

19



Europäisches Patentamt
European Patent Office
Office européen des brevets

11 Publication number:

0 148 020
A2

12

EUROPEAN PATENT APPLICATION

21 Application number: 84309065.5

51 Int. Cl.⁴: B 65 D 85/56

22 Date of filing: 21.12.84

30 Priority: 24.12.83 GB 8334503

43 Date of publication of application:
10.07.85 Bulletin 85/28

84 Designated Contracting States:
AT BE CH DE FR IT LI LU NL SE

71 Applicant: PROPRIETARY ASSOCIATION OF GREAT
BRITAIN
Vernon House Sicilian Avenue
London, WC1A 2QH(GB)

72 Inventor: Poore, Albert C.G.
11 Woodside Road
New Malden Surrey(GB)

74 Representative: Green, Alan James et al,
Sanderson & Co. 97 High Street
Colchester Essex C01 1TH(GB)

54 Strip packaging.

57 The invention relates to strip packaging, in particular to a child-resistant strip package.

The package of the invention comprises a plurality of packaged elements each individually enclosed between a first sheet comprising a material which is tear resistant and which will not easily permit release of an element by tearing or application of pressure, and a second sheet adhered thereto and comprising a material which retains the elements but which is sufficiently frangible to permit release of an element by application of finger pressure to the element through the first sheet.

The package is manufactured by a method comprising continuously feeding a web of said first sheet material and a web of said second sheet material to a packaging station. There the webs are disposed essentially vertically and a plurality of elements to be packaged are fed between the webs. The webs are then sealed together to form pockets around and to enclose the elements as one or more rows between the webs.

EP 0 148 020 A2

STRIP PACKAGING

The present invention relates to strip packaging and, in particular, to a strip package which offers a higher level of resistance to being opened by children than current strip packages.

5 Within a normal home environment most of the current forms of strip and blister packaging offer a high degree of protection against abuse by children. Also, in practice, these forms of packaging afford less frequent cases of child-poisoning than conventional
10 reclosable packs such as bottles. The disadvantage of reclosable packs lies in the fact that many people do not reclose them properly or refuse to accept packs with a child-resistant closure, thus offering a potentially greater hazard with a much larger and readily available
15 number of tablets or the like than is ever presented by a strip or blister pack. In addition, there is the added factor of the interest shown by children to an audible sound or rattle e.g. when a bottle is shaken, which is much less important for a strip or blister pack
20 because such packs are less audibly interesting.

 Nevertheless, we believe there is a potential need for a new approach to strip packaging in particular, which will permit of an even greater protection against abuse by children, and which at the same time can:

- 25 1. Permit the packaging to be run on existing machinery with little or no change to machine performance criteria,
2. Afford a commercially acceptable increase in material costs,
- 30 3. Present a greater obstacle to ingress by young children than most forms of packaging in current use, and
4. Permit the packaging to be acceptable in a practical performance sense to the adult user. In particular, the
35 package should be such as is openable without recourse to implements such as scissors while still offering the desired higher level of resistance to being opened by children.

40 We have now found surprisingly that a strip package which essentially can meet the above criteria, and which offers a higher level of child-resistance, can be produced by employing planar webs of two dissimilar

materials to enclose the elements to be packaged, and thus to form the strip package, one material being highly tear resistant and the other sufficiently frangible to release a tablet or like packaged element when pressure is applied to the material via the tablet or the like.

Accordingly, the present invention provides a child-resistant strip package, which package comprises a plurality of packaged elements each individually enclosed between a first sheet comprising a material which is tear resistant and which will not easily permit release of an element by tearing or application of pressure, and a second sheet adhered thereto and comprising a material which retains the elements but which is sufficiently frangible to permit release of an element by application of finger pressure to the element through the first sheet.

The strip packaging of the invention may be used to package any element which is relatively infrangible. Thus, while the packaging may be particularly appropriate for pharmaceutical products, it can also be used for other products where safety of young children is a factor. However, the invention particularly provides strip packaging for relatively infrangible pharmaceutical or like unit dosage forms such as tablets, caplets, capsules and the like.

In the package of the invention, the individually enclosed elements may be arranged in any convenient manner which (at the same time) generally affords a strip configuration. Thus, the elements may be in an in-line arrangement or staggered, and may be disposed in a single row, or in two or more rows, which generally will be essentially parallel to each other.

So that the package may meet current regulations, for example, as in the U.K., the first and second sheet materials are preferably opaque. However, in some instances the use of dark-tinted material may be acceptable. In either event, the tinting or opacity may be provided by printing, or by the incorporation of one or more dyes, or more preferably one or more pigments, for example, a white pigment. Alternatively, a material which in itself is opaque such as one comprising a metal foil, may be selected.

Preferably, in the package of the invention the

overall minimum width of any band of adherence between the first and second sheets should be at least about 5 mm. Furthermore, it is preferred that the first and second sheets are adhered together except
5 where they form pockets around the elements packaged between the sheets.

In particular, it is preferred that the first and second sheets should be chosen so that they can be adhered together by heat sealing, typically under
10 pressure, for example, by crimping. In that case the minimum crimp width should preferably be at least about 5 mm.

Within the above-stated criteria, the materials for the two sheets of the strip package of the invention
15 may be chosen from a number of available packaging materials such as paper, metal foil and plastics materials. However, in order to meet the stringent requirements which in practice apply say to the packaging of pharmaceuticals in unit dosage form, the
20 materials will preferably comprise laminated materials. In particular, the first and second sheets may be provided as materials comprising a plurality of plies laminated together and preferably selected as follows:

First sheet:

25 The first sheet preferably comprises one of the following materials, namely:

1. A laminate of paper e.g. glassine, and a tear-resistant e.g. biaxially orientated plastics material such as a polyamide or polyester, together with an
30 adhesive layer, preferably a heat-sealable adhesive layer. For example, a laminate of paper e.g. glassine, biaxially orientated nylon, and a polyethylene e.g. a low density polyethylene, or vinyl adhesive; or
2. Metal e.g. aluminium, foil - typically soft foil -
35 laminated with a tear-resistant plastics material, such as polypropylene, and including an adhesive layer, preferably comprising a heat-sealable adhesive, for example, a polyethylene e.g. a low density polyethylene, or vinyl adhesive.

40 Second sheet:

The second sheet is preferably one which requires a push-through force of at least about 70 Newton, for example, about 75 Newton, before rupture takes place. Given that additional criterion the second sheet

preferably comprises one of the following materials, namely:

1. A laminate of paper e.g. glassine, and a layer of plastics or other material which can provide adhesive (preferably heat-sealable adhesive) properties and any necessary strength properties, such as a polyethylene e.g. a low density polyethylene, or vinyl adhesive. For example, a laminate of glassine and low density polyethylene; or
2. Metal e.g. aluminium, foil - typically soft foil - again provided with a layer of plastics or other material which can provide the necessary adhesion, preferably heat adhesion, for example, a layer of a polyethylene e.g. a low density polyethylene, or vinyl adhesive.

It will be understood, of course, that the two sheets chosen in any particular instance must have compatible adhesive properties within the limits of the chosen method of manufacture. Furthermore, they should preferably for convenience have a common adhesive material.

The strip package of the invention is compatible with that known method of manufacture which typically comprises continuously feeding two planar webs to a packaging station where they are both disposed essentially vertically, feeding a plurality of elements to be packaged between the webs at the said station, and individually sealing the elements between the webs.

Accordingly, the invention also includes a method of manufacturing a strip package, which method comprises continuously feeding a web of first sheet material and a web of second sheet material, both as hereinbefore defined, to a packaging station where they are disposed essentially vertically, feeding a plurality of elements to be packaged between the webs at the said station, sealing together the webs to form pockets around and to enclose the elements as one or more rows between the webs and, if necessary or desired, subdividing the sealed webs into strip packages.

As described above the webs are preferably chosen so that they can be adhered together by heat sealing i.e. by the application of heat and pressure, as the webs are brought together.

In forming the package of the invention, it is

desirable that no perforations should be introduced into the package. As will be appreciated, any perforations could considerably reduce the level of its resistance to being opened by children, because any initiated cut or
5 tear such as might be introduced by perforation could make the package susceptible of opening by further tearing. However, since the package permits the removal of individual elements through the second sheet
10 by application of finger pressure, the presence of perforations, for example, to permit individually packaged elements to be torn away from the remainder of the package, is in any event not required.

As will be appreciated from the foregoing
15 description, the package of the invention is that kind of package known as a "strip package" or "strip packaging" formed by a method in which planar webs are brought together and sealed around the elements to be
20 packaged. Thus, the strip package or packaging of the invention is based on two flexible sheets or foils which can be run as vertical webs on existing strip packaging machinery, and which contain no pre-formed blisters (whether they be cold-formed or thermo-formed) to which
25 the said elements are fed to be packaged, and which are subsequently "lidded". The flexible sheets on which the present strip packaging is based both together (and essentially equally) enclose the elements to be
30 packaged, and the necessary accommodation of the elements is afforded by any necessary stretching of the material of each sheet as sealing takes place, not by any pre-forming operation. That is to say, the packaged elements are envelopped between two sheets, one of which
35 is burstable and the other of which is neither burstable not tearable, and which together are sealed around them to form a pocket enclosing each element.

The strip packages of the invention are illustrated by the following specific Examples of such packages.

Example 1

5 A package was formed on conventional strip packaging machinery to provide a strip package of the following description:

Overall individual strip

dimensions: About 131 mm x about 54 mm.

10 Contents: 10 tablets.

Dimensions of the tablets:

About 10.3 mm x about 4 mm, slightly lens-shaped.

15 Format: Two rows of 5 tablets each.

Foil material specifications:

Press-through side:

40 g/m² white opaque pergamine (glassine)/20 g/m² low density polyethylene.

20 Non press-through side

50 g/m² pergamine (glassine) - glazed imitation parchment - GIP/20 micron biaxially oriented Nylon/38 g/m² low density polyethylene.

25 Other characteristics: Round tablet pocket.

Example 2

30 A package was formed on conventional strip packaging machinery to provide a strip package of the following description:

Overall individual strip

dimensions: About 58 mm x about 124 mm.

Contents: 10 tablets.

35 Dimensions of the tablets:

About 10.3 mm x about 4 mm, bi-convex.

Format: Two rows of 5 tablets each.

Foil material specifications:

Press-through side:

50 g/m² white opaque glassine/
20 g/m² low density polyethylene.

5

Non press-through side:

50 g/m² glassine finish GIP/20
micron biaxially oriented
Nylon/38 g/m² low density
polyethylene.

10

Other characteristics:

rectangular tablet pocket.

Example 3

15 A package was formed on conventional strip packaging machinery to provide a strip package of having the following description:

Overall strip

dimensions:

About 55 mm x about 133 mm.

Contents:

10 tablets.

20

Dimensions of the

tablets:

About 13 mm x about 3 mm

Format:

Two rows of 5 tablets each.

Foil material Specifications:

Press-through side:

30 micron soft aluminium foil/vinyl (hot seal) adhesive.

25

Non press-through side:

20 micron polypropylene/12
micron soft aluminium
foil/vinyl (hot seal) adhesive.

30

35

40

We believe from tests carried out to date that the present invention provides a new type of strip package which affords increased child-resistant properties and which, at the same time, can be used by adults without difficulty. In that respect, the unidirectional press- or push-through characteristics of the package (which typically may present the same overall appearance from both sides) can be conveyed to the adult user either in instructions printed on the package and/or in separate instructions on a package insert or on another associated packaging item.

The mode of opening the package of the invention differs from that of the conventional form of strip packaging in that with the present package there is a

much higher level of resistance to tearing from the side
- effectively amounting to a complete resistance to
tearing by both young children and most adults - coupled
with an intelligence element associated with the press-
5 or push-through technique necessary to achieve opening.
Furthermore, when a tab of second sheet material is
provided by a first opening, adjacent pockets generally
cannot easily be opened subsequently by pulling the tab
10 of second sheet material across the package.

It will be understood, of course, that the
invention is not limited to the specific details given
above. Thus, for example, a polyester web may be
employed in place of the exemplified nylon web, and
15 various other types, weights and/or thicknesses of
materials may be employed, within the ambit of the
invention, to obtain similar results.

CLAIMS

1. A child-resistant strip package, which package comprises a plurality of packaged elements each individually enclosed between a first sheet comprising a material which is tear resistant and which will not easily permit release of an element by tearing or application of pressure, and a second sheet adhered thereto and comprising a material which retains the elements but which is sufficiently frangible to permit release of an element by application of finger pressure to the element through the first sheet.
2. A package according to claim 1, wherein the elements are tablets, caplets, capsules or other relatively infrangible unit dosage forms.
3. A package according to claim 1 or claim 2 and including a multiplicity of individually enclosed elements arranged either in a single row or in at least two essentially parallel rows, and either the first or second sheet or both sheets are preferably opaque or dark-tinted.
4. A package according to any one of the preceding claims, wherein the first and second sheets are adhered together except where they form pockets around the elements.
5. A package according to any one of the preceding claims, wherein the first and second sheets are chosen so that they can be adhered together by heat and pressure sealing.
6. A package according to any one of the preceding claims, wherein the overall minimum width of any band of adherence between the sheets is at least about 5 mm.
7. A package according to any one of the preceding claims, wherein the second sheet is one which requires a push-through force of at least about 70 Newton before rupture takes place.
8. A package according to any one of the preceding claims, wherein the two sheets include paper or metal foil, the first sheet preferably comprising a laminate of paper and a tear-resistant plastics material, together with an adhesive layer, or a metal foil laminated with a tear-resistant plastics material and including an adhesive layer, and the second sheet preferably comprising a laminate of paper and a plastics material which can provide adhesion and any necessary

strength, or a metal foil having a layer of plastics material which can provide the necessary adhesion.

9. A package according to claim 8, wherein the first sheet comprises a laminate of paper, biaxially oriented
5 nylon, and a low density polyethylene or vinyl adhesive, or a laminate of aluminium foil, polypropylene, and a low density polyethylene or vinyl adhesive, and/or the second sheet comprises a laminate of paper and a low
10 density polyethylene or vinyl adhesive, or aluminium foil and a low density polyethylene or vinyl adhesive.

10. A method of manufacturing a strip package, which method comprises continuously feeding a web of first sheet material and a web of second sheet material, both
15 as defined in any one of the preceding claims, to a packaging station where they are disposed essentially vertically, feeding a plurality of elements to be packaged between the webs at the said station, sealing together the webs to form pockets around and to enclose
20 the elements as one or more rows between the webs and, if necessary or desired, sub-dividing the sealed webs into strip packages.

11. A method according to claim 10, wherein the webs
25 are chosen so that they can be adhered together by heat sealing and the webs are brought together under heat and pressure.