of the capsule. The problem with such capsule is that the extraction perforators must be sharp enough to provide sufficiently large openings in the membrane. As a consequence, liquid and/or solids can easily flow back also along the surface of the water injection needle by the effect of the centrifugal momentum. As a result, such liquid and/or solid can contaminate the external surface of the container and dirty the extraction device. These residues may also be drained into the beverage. Of course, this is not desirable for the taste and the texture of the beverage.

WO2010/063644 relates to a capsule with a flexible membrane configured in the central inlet portion to provide liquid tightness between the liquid inlet and the surface of an injection needle of the beverage production device to prevent liquid from leaking from inside toward outside of the capsule. The capsule is also con-
The present invention aims at providing an improving layer may be a layer of a laminate comprising upper wall in the central inlet portion. The tightness-producing layer is localized in the central inlet portion, to create in the peripheral outlet portion and/or a fibrous or foam material in the peripheral outlet portion, or a more resilient or soft material comparatively thicker than the same material. The tightness-producing layer can be obtained by a resilient or soft material comparatively thicker than the same material. The term "container" refers to any single-use rigid or semi-rigid packaging container containing beverage producing device, e.g., a liquid injector, while still reducing leakage and avoiding by-pass of liquid at the injection site of the container. The present invention further facilitates filtering of the beverage and reduces resurgence of solids without the requirement for an additional filter in the container. The present invention also reduces backflow of liquid and/or solids such as after withdrawal of the intruding member. The present invention also aims at providing a simpler, more industrial and more economical container than prior art solutions. In particular, the invention aims at reducing the number of parts constituting the container while maintaining the previous functions and advantages.

Summary of the invention:

[0012] The present invention aims at providing an improvement for a portioned beverage container to facilitate perforation by an intruding member of the beverage producing device, e.g., a liquid injector, while still reducing leakage and avoiding by-pass of liquid at the injection site of the container. The present invention further facilitates filtering of the beverage and reduces resurgence of solids without the requirement for an additional filter in the container. The present invention also reduces backflow of liquid and/or solids such as after withdrawal of the intruding member. The present invention also aims at providing a simpler, more industrial and more economical container than prior art solutions. In particular, the invention aims at reducing the number of parts constituting the container while maintaining the previous functions and advantages.

[0013] For this, the present invention is broadly defined by the main independent claim 1. The dependent claims further define the invention.

[0014] More particularly, the invention relates to a portioned container, for the preparation of a beverage in a beverage producing device, comprising a body having a main cavity and a foil connected to the body for closing said main cavity; said main cavity containing beverage ingredients, wherein the foil is permeable in axial direction above the cavity by an elongated intruding member of the beverage preparation device, wherein the foil comprises at least a base layer and at least a tightness-producing layer; said tightness-producing layer constituting an inner layer beneath the base layer; wherein said tightness-producing layer and said base layer are adhesively bonded above the cavity at least in a first region of the foil and are free of adhesive bond in at least a second region of the foil; such second region being the region intended for being perforated by the elongated intruding member forming a tightness engagement with the surface of the elongated intruding member.

[0015] The term "container" refers to any single-use rigid or semi-rigid packaging container containing beverage ingredients such as a capsule. Other synonymous to a capsule are "cartridge" or "pod". The term "ingredients" means any suitable beverage substance such as ground coffee, soluble coffee, leaf tea, soluble tea, herbal tea, cocoa powder, dairy powder, culinary powder, baby food, other beverage nutritional ingredients and any combinations thereof. The term "tightness" is meant here to designate the tightness to a liquid medium (i.e., injected water, liquid coffee extract) and/or solids (i.e., non-fusible soluble particles such as coffee grains). The term "layer" is meant here to designate a single layer or a combination of sub-layers assembled together. The term "foil" or "flexible membrane" are used for designating the same closing element for the container.

[0016] In the second region, in which the base layer and the tightness-producing layer are free of adhesive bond, the base layer and the tightness-producing layer preferably overlap.

[0017] In a preferable mode, the second region, in which the base layer and the tightness-producing layer are free of adhesive bond, represents less than a third of the total surface area of the foil above the cavity.

[0018] The second region, in which the base layer and the tightness-producing layer are free of adhesive bond, is a circular region in the central axis (I) of the capsule.

[0019] More particularly, the second region in which the base layer and tightness-producing layer is a circular region in the central axis (I) of the capsule.

[0020] The term "free of adhesive bond" means that the base layer and the tightness-producing layer are not connected together at all or that the two layers are connected by a bond having a peeling resistance of less than 0.5 N/15mm according to the DIN53357 standard.

[0021] According to an aspect of the invention, the tightness-producing layer has a elongation at break of at least 200%, preferably at least 300%. The elongation at break is measured by ISO 527.3 standard (Tensile Properties of Films and Sheets).

[0022] In the foil of the container, the tightness-producing layer is preferably made of a material chosen amongst: PP, PE, their copolymers or their terpolymers, PVC, elastomeric thermoplastic, a biodegradable material and combinations thereof.

[0023] The tightness-producing layer is preferably made of polypropylene, most preferably cPP (cast polypropylene). The tightness-producing layer is preferably formed of PP having a thickness of between 3 and 500 microns, more preferably between 10 and 100 microns. Most preferably, the tightness-producing layer is comprised between 10 and 50 microns, for example, 30 microns.
The tightness-producing layer can also be a biodegradable material such as natural fibers (e.g., cellulose), starch, PLA and combinations thereof. Preferably, the biodegradable material is a blend of cellulose, starch and PLA.

When the tightness-producing layer is perforated by the liquid injection member, the layer elongates and creates an elongated sealing portion of film such as sealing lips around the surface of the intruding member.

The base layer has preferably an elongation at break which is lower than the elongation at break of the tightness-producing layer to ensure that it breaks earlier during insertion of the intruding member in the region in which the base layer and the tightness-producing layer are free of adhesive bond. Preferably, the base layer has an elongation at break of less than 200%, most preferably less than 100% according to ISO 527.3 standard (Tensile Properties of Films and Sheets).

The base layer preferably comprises at least one sub-layer configured for forming a decorative or printable support. The support can be printed with ink or a metal deposit, embossing or combinations.

The base layer comprises aluminium, polyester such as PET, PLA, polyolefin(s), polyamide, starch, and combination thereof. The base layer can be formed of a laminate having two or more sub-layers of these materials.

The base layer preferably comprises an additional gas barrier layer (if absent from the preceding list). The gas barrier layer can be chosen amongst: aluminium, EVOH, PA6, Siox or Alox coating and combinations thereof.

More preferably, the foil comprises a base layer with two sub-layers, mainly, an external sub-layer made of PET and an internal sub-layer made of aluminium. The aluminium sub-layer serves the function of preventing undesirable transmission of light, moisture and oxygen. As a preferred example, the foil is made (from the outer to inner side of the foil): 8-20, preferably 12 microns of PET; 5-15, preferably, 8 microns of aluminium; 15-30, preferably 30 microns of cPP.

cPP is known as "cast polypropylene" and is a film of polypropylene made from copolymer and/or homopolymer polypropylene. Other extrusion process can be used to produce PP layer such as co-extrusion cast, mono or co-extrusion blown film. In case of a coextruded structure, all layers can be made from the same PP grade or made from different grades. The preferred polypropylene has preferably a density between 0.860 and 0.92 and a melt index from 0.5 to 20g/min (ISO 1133, 230°C, 2.16kg).

The body of the capsule is preferably formed of rigid material such as aluminium and/or polymer such as polypropylene. A multi-layer of aluminium and polypropylene is preferred.

The container of the invention may comprise an internal filter which separates the main cavity into two internal chambers; a first chamber containing the beverage ingredients and a second chamber which is free of beverage ingredients. However, in a preferred mode, the capsule is free of any internal filter. In this mode, the filtering of the beverage is thereby obtained through the interstices or cracks which are provided by perforation with the beverage extracting members, such as for example those described in WO2010/066736, the first region of the foil where the tightness-producing layers and said base layer are adhesively bonded.

The invention further relates to a method for preparing a beverage from a container as aforementioned in a beverage preparation device comprising:

- providing the portioned beverage container in the beverage preparation device,
- axially inserting through the foil of the container, at least one elongate intruding member comprising at least one liquid outlet opening; wherein during insertion, the tightness-producing layer stretches to form a stretched portion at least until it becomes perforated by the intruding member,
- injecting liquid in the container through said intruding member.

Therefore, as a result, a liquid-tight arrangement can be obtained between the surface of the intruding member and the elongated portion of the tightness-producing layer.

The stretched portion of the tightness-producing layer thereby forms a tight sealing engagement on the surface of the elongated intruding member above the at least one outlet opening.

In particular, the elongated portion may form one or more free lips or a sheath which seals with the surface of the intruding member. More particularly, the at least one outlet opening communicates with the cavity below the elongated portion formed by the tightness-producing layer.

In the preferred method, the elongate intruding member is inserted along the central axis (I) of the container representing the axis of rotation during centrifugation of the container in the device. Furthermore, a plurality of liquid outlets are perforated in the first region of the foil and the capsule is centrifuged in the beverage preparation device around its central axis (I) to force liquid through the beverage ingredients in the main cavity and to force it to leave the container through the perforated liquid outlets. The beverage outlets are preferably perforated in the second region of the foil close to the periphery where the centrifugation forces are higher.

The container of the invention may also be used in a beverage preparation device wherein the extraction forces in the container are obtained by injecting a liquid under pressure in the capsule without requiring centrifugation of the capsule ("non-centrifugal beverage preparation device").
The base layer 7 and tightness-producing layer 8 are adhesively connected in a first region 9 above the cavity. In which case, gas added or flushed before or during opening of the container in a non-centrifugal beverage preparation device. Note that the adhesive layer 11 can also extend in the free-of-bond region 10 without creating an adhesive bond between the layers 7, 8.

In the preferred embodiment, the region 10 is formed as a circular region centered around the central axis I. More than one region 10 can be provided in the foil. The number and the location of regions 10 are functional for the number and location of the liquid intruding members (e.g., liquid injector). For example, several circular regions may be distributed along an annular path of the foil for enabling insertion of an equal (or lower) number of intruding members.

The base layer 7 of the foil may comprise several sub-layers 12, 13 connected by an adhesive film 14. For example, the sub-layer 12 connected to the tightness-producing layer 8 can be an aluminium layer. By "aluminium" it is meant a layer containing aluminium as its main constituent such that it can be an aluminium alloy. The sub-layer may also be another metal layer or a metalized polymer layer. The aluminium sub-layer may be embossed or engraved for decorative purpose. The outermost sub-layer may be a decorative or printable support layer such as PET (polyethylene terephthalate), PLA (polylactic acid) or polyolefin(s). The sub-layer 13 may serve as a support for ink, for an image, a structure in relief and/or recess such as decorative embossing. The decorative sub-layer may be transparent, translucent, colored or opaque.

The tightness-producing layer 8 can be formed of a single layer or more than one layer. In a preferred example, the tightness-producing layer 8 is polypropylene, more particularly CPP.

The adhesive connection of the base layer and tightness-producing layer in the region 9 has for effect that upon axial insertion of an intruding member through the foil, the tightness-producing layer is prevented from
stretches during the axial insertion of the intruding member typically comprises an axial internal water conduit (not visible) which ends by several peripherally distributed openings 17 near the free end. The free end is preferably rounded to avoid cutting the layer 8 before it sufficiently stretches. As shown in figure 5, the base layer 7, such as made of a multi-layer of PET and aluminium, breaks while the tightness-producing layer 8 stretches during the axial insertion of the intruding member. When the limit of elongation of the tightness-producing layer 8 is reached, it breaks but the broken lips 16 of the layer tends to retract slightly around the intruding member so to create a tight seal above the liquid outlets 17 of the intruding member 15. Therefore, a backflow of liquid and/or solids is prevented around the surface of the intruding member. Preferably, the distance "A", representing the axial dimension of the stretched portion of the tightness-producing layer, is lower than the total axial length "L" of the intruding member. Even preferably, the distance "A" is lower than the axial length "L1" representing the distance separating the outlet openings 17 from the base of the intruding member. Preferably, the larger diameter "D" of the intruding member is lower than d/n, where "d" is the diameter of the region 10 and "n" is comprised between 1.5 and 5. For example, A is comprised between 5 and 8 mm, "d" is comprised between 5 and 14 mm and the thickness "t" of the tightness-producing layer is comprised between 10 and 500 microns most preferably between 10 and 200 microns. Additional information regarding the beverage production device can be found in the following patent publications which are given as an illustrative nonlimiting purpose: WO2008/148601, WO2008/148646; WO2010/026045; WO2008/107281 and WO 2010/066736. According to the mode of figure 7, the container of the invention may comprise a foil with a tightness-producing region 10 which forms an annular region around and distant from the central axis I. The annular region has an inner edge distant of distance "k" from axis I and an outer edge distant of distance "k1" from axis I. The distances "k" and "k1" are determined in function of the location and the diameter "D" of the intruding member (represented by reference 15 in dotted lines) or members of the beverage producing device. For example, the distances k is about 1.9-2.1 cm and k1 is about 2.4-2.6 cm. The advantage of such configuration is that it provides the possibility to have an intruding member (e.g., water injecting needle) which is off-centered relative to axis I. When the intruding member is retrieved from the container, the foil closes off automatically (by the tightness-producing region shrinking) and the back-flow of liquid can be reduced or prevented. This container may be used in a non-centrifugal beverage producing device such as a Nescafé® Dolce Gusto® beverage machine in which the water injecting needle of the device is placed offset relative to the central axis I of the container such as it is described in the following patent applications: WO 2005/020769, WO2006/082064 WO2008/107348, WO2008/107281 and WO 2010/066736. The foil 6 of the container can be produced by lamination coating in which the adhesive layer is coated on selective parts of the base layer or tightness-producing layer. Then, the other layer (tightness-producing layer or base layer) is laminated onto the partially coated layer. Different lamination techniques can be employed such as cold seal laminating or triplex laminating including a partial laminating with the coating adhesive.

Claims

1. A portioned container (1), for the preparation of a beverage in a beverage producing device, comprising a body (2) having a main cavity (3) and a foil (6) connected to the body for closing said main cavity; said main cavity (3) containing beverage ingredients (5).
wherein the foil (6) is perforable in axial direction above the cavity by an elongated intruding member (15) of the beverage preparation device, wherein the foil (6) comprises at least a base layer (7) and at least a tightness-producing layer (8); said tightness-producing layer (8) constituting an inner layer underneath the base layer (7);

characterized in that:

said tightness-producing layers (8) and said base layer (7) are adhesively bonded above the cavity (3) at least in a first region (9) of the foil and are free of adhesive bond in at least a second region (10) or tightness-producing region of the foil, such second region being the region intended for being perforated by the elongated intruding member (15) and forming a tightness engagement with the surface of the elongated intruding member (15).

2. Container according to claim 1, wherein the second region (10), in which the base layer (7) and the tightness-producing layer (8) are free of adhesive bond, represents less than a third of the total surface area of the foil (6) above the cavity.

3. Container according to claims 1 or 2, wherein the tightness-producing layer (8) has an elongation at break of at least 200%, preferably at least 300% (ISO527-3).

4. Container according to any one of claims 1 to 3, wherein the second region (10) in which the base layer and the tightness-producing layer are free of adhesive bond, is a circular region in the central axis (I) of the capsule.

5. Container according to any one of claims 1 to 4, wherein the tightness-producing layer (8) is made of PP, PE or their copolymers or their terpolymers, PVC, elastomeric thermoplastic, a biodegradable material and combinations thereof.

6. Container according to claim 5, wherein the tightness-producing layer (8) is formed of PP having a thickness of between 3 and 500 microns, preferably 10 and 200 microns.

7. Container according to any of the preceding claims, wherein the base layer (7) has an elongation at break which is lower than the elongation at break of the tightness-producing layer.

8. Container according to any one of claims 1 to 7, wherein the base layer (7) comprises at least one sub-layer (13) configured for forming a decorative or printable support.

9. Container according to any one of claims 1 to 8, wherein the base layer (7) comprises aluminium, polyester such as PET, PLA, polyolefin(s), polyamide, starch, and combination thereof.

10. Container according to claim 9, wherein the base layer further comprises an additional gas barrier sub-layer (14).

11. Container according to claim 10, wherein the gas barrier sub-layer (14) is chosen amongst: aluminium, EVOH, PA6, Siox or Alox coating and combinations thereof.

12. Container according to any one of claims 8 to 11, wherein the foil comprises a base layer (7) with two sub-layers (13, 14), mainly, an external sub-layer (13) made of PET and an inner sub-layer (14) of aluminium.

13. Container according to any one of claims 8 to 12, wherein the tightness-producing layer (8) is made of polypropylene.

14. Method for preparing a beverage from a container according to any of the preceding claims in a beverage preparation device comprising:

- providing the portioned beverage container (1) in the beverage preparation device ,
- axially inserting through the foil (6) of the container, at least one elongated intruding member (15) comprising at least one liquid outlet opening (17); wherein during insertion, the tightness-producing layer (8) stretches to form an stretched portion at least until it becomes perforated by the intruding member, 
- injecting liquid in the container through said intruding member..

15. Method according to claim 14, wherein the stretched portion of the tightness-producing layer (8) forms a tight sealing engagement on the surface of the elongated intruding member (15) above the at least one outlet opening (17).

Patentansprüche

1. Ein Portionsbehälter (1) zur Zubereitung eines Getränks in einer Getränkeherstellungsvorrichtung, mit einem Körper (2), der einen Haupthohlraum (3) und eine zum Verschließen des Haupthohlraumes mit dem Körper verbundene Folie (6) aufweist; wobei die Folie (6) in axialer Richtung oberhalb des Hohlraumes von einem ländlichen Eindringteil (15) der Getränkezubereitungsvorrichtung perforierbar
ist, wobei die Folie (6) mindestens eine Basisschicht (7) und mindestens eine die Dichtheit herstellende Schicht (8) umfasst; wobei die die Dichtheit herstellende Schicht (8) eine Innenschicht unterhalb der Basisschicht (7) bildet; dadurch gekennzeichnet, dass die die Dichtheit herstellende Schicht (8) und die Basisschicht (7) oberhalb des Hohlraumes (3) zumindest in einem ersten Bereich (9) der Folie klebend verbunden sind und in zumindest einem zweiten Bereich (10) oder dem die Dichtheit herstellenden Bereich der Folie keine klebende Verbindung aufweisen, wobei dieser zweite Bereich der Bereich ist, der von dem länglichen Eindringteil (15) durchbohrt werden soll und einen Dichteingriff mit der Fläche des länglichen Eindringteils (15) bildet.

2. Behälter gemäß Anspruch 1, wobei der zweite Bereich (10), in dem die Basisschicht (7) und die die Dichtheit herstellende Schicht (8) keine klebende Verbindung aufweisen, weniger als ein Drittel der Gesamtfläche der Folie (6) oberhalb des Hohlraumes darstellt.

3. Behälter gemäß Anspruch 1 oder 2, wobei die die Dichtheit herstellende Schicht (8) eine Bruchdehnung von mindestens 200%, vorzugsweise mindestens 300% aufweist (ISO527-3).

4. Behälter gemäß einem der Ansprüche 1 bis 3, wobei der zweite Bereich (10), in dem die Basisschicht und die die Dichtheit herstellende Schicht keine klebende Verbindung aufweisen, ein kreisförmiger Bereich in der Mittelachse (I) der Kapsel ist.

5. Behälter gemäß einem der Ansprüche 1 bis 4, wobei die die Dichtheit herstellende Schicht (8) aus PP, PE oder deren Copolymeren oder deren Terpolymeren, PVC, elastomerem Thermoplast, einem biologisch abbaubaren Material sowie Kombinationen aus diesen besteht.


7. Behälter gemäß einem der vorhergehenden Ansprüche, wobei die Basisschicht (7) eine Bruchdehnung aufweist, die geringer als die Bruchdehnung der die Dichtheit herstellenden Schicht ist.

8. Behälter gemäß einem der Ansprüche 1 bis 7, wobei die Basisschicht (7) mindestens eine Teilschicht (13) umfasst, die zur Bildung eines dekorativen oder bedruckbaren Trägers vorgesehen ist.

9. Behälter gemäß einem der Ansprüche 1 bis 8, wobei die Basisschicht (7) Aluminium, Polyester wie PET, PLA, Polyolefin(e), Polyamid, Stärke sowie Kombinationen aus diesen umfasst.

10. Behälter gemäß Anspruch 9, wobei die Basisschicht weiterhin eine zusätzliche Gasbarriere-Teilschicht (14) aufweist.

11. Behälter gemäß Anspruch 10, wobei die Gasbarriere-Teilschicht (14) ausgewählt ist aus: Aluminium, EVOH, PA6, SiOx oder AlOx-Beschichtung sowie Kombinationen aus diesen.

12. Behälter gemäß einem der Ansprüche 8 bis 11, wobei die Folie eine Basisschicht (7) mit zwei Teilschichten (13, 14) aufweist, vor allem eine äußere Teilschicht (13) aus PET und eine innere Teilschicht (14) aus Aluminium.

13. Behälter gemäß einem der Ansprüche 8 bis 12, wobei die die Dichtheit herstellende Schicht (8) aus Polypropylen besteht.

14. Verfahren zur Herstellung eines Getränks aus einem Behälter gemäß einem der vorhergehenden Ansprüche in einer Getränkezubereitungsvorrichtung, aufweisend:

- Bereitstellen des portionierten Getränkebehälters (1) in der Getränkezubereitungsvorrichtung,
- axiales Einführen durch die Folie (6) des Behälters von mindestens einem länglichen Eindringteil (15), das mindestens eine Flüssigkeitsauslassöffnung (17) aufweist; wobei sich während des Einführens die die Dichtheit herstellende Schicht (8) ausdehnt, um zumindest so lange einen gedehnten Abschnitt zu bilden, bis sie von dem Eindringteil perforiert wird,
- Einspritzen von Flüssigkeit in den Behälter durch das Eindringteil hindurch.

15. Verfahren gemäß Anspruch 14, wobei der gedehnte Abschnitt der die Dichtheit herstellenden Schicht (8) einen dichten Versiegelungseingriff an der Oberfläche des länglichen Eindringteils (15) oberhalb der mindestens einen Auslassöffnung (17) bildet.

**Revidierung**

1. Récipient portionné (1), pour la préparation d’une boisson dans un dispositif de production de boisson, comprenant un corps (2) présentant une cavité principale (3) et un film (6) relié au corps pour fermer ladite cavité principale ; ladite cavité principale (3) contenant des ingrédients de boisson (5).
dans lequel le film (6) est perforable dans une direction axiale au-dessus de la cavité par un élément pénétrant allongé (15) du dispositif de préparation de boisson,
dans lequel le film (6) comprend au moins une couche de base (7) et au moins une couche productrice d'étanchéité (8);
ladite couche productrice d'étanchéité (8) constituant une couche intérieure en-dessous de la couche de base (7);
caractérisé en ce que :
lesdites couches productrice d'étanchéité (8) et ladite couche de base (7) sont liées de façon adhésive au-dessus de la cavité (3) au moins dans une première région (9) du film et sont dépourvues de liaison adhésive dans au moins une deuxième région (10) ou région productrice d'étanchéité du film, ladite deuxième région étant la région destinée à être perforée par l'élément pénétrant allongé (15) et formant une prise étanche avec la surface de l'élément pénétrant allongé (15).

2. Récipient selon la revendication 1, dans lequel la deuxième région (10), dans laquelle la couche de base (7) et la couche productrice d'étanchéité (8) sont dépourvues de liaison adhésive, représente au moins un tiers de la surface totale du film (6) au-dessus de la cavité.

3. Récipient selon les revendications 1 ou 2, dans lequel la couche productrice d'étanchéité (8) présente un allongement à la rupture d'au moins 200%, de préférence au moins 300% (ISO527-3).

4. Récipient selon l'une quelconque des revendications 1 à 3, dans lequel la couche productrice d'étanchéité (8) est réalisée en polypropylène.

5. Récipient selon l'une quelconque des revendications 1 à 4, dans lequel la couche productrice d'étanchéité (8) est formée de PP ayant une épaisseur comprise entre 3 et 500 microns, de préférence 10 et 200 microns.

6. Récipient selon la revendication 5, dans lequel la couche productrice d'étanchéité (8) est formée de PP avec un allongement à la rupture de la couche productrice d'étanchéité.

8. Récipient selon l'une quelconque des revendications 1 à 7, dans lequel la couche de base (7) comprend au moins une sous-couche (13) configurée pour former un support décoratif ou imprimable.

9. Récipient selon l'une quelconque des revendications 1 à 8, dans lequel la couche de base (7) comprend aluminium, polyester tel que PET, PLA, polyoléfine(s), polyamide, amidon, et combinaison de ceux-ci.

10. Récipient selon la revendication 9, dans lequel la couche de base comprend en outre une sous-couche formant une barrière supplémentaire contre les gaz (14).

11. Récipient selon la revendication 10, dans lequel la sous-couche formant barrière contre les gaz (14) est choisie parmi : aluminium, EVOH, PA6, revêtement Siox ou Alox et combinaisons de ceux-ci.

12. Récipient selon l'une quelconque des revendications 8 à 11, dans lequel la couche productrice d'étanchéité (8) est réalisée en polypropylène.

13. Récipient selon l'une quelconque des revendications 8 à 12, dans lequel la couche productrice d'étanchéité (8) est formée de polypropylène.

14. Procédé de préparation d'une boisson à partir d'un récipient selon l'une quelconque des revendications précédentes dans un dispositif de préparation de boisson comprenant :
- fourniture du récipient à boisson portionné (1) dans le dispositif de préparation de boisson,
- insertion axiale à travers le film (6) du récipient, d'au moins un élément pénétrant allongé (15) comprenant au moins une ouverture de sortie de liquide (17) ; dans le cas où de l'insertion, la couche productrice d'étanchéité (8) s'étire pour former une partie étirée au moins jusqu'à ce qu'elle soit perforée par l'élément pénétrant,
- injection de liquide dans le récipient à travers l'élément pénétrant.

15. Procédé selon la revendication 14, dans lequel la partie étirée de la couche productrice d'étanchéité (8) forme une prise de scellement étanche sur la surface de l'élément pénétrant allongé (15) au-dessus de ladite au moins une ouverture de sortie (17).
REFERENCES CITED IN THE DESCRIPTION

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