

**BUNG PLUG, BUNG PLUG ARRANGEMENT, BUNGHOLE CONTAINER,
BUNGHOLE CONTAINER CLOSURE AND INTERMEDIATE BULK
CONTAINER**

5

The invention relates to a bung plug for being disposed in a bung neck, said bung plug comprising a plug having an external thread intended to interact with an internal thread of the bung neck and an annular sealing
10 element disposed before the external thread on the outer circumference of the plug when viewed in a screw-in direction of the bung plug into the bung neck. Moreover, the invention relates to a bung plug arrangement comprising a bung neck and a bung plug. Furthermore, the invention relates to a bunghole container. Additionally, the invention relates to a
15 bunghole container closure. Finally, the invention relates to an intermediate bulk container.

A bunghole container, in particular an intermediate bulk container (IBC), typically has a bunghole container opening which is closed with a screw cap and/or a closure. There exist different embodiments of screw caps
20 and/or closures. In particular, a so-called “closed screw cap” and an “open screw cap” exist. A “closed screw cap” and/or a bung plug is/are intended to be disposed directly in a bung neck realized by the bunghole container in order to close a bunghole container opening of a bunghole container. An “open screw cap” and/or a bunghole container closure
25 comprise(s) a closure lid for being disposed on a bunghole container opening of a bunghole container, the closure lid realizing a bung neck, the bunghole container closure comprising a bung plug for being disposed in the bung neck. Accordingly, the closure lid for its part has at least one bung opening which can be closed with the bung plug.

30 Typically, the bung plug comprises a plug having an external thread intended to interact with an internal thread of the bung neck, and an annular sealing element disposed before the external thread on the outer

circumference of the plug when viewed in a screw-in direction of the bung plug into the bung neck. In this case, the plug is realized in such a manner that a diameter of the plug in an axial contact area of the sealing element with the plug is exactly as large as a minor diameter of the external thread, which, combined with production-related influencing parameters described below, often results in a reduced sealing effect. An external thread of a bung plug of a closure lid is often realized as a G2 thread.

Screw caps or closures of this kind are usually manufactured in large quantities from a plastic material, for example PP and/or HDPE which is suitable for packaging dangerous goods, in an injection molding process, the individual components of the screw caps and/or closures, that is, for example in the case of an “open screw cap” and/or a bunghole container closure, the closure lid, the bung plug and the sealing element, being manufactured by means of several injection molding tools. In this process, often a shrinkage and contraction occur due to the material and the process, which adversely affects a dimensional accuracy of the components. This is aggravated by the fact that dimensions of the components can also vary depending on the batch or as a result of tool-related measurements or process influences.

Irrespective of these circumstances, the components always have to fit together for their intended interaction, in particular to produce a necessary sealing effect. The abovementioned influencing parameters however entail that this goal is often not achieved, which results in a high rate of rejects of pre-mounted screw caps and/or closures and, in addition, can lead to leaks in bung necks and/or bunghole containers for which the screw caps and/or closures can be intended, in particular if defects are overlooked in the course of inspections during production.

With the bung plug known from the state of the art, another problem exists which results from an elastic deformation of the sealing element when the bung plug is disposed in the bung neck. When the bung plug is

screwed into the bung neck, the sealing element at first typically enters a conical area of an annular gap realized between the bung plug and the bung neck in an area of a conical section of the bung neck. If the bung plug is now screwed further or too deeply into the bung neck, the sealing
5 element is however also often pressed into a cylindrical area of the annular gap in an area of a cylindrical section of the bung neck adjoining the conical section when viewed in the screw-in direction. A local indentation is formed on the sealing element as soon as the sealing element meets a start of the internal thread provided in the cylindrical
10 section. This disadvantageously results in a reduction of the sealing effect.

The object of the invention at hand is therefore to propose a bung plug, a bung plug arrangement, a bunghole container, a bunghole container closure and an intermediate bulk container which enable(s) a reliable
15 sealing of a bung neck.

This object is attained by a bung plug having the features of claim 1, a bung plug arrangement having the features of claim 7, a bunghole container having the features of claim 14, a bunghole container closure having the features of claim 15, a bunghole container having the features
20 of claim 16 and an intermediate bulk container having the features of claim 17.

Below, the terms “before” and “after” which are to be understood spatially, as for example “before the external thread”, “before the holding web”, “after the collar” or “after the conical section”, etc. relate
25 to a screw-in direction of the bung plug into the bung neck, said screw-in direction running axially with respect to the bung plug and/or the bung neck.

The bung plug according to the invention for being disposed in a bung neck comprises a plug having an external thread intended to interact with
30 an internal thread of the bung neck and an annular sealing element

disposed before the external thread on the outer circumference of the plug when viewed in a screw-in direction of the bung plug into the bung neck, wherein the plug is realized in such a manner that a diameter of the plug in a radial contact area of the sealing element with the plug is
5 larger than a minor diameter of the external thread and/or wherein the plug has a circumferential holding web for the sealing element before the external thread on the outer circumference when viewed in the screw-in direction, the sealing element being disposed before the holding web on the plug when viewed in the screw-in direction.

10 Therefore, according to a first aspect of the invention the plug may be realized in such a manner that a diameter of the plug in a radial contact area of the plug in which the sealing element is in contact with the plug is larger than a minor diameter of the external thread. In other words, the invention is aimed at changing a geometry of the bung plug and/or plug
15 by locally increasing a diameter of the bung plug and/or plug in the radial contact area of the sealing element with the plug, that is with a sealing seat, in such a manner that a width of an annular gap realized between the bung plug and the bung neck when the bung plug is screwed into a bung neck is reduced, which results in the sealing element being
20 in contact with the bung neck with an increased preload force such that a reliable sealing of the bung neck can be achieved irrespective of the abovementioned influencing parameters. Thereby, a rate of rejects can also be significantly reduced.

According to a second aspect of the invention, which is provided
25 alternatively or additionally to the first aspect, the plug has a circumferential holding web for the sealing element before the external thread on the outer circumference, the sealing element being disposed before the holding web in the radial contact area with the plug. The holding web which limits the radial contact area, which holds the sealing
30 element and with which the sealing element can be axially in contact, fixing the sealing element in the axial direction, not only prevents that,

if the second aspect is provided additionally to the first aspect, the sealing element slides down from the radial contact area, which is of an increased diameter, in a non-screwed state of the bung plug, but also, irrespective of the first aspect, serves to ensure that the sealing element is held in a defined area between the bung neck and the bung plug in a screwed state of the bung plug and, in particular, that it cannot be pulled into the cylindrical area of the annular gap. Thereby, a contact of the sealing element with the start of the internal thread can be precluded. In other words, the plug can be realized in such a manner that the sealing element cannot contact the internal thread and/or a start of the internal thread when the bung plug is screwed into the bung neck irrespective of a screw-in depth of the bung plug into the bung neck. Thereby, a reduction of the sealing effect as a result of local indentations of the start of the internal thread on the sealing element is avoided.

In an advantageous embodiment of the bung plug, both the first and the second aspect are provided in the bung plug, as a result of which a particularly reliable sealing of a bung neck can be achieved.

The bung neck can be the bung neck of a bunghole container, in particular an inner container for an intermediate bulk container. Alternatively, the bung neck can be the bung neck of a closure lid for being disposed on a bunghole container opening of a bunghole container, in particular an inner container for an intermediate bulk container.

In an advantageous embodiment of the bung plug, the diameter of the plug in the radial contact area of the sealing element with the plug can be 1.0 mm to 2.0 mm, preferably 1.2 mm to 1.6 mm, especially preferably 1.4 mm, larger than a minor diameter of the external thread.

In an advantageous embodiment of the bung plug, the external thread can be realized as a G2 thread. In this case, the internal thread can also be realized as a G2 thread. In each case, this refers to a G2 thread based on

a DIN ISO 228 standard in its latest version on the priority date of the patent application at hand.

In an advantageous embodiment of the bung plug, the plug can have a circumferential collar before the external thread on the outer circumference when viewed in the screw-in direction, wherein the sealing element can be disposed after the collar on the plug when viewed in the screw-in direction. In this case, the sealing element can be in contact with the plug in an axial contact area of the collar such that the sealing element can be pressed in the screw-in direction by means of the collar when the bung plug is screwed into the bung neck. The collar can be provided before the holding web such that the sealing element can be disposed between the collar and the holding web on the plug. In other words, the sealing element can be in contact with the plug in the radial contact area of the plug which is provided between the collar and the holding web. Furthermore, the sealing element can be in contact with the plug in the axial contact area of the collar and in an axial contact area of the holding web. Thus, the sealing element can be fixed, in particular axially, in a sealing bed realized by the radial contact area, the axial contact area of the collar and the axial contact area of the holding web. The collar can project beyond the holding web radially or in a radial direction which is transverse to the axial direction.

Advantageously, the holding web can be realized in such a manner that the holding web can limit a width of the annular gap in an area of the holding web and/or of an annular gap realized between an inner wall of the bung neck and the holding web when the bung plug is screwed into the bung neck in such a manner that the sealing element cannot enter an area of the annular gap located between the inner wall and the holding web and/or the annular gap and/or penetrate it. In particular, the holding web can thus prevent the sealing element from entering the cylindrical area and/or prevent a contact of the sealing element with the internal thread. The width of the annular gap in the area of the holding web can

be preferably less than 0.5 mm. In an advantageous embodiment of the bung plug, the width of the annular gap in the area of the holding web can be 0.4 mm.

Advantageously, the holding web can realize a stop defining a maximum
5 screw-in depth of the bung plug into the bung neck in such a manner that the holding web and/or the stop can abut against a start of the internal thread when the bung plug is screwed into the bung neck with the maximum screw-in depth. Even in the case in which the bung plug is screwed further or too deeply into the bung neck and in which the
10 sealing element can then also be partially or completely located in the cylindrical area, that is, can partially or only be in contact with the cylindrical section, the sealing element cannot contact a start of the internal thread. Rather, the holding web realizing a stop abuts against the start of the internal thread at the maximum screw-in depth of the
15 bung plug into the bung neck. Thus, any contact of the sealing element with the internal thread can be surely precluded. Thus, local indentations of the sealing element can be reliably avoided such that the sealing effect is not affected.

The bung plug arrangement according to the invention comprises a bung
20 neck having an internal thread and comprises a bung plug according to the invention for being disposed in the bung neck.

In an advantageous embodiment of the bung plug arrangement, the bung neck can have a conical section having a longitudinal cross section which is becoming smaller when viewed in the screw-in direction and a
25 cylindrical section adjoining the conical section after the conical section when viewed in the screw-in direction on the inner circumference, wherein the cylindrical section can have the internal thread. The conical section can have a first conical partial section and a second conical partial section adjoining the first conical partial section after the first
30 conical partial section, wherein the first conical partial section can have

a larger slope and/or a smaller aperture angle than the second conical partial section with respect to the screw-in direction.

In an advantageous embodiment of the bung plug arrangement, the bung plug can be screwable into the bung neck in such a manner that a sealing element of the bung plug can be in contact only with the conical section realizing a sealing bed when the bung plug is screwed into the bung neck, which can be achieved in particular by providing the holding web and/or by a suitable selection of the width of the annular gap in the area of the holding web. Due to the exclusive contact of the sealing element with the sealing bed of the conical section which is provided for this purpose, an optimum sealing effect can be achieved. In particular, a part of the first conical partial section and the second conical partial section can realize the sealing bed. However, when the bung plug is screwed into the bung neck, the sealing element can also be in contact with the conical section and the cylindrical section or only with the cylindrical section, depending on the screw-in depth and/or if it is screwed in too deeply. Advantageously, the sealing element should then not contact the start of the internal thread, which can be achieved by providing the holding web.

In an advantageous embodiment of the bung plug arrangement, the cylindrical section can have a first cylindrical partial section and a second cylindrical partial section adjoining the first cylindrical partial section after the first cylindrical partial section when viewed in the screw-in direction, wherein the first cylindrical partial section can be free of the internal thread and the second cylindrical partial section can have the internal thread. Thus, depending on the embodiment of the bung plug arrangement and/or the bung plug, it is possible to keep the sealing element reliably or even more reliably away from the internal thread, in particular, should the bung plug have been screwed so deeply into the bung neck that the sealing element is at least also in contact with the cylindrical section and/or the first cylindrical partial section.

Advantageously, in this case, the first cylindrical partial section, when viewed along the screw-in direction, can have a length which is dimensioned in such a manner that a contact of the sealing element with the internal thread and/or the start of the internal thread can be avoided.

5 The length can correspond to a distance of the sealing bed from the start of the internal thread. In an advantageous embodiment of the bung plug arrangement, the first cylindrical partial section, when viewed along the screw-in direction, can have a length of at least 1.0 mm, preferably 1.0 mm to 1.5 mm, especially preferably 1.1 mm. A distance of the
10 sealing bed from the start of the internal thread viewed in the screw-in direction can thus have these measurements.

In an advantageous embodiment of the bung plug arrangement, a bunghole container, in particular an inner container for an intermediate bulk container, can realize the bung neck. In this case, the bung plug can
15 be a “closed screw cap”.

In an advantageous alternative embodiment of the bung plug arrangement, a closure lid for being disposed on a bunghole container opening of a bunghole container, in particular an inner container for an intermediate bulk container, can realize the bung neck. In this case, the
20 closure lid can be an “open screw cap”.

The bunghole container, in particular inner container for an intermediate bulk container, according to the invention realizes a bung neck, the bunghole container comprising a bung plug for being disposed in the bung neck, the bung neck and the bung plug realizing a bung plug
25 arrangement according to the invention. The bunghole container can also be a drum. The bunghole container can realize the bung neck on an upper side. In this case, a bunghole container opening in the bung neck can be directly closed by means of the bung plug.

The bunghole container closure according to the invention comprises a
30 closure lid for being disposed on a bunghole container opening of a

bunghole container, in particular an inner container for an intermediate bulk container, the closure lid realizing a bung neck, the bunghole container closure comprising a bung plug for being disposed in the bung neck, the bung neck and the bung plug realizing a bung plug arrangement
5 according to the invention. Accordingly, the closure lid for its part can have at least one bung opening which can be closed with the bung plug.

The bunghole container according to the invention, in particular an inner container for an intermediate bulk container, comprises the bunghole container closure according to the invention. The bunghole container can
10 also be a drum. The bunghole container can have the bunghole container opening on an upper side, wherein the closure lid can be disposed on said bunghole container opening. In this case, a bung opening in the bung neck can be closed by means of the bung plug.

The closure lid and/or the bung plug and/or the plug, the sealing element
15 and the bung neck can be manufactured from a plastic material, in particular from PP and/or HDPE, for example, in an injection molding process. In particular, the closure lid can be made of HDPE and the bung plug and/or the plug can be made of PP. The sealing element can be made of an elastic material. The bunghole container and/or inner
20 container can also be made of a plastic material.

The intermediate bulk container according to the invention comprises one of the bunghole containers according to the invention realized as an inner container.

Below, preferred embodiments of the invention are explained in more
25 detail with reference to the accompanying drawings.

In the figures:

Fig. 1 shows a sectional view of a bung plug arrangement known from the state of the art;

Fig. 2 shows a detailed view of an area X shown in **Fig. 1**;

Fig. 3 shows a sectional view of a bung plug arrangement according to the invention;

Fig. 4 shows a detailed view of an area Y shown in **Fig. 3**;

5 **Fig. 5** shows a sectional view of a bung neck of a bung plug arrangement according to the invention;

Fig. 6 shows a detailed view of an area E shown in **Fig. 5**;

Fig. 7 shows a perspective view of a bunghole container closure;

Fig. 8 shows a sectional view of the bunghole container closure.

10 A combination of **Figs. 1** and **2** shows a bung plug arrangement 10 known from the state of the art, said bung plug arrangement 10 comprising a bung neck 11 and a bung plug 13 which is partially disposed in a bung opening 12 of bung neck 11.

Bung neck 11 realizes a conical section 14 having a longitudinal cross
15 section which is becoming smaller when viewed in a screw-in direction 15 and a cylindrical section 16 adjoining conical section 14 after conical section 14 when viewed in screw-in direction 15 on the inner circumference, cylindrical section 16 realizing an internal thread 17 of bung neck 11.

20 Bung plug 13 comprises a plug 18 realizing an external thread 19 intended to interact with internal thread 17 and a circumferential collar 20 before external thread 19 on the outer circumference when viewed in screw-in direction 15 and comprises an annular sealing element 21 disposed after collar 20 and before external thread 19 on the outer
25 circumference of plug 18 when viewed in screw-in direction 15. Plug 18 is realized in such a manner that a diameter 22 of plug 18 in a radial contact area 23 of sealing element 21 with plug 18 is exactly as large as

a minor diameter 24 of external thread 19, which, in particular combined with production-related influencing parameters, results in a reduced sealing effect. An annular gap 26 is realized between bung neck 11 and/or an inner wall 25 of bung neck 11 and bung plug 13, said annular gap 26 having a conical area 27 and a cylindrical area 28. In the case at hand, bung plug 13 is screwed into bung neck 11 in such a manner that sealing element 21 is located both in conical area 27 and in cylindrical area 28, that is, is in contact both with conical section 14 and with cylindrical section 16. Thus, sealing element 21 is not in contact with a sealing bed of conical section 14 which is intended for contact with sealing element 21. If bung plug 13 is screwed even deeper into bung neck 11, sealing element 21 meets a start 29 of internal thread 17, as a result of which sealing element 21 is indented locally. Consequently, an additional reduction of the sealing effect results.

A combination of **Figs. 3** and **4** shows a bung plug arrangement 30 according to the invention, said bung plug arrangement 30 comprising a bung neck 31 and a bung plug 33 which is partially disposed in a bung opening 32 of bung neck 31.

Bung neck 31 realizes a conical section 34 having a longitudinal cross section which is becoming smaller when viewed in a screw-in direction 35 and a cylindrical section 36 adjoining conical section 34 after conical section 34 when viewed in screw-in direction 35 on the inner circumference, cylindrical section 36 realizing an internal thread 37 of bung neck 31.

Bung plug 33 comprises a plug 38 realizing an external thread 39 intended to interact with internal thread 37 and a circumferential collar 40 before external thread 39 on the outer circumference when viewed in screw-in direction 35 and comprises an annular sealing element 41 disposed after collar 40 and before external thread 39 on the outer circumference of plug 38 when viewed in screw-in direction 35. Plug 38 is realized in such a manner that a diameter 42 of plug 38 in a radial

contact area 43 of sealing element 41 with plug 38 is larger than a minor diameter 44 of external thread 39 such that sealing element 41 is in contact with bung neck 31 with an increased preload force, which results in an increased sealing effect, in particular irrespective of production-related influencing parameters. Furthermore, plug 38 realizes a circumferential holding web 45 for sealing element 41 after collar 40 and before external thread 39 on the outer circumference when viewed in screw-in direction 35 such that sealing element 41 is disposed between collar 40 and holding web 45 on plug 38. In other words, sealing element 41 is in contact with plug 38 in radial contact area 43 of plug 38 which is provided between collar 40 and holding web 45. Furthermore, sealing element 41 is in contact with plug 38 in an axial contact area 46 of collar 40 and in an axial contact area 46 of holding web 45. Thus, sealing element 41 is fixed, in particular axially, in a sealing bed realized by radial contact area 43, axial contact area 46 of collar 40 and axial contact area 47 of holding web 45. Collar 40 projects beyond holding web 45 radially. Plug 38 realizes a cylindrical section 75 which is free of external thread 39 after holding web 45 and/or radial contact area 43 and before external thread 39 when viewed in screw-in direction 35 on the outer circumference, cylindrical section 75 being realized with a diameter 76 corresponding to minor diameter 44. Plug 38 can also realize cylindrical section 75 if no holding web and/or holding web 45 is not provided.

An annular gap 49 is realized between bung neck 31 and/or an inner wall 48 of bung neck 31 and bung plug 33, said annular gap 49 having a conical area 50 and a cylindrical area 51. In the case at hand, bung plug 33 is screwed into bung neck 31 in such a manner that sealing element 41 is located essentially in conical area 50, that is, is essentially in contact with conical section 34. Thus, sealing element 41 is in contact with a sealing bed of conical section 34 which is intended for contact with sealing element 41. In this case, holding web 45 prevents sealing element 41 from entering cylindrical area 51. For this purpose, holding

web 45 is realized in such a manner that holding web 45 limits a width 52 of annular gap 49 in an area 53 of holding web 45 in such a manner that sealing element 41 cannot enter an area 54 of annular gap 49 located between inner wall 48 and holding web 45 and/or cannot penetrate it.

- 5 Due to this design of holding web 45, sealing element 41 is fixed in screw-in direction 35.

Even in a case in which bung plug 33 is screwed further into bung neck 31 and in which sealing element 41 can then also be partially or completely located in cylindrical area 51, that is, can partially or only be
 10 in contact with cylindrical section 36, sealing element 41 does not contact a start 55 of internal thread 37 since sealing element 41 cannot enter an area 54 of annular gap 49 located between inner wall 48 and holding web 45 and/or cannot penetrate it. Rather, holding web 45 realizing a stop 56 abuts against start 55 at a maximum screw-in depth of
 15 bung plug 33 into bung neck 31. Thus, any contact of the sealing element 41 with internal thread 37 can be precluded. Thus, local indentations of sealing element 41 can be avoided such that the sealing effect is not affected.

A combination of **Figs. 5** and **6** shows a bung neck 57 of a bung neck
 20 arrangement according to the invention not further shown in the case at hand.

The features of bung neck 57 described below can also be seen in **Figs. 3** and **4** in the case of bung neck 31 such that the following explanations can also be applied to bung neck 31.

- 25 Bung neck 57 realizes a conical section 58 having a longitudinal cross section which is becoming smaller when viewed in a screw-in direction 62 and a cylindrical section 60 adjoining conical section 58 after conical section 58 when viewed in screw-in direction 62 on the inner circumference, said cylindrical section 60 realizing an internal thread 59.
 30 Conical section 59 has a first conical partial section 61 and a second

conical partial section 63 adjoining first conical partial section 61 when viewed in screw-in direction 62, wherein first conical partial section 61 has a larger slope and/or a smaller aperture angle than second conical partial section 63 with respect to screw-in direction 62. A part of first
5 conical partial section 61 and second conical partial section 63 realize a sealing bed 64 provided for the abutment of a sealing element (not shown in the case at hand) of a bung plug (also not shown in the case at hand) of the bung plug arrangement. Furthermore, cylindrical section 60 has a first cylindrical partial section 65 and a second cylindrical partial
10 section 66 adjoining first cylindrical partial section 65 when viewed in screw-in direction 62, wherein first cylindrical partial section 65 is free of internal thread 59 and second cylindrical partial section 66 realizes internal thread 59. A distance 67 between a start 68 of internal thread 59 and sealing bed 64 viewed in screw-in direction 62 and/or a length of
15 first cylindrical partial section 65 when viewed in screw-in direction 62 is/are dimensioned in such a manner that the sealing element is precluded from cutting into internal thread 59 when screwing the bung plug into bung neck 57, in particular should the bung plug have been screwed too deeply into bung neck 57.

20 A combination of **Figs. 7 and 8** shows a bunghole container closure 69 comprising a closure lid 70 for being disposed and/or screwed on a bunghole container opening (not shown in the case at hand) of an inner container (also not shown in the case at hand) for an intermediate bulk container, said closure lid 70 being realized as an “open screw cap” and
25 having an internal thread 71, closure lid 70 realizing a bung neck 72, bunghole container closure 69 comprising a bung plug 73 screwed into bung neck 72, bung neck 72 and bung plug 73 realizing a bung plug arrangement 74. In addition, reference is made to the description of **Figs. 2 to 6**.

Claims

1. A bung plug (33, 73) for being disposed in a bung neck (31, 57, 72),
5 said bung plug (33, 73) comprising a plug (38) having an external
thread (39) intended to interact with an internal thread (37, 59) of the
bung neck and an annular sealing element (41) disposed before the
external thread on the outer circumference of the plug when viewed
in a screw-in direction (35, 62) of the bung plug into the bung neck,
10 characterized in that
the plug is realized in such a manner that a diameter (42) of the plug
in a radial contact area (43) of the sealing element with the plug is
larger than a minor diameter (44) of the external thread and/or the
plug has a circumferential holding web (45) for the sealing element
15 before the external thread on the outer circumference when viewed in
the screw-in direction, the sealing element being disposed before the
holding web on the plug when viewed in the screw-in direction.
2. The bung plug according to claim 1,
characterized in that
20 the diameter (42) of the plug (38) in the radial contact area (43) of
the sealing element (41) with the plug is 1.0 mm to 2.0 mm,
preferably 1.2 mm to 1.6 mm, especially preferably 1.4 mm, larger
than the minor diameter (44) of the external thread (39).
3. The bung plug according to claim 1 or 2,
25 characterized in that
the external thread (39) is realized as a G2 thread.
4. The bung plug according to any one of the preceding claims,
characterized in that

the plug (38) has a circumferential collar (40) before the external thread (39) on the outer circumference when viewed in the screw-in direction (35, 62), the sealing element (41) being disposed after the collar on the plug when viewed in the screw-in direction.

- 5 5. The bung plug according to any one of the preceding claims,
characterized in that
the holding web (45) is realized in such a manner that the holding
web limits a width (52) of an annular gap (49) realized between an
inner wall (48) of the bung neck (31, 57, 72) and the holding web
10 when the bung plug (33, 73) is screwed into the bung neck in such a
manner that the sealing element (41) cannot enter the annular gap.

6. The bung plug according to any one of the preceding claims,
characterized in that
the holding web (45) realizes a stop (56) defining a maximum screw-
15 in depth of the bung plug (33, 73) into the bung neck (31, 57, 72) in
such a manner that the holding web abuts against a start (55, 68) of
the internal thread (37, 59) when the bung plug is screwed into the
bung neck to the maximum screw-in depth.

7. A bung plug arrangement (30, 74), comprising a bung neck (31, 57,
20 72) having an internal thread (37, 59) and comprising a bung plug
(33, 73) for being disposed in the bung neck according to any one of
the preceding claims.

8. The bung plug arrangement according to claim 7,
characterized in that
25 the bung neck (31, 57, 72) has a conical section (34, 58) having a
longitudinal cross section which is becoming smaller when viewed in
the screw-in direction (35, 62) and a cylindrical section (36, 60)
adjoining the conical section after the conical section when viewed in

the screw-in direction on the inner circumference, the cylindrical section having the internal thread (37, 59).

9. The bung plug arrangement according to claim 8,
characterized in that
5 the bung plug (33, 73) is screwable into the bung neck (31, 57, 72) in such a manner that a sealing element (41) of the bung plug is in contact only with the conical section (34, 58) realizing a sealing bed (64) when the bung plug is screwed into the bung neck.
10. The bung plug arrangement according to claim 8 or 9,
10 characterized in that
the cylindrical section (36, 60) has a first cylindrical partial section (65) and a second cylindrical partial section (66) adjoining the first cylindrical partial section after the first cylindrical partial section when viewed in the screw-in direction (35, 62), the first cylindrical
15 partial section being free of the internal thread (37, 59) and the second cylindrical partial section having the internal thread.
11. The bung plug arrangement according to claim 9 and 10,
characterized in that
a distance (67) of the sealing bed (64) from a start (55, 68) of the
20 internal thread (37, 59) is at least 1.0 mm, preferably 1.0 mm to 1.5 mm, especially preferably 1.1 mm.
12. The bung plug arrangement according to any one of claims 7 to 11,
characterized in that
a bunghole container, in particular an inner container for an
25 intermediate bulk container, realizes the bung neck (31, 57).

13. The bung plug arrangement according to any one of claims 7 to 11,
characterized in that
a closure lid (70) for being disposed on a bunghole container opening
of a bunghole container, in particular an inner container for an
5 intermediate bulk container, realizes the bung neck (31, 57, 72).
14. A bunghole container, in particular an inner container for an
intermediate bulk container, the bunghole container realizing a bung
neck (31, 57), the bunghole container comprising a bung plug (33)
for being disposed in the bung neck, the bung neck and the bung plug
10 realizing a bung plug arrangement (30) according to any one of
claims 7 to 11.
15. A bunghole container closure (69), comprising a closure lid (70) for
being disposed on a bunghole container opening of a bunghole
container, in particular an inner container for an intermediate bulk
15 container, the closure lid realizing a bung neck (31, 57, 72), the
bunghole container closure comprising a bung plug (33, 73) for being
disposed in the bung neck, the bung neck and the bung plug realizing
a bung plug arrangement (30, 74) according to any one of claims 7 to
11.
- 20 16. A bunghole container, in particular an inner container for an
intermediate bulk container, comprising a bunghole container closure
(69) according to claim 15.
17. An intermediate bulk container, comprising a bunghole container
according to any one of claims 14 or 16 which is realized as an inner
25 container.