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(54) A very light beverage container

(57) The present invention relates to a container (1) for a liquid or viscous product, comprising a substantially ovoid or spherical container body (2) having a diameter D1, and a neck (3) having a diameter D2, said neck comprising a dispensing opening and means for allowing closing means to be attached thereto, D1 being greater than D2, said container (1) being made out of semi-cristalline PET, the walls of said container body (2) having a thickness inferior or equal to 100 μm at least in the middle-height region of said container. In a highly preferred embodiment of the invention, the container body comprises at least two opposite flat, substantially vertical, surfaces (8), and a flat, substantially horizontal, surface (9) located opposite the neck and forming a bottom side.

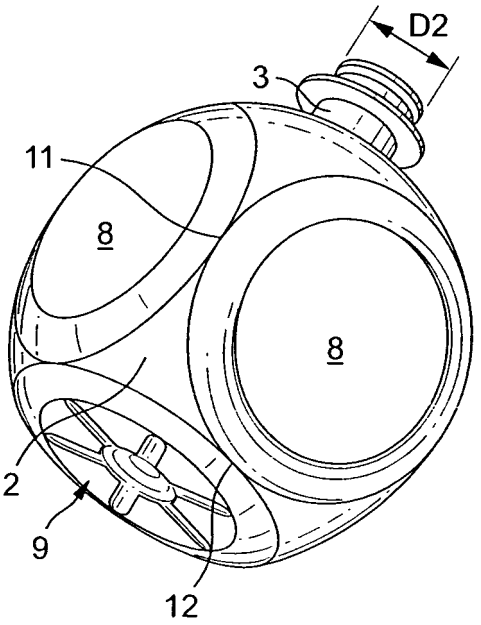

FIG. 1

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Description

[0001] The present invention relates to a very light weight container for beverages.

[0002] Very light containers for beverages are known in the art that are made for example of a semi-cristalline polyethylene terephtalate (PET) for good transparency and processability properties. Such containers are typically blown from an injected preform.

[0003] Such very-light containers can have a wall thickness, at least in the middle-height region of the container body, inferior or equal to 100μm. Such containers have been developped to be manufactured with a substantially lower amount of plastic material compared to containers of similar contents volume made out of "classic" processes. These light weight containers are therefore cheaper to produce, and are also particularly environment-friendly.

[0004] Such prior art very-light weight containers, described for example in International Patent Application WO 03/033361 A1 or WO 2005/047120 A1, are known to be of generally ovoid or spherical shape which provides for good ratio volume / weight.

[0005] However, such containers comprise several drawbacks: they are difficult to label, they are difficult to store and to pile in pallets for transportation.

[0006] More importantly, due to the generally ovoid shape, the sides of body of such containers are very flexible and a risk exists that once the container is open, the contents splashes outside when the consumer grabs the sides of said container. If the contents is a milk-based product, such splashing can be particularly inconvenient for the consumer.

[0007] Therefore, a need exists for a very light weight container which solves the above-mentioned disadvantages.

[0008] The present invention addresses the problems set out above with a container for a liquid or viscous product, comprising a substantially ovoid or spherical container body having a diameter D1, and a neck having a diameter D2, said neck comprising a dispensing opening and means for allowing closing means to be attached thereto, D1 being greater than D2, said container being made out of semi-cristalline PET, the walls of said container body having a thickness inferior or equal to 100 μm at least in the middle-height region of said container.

[0009] According to the present invention, said container is characterized in that the container body comprises at least two flatten or embossed surfaces.

[0010] By "flatten or embossed" it is meant that the surfaces are either completely flat, or slightly convex or concave.

[0011] In a particularly preferred embodiment of the invention, the container body comprises at least two opposite flat, substantially vertical, surfaces, and a flat, substantially horizontal, and forming a bottom side.

[0012] In a preferred embodiment, the neck is located on the surface symmetrically opposite to the bottom surface.

[0013] In a preferred embodiment of the present invention, the container body comprises four flat, substantially vertical, surfaces that are opposite to one another by pairs.

[0014] Also preferably, said vertical surfaces are disks.

[0015] Adjacent flat vertical surfaces are preferably in contact which one another at least in one point, and/or the vertical flat surfaces are preferably in contact with said bottom flat side.

[0016] In a preferred embodiment, the vertical and horizontal flat surfaces have equal area.

[0017] Advantageously, the ratio of D1/D2 is comprised between 1.2 to 15, preferably 2 to 5.

[0018] Also preferably, the bottom flat side comprises reinforcing ribs and / or grooves.

[0019] The content product can be selected from the group consisting of water-based or milk-based products.

[0020] Finally, the container according to the present invention has preferably a weight inferior or equal to 5g, preferably 3g, and a total contents volume of at least 25 cl.

[0021] The closing means of the container can be a peelable membrane sealed on the top end of the neck, or a screw cap with threads that cooperate with corresponding threads of the neck.

[0022] Additional features and advantages of the present invention are described in, and will be apparent from, the description of the presently preferred embodiments which are set out below with reference to the drawings in which:

Figure 1 is a perspective bottom view of a container according to the invention ;
Figure 2 is a perspective top view similar to figure 1 ;
Figure 3 is a bottom view of of a container of the invention ;
Figure 4 is a side view of the same container;
Figure 5 is a top view of the same container.

[0023] As shown in figure 1, the very-light weight container 1 according to the invention comprises a substantially spherical container body 2 having a diameter D1.

[0024] It further comprises a neck 3 having a diameter D2, said neck 3 comprising a dispensing opening 4 and means 5 for allowing closing means 6 to be attached thereto.

[0025] As shown in figure 2, the means 5 comprise a flat horizontal flange at the top portion of the neck 3. This flange 5 is adapted for receiving a peelable closing membrane (not represented in the drawing).

[0026] As can be seen in figures 1 and 2, the diameter D1 of the container body 2 is greater than the diameter D2 of the neck 3. The ratio of D1/D2 is about 4.

[0027] The container is made out of semi-cristalline PET. The walls of the container body have a thickness inferior or equal to 100 μm at least in the middle-height region 7 of said container. This container 1 is made by blowing a PET preform, that is itself made by an injection

forming process.

[0028] According to the present invention, and as shown in figures 1 and 2, the generally spherical container body 2 further comprises four opposite flat, disk-shaped, substantially vertical surfaces 8 that are opposite to one another by pairs. It further comprises a flat, substantially horizontal, surface 9 located opposite the neck 3 and forming a bottom side. The bottom flat side 9 comprises reinforcing grooves 10 to improve its rigidity, shown in figures 1 and 3.

[0029] As shown in figures 3, 4, 5, adjacent flat vertical surfaces 8 are preferably in contact with one another along a contact line 11. Said vertical flat surfaces are also in contact with said bottom flat side at contact lines 12. The vertical 8 and horizontal 9 flat surfaces have equal area.

[0030] The content product can be selected from the group consisting of water-based or milk-based products.

[0031] Finally, the container according to the present invention has a weight of 2.9 g, and a total contents volume of 25 cl.

[0032] A splash test was conducted to compare the rigidity of the side walls of the container according to the present invention, and a similar container having an ovoid shape.

[0033] This test consisted in applying a transversal load to the handling zone of the bottle (filled but not closed), and then measuring the increase in liquid level. All measured containers had the same content volume.

[0034] For a contents volume of 25 cl, and a same transversal load, the measured level increase average results were as follows:

- 48 mm for a classic ovoid bottle ;
- 35 mm for the container according to the invention.

[0035] These results illustrate how the flat surfaces in the container of the invention improve the resistance to transversal load, like the pressure that is applied by the hands of a consumer who grabs the said container.

[0036] Moreover, it was found that PET water containers let water pass through their walls. Such a water loss usually leads to more flexibility of the container walls as time passes. In the case of the present invention, the water loss remains the same as for a convention PET light weight container, however, the reinforcement of the transversal rigidity with flat surfaces compensates this increase in flexibility, which is obviously very convenient for the consumer, and further helps avoiding splashes when the container is open.

[0037] One of the advantages achieved by the present invention is that it also allows for easy labelling on standard labelling equipment, due to the flatness of the at least one side of the container body.

[0038] It should be understood that various changes and modifications to the presently preferred embodiments described herein will be apparent to those skilled in the art. Such changes and modifications can be made without departing from the spirit and scope of the present invention and without diminishing its attendant advantages. It is therefore intended that such changes and modifications be covered by the appended claims.

Claims

1. A container for a liquid or viscous product, comprising a substantially ovoid or spherical container body having a diameter D1, and a neck having a diameter D2, said neck comprising a dispensing opening and means for allowing closing means to be attached thereto, D1 being greater than D2, said container being made out of semi-cristalline PET, the walls of said container body having a thickness inferior or equal to 100 μm at least in the middle-height region of said container, **characterized in that** the container body comprises at least two flatten or embossed surfaces.

2. A container according to claim 1, wherein the container body comprises at least two opposite flat, substantially vertical, surfaces, and a flat, substantially horizontal, and forming a bottom side.

3. A container according to claim 2, wherein said neck is located symmetrically opposite to the horizontal bottom side.

4. A container according to claims 2 or 3, wherein said container body comprises four flat, substantially vertical, surfaces that are opposite to one another by pairs.

5. A container according to claims 2 to 4, wherein said flat vertical surfaces are disks.

6. A container according to claim 2 or 5, wherein the adjacent flat vertical surfaces are in contact which one another at least in one point.

7. A container according to claims 2 to 6, wherein the vertical flat surfaces are in contact with said bottom flat side.

8. A container according to any of the claims 2 to 7, whererin said vertical and horizontal flat surfaces have equal area.

9. A container according to any of the preceding claims, wherein the ratio of D1/D2 is comprised between 1.2 to 15, preferably 2 to 5.

10. A container according to any of the preceding claims, wherein said bottom flat side comprises reinforcing ribs and / or grooves.

11. A container according to any of the preceding claims, wherein said product is selected from the group consisting of water- based or milk-based products.

12. A container according to any of the preceding claims, which has a weight inferior or equal to 5g, preferably 3g, and a total contents volume of at least 25 cl.

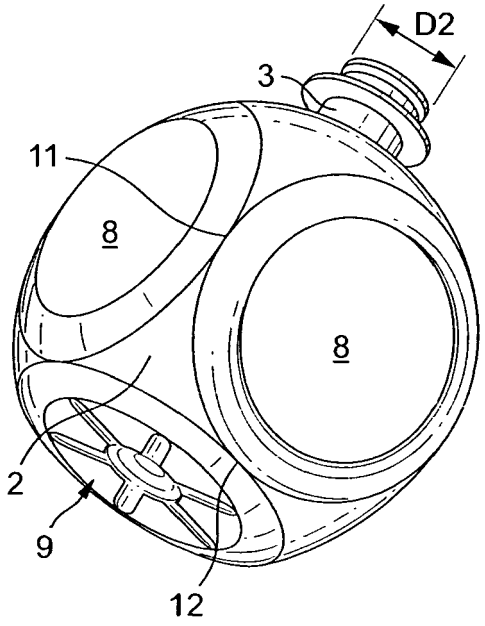

FIG. 1

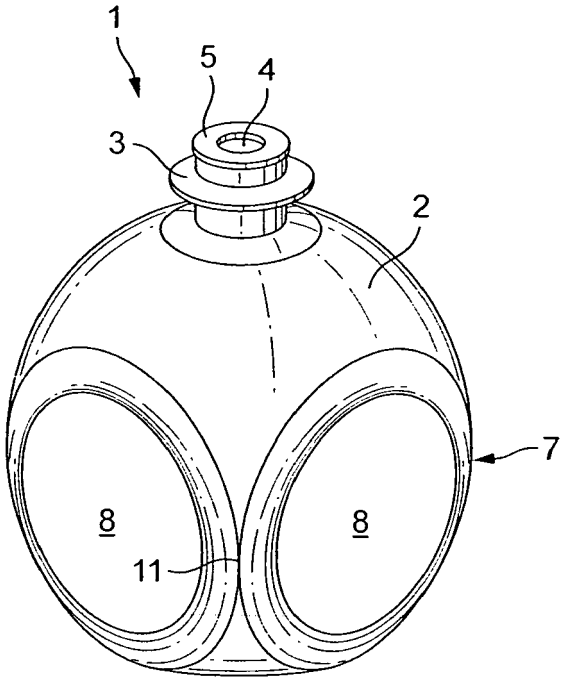

FIG. 2

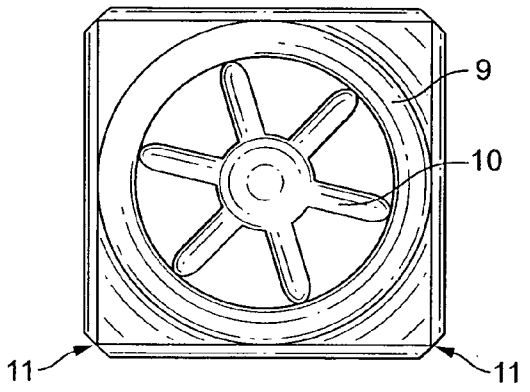

FIG. 3

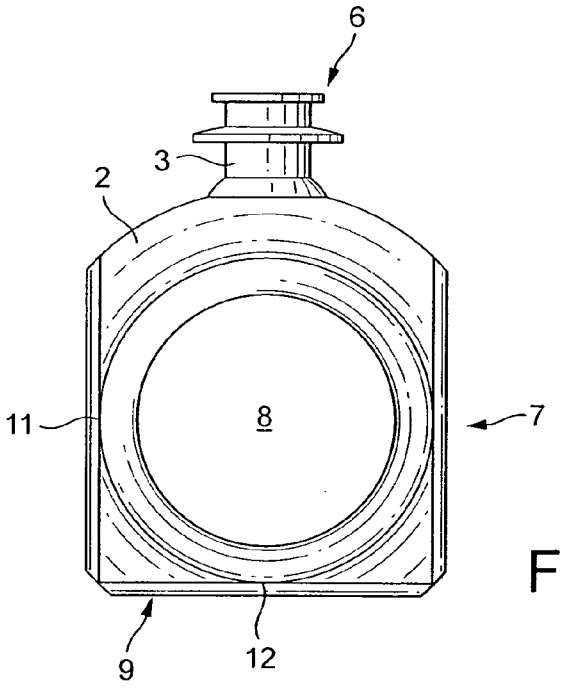

FIG. 4

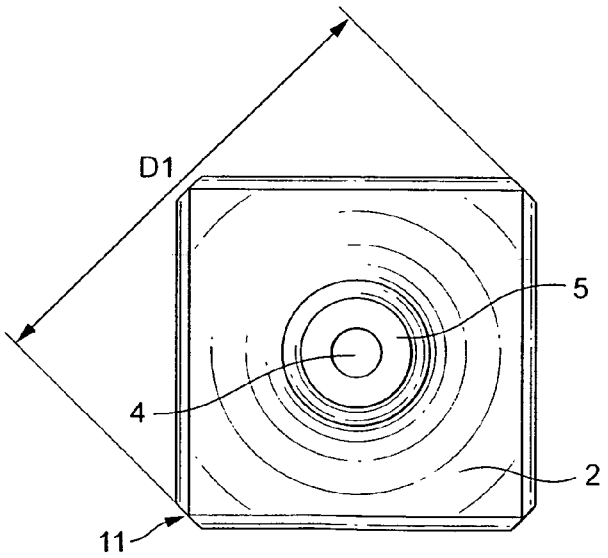

FIG. 5

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EUROPEAN SEARCH REPORT

Application Number
EP 05 10 9806

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TECHNICAL FIELDS SEARCHED (IPC)

B65D
B29C

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	15 February 2006	Cazacu, C

CATEGORY OF CITED DOCUMENTS

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