

POURING INSERT FOR A CONTAINER

The present invention relates to a pouring insert for a container closable with a cup-shaped dosing, metering or proportioning cap, which is fitted and held preferably as a force fit, e.g. jammed, into the container neck and reduces the original cross-section of the container neck, e.g. to 1/10 or less. The insert is cup-shaped and the base area of such a pouring insert, when inserted, is positioned lower in the container than its opening area.

The function of the insert is to reduce the stream of liquid flowing out of the container on pouring so as to make it easier to fill the dosing cap without spilling.

In a known pouring insert of this type (EP 0,109,704 - GB 2150102) the side wall is cylindrical and a sloping partition extends across it forming a base area. A cylindrical pouring spout extends up from this sloping partition coaxial with the side wall. An additional air vent opening is provided in the lowest region of the sloping partition. In the embodiment shown in that document, this known pouring insert reduces the original cross-section of the container neck into which it is inserted to approximately 1/10, so that the liquid is discharged from the container in a smaller stream than in the case of a completely free container neck. The dosing cap can thus be filled much more easily, as is desirable, for example, in the case of soft scourer bottles and the like.

In the known pouring insert, egress of the contents takes place through the pouring spout and during this pouring process the additional air vent

opening in the partition has be in a position above the discharge opening of the pouring spout, if pressure compensation is to be obtained through the air vent opening, thus ensuring smooth flow rather than jerky flow. If the container is held in such a way that liquid can also flow out through the air vent opening in the partition, such liquid is unlikely to pass into the dosing cap and instead is more likely to flow down beside the latter and be spilt.

10. The present invention aims to provide a pouring insert of simple construction which permits a controlled pouring to take place without it being necessary to hold the container in a specific orientation during the pouring process.

15. According to the present invention, there is provided a pouring insert for a container closable with a cup-shaped dosing cap, the insert in use being sealingly located in the neck of the container and such as to reduce the cross-section of the container neck, the
20. insert having a base area and an opening area, in use the base area being located further into the container than the opening area of the insert, the insert being cup-shaped and having at least three uniformly circumferentially distributed opening means, each of
25. which extends into the side wall and into the base area. The openings are preferably in the form of slots.

When the pouring insert is inserted into the container neck, its base area is located further within the container than its opening area and, independently
30. of the way in which the container is held during pouring, liquid only passes through some of the circumferentially distributed slots and out of the opening area, whilst at least

one opening is available for producing a pressure compensation in the container.

5. It is desirable for the openings to extend into or be in the base area, because then liquid residues can flow downwards out of the dosing cap after remounting the cap on the container after use and such residues are returned into the container by passing through the openings back into the container.

10. Admittedly, a cup-shaped pouring insert is already known (German Patent 1607982), which can be inserted in a container neck and has two facing openings in its side wall adjacent to the base area. However, this pouring insert can only be inserted in the container neck in such a way that its base wall is located outside the container and its opening area forming the cup opening is located inside the container. In addition, this known pouring insert is not suitable for use in conjunction with containers to be closed by dosing caps, because the residual material flowing downwards from the re-fitted dosing cap flows into an annular area of the pouring insert, but cannot get back into the container again.

25. According to a preferred embodiment of the invention, the base area of the pouring insert is convex in the direction of the open end thereof and the region between the side wall and the convex base area affords an annular transition area into which the openings extend.

30. The convexity of the base area imparts additional strength and stability to the pouring insert. In

5. addition, residual material left in the dosing cap after its use can flow back out of the dosing cap and pass from the central part of the convex base area in the direction of the openings and consequently into the container.

10. In order to be able to mechanically insert a pouring insert according to the present invention to a predetermined position within the container neck, it is desirable to provide on its open end an outwardly directed annular shoulder, adjacent to which a sealing surface is formed on the outer face of the side wall. The automatic inserting movement of the pouring insert is in this way limited by the engagement of the annular shoulder on the end face of the container neck and due to the sealing surface, there is simultaneously a sealing fit in the container neck.

20. In order to be able to firmly anchor the pouring insert on the container, an outer holding wall can emanate from the annular shoulder and run parallel to the side wall. This holding wall can pass in the direction of the base area and preferably has an anchoring projection on its inner face adapted to cooperate with a structure on the outer face of the neck of the container.

30. On inserting the pouring insert in the container neck, the anchoring projection can pass over a corresponding anchoring projection on the outer face of the container neck, accompanied by elastic deformation of the holding wall, so as to lockingly

engage behind the said neck in the inserted end position.

5. With such a construction, a thread can be formed on the inner face of the side wall of the insert, into which may be screwed an outer thread of the dosing cap.

With such a construction, the pouring insert and screwed-in dosing cap can be inserted as one unit and in a single operation into the container neck.

10. In order to achieve a reliable seal between the pouring insert and the dosing cap mounted on the container neck, an annular sealing surface can be provided on the pouring insert on the wall area forming the annular shoulder and on the side remote from the base area. This sealing surface sealingly engages with a corresponding sealing surface of the dosing cap, when the latter has been fitted.

15. The invention may be put into practice in various ways and two specific embodiments will be described to illustrate the invention with reference to the accompanying drawings, in which:-

20. Figure 1A is a partial section through a container with a pouring insert in accordance with the present invention located in the neck of a container and a dosing cap screwed onto the neck of the container,

25. Figure 1B is an exploded version of Figure 1A showing the container, insert and cap separately but disposed on the same longitudinal axis 50, with the insert in the process of being located in the neck of the container,

Figure 2A is a view corresponding to Figure 1A of a second embodiment in which the dosing cap is screwed into the insert, and

5. Figure 2B is an exploded version of Figure 2A showing the container, insert and cap separately but disposed on the same longitudinal axis 50 with the insert in the process of being located in the neck of the container.

10. A container 1, the neck portion of which is shown in Figure 1, may be a soft scourer bottle. The container has a neck 2, on whose outer face is formed a thread 3, onto which is screwed a dosing cap 4 by means of an inner thread 5 located on the inside face of a skirt 40 of the dosing cap.

15. The skirt 40 extends out from the outer face of the side wall 45 of the cap approximately midway between its base and its open end. In fact, the length from the top of the skirt (the portion nearest the closed end) to the open end is 48% of the
20. internal depth of the cap whilst the length from the underside of the skirt (point 41) is about 41%. A substantial portion of the depth of the cap is thus nested within the container (by being inserted within the insert).

25. According to a first embodiment of the present invention a cup-shaped pouring insert 7 is shown located as a force fit in the container neck 2, i.e. it is inserted by being pressed into the opening. The insert has a base area 9, 10 and in use this is
30. located in the interior of container 2. The insert

also has an open top or opening area which in use is located within and in the vicinity of the discharge opening of the neck 2 of the container. The pouring insert may be conveniently (and conventionally) made from elastic plastics material. The insert 7 has a cylindrical side wall 8, the upper outer edge of which affords three sealing surfaces, an axially facing annular shoulder 42, an outwardly facing axially extending circumferential sealing face 12, and an inclined or conical inwardly facing sealing surface 13, the function of which will be described below. The shoulder 42 engages with and seals against an annular shoulder 14 on the end face of the neck 2 of the container. The sealing face 12 of the insert engages with an inner face 43 of the neck of the container and seals therewith when the shoulders 42 and 14 are in engagement.

The base area of the cup-shaped pouring insert is curved upwardly in the direction of its opening area. An annular transition area 10 is located between it and the side wall 8. Slots 11 parallel to the longitudinal axis of the pouring insert 7 are provided in side wall 8 and extend through the transition area 10 and just into the convex base area 9. This embodiment has six slots 11, which are uniformly circumferentially distributed.

As mentioned above, the dosing cap 4 has a skirt 40 and located on the inside face of the skirt 40 is a screw thread 5 adapted to cooperate with the thread 3 on the neck 2 of the container. Where the skirt

connects to the side wall 45 of the dosing cap an outwardly facing inclined or conical sealing surface 6 is provided which is dimensioned and located so as to seal onto the surface 13 of the insert 7.

5. When it is wished to pour some of the contents out of the container, the dosing cap 4 is unscrewed and the container 1 is tilted in such a way that its content flows out. Only a relatively small amount of liquid passes out and this will be through only some of the slots 11. Thus, the pouring insert 7 restricts the original opening cross-section of the neck of the container to a considerably reduced value, specifically to about 1/10 or less. The much smaller quantity of liquid flowing out of the
10. container can be very easily filled into the dosing cap 4, as compared with the situation when the neck of the container is completely free. Filling of the cap can be controlled without difficulty and the dosing cap 4 can be filled up to a given desired
15. level. It is unimportant in what "turning position" or orientation relative to the axis of pouring the container neck 2 and consequently the pouring insert 7 are located during the pouring operation, because as a result of the uniform distribution of the slots
20. 11, liquid passes out through some slots in each pouring position, whilst other slots remain connected to the ambient air for producing a pressure compensation in the interior of the container 1.
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30. When the filled dosing cap 4 has been emptied, it can again be screwed onto the thread 3 by means of

- its thread 5, its sloping sealing surface 6 sealingly engaging the sloping sealing surface 13 at the upper end of the pouring insert 7. In this position, as shown in Figure 1A, the liquid residues still
5. remaining in the dosing cap 4 trickle down the inner face of the cap 4 and drip substantially onto the transition area 10 and partly onto the convex base area 9 (from where they will flow to the area 10), so that the said liquid residues gradually pass through
10. the slots 11 back into container 1.

- The embodiment according to Figures 2A and 2B corresponds with that according to Figures 1A and 1B in that a pouring insert 17 is inserted into the neck 2' of a container 1. As in the embodiment of Figure
15. 1A and 1B, the side wall 18 and a convex base area 19 between them afford an annular transition area 20. The insert has slots 21 in its side wall 18. The slots extend into the annular transition area 20 (corresponding to the transition area 10 in the
20. embodiment of Figures 1A and 1B). The outer face of the side wall 18 has a sealing surface 22 which sealingly engages on the inner face 52 of the neck 2' of the container. The insertion depth of the pouring insert 17 is limited by an outwardly directed annular
25. shoulder 24 connected to the sealing surface 22 and which rests on the end face 53 of the neck 2' of the container. The side wall 18 of the insert extends outwardly at its upper end into a seal providing region 54. Besides providing the shoulder 24 this
30. region also provides an upwardly and inwardly facing

conical sealing surface 23 the function of which will be described below.

5. The insert has an outer holding wall 26 which extends on from the shoulder 24 and passes downwardly substantially parallel to side wall 18 from the wall area 54 affording the annular shoulder 24 (see Figure 2B). The holding wall 26 is provided with an inwardly directed, annular anchoring projection 28, 10. which engages behind a correspondingly shaped anchoring projection 27 on the outside of the neck of the container 2'. The holding wall 26 is so dimensioned as to be elastically outwardly expandable relative to the pouring insert 17. Thus, the anchoring projection 28 can expand and be slid or 15. pushed over the anchoring projection 27 and then contracts again and "snaps" behind it.

A thread 25 is formed on the inner face in the opening area of the pouring insert 17. A corresponding outer thread 5' is provided on the 20. outside face of the lower part 48 of the wall 45 of the dosing cap 4'. The dosing cap can then be nested in the insert 17 and secured to it by these interengageable threads. The dosing cap 4' has an annular rib or flange 55 extending out from its outer 25. face about halfway down its length. The upper face 56 is about 44% of the internal depth of the cap from its open end and the lower face 57 is about 39%.

The flange also carries a sloping sealing surface 6' which, when the cap is screwed into the 30. insert, sealingly engages with the sloping sealing

surface 23 formed on the seal providing region 54 at the upper end of the pouring insert 17. (Figure 2A).

The operation of the pouring insert 17 during the pouring process, as well as during the return of residual liquid from dosing cap 4' into container 1' corresponds to the operation of the embodiment shown in Figures 1A and 1B.

Our copending Application no. 8526372 Serial No. 2168945 is directed to a pouring insert for a container comprising means for sealingly locating the insert in the neck of the container and affording a septum extending across and within the opening of the container, the septum affording opening means for egress of the contents from the container, and access thereto of liquids falling on the septum, the said opening means being spaced from the axis of the insert and affording egress at locations distributed around the axis over an angle in excess of 180°, the septum affording an annular region linking a base area and the side walls of the insert, the annular region being the most remote region of the insert from opening of the container in use of the insert, and in which the opening means contact or are located in the annular region.



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CLAIMS

5. 1. A pouring insert for a container closable with a cup-shaped dosing cap, the insert in use being sealingly located in the neck of the container and such as to reduce the cross-section of the container neck, the insert having a base area and an opening area, in use the base area being located further into the container than the opening area of the insert, the insert being cup-shaped and having at least three uniformly circumferentially distributed opening means, each of which extends into the side wall and into the base area.

15. 2. A pouring insert as claimed in Claim 1, in which the openings means are formed by slots.

20. 3. A pouring insert as claimed in Claim 1 or Claim 2 in which the base area is curved or domed or convex in the direction of the open end of the pouring insert.

25. 4. A pouring insert as claimed in Claim 3 in which an annular region or transition area is provided between the side wall and the base area and the opening means extend into the annular region or transition area.



5. A pouring insert as claimed in any one of the preceding claims in which the open end of the insert is provided with an outwardly directed annular shoulder adapted to engage in use the end face of the neck of the container.

10. 6. A pouring insert as claimed in any one of the preceding claims in which the means for sealingly locating the insert in the neck of the container comprise a sealing surface formed on the outer face of the side wall of the insert.

15. 7. A pouring insert as claimed in any one of the preceding claims in which an outer holding wall or skirt emanates from the means for sealingly locating the insert in the container and extends down the outside of the neck of the container in use.

20. 8. A pouring insert as claimed in Claim 7 in which the skirt has on its inner face an anchoring projection.

25. 9. A pouring insert as claimed in any one of the preceding claims in which engaging means are formed on the inner face of the side wall of the insert and are adapted to secure the dosing cap in nested relationship to the insert.

30. 10. A pouring insert as claimed in any one of the preceding claims in which the means for sealingly



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locating the insert in the container also afford an annular sealing surface on the side remote from the base area.

5. 11. A pouring insert as claimed in any one of the preceding claims in which on the open end of the insert is provided an outwardly directed annular shoulder, adjacent to which a sealing surface is formed on the outer face of side wall of the insert.

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12. A pouring insert as claimed in Claim 11 in which an outer holding wall running substantially parallel to the side wall of the insert emanates from the annular shoulder and extends in the direction of the base area and has on its inner face an anchoring projection.

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13. A pouring insert as claimed in Claim 12 in which a thread is formed on the inner face of the side wall of the insert.

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14. A pouring insert as claimed in any one of Claims 11 to 13 in which an annular sealing surface is provided on the side remote from the base area of the wall area forming the annular shoulder of the insert.

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15. A pouring insert as claimed in Claim 1 substantially as specifically described herein with reference to Figures 1A and 1B or Figures 2A and 2B.

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