Disposable container and a method for producing a disposable container

A disposable container comprises a sealed container body (1) containing a soluble substance (2), wherein the container body (1) is maintainable in a substantially flat, folded state and deformable into a cup shape. A method for producing a disposable container comprises the steps of manufacturing a container body (1), folding the container body (1), filling the container body (1) with a soluble substance (2) and sealing the container body (1), wherein the container body (1) is manufactured so as to be foldable in a substantially flat shape and deformable into a cup shape.
Technical Field

[0001] The invention relates to the technical field of a disposable container and a method for producing a disposable container. In particular, the invention relates to a disposable container comprising a sealed container body containing a soluble substance.

Prior Art

[0002] Disposable containers containing a soluble substance are well-known in the state of the art. The soluble substance may be e.g. powdered, agglomerated, dehydrated and/or freeze-dried. For preparing a beverage, food and/or medicine, the soluble substance is added to a liquid such as water or milk.

[0003] In order to mix the soluble substance and the liquid, an additional cup, pot and/or container is necessary. In particular when travelling, carrying the disposable container and an additional cup for mixing the substance with a liquid may be inconvenient.

[0004] US 6,719,140 B1 discusses a disposable food bag for transporting and serving food. The bag may be of various sizes for storage and service of a snack or a meal that may be heated and eaten by the use of utensils provided with the bag. The bag is provided with a flat bottom panel, which allows the bag to stand open on a flat surface. The weight and the size of such a bag are dependent of the type of food contained therein. In particular, when travelling, such a food bag may be too bulky to be carried along.

[0005] WO 99/11541 discusses a one-dose container for food. The container is made of a flexible material, which is folded so that two parts project from the folded container, which may be gripped for unfolding the container into a bowl-shaped element. Due to the projecting parts, the folded container is damageable. Further, the folding method discussed is rather complex and the folded material consumes a lot of space. Therefore, the one-dose container is only suitable for carrying very small amounts such as one pill.

Summary of the Invention

[0006] It is the object of the invention to provide a disposable container comprising a sealed container body containing a soluble substance, wherein using, storing and/or transporting of the container is improved, as well as a method for producing a disposable container.

[0007] This object is solved by the disposable container and the production method with the features of claims 1 and 14.

[0008] It is the basic idea of the invention to provide a container body being maintainable in an essentially flat folded state and deformable into a cup-shape. The soluble solution is contained in the sealed container body in the folded state. The soluble substance may be a powdered or agglomerated colour or flavour and/or a dehydrated or freeze-dried food and/or any kind of hybrid mixture used for powdered beverages or medicine or the like. The substance becomes ready to drink or eat after adding a liquid such as water or milk. Hence, the beverage or food may be directly mixed and/or served in the container body. After the disposable container is used, the container may be thrown away or be re-used as a cup at consumer’s option. The amount of the soluble substance is preferably exact to match a preferred or suggested concentration of a mixed food, beverage or medicine, when the container is completely filled or filled up to a marked filling line. The soluble substance is preferably treated to have a minimum weight and to occupy a minimum space. Hence, the disposable container with the soluble substance contained therein is very convenient for transporting and/or storing. For example, the container may be made small enough to fit in a pocket. For consuming the product, the consumer only has to unfold, unseal and open the container and fill the container with a liquid. Hence, the use of the container is also very convenient.

[0009] The container may be produced from paper, plastics and/or other materials, which are substantially or sheet type of film type and can be folded, so that the container body is substantially flat, wherein the thickness is defined by the thickness of the material and the soluble substance sealed therein. Preferably, the container is folded along two lines so that two opposing sides of the container body are on top of one another, with the soluble substance at least partially in between. The angle between the two opposing sides along the fold line may be dependent on the soluble substance. Preferably the angle is less than 20°, more preferably less than 10°. In such a folding, the thickness is equal to the thickness of two layers of the material and the soluble substance contained therein, wherein, in a bottom region, an extra folding may be necessary so that in the bottom region the thickness equals four layers plus the soluble substance. A mouth region may be reinforced, however such a reinforcement does barely influence the thickness.

[0010] According to a preferred embodiment, the cup-shape is substantially a cylinder, a cone, a truncated cone, a cube and/or has any multi-edged footprint. These shapes allow easy handling of the cup when drinking and/or eating.

[0011] However, any other shape, which is preferably easy to grip, could be used.

[0012] In another embodiment, the container body is provided with a substantially round bottom part. The bottom part may be a separate piece or formed integrally with the container body. A powder or the like may stick to edges of a container. Therefore, a round bottom part and corresponding walls having a minimum of edges are advantageous. If the cup-shape is of a cone-type, no bottom part may be provided.

[0013] According to another embodiment, the bottom
of the container body is bent inwardly. Preferably, the bottom is folded along a center line in order to be bent inwardly. However, other foldings are possible. The angle of such an inwardly bent bottom is preferably less than 20°, more preferably, less than 10°.

[0014] In another embodiment, the container body is folded sideways so that the bottom and/or a lower part of the container body touches a side wall of the container body. It is also possible to fold the bottom by bending the two resulting flaps so that they touch either side of the folded container body. The angle of such sideways folds is preferably less than 20°, more preferably less than 10°.

[0015] According to a preferred embodiment, the container body comprises a hydrophobic layer. The hydrophobic layer may be provided on the outside of the container body in order to prevent liquid from entering the container body in a folded state. Preferably the hydrophobic layer is provided on the inside of the container body, thereby preventing a liquid from contacting the soluble substance while the container body is in a folded state and holding a liquid in the container body after being mixed with the soluble substance.

[0016] In still another embodiment, the container body is sealed with a seal, wherein the seal is an easy opening seal surrounding the container body, at least at an upper part thereof, and/or the seal is an adhesive or cohesive seal being integrated in the inner wall of the container body. An easy opening seal allows an easy handling of the disposable container. When using an adhesive or cohesive seal, the adhesive is preferably only applied above a fill level. Furthermore, the disposable container may be provided with a tearing line above a fill level.

[0017] According to another embodiment, the seal at least covers an upper edge of the container body and a mouth contact area. When sealing the mouth contact area, a good safe sanitary condition can be provided. Alternatively, the whole container body may be sealed with a cover.

[0018] In another preferred embodiment the container body and/or the seal are biodegradable and/or compostable. A disposable container may be used during hiking or camping. Hence, it may be advantageous to have a biodegradable container body, which may be buried after use without harm to the environment. In the context of the invention, "biodegradable" is to be understood as the decomposition of a material, preferably into CO₂ and H₂O.

[0019] Preferably, the container comprises a stirring aid and/or a drinking aid. When providing the container with a stirring aid and/or drinking aid, the substance may be easily mixed with the liquid. Preferably the stirring aid is a straw and/or a spoon. The embodiment of stirring aid depends on the type of soluble substance contained in the container body.

[0020] In another embodiment the container body and/or the stirring aid is filled with a water purification agent and/or a carbonating agent. When the stirring aid is filled with a water purification agent, the soluble substance may be mixed with water while hiking or camping. Preferably, the water purification agent is an additional powder contained in the stirring aid. The water purification agent may also be provided as a filter inside a straw. With a straw or stirring aid containing a carbonating agent, a fizzy drink can be created with flat water. For example, sodium bicarbonate (CO₃) could be used as the carbonating agent.

[0021] In another embodiment, the container body is at least partly rigid. A rigid container body is advantageous for transporting as well as for gripping. The container body may be printed with a brand name and/or flavour specifications.

[0022] According to another embodiment, the container body comprises a spring-type element, which is biased in a folded state. The spring-type element may, for example, be provided in the sealed upper part of the container, wherein the seal maintains the spring-type part in a biased state. Once the seal is broken, the container body unfolds itself or the spring-type element assists the user in unfolding the container body.

[0023] In another embodiment, the container body comprises an insulating layer. Depending on the content of the container, adding hot water may be preferred for better dissolution. Therefore, an insulating layer may be advantageous for gripping the container body.

[0024] The inventive method for producing a disposable container comprising the steps of manufacturing a container body, folding the container body, filling the container body with a soluble substance and sealing the container body with a seal, wherein the container body is manufactured to be foldable in a substantially flat shape and deformable into a cup shape. Folding of the container body may be performed either before or after filling.

[0025] In a preferred embodiment for producing an inventive dissolvable container, the container body comprises a bottom which is folded sideways or bent inwardly.

Brief description of the drawings

[0026] The invention will be better understood when consideration is given to the following detailed description of two embodiments. The same reference numerals refer to the same parts throughout various figures. The description makes reference to the figures, wherein:

Fig. 1a is a cross-sectional view of a first embodiment of a disposable container in a folded state;

Fig. 1b is a front view of the container of Fig. 1a;

Fig. 2a is a cross-sectional view of a second embodiment of a disposable container in a folded state; and

Fig. 2b is a front view of the container of Fig. 2a.

Detailed Description of the drawings

[0027] Figs. 1a and 1b show a first embodiment of a
disposable container in a folded state. The disposable container comprises a container body 1 having a bottom 12 which contains a soluble substance 2. The soluble substance may be of any type, such as powder or accumulated flavours, colours or any kind of hybrid mixtures used, for example, for powdered beverages, soups or medicine. The beverage, soup or medicine is ready to eat or drink after a liquid, such as water or milk, is added.

[0028] The container body 1 is sealed using a seal 3. In the depicted embodiment an easy opening seal 3 surrounds the container body 1 at an upper part thereof. The easy opening seal is provided with a tape 32 which may be lifted for peeling off the seal 3. In the depicted embodiment, the seal 3 is provided as a film, which is folded approximately 180° and heat-sealed with the container body 1. The heat-sealing may be provided along the whole contact line between the container body 1 and the seal 3 or on specific sealing points. The sealing may also be provided by a cold-seal adhesive or cohesive.

[0029] In the depicted folded state, two sides of the container body 1 are on top of one another, the angle between these two sides being less than 10°. The bottom 12 is bent inwardly, as can best be seen in the side view of Fig. 1a, wherein the angle in the bent bottom 12 is also less than 10°.

[0030] The container body 1 may be unfolded or at least partly unfolded by pressing the container body 1 in an area indicated with the arrows 4. By pressing the container body 1, the bottom 12 is unfolded. The unfolded container body 1 is shaped like a truncated cone, which may be gripped very easily.

[0031] The steps for providing a beverage, medicine or food are: opening the seal 3, unfolding the container body 1, and filling the container body 1 with an appropriate liquid. Preferably, the container body 1 is unfolded after being opened. However, the container body 1 may be at least partly unfolded while in a sealed state.

[0032] The container body 1 is provided with a reinforced border 14 in the mouth contact area. The container body 1 may contain a spring-type element (not shown) in the sealed area. Hence, once the seal 3 is broken, the spring-type element unfolds the container body 1.

[0033] In order to enhance the dissolution of the soluble substance 2, a stirring aid, such as a straw or a spoon, may be used. The straw may contain a water purifier agent. By adding the additional powder contained in the straw, a safe beverage or medicine may be created almost anywhere.

[0034] In another embodiment, the straw may contain a carbonating agent to create a fizzy drink with flat water.

[0035] Figs. 2a and 2b show a second embodiment of the disposable container.

[0036] The container also comprises a container body 1' in which a soluble substance 3 is contained. The container body 1' is also provided with a bottom 12. The bottom 12 is bent sideways. The angle with which the bottom 12 is bent sideways is less than 10°. As can be best seen in Fig. 2b, the bottom 2b is centrally round in shape. Therefore, when unfolded, the container body 1' having a cylindrical shape or a truncated cone shape has no edges or the like on the inner surface, in which the soluble substance may deposit. However, the inner surface may have one overlapping lip due to manufacturing of the container body.

[0037] Preferably, the container body 1, 1' is made of paper or the like and is biodegradable. Other materials or material combinations, such as a flexible film reinforced with a paper board, may be used for producing the container body.

Claims

1. A disposable container comprising:

   a sealed container body (1, 1') containing a soluble substance (2),

   characterized in that
   the container body (1, 1') is maintainable in a substantially flat, folded state and deformable into a cup shape.

2. The disposable container according to claim 1, characterized in that the cup shape is substantially a cylinder, a cone, a truncated cone or a cube and/or has a multi-edged footprint.

3. The disposable container according to claim 2, characterized in that the container body (1, 1') is provided with a substantially round bottom part (12).

4. The disposable container according to claims 1 to 3, characterized in that the bottom part (12) of the container body (1, 1') is bent inwardly.

5. The disposable container according to claims 1 to 3, characterized in that the container body (1, 1') is folded sideways so that the bottom part (12) and/or a lower part of the container body (1, 1') touches a side wall of the container body (1, 1').

6. The disposable container according to any of the claims 1 to 5, characterized in that the container body (1, 1') comprises at least one hydrophobic layer.

7. The disposable container according to any of the claims 1 to 6, characterized in a seal (3) for sealing the container body (1, 1'), wherein the seal (3) is an easy opening seal surrounding the container body (1, 1') at least at an upper part thereof and/or the seal is an adhesive or cohesive seal being integrated in the inner walls of the container body (1, 1').

8. The disposable container according to any of claims
1 to 7, characterized in that the seal (3) at least covers an upper edge of the container body (1, 1') and a mouth contact area.

9. The disposable container according to any of claims 1 to 8, characterized in that the container body (1, 1') and/or a seal (3) are biodegradable and/or compostable.

10. The disposable container according to any of claims 1 to 9, further comprising a stirring aid and/or a drinking aid.

11. The disposable container according to claims 1 to 10, characterized in that the container body (1, 1') and/or a stirring aid and/or a drinking aid are biodegradable and/or compostable.

12. The disposable container according to any of claims 1 to 11, characterized in that the container body (1, 1') is at least partly rigid.

13. The disposable container according to any of claims 1 to 12, characterized in that the container body (1, 1') comprises a spring-type element, which is biased in a folded state.

14. The disposable container according to any of claims 1 to 12, characterized in that the container body (1, 1') comprises an insulating layer.

15. A method for producing a disposable container comprising the steps of
- manufacturing a container body (1, 1'),
- folding the container body (1, 1'),
- filling the container body (1, 1') with a soluble substance and
- sealing the container body (1, 1'), characterized in that the container body (1, 1') is manufactured so as to be foldable in a substantially flat shape and deformable into a cup shape.

16. The method for producing a disposable container according to claim 15, characterized in that the container body (1, 1') comprises a bottom part (12) which is folded sideways or bent inwardly.

Amended claims in accordance with Rule 86(2) EPC.

1. A disposable container comprising a sealed container body (1, 1') containing a soluble substance (2) and maintainable in a substantially flat, folded state and deformable into a cup shape, characterized in that the container body (1, 1') comprises a spring-type element, which is biased in a folded state of the container body (1, 1').

2. The disposable container according to claim 1, characterized in that the cup shape is substantially a cylinder, a cone, a truncated cone or a cube and/or has a multi-edged footprint.

3. The disposable container according to claim 2, characterized in that the container body (1, 1') is provided with a substantially round bottom part (12).

4. The disposable container according to claim 3, characterized in that the bottom part (12) of the container body (1, 1') is bent inwardly.

5. The disposable container according to claims 1 to 3, characterized in that the container body (1, 1') is folded sideways so that the bottom part (12) and/or a lower part of the container body (1, 1') touches a side wall of the container body (1, 1').

6. The disposable container according to any of the claims 1 to 5, characterized in that the container body (1, 1') comprises at least one hydrophobic layer.

7. The disposable container according to any of the claims 1 to 6, characterized in that the container body (1, 1') comprises an easy opening seal surrounding the container body (1, 1') at least at an upper part thereof and/or the seal is an adhesive or cohesive seal being integrated in the inner walls of the container body (1, 1').

8. The disposable container according to any of claims 1 to 7, characterized in that the seal (3) at least covers an upper edge of the container body (1, 1') and a mouth contact area.

9. The disposable container according to any of claims 1 to 8, characterized in that the container body (1, 1') and/or a seal (3) are biodegradable and/or compostable.

10. The disposable container according to any of claims 1 to 9, further comprising a stirring aid and/or a drinking aid.

11. The disposable container according to claims 1 to 10, characterized in that the container body (1, 1') and/or the stirring aid is filled with a water purification agent and/or carbonating agent.

12. The disposable container according to any of claims 1 to 11, characterized in that the container body (1, 1') is at least partly rigid.
13. The disposable container according to any of claims 1 to 12, characterized in that the container body (1, 1') comprises an insulating layer.

14. A method for producing a disposable container comprising the steps of

  - manufacturing a container body (1, 1'), so as to be foldable in a substantially flat shape and deformable into a cup shape,
  - folding the container body (1, 1') so as to bias a spring-type element,
  - filling the container body (1, 1') with a soluble substance and
  - sealing the container body (1, 1').

15. The method for producing a disposable container according to claim 14, characterized in that the container body (1, 1') comprises a bottom part (12) which is folded sideways or bent inwardly.
### DOCUMENTS CONSIDERED TO BE RELEVANT

<table>
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<tr>
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The present search report has been drawn up for all claims.

Place of search: Munich

Date of completion of the search: 18 August 2006

Examiner: Pollet, D

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