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(54) **RECLOSABLE PACKAGING WITH A FILM AND A LID COMPRISING A PLUG SECTION**

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(57) **ABSTRACT**

The invention relates to a reclosable packaging with a packaging body (**12**), with an edge component (**14**) surrounding a packaging opening (**16**) and which is irremovably connected to the packaging body (**12**), and also with a lid (**20**) which is held on the edge component (**14**) and closes the packaging opening (**16**), wherein the packaging body (**12**) is substantially formed by a flexible packaging body film (**13**) at least in one section (**12***a*) accommodating the edge component (**14**), wherein the lid (**20**) is connected to the edge component (**14**) by means of a first detachable connection in the form of an adhesive bond or seal in the initially closed packaging state, and in a reclosed packaging state after a first opening is connected to the edge component (**14**) by means of a second detachable and restorable connection formed separately from the first connection. According to the invention the lid (**20**) comprises a plug section (**20***a*) that penetrates the packaging opening (**16**) in the reclosed packaging state and a flexible lid film (**22**) irremovably connected to the plug section (**20***a*), a joining section (**22***d*) of the flexible lid film being connected to the edge component (**14**) with the formation of the first detachable connection in the initially closed packaging state, and the plug section (**20***a*) forms the second detachable connection with the edge component (**14**) in the reclosed packaging state.

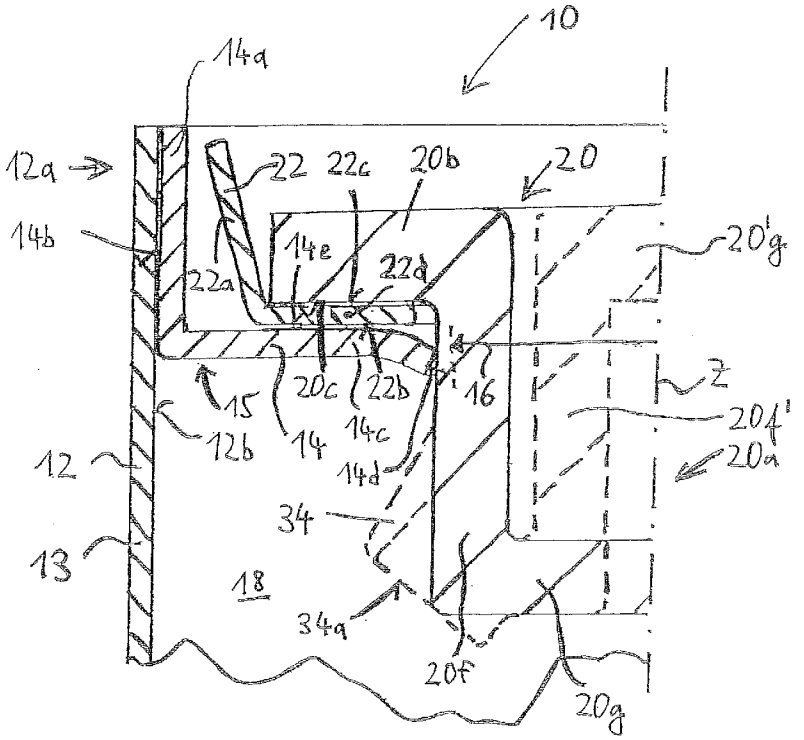
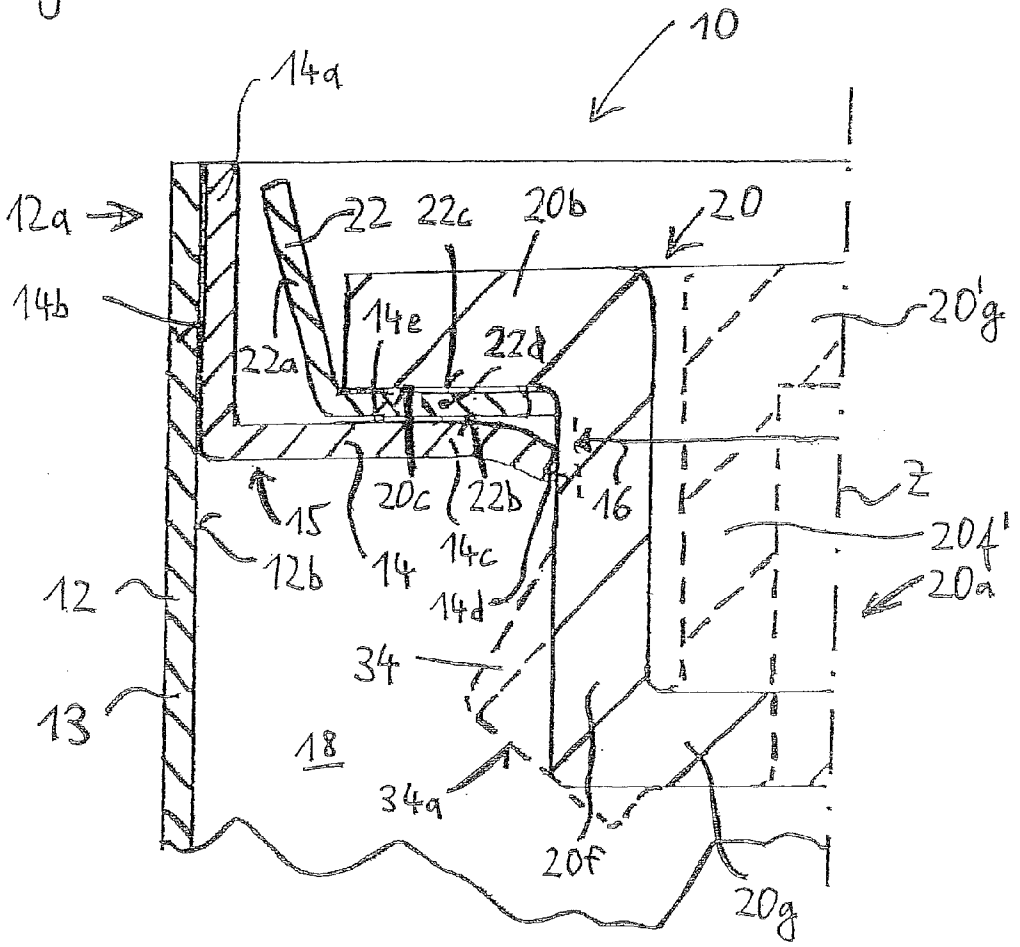


Fig. 1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14a
12a
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22c
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22a
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14c
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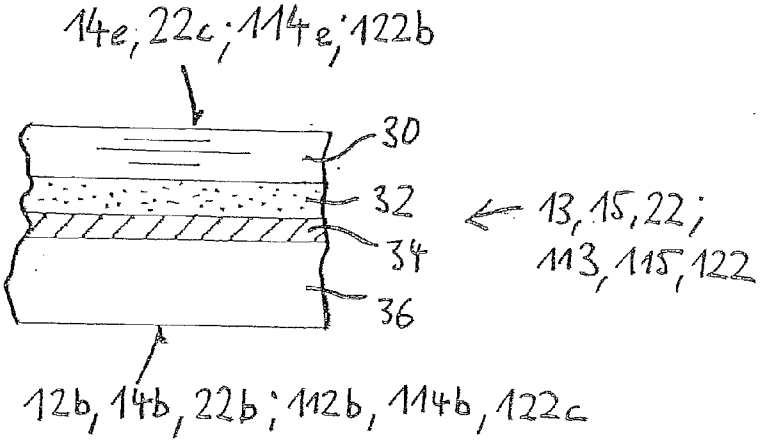
12
14d
34
13
18
34a
20f
20g

Fig. 3


14e, 22c; 114e; 122b
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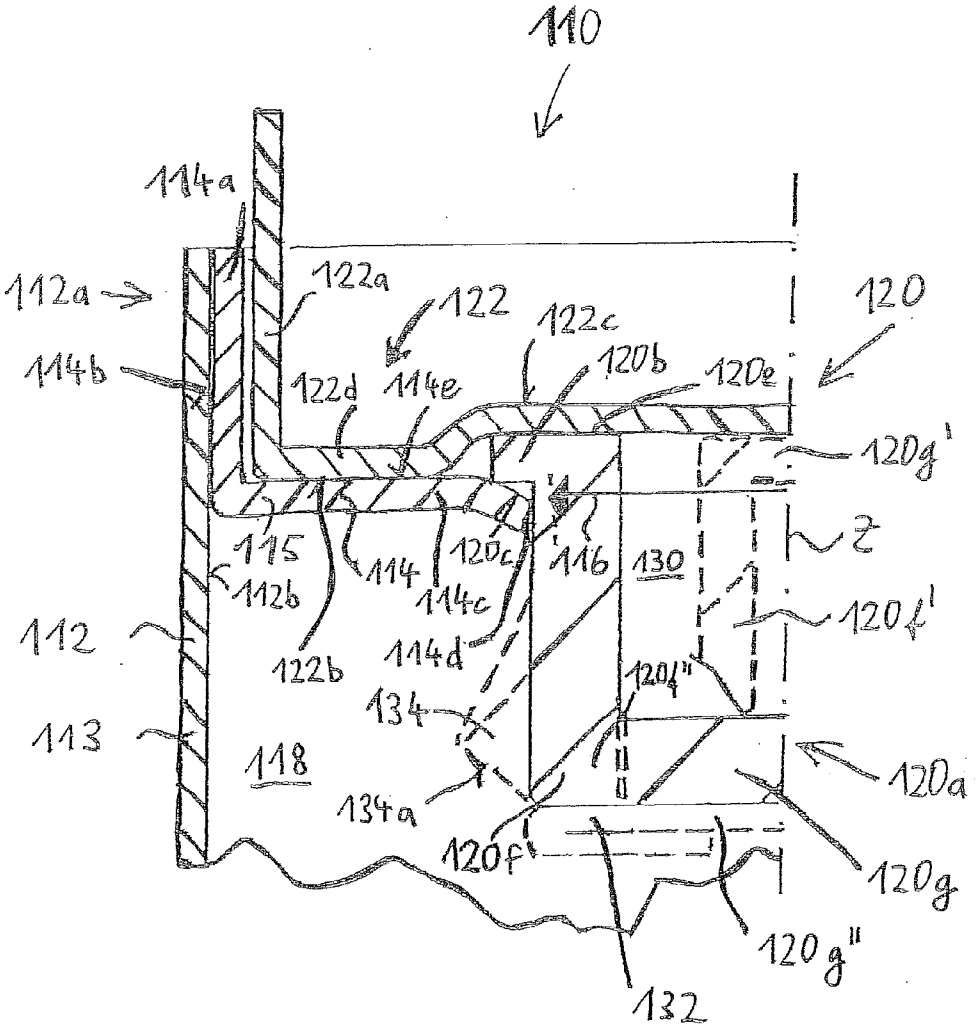
32
13, 15, 22;
113, 115, 122
34
36
12b, 14b, 22b; 112b, 114b, 122c

Fig. 2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130
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114c
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122b
114d
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134
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120a
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120f
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120g''
132

RECLOSABLE PACKAGING WITH A FILM AND A LID COMPRISING A PLUG SECTION

[0001] The present invention relates to a reclosable packaging, with a packaging body, with an edge component surrounding a packaging opening and which is irremovably connected to the packaging body, and also with a lid which is held on the edge component and closes the packaging opening, wherein the packaging body is substantially formed by a flexible packaging body film at least in one section accommodating the edge component, wherein the lid is connected to the edge component by means of a first detachable connection in the form of an adhesive bond or seal in the initially closed packaging state, and in a reclosed packaging state after a first opening is connected to the edge component by means of a second detachable and restorable connection that is formed separately from the first connection.

[0002] Such a packaging is known on the market for example for coffee pads. This packaging is formed almost completely of flexible plastics film, more specifically a plastics film laminate.

[0003] The lid of this packaging is formed as a dimensionally stable component of thermoplastic material.

[0004] In order to stiffen that section of the package that is to accommodate the lid, an annular dimensionally stable edge component likewise made of thermoplastic material is sealed onto the film laminate of the packaging body under a pressure and temperature chosen so that the dimensionally stable edge component is, when the packaging is correctly used, irremovably connected to the packaging body film.

[0005] The lid in turn is inserted with a plug section into the packaging opening defined by the edge component and is held there by clamping as a result of material elasticities and friction.

[0006] In an initially closed packaging, i.e. a packaging that has been filled and closed but has not yet been opened by a user, the lid is additionally sealed onto the edge component by an ultrasound welding method so as to produce a high closure quality and ensure closure reliability.

[0007] A disadvantage of the known reclosable packaging is its difficult processability during its manufacture.

[0008] For example, on the one hand the strength of the seal between the lid and edge component can be reproduced only with difficulty, which in some cases can lead to initially closed packagings in which the strength of the seal between the edge component and lid is greater than the material strength of the lid itself. As a result it may undesirably happen that the lid is destroyed when opening the packaging, while lid sections still remain stuck to the edge component.

[0009] In addition problems also arise with the irremovable sealing of the edge component to the packaging body film, in which the packaging body film can be damaged by the sealing tool specifically on the outwardly facing presentation surface of the packaging body.

[0010] For example, a localised sticking of the packaging body film to the sealing tool may occur, whereby when the sealing tool is lifted away from the packaging body film after completion of sealing, threads are withdrawn from the film. As a result deposits of material can form on the sealing tool, which during subsequent sealing operations can undesirably be transferred to subsequent packagings. This forming of threads can be counteracted by altering the sealing parameters, which however can lead during the sealing to leaks between the packaging body and the separately formed dimensionally stable edge component.

[0011] An object of the present invention is therefore to provide a reclosable packaging of the type mentioned at the outset, in which the aforementioned problems are minimised or even completely avoided.

[0012] This object is achieved according to the invention by a generic reclosable packaging, in which the lid comprises a plug section that penetrates the packaging opening in the reclosed packaging state as well as a flexible lid film that is irremovably connected to the plug section, a joining section of the flexible lid film being connected to the edge component with the formation of the first detachable connection in the initially closed packaging state, and the plug section forms the second detachable connection with the edge component in the reclosed packaging state.

[0013] The reclosability of the packaging is ensured by the plug section of the lid. For this purpose the plug section is simply pressed into the packaging opening.

[0014] The lid film irremovably connected to the plug section permits the formation of the first detachable connection of the lid to the edge component by bonding and/or sealing the joining section of the lid film to the edge component. On account of the high process reliability the irremovable connection of the lid film and plug section is also formed by bonding and/or irremovable sealing.

[0015] The plug section, which in the solution employed in the prior art was frequently destroyed together with the whole lid, i.e. was torn, when the adhesive forces of the first detachable connection were higher than the material strength of the lid, remains intact in the solution according to the invention proposed here, when the lid, which is preferably peelably bonded and/or sealed to the edge component by means of the lid film, is ripped open.

[0016] Even if the lid film were destroyed in the first opening of the packaging, the plug section still remains as a preferably one-piece component, in particular of injection-moulded or thermoformed plastics material, as a result of which the packaging can be reliably reclosed.

[0017] As a rule the lid in the initially closed packaging state is additionally held to the first connection also by the second connection on the remaining packaging. This is however not absolutely necessary.

[0018] The term "film" in the context of this application applies to films having a film or laminate thickness of up to 250 μm.

[0019] A strict distinction is made between films within the meaning of the present invention and so-called rigid or dimensionally stable plastics, which although they are elastically deformable under the action of a force are nevertheless as a whole dimensionally stable.

[0020] In principle it can be envisaged for the edge component to be formed in one piece with the packaging body. However, the edge component is preferably a separately formed component.

[0021] A specifically peelable first connection between the lid film and the edge component can be achieved if the edge component is formed from a flexible edge component film, which is irremovably connected to the packaging body film in the region of the packaging opening and which is connected to the lid film by peelable bonding and/or sealing, to form the first detachable connection.

[0022] Since the edge component, just like at least the section of the packaging body carrying the edge component is

produced from a film, an irremovable connection of the edge component to the packaging body film can be achieved, just like the first detachable connection, virtually without any problem, in particular by sealing, if the packaging is used correctly. Specifically the connection of two films to one another by sealing is known in packaging technology and is a proven technique.

[0023] In addition the use of an edge component formed of edge component film is substantially cheaper than the use of the dimensionally stable thermoplastic edge component known from the prior art.

[0024] It has surprisingly been found that also by using a film-like edge component instead of the hitherto used dimensionally stable edge component together with the packaging body film, a sufficiently dimensionally stable packaging body section can be formed for defining the packaging opening and for accommodating the lid. This was also not to be expected by the use of basically only dimensionally unstable starting components.

[0025] When furthermore the present application discusses the strengths and load-carrying capacities of connections, such as for example a detachable or an irremovable connection, this always refers to the strength, load-carrying capacity or (non-)detachability provided the packaging is properly used.

[0026] A cold-bonding adhesive, i.e. one which bonds at ambient temperature, or alternatively a hot-sealing lacquer, can be used as adhesive for producing a detachable connection of the lid film to the edge component.

[0027] Preferably the lid film is however sealed to the edge component, i.e surface regions of the edge component and lid film that in the initially closed packaging state are arranged adjacent to one another, are melted, and are then sealed to one another by applying pressure. With a suitable choice of material and choice of sealing parameters such as temperature, pressure and time, the lid can be peeled off from the edge component, similar to the case of tear-off packagings for yoghurt, cottage cheese and the like. Such a connection is also termed a "peelable" connection in the art.

[0028] If in order to ensure a particularly high closure quality the lid in the initially closed packaging state is joined by two detachable connections to the edge component, namely to the first detachable connection between the lid film and the edge component and to the second detachable and restorable connection between the edge component and plug section, whereas in the reclosed packaging state the first detachable connection is not relevant, then in order to open the still initially closed packaging a higher opening force is required than to open the simply reclosed packaging.

[0029] If the edge component, in particular as film component, has a first edge component section that is directly irremovably connected to the packaging body film, and has a second edge component section that is only indirectly connected via the first edge component section to the packaging body film, the edge component can on the one hand be securely irremovably connected to the packaging body film and can just as reliably provide a section to which the lid can be detachably connected.

[0030] Preferably the second edge component section, not directly connected to the packaging body film, stands proud of the packaging body film. In this way, especially if the edge component is formed from the edge component film, on the one hand the stiffness and stability of the packaging can be significantly increased in a very simple and uncomplicated manner in the region immediately around the packaging opening, in which the packaging body with the edge component is substantially formed only from film material.

[0031] On the other hand, with the second edge component section standing proud of the packaging body film a sufficient joining area for the connection to the lid, more specifically to the lid film, can be provided also with otherwise very slender packagings.

[0032] In principle it may be envisaged to connect the plug section, if made of a suitable material as an injection-moulded component or thermoformed component of thermoplastic material, directly to the lid film, particularly preferably again by thermal sealing. Surprisingly it has been found however that the plug section too can be formed, at least in portions, preferably completely, from a plug section film.

[0033] Especially if the edge component is connected with a first edge component section to the packaging body film, whereas a second edge component section stands proud of the packaging body film, the lid with the lid film and plug section can be arranged lowered with respect to an envelope of the overall packaging if a packaging body section connected to the first edge component section projects in the initially closed packaging beyond the lid section protruding outwardly over the edge component, in the protrusion direction. As a result there is less possibility of an unintended and uncontrolled external force acting on the lid, in particular on the plug section, for example during transportation of the packaging.

[0034] In order to safeguard the lid and also to provide sufficient dimensional stability in the region of the packaging adjacent to the packaging opening, the first and second edge component sections enclose at least in sections, preferably along their whole extent, an angle, preferably a right angle. Likewise, the second edge component section advantageously encloses at least in sections, preferably along the whole extent of the edge component, an angle, preferably a right angle, with the packaging body.

[0035] The edge component is advantageously formed as a closed ring, whose radially inner edge forms a boundary of the packaging opening. In this case the term "extent" in the previous paragraph denotes the circumferential length.

[0036] This ring is preferably circular, though this need not be the case. The edge component can likewise have an oval (elliptical) shape or a polygonal shape or a combination of round and polygonal shapes.

[0037] In this case a radially outer section of the annular edge component can preferably be the first edge component section, while a radially inner section of the edge component is the second edge component section.

[0038] For the best possible connection of the edge component to the packaging body film the first edge component section in the case of a surrounding edge component is likewise surrounding.

[0039] For the best possible screening of the packaging volume enclosed by the packaging against external environmental influences that could promote spoiling of the packaged contents, it may be envisaged that at least one film out of the packaging body film, the lid film, the edge component film and the plug section film is a laminate comprising at least two film layers, one of which forms a barrier layer.

[0040] Barrier layers are known per se in the prior art. Suitable barrier layers include for example EVOH, SiO_x, AlO_x and the like.

[0041] In order to screen the packaged goods not only against gases, such as oxygen and hydrogen, but also to exclude any action of UV radiation, the barrier layer is preferably a metal layer, particularly preferably a metallised layer. In this connection aluminium has proved particularly suitable as material for an absolute barrier.

[0042] The metal layer can be joined via intermediate bonding layers to adjacent layers of the laminate.

[0043] The packaging body film and the edge component film, and particularly preferably also the lid film, are preferably provided with a barrier layer. In order to ensure as good a barrier effect as possible, the plug section film can also comprise a barrier layer.

[0044] For the simplest possible connection of the films to one another it may alternatively or additionally be envisaged that at least one film from the packaging body film, the lid film, the edge component film and the plug section film is a laminate comprising at least two film layers, at least one of which is an outer layer, preferably both are outer layers, formed from a sealable thermoplastic material.

[0045] Particularly preferably all four films involved in the packaging described here are provided in each case with two outer-lying layers of sealable thermoplastic material.

[0046] Since the edge component film as well as the lid film should in each case engage in an irremovable connection and a detachable connection, in a preferred embodiment of the invention it is envisaged that at least in the case of the edge component film or the lid film, preferably both films, but particularly preferably also the plug section film, an outer layer of a sealable thermoplastic material is suitable for forming irremovable connections. Such a plastic is for example polypropylene (PP). Furthermore, it is also envisaged that the in each case other outer layer is formed from a sealable thermoplastic material for the formation of a detachable connection, in particular a peelable connection. Such a plastic material is for example oriented polypropylene (OPP) or PP-peel.

[0047] A further important feature of packagings is their printability. In order to ensure that the reclosable packaging can be printed with user information and the like, it may be envisaged that at least one film from the packaging body film, the lid film, the edge component film and the plug section film is a laminate of at least two film layers, at least one of which is a layer capable of receiving printing inks. For this purpose there may be provided in particular a layer of a polyester, in particular of polyethylene terephthalate (PET). The PET layer can also be provided in order to increase the laminate stiffness.

[0048] Alternatively or in addition the outer layer too, in particular the OPP outer layer, can to protect the colour application be printed by a counter-printing method, or without any special protection, simply by using an imprinting method.

[0049] The compatibility of the packaging body film and/or edge component film and/or lid film and/or plug section film as well as their material properties can then be adjusted to be substantially similar or even identical, if the aforementioned films comprise substantially identical layers.

[0050] Particularly preferably they comprise the same layer structure, i.e. layers of the same material are arranged in the same order in the laminate.

[0051] For reasons of cost, the packaging body film, the lid film, the edge component film and the plug section film are particularly preferably substantially identical. In this case one film can be used to form the edge component and also the packaging body adjacent to the packaging opening.

[0052] In order to achieve the best possible barrier property of the packaging, it may be envisaged that the lid film spans the plug section. Owing to the fact that the lid film spans the plug section, i.e. surrounds this section looking outwardly from the interior of the packaging, the lid film in the initially closed state and with a suitable choice of film provides a suitable barrier, in particular absolute barrier, against gases and/or light, so that the plug section can be produced from an inexpensive material without barrier properties.

[0053] Owing to the fact that the lid film spans the plug section, the whole lid surface can also be printed if the lid film is provided with the aforementioned properties ensuring printability. For the reliable attachment of the lid film to the edge component it may be envisaged that the lid film in its plane of extension has, in at least one spatial direction, a larger dimension than the plug section. This means therefore that the lid film in at least one of its flat extension directions projects beyond the plug section, so that the lid film, especially if the edge component comprises the aforementioned edge component film, can be detachably joined in a very simple and reliable manner to the edge component.

[0054] Preferably the lid film has in its plane of extension in at least two mutually orthogonal spatial directions larger dimensions than the plug section, which permits a more reliable joining of the lid film to the edge component.

[0055] According to a particularly preferred embodiment of the present invention it is envisaged that the plug section extends along a longitudinal axis and the lid film surrounds the plug section radially outwardly referred to the longitudinal axis. The plug section in fact often has a cylindrical or similar shape, i.e. it has an outside surface (jacket or cover surface) along which it abuts at one edge of the packaging opening and thereby closes the said packaging opening. This outside surface extends in the axial direction, in order to impart to the plug section the necessary axial expansion so that the section can be inserted into the packaging opening.

[0056] If the lid film surrounds the plug section radially outwardly, the plug section in the initially closed packaging can be completely surrounded by film, so that a packaging can be obtained that at least in the packaging opening section is completely printable and/or is provided with a barrier over the whole surface.

[0057] The plug section is then as it were packaged by the films externally surrounding it: the packaging body film, lid film and possibly edge component film. Therefore it does not necessarily depend on the barrier and printing properties of the plug section.

[0058] As regards the reclosability of the packaging, it may be envisaged that the plug section abuts against a radially inner edge of the edge component when the packaging opening is closed by the lid.

[0059] As already mentioned, the lid can be joined in a particularly simple manner to the remaining packaging if the joining section of the lid film surrounds radially outwardly the plug section of the lid. Then in particular the joining section can abut against a two-dimensional section of the edge component, while the plug section abuts against the radially inner edge of the edge component and thus penetrates the packaging opening defined by the radially inner edge of the edge component.

[0060] Especially in the reclosed packaging state the lid can close the packaging opening reliably and sufficiently firmly if

the plug section is held by a material-elastic clamping action and the thereby exerted friction by the edge component.

[0061] Such a material-elastic clamping action can be obtained for example if the edge component forms an edge of the packaging opening, the dimensions of the plug section being larger than the associated dimensions of the packaging opening.

[0062] Associated "dimensions" are in this connection the dimensions of those sections of the edge component (for defining the packaging opening) and plug section which, when the packaging is correctly reclosed, mutually engage via a bearing surface.

[0063] In the case of a plug section of circular cross-section and a packaging opening of circular cross-section, the associated dimensions are the respective diameters of the plug section and packaging opening.

[0064] In the case of elliptical cross-sections of the plug section and packaging opening, the two minor semi-axes and the two major semi-axes of the respective elliptical cross-sections for example are associated with one another.

[0065] In order to form the aforementioned outside surface the plug section can advantageously comprise an outside section that extends at a predetermined angle away from the lid film. Preferably the outside section extends at a right angle away from the lid film or at least in sections is slightly conical, i.e. tapers in the direction away from the lid film, in order to facilitate an insertion of the outside section into the packaging opening so that the outside surface can bear against the radially inner edge of the packaging opening.

[0066] In order to ensure as reliable and tight a bearing as possible of the plug section on the outside surface of the outside section, this can be formed all the way round along a closed path referred to a reference axis orthogonal to the plane of extension of the lid film.

[0067] In some cases it may be sufficient if the plug section consists only of the outside section, i.e. the plug section is formed from a ring or hollow cylinder and the like standing proud at an angle from the lid film. The external shape of the outside section, i.e. the shape of the outside surface, is shaped corresponding to the contour of the radially inner edge of the packaging opening so as to achieve as tight a packaging as possible in the reclosed packaging state. This means that the outside surface on the outside section can have a circular, elliptical or polygonal cross-section, or combinations thereof.

[0068] To accommodate materials that first of all are to be provided separately from the contents of the reclosable packaging according to the invention, it may be envisaged that a wall section of the plug section lying radially within the outside section referred to the aforementioned reference axis together with the outside section and the lid film enclose a storage space.

[0069] This storage space can according to a preferred development of the present invention be utilised so as to accommodate so-called scavenger materials, which are intended to absorb or bind gases, such as for example oxygen and/or ethylene, and/or liquids, such as for example water, in order to protect the actual contents of the packaging according to the invention for as long as possible against undesirable external influences due to the substances to be absorbed and/or bound.

[0070] For a particularly permanent and secure connection of the lid film to the plug section, it may also be envisaged that a wall section of the plug section lying radially within the outside section with reference to the reference axis, is connected, preferably irremovably, to the lid film. Preferably for this purpose the wall section runs at least in sections parallel to the lid film.

[0071] Also it may be desirable in certain circumstances to make the contents of the aforedescribed storage space accessible to users. For this purpose it may be envisaged that the wall section is formed by a cover film preferably detachably connected, preferably by sealing, to the end region of the outside section lying remote from the lid film.

[0072] To ensure the best possible reclosability of the packaging according to the invention, it may be envisaged that the outside section comprises at least along a circumferential section, preferably running all the way round, a catch protrusion that projects radially outwardly referred to the reference axis.

[0073] So that the plug section can nevertheless be inserted without too much difficulty into the packaging opening, the reclosable packaging described here can furthermore be formed in such a way that the catch protrusion comprises an insertion bevel inclined with respect to the opening surface of the packaging opening, which facilitates an insertion of the plug section into the packaging opening so as to produce the reclosed packaging state.

[0074] In order either to make the contents of the storage space accessible already before an opening of the packaging, or simply to be able to utilise the plug section, in particular its outside section, as a stacking aid when stacking a plurality of the same kind of reclosable packagings according to the invention, the packaging can according to a preferred embodiment be modified so that the outside section in the initially closed packaging state projects from the lid film in the direction away from the packaging interior, and is preferably irremovably connected to a side of the lid film that in the initially closed state points away from the packaging interior.

[0075] Preferably for reasons of cost the whole packaging body is formed of film laminate. In this connection cylindrical packaging bodies in particular have proved suitable as dimensionally stable packaging bodies that can be constructed with simple means from dimensionally unstable films.

[0076] It should be added that the packaging according to the invention can according to an advantageous modification to facilitate the first opening, be formed so that the lid film comprises a tear-off tab as tear-off aid that preferably projects beyond an outer edge of the packaging, so that it can be gripped more easily by a user.

[0077] Also, to facilitate the stackability of the packaging it may be envisaged that the lid film in the initially closed packaging state is substantially flat. To this end, in particular the plug section is arranged sufficiently sunk in the packaging opening and/or is formed from a sufficiently thin film laminate so that it cannot be seen or scarcely so on the lid film, even if it is already arranged in the initially closed packaging state.

[0078] The present invention is described hereinafter in more detail with the aid of the accompanying drawings, in which:

[0079] FIG. **1** is a cross-sectional view of a closure region of a first embodiment of a reclosable packaging according to the invention.

[0080] FIG. **2** is a cross-sectional view of a closure region of a second embodiment of a reclosable packaging according to the invention.

[0081] FIG. **3** is a cross-section through the film laminate employed in the packagings of FIGS. **1** and **2**.

[0082] In FIG. **1** an embodiment of a reclosable packaging according to the invention is generally identified by the reference numeral **10**. The packaging **10**, of which simply the closure section is illustrated, is rotationally symmetrical with respect to the axis of rotation Z. The cross-sectional plane of the illustration of FIG. **1** contains the axis of rotation Z.

[0083] The packaging **10** comprises a cylindrical packaging body **12** of a packaging body film **13**, onto one axial longitudinal end **12***a* of which an edge component **14** is permanently sealed on the inside **12***b*.

[0084] The edge component **14** formed from an edge component film **15**, which is produced from the same film material as the packaging body **12**, is in a first edge component section **14***a* permanently sealed with its outside **14***b* to the inside **12***b* of the packaging body **12** substantially over the whole common axial and radial extension length. Alternatively this connection could also be formed by bonding instead of thermal sealing.

[0085] A second edge component section **14***c* joined in the radial direction to the first edge component section projects orthogonally from the cylindrical packaging body **12** radially inwardly, i.e. towards the axis of rotation Z.

[0086] The edge component **14** is formed from an originally substantially flat annular film piece, which extends in the radial direction over the joint length of the first edge component section **14***b* and second edge component section **14***c*. When the edge component is inserted into the cylindrical inner surface **12***b* of the packaging body **12** the first edge component section **14***a* is thus necessarily deformed into the position illustrated in FIG. **1**.

[0087] A radial inner edge **14***d* of the edge component **14** defines in the undeformed state a packaging opening **16**, through which the interior **18** of the packaging **10** is accessible from outside.

[0088] The packaging **10** is shown in FIG. **10** in its initially closed state, i.e. it is in the state in which it leaves the filling unit of a packer to be despatched to the consumer.

[0089] In this initially closed state the packaging opening **16** (the position of the radially inner edge **14***d* of the edge component **14** with undeformed second edge component section **14***c* is indicated by dotted lines in FIG. **1**) is closed by a lid **20**. A dimensionally stable plug section **20***a* of the lid **20** penetrates the packaging opening **16** and, under material elastic deformation of the second edge component section **14***c*, abuts against the edge **14***d* of the edge component section **14**.

[0090] Already due to this material elastic deformation and the resultant friction, the lid **20** is held securely on the edge component **14**. The clamping of the lid **20** to the second edge component section **14***c* produced by the material elastic deformation ensures that the packaging **10** can be reclosed after the first opening.

[0091] The plug section **20***a* furthermore comprises a radially outwardly projecting and surrounding connecting section **20***b*. This connection section **20***b* runs substantially parallel to the extension plane of the second radial component section **14***c*.

[0092] A lid film **22** is irremovably sealed to the side **20***c* of the connecting section **20***b* facing towards the edge component. The joining of the lid film **22** to the connecting section **20***b* of the plug section **20***a* corresponds as regards its strength substantially to the joining of the first edge component section **14***a* to the longitudinal end **12***a* of the packaging body **12**.

[0093] The lid film **22** is made of the same film material as the packaging body **12** and the edge component **14** of the illustrated embodiment. The lid film **22**, which enclosably surrounds the plug section **20***a* of the lid **20**, is arranged over almost the whole circumference of the lid **20** underneath the connecting section **20***b*. The lid film **22** comprises an opening tab **22***a* simply at the position indicated in FIG. **1**, which can be gripped by the fingers and used to detach the connecting section **20***b* from the second edge component section **14***c*.

[0094] The lid film **22** is detachably, more specifically peelably, sealed with its side **22***b* facing away from the connecting section **20***b*, to the outwardly facing side **14***e* of the edge component **14**. The region of the lid film **22** abutting and peelably sealed to the edge component film **15** defines its joining section **22***d*.

[0095] The lid film **22** is however, as already mentioned above, irremovably connected by its opposite outer side **22***c* by thermal or ultrasound-initiated sealing to the surface **20***c* of the connecting section **20***b*.

[0096] To open for the first time the packaging **10** hermetically closed by the detachable sealing of the edge component **14** to the lid film **22** and by the irremovable sealing of the lid film **22** to the lid **20**, the lid film tab **22***a* is firmly gripped between two fingers and pulled axially away from the packaging body **12**. In this way the lid film **22** is peeled from the edge component **14** and the plug section **20***a* is pulled out of the packaging opening **16**.

[0097] When it is desired to reclose the packaging **10** the plug section **20***a* can be pressed into the packaging opening under deformation of the region of the edge component **14** adjacent to the edge **14***d*, and thereby close the opening.

[0098] The plug section **20***a* is then held on the packaging by the material elastic deformation of the edge component **14** and the friction thereby generated between the edge component **14** and the plug section **20***a*.

[0099] Due to the irremovable connection of the first edge component section **14***a* to the axial longitudinal end region **12***a* of the packaging body **12**, the axial longitudinal end of the packaging **10** containing the longitudinal end region **12***a* is considerably stiffened, so that the region of the packaging **10** adjacent to the packaging opening **16** substantially retains its shape during an opening procedure as well as in the opened state.

[0100] In order to protect the lid **20** against undesired action of forces and thus undesired opening, say for example when the packaging **10** is being transported, the longitudinal end region **12***a* of the packaging body and also the first edge component section **14***a* in the closed state of the packaging **10** project outwardly in the axial direction beyond the lid **20**.

[0101] The plug section **20***a* comprises an outside section **20***f* extending substantially parallel to the axis of rotation Z. This outside section **20***f* joins directly onto the connecting section **20***b* of the plug section **20***a*.

[0102] On the radial external section of the outside section **20***f* there is shown in dotted lines a radial protrusion **34** of the outside section **20***f* surrounding the axis of rotation Z, which is formed so as to engage behind the radially inner edge **14***d* of the edge component **14** in the manner of a catch. In order to facilitate an insertion of the plug section **20***a* into the interior **18** of the packaging through the packaging opening **16**, an insertion bevel **34***a* is formed on the radial protrusion **34**, which likewise surrounds the axis of rotation Z. This insertion bevel **34***a* continues radially inwardly as far as the region of the material section **20***f*.

[0103] The plug section **20***a* can, as is otherwise shown by the continuous line, be formed in the shape of a cup, with a

wall section **20***g* substantially parallel to the plane of the packaging opening **16**, the wall section adjoining the end of the outside section **20***f* remote from the lid film **22**.

[0104] Alternatively the outside section **20***f* can also be formed in the shape of a bulb according to the dotted line contour identified as **20***f*. In this case the outside section **20***f'* has a U-shaped cross-section seen in a cross-sectional view containing the axis of rotation Z, the radially inner wall section **20***g'* being situated approximately at the level of the connecting section **20***b*.

[0105] The wall section **20***g* or **20***g'*, respectively, fills the whole region of the plug section **20***a* lying radially within the outside section **20***f* or **20***f'*, respectively, which thereby enables the packaging opening **16** to be tightly closed.

[0106] The packaging illustrated in FIG. **1** has however a disadvantage in that the region of the packaging **10** closed exclusively by the plug section **20***a* does not ensure sufficient barrier properties, since the plug section **20***a* is simply an injection-moulded component formed from thermoplastic material. Depending on the packaging contents, improved barrier properties or a packaging having absolute barrier properties may however be desired.

[0107] The same is also true if the packaging is to be printed or is to be at least printable substantially without gaps, but in any case also in the lid region.

[0108] In order to obviate these disadvantages there is proposed the particularly preferred second embodiment of a packaging according to the invention illustrated in FIG. **2**.

[0109] The embodiment illustrated in FIG. **2**, in which identical or functionally identical components to those in FIG. **1** are provided with the same reference numerals but increased in each case by the number **100**, is now described hereinafter only insofar as it differs from the first embodiment shown in FIG. **1**, to the description of which reference is specifically made.

[0110] In the second embodiment illustrated in FIG. **2** the plug section **120***a* is introduced in a substantially identical manner to the plug section **20***a* of the first embodiment into the packaging opening **116** and is held there, both in the initial packaging state and in the reclosed packaging state, by the deformed edge component **114**, more specifically by an edge component film **115** expanded against its material elasticity.

[0111] However, in FIG. **2** the lid film **122** spans the plug section **120***a* of the lid **120**.

[0112] The lid film **122** is for this purpose sealed irremovably to the side **120***e* of the connecting section **120***b* of the lid **120** with its side **122***b*, with which it is peelably sealed to the side **114***e* of the edge component **114** formed by the edge component film **115**.

[0113] The different strengths of the connections of the lid film **122** to the edge component **114** on the one hand and to the plug section **120***a* on the other hand can be adjusted by a different temperature and/or sealing pressure and/or sealing time, wherein it is found that the connection strength increases with increasing sealing temperature and/or increasing sealing pressure and/or increasing sealing time.

[0114] Apart from the tab **122***a* the lid film **122**, like the connecting section **120***b* to which it is sealed, is substantially circular, but has a larger diameter than the plug section **120***a* and the connecting section **120***b*, respectively, so that the lid film **122** together with its joining section **122***d* radially outwardly completely surrounds the plug section **120***a*. In this way the plug section **120***a* is completely enclosed by the film structure consisting of packaging body film **113**, edge component film **115** and lid film **122**.

[0115] The packaging **110** is thus extremely well protected against undesired opening by accidental withdrawal of the plug section **120***a*.

[0116] Furthermore, in the preferred case of a packaging **110** formed exclusively of the aforementioned films, a complete packaging, i.e. one that can be printed on all sides, can be obtained.

[0117] Likewise a packaging completely provided, i.e. on all sides, with barrier properties can also be achieved.

[0118] The contents packaged by the packaging **110** are thereby protected in the best possible way against external influences.

[0119] As is shown in FIG. **2** by the double-dotted line the outside section **120***f* can, owing to the fact that the plug section **120***a* is completely spanned by the lid film **122**, simply be formed as an annular hollow cylindrical outside section **120***r*, which in a cross-section containing the axis of rotation Z has an L-shaped cross-sectional shape on account of the presence of the connecting section **120***b*. If the connecting section **120***b* does not project radially outwardly or inwardly from the outside section **120***f'*, the outside section **120***r* can in the illustrated cross-sectional view simply have a rectangular or parallelogram-shaped cross-section.

[0120] For a particularly reliable connection of the lid film **122** to the plug section **120***a*, in the aforedescribed variant of the outside section **120***f'* with a substantially U-shaped cross-section the radially inwardly adjoining wall section **120***g'* can be joined in sections or completely detachably or irremovably to the lid film **122**, particularly preferably by sealing.

[0121] Owing to the fact that the lid film **122** spans the plug section **120***a*, if the plug section as illustrated in FIGS. **1** and **2** is not formed massively, a storage space **130** is enclosed by the plug section **120***a* together with lid film **122**, in which materials can be accommodated. These may in particular be so-called scavenger materials, which serve to absorb or bind undesirable gases and/or liquids contained in the interior **118** of the packaging **110**.

[0122] Alternatively or in addition it may also be envisaged to make the storage space **130** accessible to users of the packaging **110**. For this purpose, especially if the outside section **120***r* of the plug section **120***a* is simply formed as a ring projecting from the lid film **122**, the wall section **120***g"* adjoining the outside section **120***f"* can be formed as a plug section film **132** substantially parallel to the lid film **122**, spanning the plug section **122***a* at its end remote from the lid film **122**. The plug section film **132** can in particular be sealed detachably to the outside section **120***f"* or generally to the plug section **120***a*, in particular peelably sealed.

[0123] The plug section film **132** is preferably identical to at least one, more preferably to all the aforementioned films, so that just one single film material has to be used to form the packaging according to the invention.

[0124] FIG. **3** shows in cross-section the structure of the film that is used to form the packaging body films **13** and **113**, the edge component films **15** and **115** as well as the lid films **22** and **122**.

[0125] The film laminate that is used comprises as an outer layer a layer **30** of detachable (peelable) sealable thermoplastic material, in the illustrated embodiment of oriented polypropylene (OPP) with a layer thickness of about 30 μm.

[0126] A printable layer **32**, i.e. one that can take printing ink, adjoins the outer layer **30**. In the illustrated example this

printable layer is formed by a layer of polyethylene terephthalate (PET) with a layer thickness of about 12 μm.

[0127] A barrier layer **34** adjoins the side of the PET layer **32** facing away from the OPP layer **30**. In the illustrated example this is an aluminium layer of about 8 μm layer thickness.

[0128] Finally, a layer of irremovably sealable thermoplastic material adjoins, as second outer layer **36**, the side of the aluminium layer **34** facing away from the PET layer **32**. In the illustrated example the second outer layer **36** is formed by polypropylene (PP) with a layer thickness of about 70 μm.

[0129] The advantage of this laminate structure lies also in the fact that in the packaging **10** illustrated in FIG. **1**, outer layers **36** or **32**, which are sealable for the same purpose, of films to be connected to one another, always abut to each other, and at the same time the layer **32** receiving printing ink lies further outwardly than the barrier layer **34**, so that the layer **32** receiving printing ink always remains perceptible and is not covered by the barrier layer **34**.

[0130] The first edge component section **14***a* and the packaging body **12** are irremovably connected to one another via the outer layers **36** of the involved films.

[0131] The second edge component section **14** and the lid film **22** are peelably connected to one another via adjoining outer layers **30** of the involved films **15** and **22**.

[0132] The plug section **20***a*, which for this purpose is also formed of polypropylene, is in turn irremovably connected to this via the outer layer **36** of the lid film **22**.

[0133] Up to the connection of the plug section **20***a* to the lid film **22**, the same details apply to the example illustrated in FIG. **2**. There simply the outer layer **34** formed from oriented polypropylene is irremovably connected to the connecting section **120***b* of the plug section **120***a*, which however presents no problems due to the identical choice of material (polypropylene) for this outer layer and the plug section **120***a*.

[0134] In the illustrated examples the packaging opening **16**; **116** in the unclosed state of the packaging **10**; **110**, i.e. with the undeformed second edge component section **14***c*; **114**, has a smaller diameter than the plug section **20***a*; **120***a* of the lid **20**; **120** that can be inserted into the packaging opening **16**; **116**. When the plug section **20***a*; **120***a* is pressed into the packaging opening **16**; **116** the section therefore expands against the material elasticity of the second edge component section **14***c*; **114***c*. The edge **14***d*; **114***d* of the edge component **14**; **114** abuts against the plug section **20***a*; **120***a* of the lid **20**; **120** as a result of the material properties, with an elastic force produced by this expansion and the thereby caused additional friction, and holds the section detachably in the closure position.

1. Reclosable packaging, with a packaging body (**12**; **112**), with an edge component (**14**; **114**) surrounding a packaging opening (**16**; **116**) and which is irremovably connected to the packaging body (**12**; **112**), and also with a lid (**20**; **120**) which is held on the edge component (**14**; **114**) and closes the packaging opening (**16**; **116**), wherein the packaging body (**12**; **112**) is substantially formed by a flexible packaging body film (**13**; **113**) at least in one section (**12***a*; **112***a*) accommodating the edge component (**14**; **114**), wherein the lid (**20**; **120**) is connected to the edge component (**14**; **114**) by means of a first detachable connection in the form of an adhesive bond or seal in the initially closed packaging state, and in a reclosed packaging state after a first opening is connected to the edge component (**14**; **114**) by means of a second detachable and restorable connection formed separately from the first connection, characterised in that the lid (**20**; **120**) comprises a plug section (**20***a*; **120***a*) that penetrates the packaging opening (**16**; **116**) in the reclosed packaging state and a flexible lid film (**22**; **122**) irremovably connected to the plug section (**20***a*; **120***a*), a joining section (**22***d*; **122***d*) of the flexible lid film being connected to the edge component (**14**; **114**) with the formation of the first detachable connection in the initially closed packaging state, and the plug section (**20***a*; **120***a*) forms the second detachable connection with the edge component (**14**; **114**) in the reclosed packaging state.

2. Reclosable packaging according to claim **1**, characterised in that the edge component (**14**; **114**) is formed of a flexible edge component film (**15**; **115**), which is irremovably connected to the packaging body film (**13**; **113**) in the region of the packaging opening (**16**; **116**).

3. Reclosable packaging according to claim **1**, characterised in that the edge component (**14**; **114**) comprises a first edge component section (**14***a*; **114***a*), which is irremovably connected to the packaging body film (**13**; **113**), and comprises a second edge component section (**14***c*; **114***c*), which is connected to the packaging body film (**13**; **113**) only over the first edge component section (**14***a*; **114***a*) and preferably stands proud of this.

4. Reclosable packaging according to claim **2**, characterised in that the joining section (**22***d*; **122***d*) in the initially closed packaging (**10**; **110**) is detachably, preferably peelably, particularly preferably connected by sealing, to a section of the edge component film (**15**; **115**), preferably in the region of the second edge component section (**14***c*; **114***c*).

5. Reclosable packaging according to claim **3**, characterised in that a packaging body section (**12***a*; **112***a*) connected to the first edge component section (**14***a*; **114***a*) projects in the initially closed packaging outwardly beyond a lid section located—viewed from the interior (**18**; **118**) of the packaging—outside the edge component (**14**; **114**).

6. Reclosable packaging according to claim **2**, characterised in that at least one film from the packaging body film (**13**; **113**), the lid film (**22**; **122**) and optionally the edge component film (**15**; **115**) is a laminate of at least two film layers (**30**, **32**, **34**, **36**), one of which layers forms a barrier layer (**34**) and is preferably a metal layer, particularly preferably an aluminium layer.

7. Reclosable packaging according to claim **2**, characterised in that at least one film from the packaging body film (**13**; **113**), the lid film (**22**; **122**) and optionally the edge component film (**15**; **115**) is a laminate of at least two film layers (**30**, **32**, **34**, **36**), of which at least one outer layer (**30**), preferably both outer layers, are formed by a sealable thermoplastic material.

8. Reclosable packaging according to claim **2**, characterised in that at least one film from the packaging body film (**13**; **113**), the lid film (**22**, **122**) and optionally the edge component film (**15**; **115**) is a laminate of at least two film layers (**30**, **32**, **34**, **36**), of which at least one layer (**32**) is capable of receiving printing inks.

9. Reclosable packaging according to claim **2**, characterised in that the packaging body film (**13**; **113**) and the edge component film (**15**; **115**) comprise as film laminates substantially identical layers (**30**, **32**, **34**, **36**), which preferably have the same layer structure and particularly preferably are substantially identical.

10. Reclosable packaging according to to claim **6**, characterised in that the edge component film (**15**; **115**) and the lid film (**22**; **122**) comprise as film laminates substantially iden-

tical layers (**30**, **32**, **34**, **36**), preferably have the same layer structure, and particularly preferably are substantially identical.

11. Reclosable packaging according to claim **1**, characterised in that the lid film (**22**; **122**) spans the plug section (**20***a*; **120***a*).

12. Reclosable packaging according to claim **1**, characterised in that the lid film (**22**; **122**) in its extension plane has in at least one spatial direction, preferably in two mutually orthogonal spatial directions, a larger dimension than the plug section (**20***a*; **120***a*).

13. Reclosable packaging according to claim **12**, characterised in that the plug section (**20***a*; **120***a*) extends along a longitudinal axis (Z) and the lid film (**22**; **122**) radially outwardly surrounds the plug section (**20***a*; **120***a*) referred to the longitudinal axis (Z).

14. Reclosable packaging according to claim **1**, characterised in that the plug section (**20***a*; **120***a*) in the reclosed packaging state, optionally also in the initially closed packaging state, abuts a radially inner edge of the edge component (**14**; **114**).

15. Reclosable packaging according to claim **14**, characterised in that the plug section (**20***a*; **120***a*), in the reclosed packaging state, optionally also in the initially closed packaging state, is held by a material elastic clamping by the edge component (**14**; **114**).

16. Reclosable packaging according to claim **15**, characterised in that the edge component (**14**; **114**) forms an edge (**14***d*; **114***d*) of the packaging opening (**16**; **116**), the dimensions of the plug section (**20***a*; **120***a*) being larger than the associated dimensions of the packaging opening (**16**; **116**) defined by the edge component (**14**; **114**).

17. Reclosable packaging according to claim **1**, characterised in that the plug section (**20***a*; **120***a*) comprises an outside section (**20***f*; **120***f*) projecting, in particular orthogonally projecting, from the lid film (**22**; **122**).

18. Reclosable packaging according to claim **17**, characterised in that the outside section (**20***f*; **120***f*) surrounds, in particular in an enclosed manner, a reference axis (Z) substantially orthogonal to the extension plane of the lid film (**22**; **122**).

19. Reclosable packaging according to claim **18**, characterised in that a wall section (**120***g*) of the plug section (**120***a*) lying radially within the outside section (**120***a*) referred to the reference axis (Z) encloses together with the outside section (**120***f*) and the lid film (**122**) a storage space (**130**).

20. Reclosable packaging according to claim **19**, characterised in that a so-called scavenger material is accommodated in the storage space (**130**), in particular to bind gases, especially oxygen and/or ethylene, to bind moisture and/or to absorb predetermined substances.

21. Reclosable packaging according to claim **18**, characterised in that a wall section (**120***g'*) of the plug section (**120***a*) lying radially within the outside section with reference to the reference axis (Z), is connected, preferably irremovably, to the lid film (**122**).

22. Reclosable packaging according to claim **18**, characterised in that the wall section (**120***g"*) is formed by a cover film (**132**) connected preferably by sealing, preferably detachably, to the end region of the outside section (**120***r*) lying remote from the lid film (**122**).

23. Reclosable packaging according to claim **18**, characterised in that the outside section (**20***f*; **120***f*) comprises at least along a circumferential section, preferably all the way round, a catch protrusion (**34**; **134**) projecting radially outwards referred to the reference axis (Z).

24. Reclosable packaging according to claim **23**, characterised in that the catch protrusion comprises an insertion bevel (**34***a*; **134***a*) inclined with reference to the opening surface of the packaging opening (**16**; **116**), which bevel facilitates an insertion of the plug section (**20***a*; **120***a*) into the packaging opening (**16**; **116**) to produce the reclosed packaging state.

25. Reclosable packaging according to claim **17**, characterised in that the outside section (**20***f*; **120***f*) in the initially closed packaging state projects away from the lid film (**22**; **122**) in the direction from the packaging interior (**18**; **118**), and is preferably irremovably connected to a side (**22***c*; **122***c*) of the lid film (**22**; **122**) that in the initially closed state faces away from the packaging interior (**18**; **118**).

26. Reclosable packaging according to claim **1**, characterised in that the plug section (**20***a*; **120***a*) is formed at least in sections, preferably completely, from a flexible plug section film.

27. Reclosable packaging according to claim **26**, characterised in that the plug section film is a film laminate of at least two film layers (**30**, **32**, **34**, **36**), which comprises the same layers, preferably the same layer structure, as the packaging body film and/or the edge component film and/or the lid film, and particularly preferably is substantially identical to at least one of the aforementioned films.

28. Reclosable packaging according to claim **1**, characterised in that the lid film (**22**; **122**) comprises a tear-off tab (**22***a*; **122***a*) as tear-off aid, which preferably projects beyond an outer edge (at **12***a*; at **112***a*) of the packaging in order to facilitate its handling by a user.

29. Reclosable packaging according to claim **1**, characterised in that the lid film (**22**; **122**) in the initially closed packaging state is substantially flat.

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