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POLYESTER BEER BOTTLE



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BACKGROUND OF THE INVENTION

1. TECHNICAL FIELD

5 The present invention relates to a container to accept liquid, more specifically, to a beer bottle made of a plastic material of one type of polyester (e.g. PET-polyethylene terephthalate).

2. BACKGROUND ART

10 Currently used beer bottles mostly are glass bottles. Due to their fragility, even a matter of damaging human by the glass fragments or granules accidentally occurs while natural explosion of glass beer bottles occurred. People thus switch over to use plastic bottles for containing beer. For example, a laminated plastic vessel has been disclosed in a patent application publication of China No.
15 971981515.5 titled "Zero Oxygen Seepage Plastic Bottle for Beer and Other Use" . This is a laminated plastic vessel for containing beer, fruit juice, and flavouring etc, in which a layer comprising oxygen scavenger is especially involved. Both the structure and manufacturing procedure of this plastic beer bottle are complicated. A specially assigned oligomer polyester chain segment formulation should be required,
20 thus the fabrication cost cannot be lowered.

 On the other hand, in current plastic beer bottles, the neck portion of bottle easily occurs a distortion when it is heated, and then it results in a kickback for hermeticity, due to the reason of its bottle-neck and bottom structure, such as the neck portion of the bottle does not have a heat-resistant ability. In addition, the
25 diameter of bottle body is the same as that of the bottle bottom and no configurations opposing distortion are provided at the bottom, so that the overall supporting hardness of the bottom of a plastic beer bottle is weaker than that of the glass bottle. Therefore, deformation easily occurs, particularly in a case of the sterilization at high-temperature, the overall shape of the bottle can hardly be
30 maintained. A phenomenon for a deformation of the bottle-neck portion and a

unstable erecting of the body by said outwards protruding often occurs. All these aspects directly affect their spreading and application on market.

BRIEF DESCRIPTION OF THE INVENTION

5 An object of the present invention is to provide a polyester beer bottle having a simple structure, good overall supporting hardness and strength, resisting to the deformation as well as having a lower cost for manufacture.

 To carry out the above object, the present invention provides a polyester beer bottle comprising a bottleneck portion, a body portion and a bottom portion of the bottle, which are once blow molded and shaped with polyester blank, in which an arc portion in a vertical section extended from the joint of shaped bottom and body of the bottle to the joint of the plane on the bottom of the bottle has a radius ranging over 15-25mm; a bottom surface of said bottle forms a concave quaquversal portion projecting inwards, an arc radius in a vertical section of the concave quaquversal portion is in a range of 20-35mm, and the distance between a top of the concave quaquversal portion to the plane of bottom face is in a range of 7-15mm; an outward projecting support flange portion is formed at the joint between said concave quaquversal portion and the bottom plane of the bottle, the height of the flange portion is in a range of 0.1-5mm; a side-face of the bottle is connected to said concave quaquversal portion at the bottom of the bottle via the transition arc portions respectively having different radius.

 Preferably, a first transition arc radius can be in a range of 3-8mm, and a second transition arc radius can be in a range of 0.5-2mm.

 Preferably, the ratio between the maximum outer diameter of the bottom portion of the bottle and the diameter of the flange portion on said bottom plane of the bottle is in a range of 1.2-1.7.

 With the polyester beer bottle having above structure of the present invention, by means of the multiple structural measures, particularly its unique bottom structure, the polyester beer bottle can not only be non-deformable in utilization, but also be non-explosive and non-penetrable, even a sterilization processing at high-

temperature such as 70°C (Pasteurize) is experienced in the bottle, it can still maintain the overall shape of the bottle structure in invariant and steadily arises. As a result of an actual testing, after a sterilization processing at high-temperature, a rate of the deformation for the bottle is not more than 3%. Consequently, the polyester beer bottle of the present invention may be extensively used in filling and marketing of the beer etc.

The structure, features and advantages of polyester beer bottle of the invention will become apparent from the following detailed description for a preferred embodiment incorporating with the accompanying drawings.

BRIEF DESCRIPTION OF DRAWINGS

FIG.1 is a plan view showing a polyester beer bottle structure in a preferred embodiment of the invention;

FIG.2 is a section view taken in A-A line in FIG.1.

DETAILED DESCRIPTION OF PREFERRED EMBODIMENT

As shown in FIG.1, a polyester beer bottle of an embodiment of the invention comprises: a bottleneck 1, a body of the bottle 2 and a bottom of the bottle 3, (hereinafter, the body of the bottle and the bottom of the bottle will be stated respectively in brief for a body and a bottom), in which said bottleneck 1, body 2 and bottom 3 are made by means of once blow molding and shaping a bottle blank made of polyethylene terephthalate (PET) material. It can be seen from the diagram that a vertical section extending from the joint of bottom 3 and body 2 to the joint of the plane on said bottom 3 forms an arc section, and the radius R1 of said arc section is in a range of 15-25mm. A vertical section of said bottom 3 forms a concave quaquersal portion projecting inwards and the radius R2 of the concave quaquersal portion is in a range of 20-35mm. In addition, the distance L between a top of the concave quaquersal portion to a plane of said bottom 3 is in a range of 7-15mm. An outwards protruding flange portion 4 is formed by an edge of said concave quaquersal portion at a plane of the bottom of the bottle. The height of the

flange portion 4 is in a range of 0.1-5mm. A side-face of the bottle is connected to said concave quaquersal portion at the bottom of the bottle via the transition arc portions respectively having different radius R3 and R4, in which the radius R3 of a first transition arc is in a range of 3-8mm and the radius R4 of a second transition arc is in a range of 0.5-2mm.

According to the polyester beer bottle of the embodiment, the ratio between the maximum outer diameter of the bottom 3 and the diameter of the flange portion 4 on said plane of the bottom of the bottle is in the range of 1.2-1.7.

More specifically, as an embodiment, it can also be seen from FIG.1 that the radius R1 of the arc of said vertical section extending from the joint of bottom 3 and body 2 to the joint of the plane on the bottom of PET beer bottle is 25mm. In the inward projected concave quaquersal portion formed in the bottom portion 3, a radius R2 of the concave quaquersal portion is 27.5mm, and a distance L from the top of the concave quaquersal portion to the plane of the bottom of the bottle is 9mm.

In addition, a height H of the flange portion 4 for the concave quaquersal portion on the plane of said bottom 3 is 1.6mm.

Moreover, as an embodiment, the arc portion of the vertical section of PET beer bottle having a radius R1 is connected with the concave quaquersal portion at the bottom of the bottom 3 via the transition arcs having radii R3 and R4 respectively, in which the radius R3 of the first transition arc is 8mm, and the radius R4 of the second transition arc is 2mm.

In the PET beer bottle of this embodiment, the ratio between the maximum outer diameter L1 of said bottom 3 to the diameter L2 of the flange portion 4 on the plane of said bottom 3 is 1.5.

WHAT IS THE CLAIMS:

1. A polyester beer bottle comprising a bottleneck, a body and a bottom of the bottle, which are once blow molded and shaped with polyester blank,
 wherein an arc portion in a vertical section extended from the joint of shaped bottom and the body of the bottle to the joint of a plane of the bottom has a radius R1 ranging over 15-25mm;
 a bottom surface of said bottle forms a concave quaquversal portion projecting inwards, an arc radius in a vertical section of the concave quaquversal portion is in a range of 20-35mm, and the distance between a top of the concave quaquversal portion to the plane of bottom face is in a range of 7-15mm;
 an outwards protruding flange portion is formed by an edge of said concave quaquversal portion at a plane of the bottom of the bottle, the height H of the flange portion is in a range of 0.1-5mm; and
 a side-face of the bottle is connected to said concave quaquversal portion at the bottom of the bottle via the transition arc portions respectively having different radius.
2. A polyester beer bottle according to claim 1, wherein a first transition arc radius R3 is in a range of 3-8mm, and a second transition arc radius R4 is in a range of 0.5-2mm.
3. A polyester beer bottle according to claim 1, wherein the ratio between the maximum outer diameter of the bottom of the bottle to the diameter of the flange portion on said bottom plane of the bottle is in a range of 1.2-1.7.
4. A polyester beer bottle according to claim 1, wherein the radius R1 of the arc of said vertical section extending from the joint of bottom and body to the joint of the plane on the bottom face of PET beer bottle is 25mm; and the radius R2 of said

concave quaquersal portion is 27.5mm, and the distance from the top of the concave quaquersal portion to the plane of the bottom of the bottle is 9mm.

5 5. A polyester beer bottle according to claim 4, wherein the ratio between the maximum outer diameter of said bottom (3) to the diameter of the flange portion (4) on the plane of said bottom (3) is 1.5.

6. A polyester beer bottle according to claim 5, wherein, the radius R3 of said first transition arc is 8mm.

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7. A polyester beer bottle according to claim 5, wherein, the height H of the flange portion (4) for the concave quaquersal portion projecting outward from the plane of said bottom (3) is 1.6mm.

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