(57) Abrégé/Abstract:
The invention relates to a reclosable pouring element for opening and reclosing packagings, especially parallelepiped-shaped multilayer composite packagings. The pouring element comprises a base body (1) with a peripheral flange (2), and a lid (3) which is joined to the base body in an articulated manner. The invention also relates to a method for producing such a pouring element and to a packaging provided therewith. The aim of the invention is to maintain the good barrier properties of a packaging that is provided with a pouring element up to the first opening of the packaging even if said pouring element has a small overall height. For this purpose, the base body (1), in the zone of its pouring opening, is provided with a plate (4) whose contour substantially corresponds to the contour of the pouring opening. Said plate is spaced apart from the flange (2) by at least one slot (7) and the bottom thereof runs flush with the bottom of the flange (2). The lid (3) is firmly linked with the plate (4) so that the lid (3) simultaneously functions as an opener. The base body (1) and the plate (4) are provided with a film (10) that comprises a barrier layer, runs parallel to the flange plane and covers the slot (7). The inventive pouring element is further characterized in that it comprises no separate parts that have to be disposed of.
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ABSTRACT

A reclosable pouring element for opening and reclosing packages, especially rectangular multi-layer composite packages, with a base body having a circumferential flange and a lid joined flexibly thereto, as well as a method for its manufacture and a package provided with such a pouring element are presented and described. In order to retain the good barrier properties of a package provided with a pouring element even with a low overall height of the pouring element before the package is opened for the first time, it is provided that in the region of its pouring opening the base body has a plate whose contour substantially corresponds to the contour of the pouring opening, which is arranged spaced from the flange by at least one slit and whose underside runs flush with the underside of the flange, that the lid is connected securely to the plate so that the lid at the same time serves as an opening element and that both the base body and the plate have a film with a barrier layer, extending parallel to the plane of the flange and covering the slit. In addition, the pouring element according to the invention manages without separate disposable parts.

Fig. 2 is provided for the abstract.
The invention relates to a reclosable pouring element for opening and reclosing packages, especially rectangular multi-layer composite packages, with a base body having a circumferential flange and a lid joined flexibly thereto, as well as a method for its manufacture and a package provided with such a pouring element.

Drinks packages constructed as multi-layer composite packages are known in a plurality of embodiments, for example, as flat-top composite packages. They are mainly used in the field of liquid packaging in connection with cold, cold-sterile, hot and aseptic filling.

In order to improve the handling of such composite packages and especially to make them reclosable, there is an increasing tendency to provide the composite packages with reclosable pouring elements. These pouring elements can be carried out in one or several pieces and generally have an opening element as well as a lid. Today, such packages are almost exclusively available on the market with reclosable pouring elements.

EP 0 580 593 B1 for example, discloses a multi-layer composite package provided with a pouring element which serves to open the package for the first time and is equipped with a suitable closure element so that it is reclosable. In the region of the cardboard layer and the
outer polyethylene layer of the composite material of the package there is provided an indentation to weaken the gable material in which an opening element joined in one piece to the pouring element is pressed into the package material to open the package. Packages provided with pouring elements having screw closures are also known.

Some pouring elements have a pull tab located inside the base body above the pouring opening and sealed on securely there, which must be removed to open the package for the first time by pulling away from the base body (EP 0 750 564 B1). In this case, however, the internal polyethylene layer is frequently only unsatisfactorily removed and the torn-off pull tab also constitutes a waste product to be disposed of separately.

A problem with the pouring elements described previously is that in order to achieve reliable opening of the entire pouring opening, the multi-layer composite package must be sufficiently weakened. Pouring elements stuck onto the package are arranged above a zone of weakening generally formed by perforating the outer layers of the multi-layer composite material; this certainly results in barrier behaviour of the composite material which persists until the actual opening, but requires a certain minimum size (overall height) of the pouring element since, during the opening process, an opening element of the pouring element must destroy the remaining layers. However, if the pouring element is arranged above a pouring opening in the multi-layer composite material sealed over merely with a thin polyethylene layer, the opening process is facilitated even with a small overall height but such a package does not have adequate barrier
properties against loss of aroma or adverse influence by light or oxygen.

The object of the invention is thus to configure and further develop the pouring element specified initially and described in detail previously so that the good barrier properties of the package provided therewith are retained until the package is opened for the first time even with a small overall height of the pouring element. It is further desired that such a pouring element should manage without a separate disposable section.

This object is achieved by the base body having a plate in the region of its pouring opening, whose contour substantially corresponds to the contour of the pouring opening which is arranged separated from the flange by at least one slit and whose underside runs flush with the underside of the flange, by the lid being securely connected to the plate so that the lid at the same time serves as an opening element, and by both the base body and the plate having a barrier layer extending parallel to the plane of the flange and covering the slit.

According to the invention, during injection moulding of the pouring element as part of the base body, the plate is separated from this by a thin slit. The plate and lid are then brought together to form a secure joint, for example are stuck flat or welded ultrasonically at several points. Since both the flange of the base body and the plate are provided with a barrier layer, the package provided with such a pouring element according to the invention retains its good barrier properties. In the region of the pouring opening, the weakened properties of
the package are to some extent "repaired" by the pouring element applied there and provided with a barrier layer.

In order to open this pouring element according to the invention for the first time, the lid is raised from the base body and the plate with the film located below it, which seals the pouring opening of the package until it is opened for the first time, is removed following the contour precisely as a result of the flat join. In this way not only is a defined pouring opening created but the opening also functions reliably without any disposable part to be disposed of separately being formed. It is also ensured that that the lid with the torn-out connecting piece can be reliably re-closed.

A secure joint is formed between the plate and the lid since both parts are welded, preferably ultrasonically welded.

A further teaching of the invention provides that the base body has a circumferential cross-piece extending substantially perpendicular to the flange, which receives the lid in a sealing fashion in the closed state, wherein it is especially appropriate if the lid can be locked into place with the base body. The locking can be accomplished audibly here in order to indicate to the user that the package thus re-closed is tightly closed, so that it can be shaken for example.

In a further advantageous embodiment of the invention a hinge is provided for the flexible connection of the base body and lid, which can be arranged either on the base body or alternatively on the lid. An especially low overall height is achieved by using a film hinge.
According to a further embodiment of the invention, the barrier layer of the film used consists, for example, of an ethylene vinyl alcohol (EVOH), polyethylene (PE), polyamide or of aluminium foil or of a mixture of said materials.

According to a further teaching of the invention, the base body and/or the lid can have an originality seal which indicates to the user if a package has been opened without authorisation before the use for which it is intended. For this purpose, for example, the base body and lid can be constructed with a connecting cross-piece constructed as a predetermined breaking point.

Finally, according to a further advantageous embodiment of the invention, the base body and the lid can be manufactured in one piece. In this case, both parts are manufactured in a single injection process and the burr connecting them is removed before joining the plate and the lid.

According to a first method of manufacture according to the invention, the base body of the pouring element is activated by means of a heat source and joined to the film by means of a stationary die. In this case, the thermal energy can be supplied between the pouring element and the film or it is alternatively also feasible that the thermal energy is supplied below the film. In this case, the film is penetrated by the energy emitted by the heat source.

After plastifying the seal surfaces, the film and the underside of the base body are joined together without
any pockets. Roll goods are preferably used as the film. Separation of the pouring elements can take place directly after joining with the film by punching out or however, just before the actual application of the pouring element in the filling machine. A substantial advantage of said last-mentioned possibility is that a partly extremely complex sorting process of the pouring elements before supply to the applicator can be completely dispensed with if the pouring elements on the film strips are arranged in fixed positions.

According to an alternative method of manufacture it is provided that the film is a film strip prepared from a roll and the film strip is pulled through the injection moulding die for the pouring element so that the pouring element is injected onto the film without any pockets. In this case, the flange of the base body and the plate located therein are joined to the barrier film. In this method of manufacture the pouring element can also be punched out in the vicinity of the injection moulding die in order to be further processed as loose bulk goods or however, to remain until application on the film strip.

The invention is explained in detail subsequently with reference to the drawings which merely show preferred embodiments wherein:

Fig. 1 is a top view of an embodiment of a pouring element according to the invention in the closed state,

Fig. 2 is a perspective view of the pouring element from Fig. 1,
Fig. 3 is a view of the pouring element from Fig. 1 from below,

Fig. 4 is a longitudinal section of the pouring element from Fig. 1,

Fig. 5 is a longitudinal section of the pouring element from Fig. 4 but in the opened state,

Fig. 6 is a cross-section of a second embodiment of a pouring element according to the invention,

Fig. 7 is a schematic top view of another pouring element according to the invention with a base body applied to a film,

Fig. 8 is a perspective view of a further pouring element according to the invention applied to a film, and

Fig. 9 is a perspective view of a further pouring element according to the invention injected onto a film.

Figs. 1 to 3 show a pouring element according to the invention without a barrier layer for better explanation. The pouring element has a base body 1 with a circumferential flange 2 and a lid 3 joined flexibly to the base body 1. As can be seen from the view from below in Fig. 3 in particular, inside the base body 1 there is provided a plate 4 whose size corresponds to the later pouring opening, which is connected to the circumferential flange 2 of the base body by four cross-
pieces S in the embodiment shown and insofar preferred. In order to facilitate the opening process, the plate 4 has a wedge-shaped elevation 5, as can be seen from Fig. 4, in order to fasten a grip tab 6, which has a corrugation, not described in greater detail, provided on the underside of its free end, at a slight angle to the lid 3.

As can be seen from Fig. 3, the plate 4 is surrounded by a slit 7 which is only interrupted in the region of the cross-piece S. Since the plate 4 is securely joined to the lid 3, opening the lid 3 with the aid of the grip tab 6 results in breaking of the cross-pieces S and release of the plate 4 from the base body 1.

In order that the lid 3 is not completely removed from the base body 1 during the opening process, the right-hand part of the lid 3 in the drawing is joined securely to the base body 1 by means of a connecting element 9. Between the connecting element 9 and the actual lid 3 there is arranged a hinge 8 which is preferably constructed as a film hinge.

Figs. 4 and 5 show a longitudinal section of the pouring element according to the invention, described in detail previously, already joined to a barrier film 10 arranged holohedrally on the underside of the base body 1. It can be seen clearly from Fig. 5 that when the lid 3 of the pouring element according to the invention is opened for the first time by actuating the grip tab 6, the piece of film of the barrier film 10 joined securely thereto under the lid 4 is pulled out from the film composite, following the contour precisely.
Fig. 6 shows an alternative embodiment wherein, before the ultrasonic welding of the lid 3' with the base body 1', energy directors between the lid 3' and the plate 4 and the connecting element 9' and the base body 1' ensure a secure join during welding.

It is further deduced from Fig. 1 and Figs. 4 to 6 that above the circumferential flange 2 there is provided a circumferential energy director 11 so that during application of the pouring element which is pushed from below through an opening in the multi-layer composite package not shown, a sealed unit is achieved.

In principle, Fig. 7 again shows a pouring element manufactured in one piece in which the lid 3 is joined to the base body 1 via a cross-piece not described in detail, which must be removed before bringing the lid 3 and the plate 4 together. Also shown at the same time is a strip of a film 10 wherein the joining of the base body 1, lid 3 and film 10 can be accomplished in a single working step. This is shown in Fig. 8 where the strip-like film 10 is shown as roll goods and the joining of the parts activated by a heat source 12 is made by means of a press die 13.

Finally Fig. 9 shows that it is also possible to pull the strip of barrier film 10 through an opened injection moulding die 14 which is merely shown schematically. A suitable slider 15 inside the injection moulding die 14 ensures that the undercuts of the pouring element are released before opening the mould. Here it is also possible to use the movement for opening and closing the injection moulding die 14 simultaneously to punch out the
pouring element injected onto the barrier film 10, as should be indicated by the punched-out surface 16.
CLAIMS

1. A reclosable pouring element for opening and reclosing packages, especially rectangular multi-layer composite packages, with a base body (1) having a circumferential flange (2) and a lid (3) joined flexibly thereto, characterised in that in the region of its pouring opening the base body (1) has a plate (4) whose contour substantially corresponds to the contour of the pouring opening, which is arranged spaced from the flange (2) by at least one slit (7) and whose underside runs flush with the underside of the flange (2), that the lid (3) is connected securely to the plate (4) so that the lid (3) at the same time serves as an opening element and that both the base body (1) and the plate (4) have a film (10) with a barrier layer, extending parallel to the plane of the flange and covering the slit (7).

2. The pouring element according to claim 1, characterised in that the plate (4) is welded to the lid (3), preferably ultrasonically welded.

3. The pouring element according to claim 2, characterised in that the base body (1) has a cross-piece (1A) running around the pouring opening, extending substantially...
perpendicular to the flange (2), which receives the lid (3) in a sealing fashion in the closed state.

4. The pouring element according to claim 3, characterised in that the lid (3) can be locked into place with the base body (1).

5. The pouring element according to one of claims 1 to 4, characterised in that a hinge (8) is provided for the flexible connection of the base body (1) and the lid (3) and that the hinge (8) is arranged in the lid (3).

6. The pouring element according to one of claims 1 to 4, characterised in that a hinge (8') is provided for the flexible connection of the base body (1') and the lid (3') and that the hinge (8') is arranged on the base body (1').

7. The pouring element according to claim 5 or 6, characterised in that the hinge (8, 8') is constructed as a film hinge.

8. The pouring element according to one of claims 1 to 7, characterised in that the barrier layer of the film (10) consists of an ethylene vinyl alcohol (EVOH).
9. The pouring element according to one of claims 1 to 7, characterised in that the barrier layer (10) is an aluminium foil.

10. The pouring element according to one of claims 1 to 7, characterised in that the barrier layer (10) is a polyethylene (PE) film.

11. The pouring element according to one of claims 1 to 7, characterised in that the barrier layer (10) of the film consists of polyamide (PA).

12. The pouring element according to one of claims 1 to 11, characterised in that the barrier layer of the film (10) consists of a mixture of the materials specified in claims 8 to 11.

13. The pouring element according to one of claims 8 to 12, characterised in that the film (10) provided for the barrier layer is used as roll goods.

14. The pouring element according to one of claims 1 to 13, characterised in that
the base body and/or the lid have an originality seal.

15. The pouring element according to one of claims 1 to 14, characterised in that the base body (1) and the lid (3) are manufactured as one piece.

16. A method for manufacture of a pouring element according to one of claims 1 to 15, characterised in that the base body (1) of the pouring element is activated by means of a heat source (12) and is joined to the film (10) by means of a stationary die (13).

17. The method according to claim 16, characterised in that the thermal energy is supplied between the pouring element and the film.

18. The method according to claim 16, characterised in that the thermal energy is supplied below the film (10).

19. The method for manufacture of a pouring element according to one of claims 1 to 15, characterised in that the film (10) is a film strip (11) supplied from a roll and the film strip (11) is pulled through the injection moulding die (14) for the pouring element so that the circumferential flange (2) and the plate
(4) of the pouring element are injected pocket-free onto the film (11).

20. The method according to one of claims 16 to 19, characterised in that the pouring elements remain on a film strip (11) of barrier material and are only separated before their actual application in the filling machine.

21. A package, especially a rectangular multi-layer composite package, for use with a pouring element according to one of claims 1 to 15, characterised in that it has an opening whose shape substantially corresponds to the shape of the lid and that the pouring element with its circumferential flange is attached to the inside of the multi-layer composite material.