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(71) Applicant: **AMCOR FLEXIBLES**
8280 Kreuzlingen (CH)

(72) Inventor: **Pilzecker, Jens**
31675 BÜCKEBURG (DE)

(74) Representative: **Pronovem**
Office Van Malderen
Parc d'affaires Zénobe Gramme- bâtiment K
Square des Conduites d'Eau 1-2
4020 Liège (BE)

(54) Reclosable flowpack

(57) The present invention is related to a reclosable flowpack (1) comprising:
- a film (2), said film (2) comprising one or more polymeric layer(s),
- peelable-cross seals (11),
- a flap (8) comprising a fin seal (6),
- one or more weakened lines (3) along the flap (8), the weakened line (3) allowing, in use, the opening of said flowpack (1) by tearing a strip (7) that is at least partially part of said flap (8), the remaining part of the flap (8) comprising a pressure-sensitive adhesive (5) allowing the reclosability of the flowpack (1) by folding said remaining part of the flap (8) on the packaging (1).

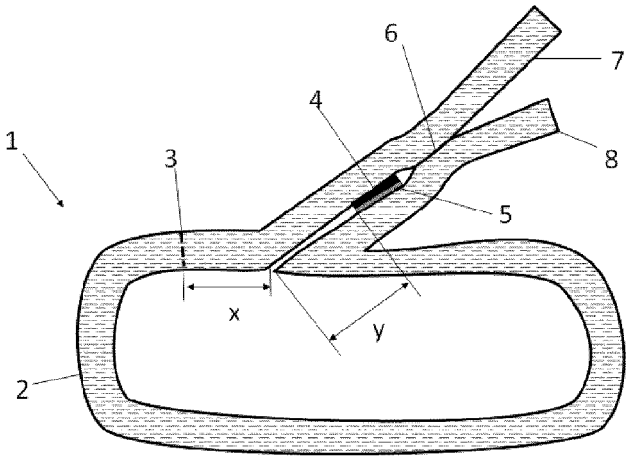

Fig. 2

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Description

Field of the Invention

[0001] The present invention is related to a reclosable flowpack.

State of the Art

[0002] Reclosable flowpacks are well known by those skilled in the art. The reclose means are either of a mechanical kind, such as zips for example disclosed in documents US 5,561,966 or US 4,894,975, or based on adhesive tapes.

[0003] Reclosable flowpacks comprising adhesive tapes are for example disclosed in documents US 5,078,509, US 4,622,799 and US 2004/0091183. For example, EP 1 939 106 discloses a reclosable flowpack comprising a fin seal, said fin seal comprising an adhesive used both for closing the package during the shelf life of the product and for reclosing it after a first use.

[0004] In this type of packaging, a major drawback is that after the first opening, the fin seal remains as a flap which may render the reclosing difficult for the user. An additional drawback of this remaining flap is that it hinders the access to the packaged goods.

[0005] Furthermore, since the reclosable adhesive is used both for sealing the package and for reclosing it, the first opening force and the subsequent opening forces are closely linked together. In that case, it becomes difficult to cope with two antagonist properties, i.e. having a strong seal during the shelf life to insure the integrity of the packaged product and having a seal that is easy to reopen after a first use. As a matter of fact, the reopening forces of pressure-sensitive adhesives are usually weaker than the seal force, a degradation of the adhesion being for example due to surface contamination by fatty products or dust.

[0006] Therefore, making the first opening force independent from the subsequent opening forces is also desirable.

Summary of the Invention

[0007] The present invention is related to a reclosable flowpack comprising:

- a film, said film comprising one or more polymeric layer(s);
- peelable cross-seals;
- a flap comprising a fin seal;
- one or more weakened line(s) along the flap;

the weakened line allowing, in use, the opening of said flowpack by tearing a strip that is at least partially part of said flap, the remaining part of the flap comprising a pressure-sensitive adhesive allowing the reclosability of the flowpack by folding said remaining part of the flap on the packaging.

[0008] In a first embodiment , the pressure-sensitive adhesive is located inside the flowpack and protected by a transfer tape, said transfer tape being, in use, peeled off from said pressure-sensitive adhesive before reclosing said flowpack.

[0009] In a second embodiment, the pressure-sensitive adhesive can be located in one of the layer of a multilayer film forming the flowpack, said layer being located between a support layer and a rupturable sealant layer.

[0010] In a third embodiment of the invention, the fin seal is a cold seal formed by the pressure-sensitive adhesive.

[0011] Preferably, the fin seal is a peelable fin seal.

[0012] As an alternative, the flowpack of the invention comprises a second weakened line located between the first weakened line and the fin seal allowing, in use, the tearing of the strip by breaking both weakened lines.

[0013] Preferably, the weakened line is located at a distance "X" from the flap fold and the pressure-sensitive adhesive is located at a distance "Y" of the flap fold, "X" being smaller than "Y".

[0014] Preferably, the one or more weakened line(s) is/are scored line(s).

[0015] Advantageously, the film forming the flowpack comprises an oriented polymer layer and an aluminium layer.

Brief Description of the Drawings

[0016] Fig. 1 represents a schematic top view of a closed flowpack according to the invention.

[0017] Fig. 2 represents a schematic cross-section of a flowpack according to the first embodiment of the invention before opening, said flowpack comprising a peelable fin seal and a transfer tape protecting the pressure-sensitive adhesive.

[0018] Fig. 3 represents a schematic cross-section of a flowpack as in Fig. 2 after peeling the peelable fin seal.

[0019] Fig. 4 represents a schematic cross-section of a flowpack as in Fig. 3 after tearing the strip.

[0020] Fig. 5 represents a schematic cross-section of a flowpack as in Fig. 4 after removing the transfer tape.

[0021] Fig. 6 represents a schematic cross-section of a flowpack according to the invention after reclosing.

[0022] Fig. 7 represents a schematic cross-section of an alternative of the first embodiment of the invention comprising a second weakened line.

[0023] Fig. 8 represents a schematic cross-section of the second embodiment of the invention, wherein the pressure-sensitive adhesive is located below a rupturable sealant layer, as seen in a detailed view.

[0024] Fig. 9 represents a schematic cross-section of the third embodiment of the invention, wherein the pressure-sensitive adhesive forms the fin seal.

Key

[0025]

1: flowpack
2: multilayer film
3: weakened line
4: transfer tape
5: pressure-sensitive adhesive
6: fin seal
7: strip
8: flap
10: reclosed package
11: peelable cross seal
12: rupturable sealant layer
13: support layer
14: pressure-sensitive adhesive layer
15: second weakened line
16: breaking line in the rupturable sealant layer

Detailed Description of the Invention

[0026] The present invention is related to a reclosable flowpack 1 comprising peelable cross seals 11 and a flap 8, wherein an easy access to the packaged goods is obtained by tearing a strip 7, said strip 7 being at least partially part of the flap 8. An advantage of such an opening procedure is that it provides an easier access to the package goods. In order to ease the tearing process, a weakened line 3 is located on the flowpack, in a direction that is essentially parallel to the fin seal.

[0027] Several methods are known in the art to produce weakened lines 3, 15. This can be pre-cut multilayer materials made of superposed pre-cut monolayers as disclosed for example in EP 1 817 165 and US 5,312,659. It can be induced by slits penetrating through one of the film layers as disclosed in EP 0 596 747 A1. The weakening can be obtained for example by laser scoring of the film 2 limited to a certain thickness as disclosed in US 2005/0084636-A1 and US 5,630,308. Or it can be obtained by scratching the film by means of sand paper, or by scratching an intermediate layer in a laminated structure as disclosed in EP 1 757 533 by the Applicant. The weakened line 3 can also comprise a tear strip to ease the opening (not represented).

[0028] Typical multilayer structures for flexible packaging films comprising weakened lines are:

- heat-seal lacquer / PET / print layer / PE,
- OPP/print layer/PE,
- OPP/print layer/OPP,
- print layer /OPP / metalized-OPP / seal layer,
- print layer /OPP /seal layer.

[0029] The invention provides the possibility of reclosing the flowpack 1 by using the remaining part of the flap 8, a pressure-sensitive adhesive 5 (PSA) being present on the internal surface of the remaining part of the flap 8. As shown in Fig. 6, the reclosing seal obtained by the pressure-sensitive adhesive 5 is a lap seal.

[0030] Pressure-sensitive adhesives usually have compositions based on natural and/or synthetic rubber, optionally used in combination with modified cellophanes, phenolformaldehyde resins or waxes. In addition to rubbers, polymers based on styrene, (meth)acrylic acid or vinyl ether are widely used, alone or as a mixture. Lastly, silicone resins may also be employed. Compositions including mixtures of natural and synthetic rubbers and copolymers of (meth)acrylic acid and styrene are preferred.

[0031] These pressure-sensitive adhesives are deposited onto the substrate (web) at a thickness of approximately 1 to 5g/m^2. Pressure-sensitive adhesives can be applied in the form of a solution, or as dispersion, or even in the molten state. Coating-deposition techniques well-known by those skilled in the art may be employed, such as, for example, heliographic or flexographic printing, or offset printing. The pressure-sensitive adhesives 5 can also be deposited on a transfer tape 4 slitted in the right dimensions, and then applied to the film 2 before the manufacturing of the flowpack 1.

[0032] Examples of suitable commercially-available pressure-sensitive adhesives are produced by Henkel under the grade names 22-263, 22-272, 22-392, 22-477, 22-848, 22-861, or produced by Sun Chemical under the grade names S7188, S7883, S7936, S7979, S7985, S8011, S8039, S8041, S8044, S8046, S8057, S8078, S8083, S8093, S8095, S8110, S9044, C1225, S8124, S8129, S8130.

[0033] In order to ease the access to the packaged goods, the weakened line 3 can be located at a distance "X" from the flap fold, but that distance cannot be larger than the distance "Y" between the pressure-sensitive adhesive and said flap fold (see Fig. 2). Advantageously, said distance "X" is larger than the size of the package goods.

[0034] The strip 7 must also be detachable from the flap, which can be obtained by having the fin seal be peelable, as represented in Fig. 2, 8 and 9. Alternatively, a second weakened line 15 can be located near the fin seal 6 as represented in Fig. 7.

[0035] By "peelable" is meant that the seal can be broken by delamination at the original interface (adhesive failure), or by propagating a fracture through a specially-designed peelable layer (cohesive failure), or by delaminating one of the films at an interface between two layers (adhesive failure between two layers).

[0036] In the third embodiment of the invention, the fin seal is a cold seal formed by the pressure-sensitive adhesive 5, as represented in Fig. 9

[0037] The first embodiment of the present invention is represented in Fig. 2 and 7, where the pressure-sensitive adhesive 5 is located inside the flowpack and protected by a transfer tape 4, said transfer tape 4 being peeled off from said pressure-sensitive adhesive 5 before reclosing said flowpack 1.

[0038] Alternatively, as represented in Fig. 8, the pressure-sensitive adhesive 5 is located in a layer 14 of the film 2 forming the flowpack, said layer 14 being located between a support layer 13 and a rupturable sealant layer 12. Such structures are described in more details in EP 2 111 982 or FR 2 741 605. A typical structure in this case is OPET/inks/OPET/PSA/PETG, the sealant layer being the PETG layer, this layer typically having a thickness of less than 15μm, preferably less than 10μm.

[0039] In that case, when the fin seal 6 is peeled off, the rupturable layer breaks around the seal and the rupturable sealant layer 12 delaminates, leaving the pressure-sensitive adhesive layer 14 uncovered, permitting the reclosing of the flowpack 1.

[0040] In order to ensure that the rupturable layer breaks between the layers of the remaining part of the flap, the rupturable sealant layer is preferably weakened along the breaking lines 16. A method to produce such kind of breaking lines 16 is for example disclosed in EP 1 077 186.

[0041] Fig. 1 and 2 represent two views of the first and preferred embodiment of the invention. In this example, the flowpack 1 comprises two peelable cross-seals 11 and a peelable fin seal 6 joining two sides of a flap. Next to the fin seal 6 and inside the flowpack 1, is a pressure-sensitive adhesive 5 protected by a transfer tape 4. Locating the pressure-sensitive adhesive 5 inside the flowpack 1 has the advantage of protecting it during the shelf life of the product. The transfer tape 4 protects the pressure-sensitive adhesive 5 from contamination from the package goods. For example, fatty contamination from chocolate can lower the adhesion properties of the pressure-sensitive adhesive 5 if it is not protected.

[0042] In this example, the opening is first performed by peeling off the fin seal 6 as represented in Fig. 3. The strip 7 is then torn away from the film 2, as represented in Fig. 4. The transfer tape is then removed as represented in Fig. 5 and the flowpack 1 is reclosed by unfolding the remaining part of the flap on the external side of the film 2, thereby forming a lap seal as represented in Fig. 6.

[0043] The presence of a transfer tape 4 is nevertheless not mandatory since the pressure-sensitive adhesive 5 can directly adhere to the film 2 within the flap.

Claims

1. Reclosable flowpack (1) comprising :

- a film (2), said film comprising one or more polymeric layer(s),
- peelable cross-seals (11),
- a flap comprising a fin seal (6),
- one or more weakened line(s) (3) along the flap,

the weakened line (3) allowing, in use, the opening of said flowpack by tearing a strip (7) that is at least partially part of said flap (8), the remaining part of the flap (8) comprising a pressure-sensitive adhesive (5) allowing the reclosability of the flowpack (1) by folding said remaining part (8) of the flap on the packaging (1).

2. Reclosable flowpack (1) according to Claim 1, comprising one of the following features:

a) the pressure-sensitive adhesive (5) is located inside the flowpack (1) and protected by a transfer tape (4), said transfer tape (4) being, in use, peeled off from said pressure-sensitive adhesive (5) before reclosing said flowpack;
b) the pressure-sensitive adhesive is located in a layer (14) of the film (2) forming the flowpack (1), said layer (14) being located between a support layer (13) and a rupturable sealant layer(12);
c) the fin seal is a cold seal formed by the pressure-sensitive adhesive (5).

3. Reclosable flowpack according to Claim 1 or 2, **characterised in that** the fin seal (6) is a peelable fin seal.

4. Reclosable flowpack (1) comprising a second weakened line (15) located between the first weakened line and the fin seal (6) allowing, in use, the tearing of the strip (7) by breaking both weakened lines.

5. Reclosable flowpack according to any of the preceding claims, **characterised in that** the weakened line (3) is located at a distance "X" from the flap fold, and the pressure-sensitive adhesive (5) is located at a distance "Y" of the flap fold, "X" being smaller than "Y".

6. Reclosable flowpack as in any of the preceding claims, **characterised in that** the one or more weakened line(s) (3, 15) is a scored line.

7. Reclosable flowpack as in any of the preceding claims, **characterised in that** the film (2) forming the flowpack comprises an oriented polymer layer and an aluminium layer.

8. Reclosable flowpack as in any of the preceding claims, **characterised in that** the opening force of the peelable fin seal according to ASTM D1876 is comprised between 5 and 25 N/15mm, preferably between 10 and 20N/15mm.

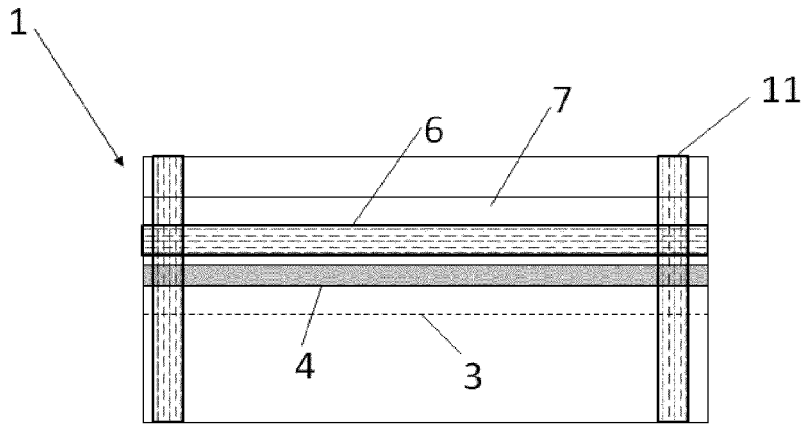

Fig. 1

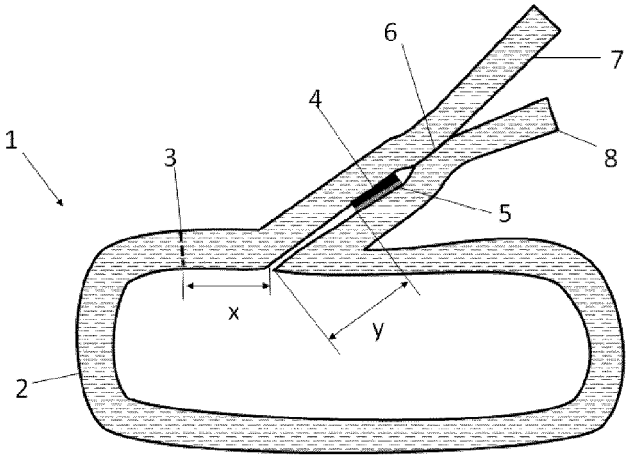

Fig. 2

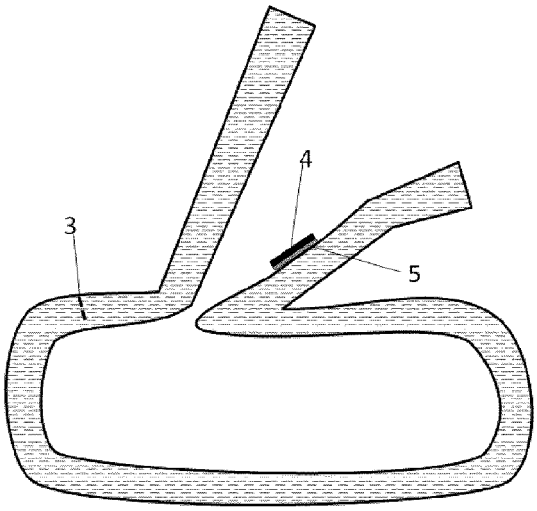

Fig. 3

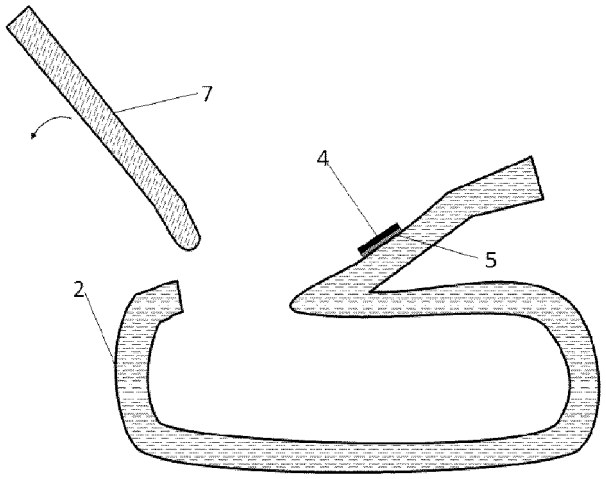

Fig. 4

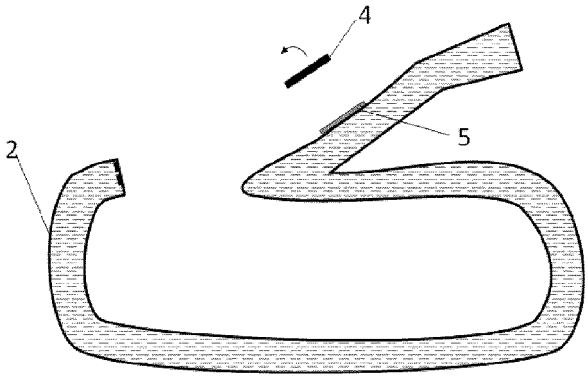

Fig. 5

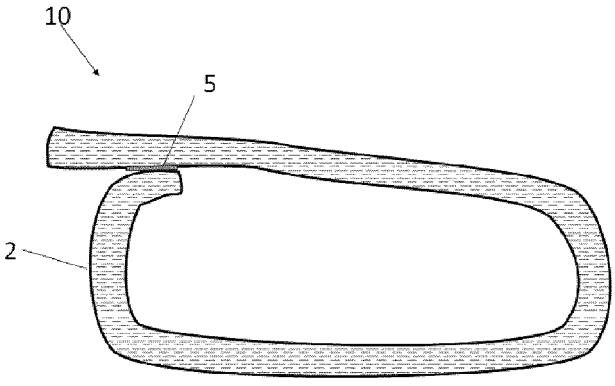

Fig. 6

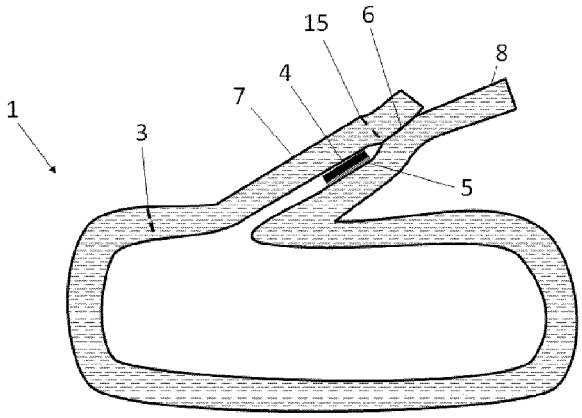

Fig. 7

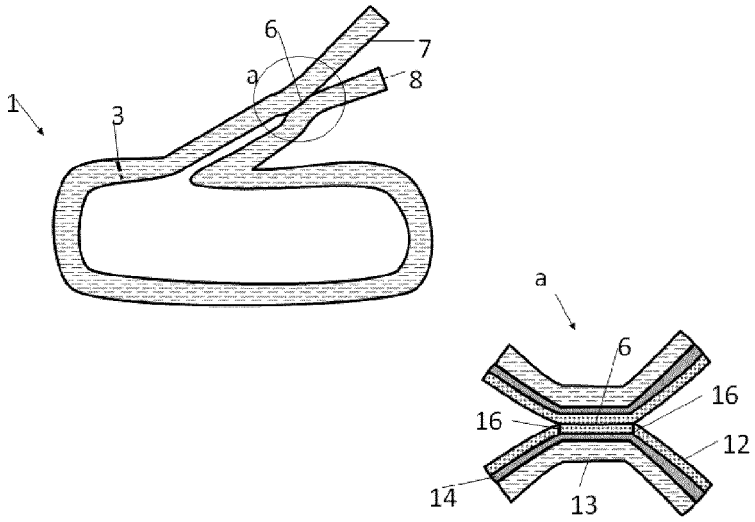

Fig. 8

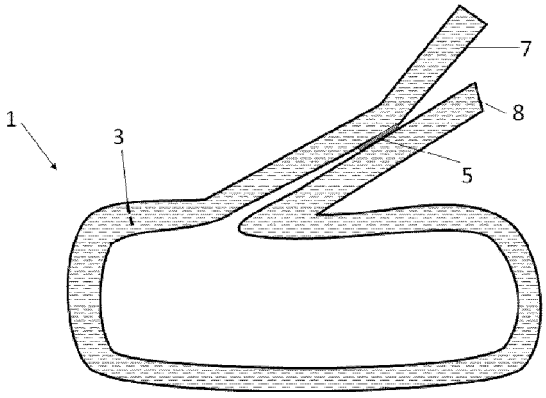

Fig. 9

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EUROPEAN SEARCH REPORT

Application Number
EP 12 18 7602

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	US 4 785 940 A (WILSON SHARI J [US]) 22 November 1988 (1988-11-22) * column 1, lines 6-8 * * column 2, line 33 - column 3, line 19; figures 1,2A,2B,2C * -----	1-6,8	INV. B65D33/20

TECHNICAL FIELDS SEARCHED (IPC)

B65D

~~The present search report has been drawn up for all claims~~

Place of search	Date of completion of the search	Examiner
Munich	1 March 2013	Vesterholm, Mika

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
Y : particularly relevant if combined with another document of the same category
A : technological background
O : non-written disclosure
P : intermediate document

T : theory or principle underlying the invention
E : earlier patent document, but published on, or after the filing date
D : document cited in the application
L : document cited for other reasons

& : member of the same patent family, corresponding document

1

EPO FORM 1503 03.82 (P04C01)

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Application Number
EP 12 18 7602

CLAIMS INCURRING FEES

The present European patent application comprised at the time of filing claims for which payment was due.

☐ Only part of the claims have been paid within the prescribed time limit. The present European search report has been drawn up for those claims for which no payment was due and for those claims for which claims fees have been paid, namely claim(s):

☐ No claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for those claims for which no payment was due.

LACK OF UNITY OF INVENTION

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

see sheet B

☐ All further search fees have been paid within the fixed time limit. The present European search report has been drawn up for all claims.

☐ As all searchable claims could be searched without effort justifying an additional fee, the Search Division did not invite payment of any additional fee.

☐ Only part of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the inventions in respect of which search fees have been paid, namely claims:

☒ None of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims, namely claims:

1-6, 8

☐ The present supplementary European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims (Rule 164 (1) EPC).

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LACK OF UNITY OF INVENTION
SHEET B

Application Number
EP 12 18 7602

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

1. claims: 1-6, 8

How to make the first opening force of the flowpack independent from the subsequent opening forces

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2. claim: 7

How to provide a flowpack with barrier properties

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 12 18 7602

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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01-03-2013

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 4785940 A	22-11-1988	NONE	

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

REFERENCES CITED IN THE DESCRIPTION

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- US 20050084636 A1 **[0027]**
- US 5630308 A **[0027]**
- EP 1757533 A **[0027]**
- EP 2111982 A **[0038]**
- FR 2741605 **[0038]**
- EP 1077186 A **[0040]**