

NAKED COLLATION PACKAGE

The present invention relates to a naked collation package.

5 Naked collation refers to a packaging application in which a plurality of individual units (generally of an article of commerce) are collated and then wrapped directly (without any intermediate packaging such as a carton or tube) in a packaging film, which holds the collated units together in the resulting naked collation package. Naked collation provides a number of
10 benefits, including reducing the quantity of packaging material (by avoiding the need for any intermediate packaging) and, in the case of a transparent packaging film, allowing the individual units to be visible.

The packaging technique of naked collation is particularly useful in connection
15 with the packaging of relatively rigid articles and/or articles which are not especially susceptible to flexing, for example, cigarette cartons, boxed pharmaceutical products, playing cards, packaged perfumes and cosmetics, CD cases, DVD cases, and the like. Although they need not be, commonly such articles will themselves be unit wrapped with an overwrap film so that
20 once removed from the naked collation package they are then ready for display on the shelves of a retailer, for example. The problem of avoiding sealing the exterior film of the naked collation package to the unit wrap film is addressed for example in our co-pending application PCT/GB2008/050662

25 Conversely, this invention is concerned with removing the individual units from the naked collation package in a manner which is easy to effect and which preferably allows individual units or groups of units to be removed from the naked collation package without compromising the integrity of the remainder of the package.

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Commonly in naked collation, as in many other types of packaging, a shrink film is employed to ensure a tight wrap. Whether a tight wrap, desirable from both a practical and an aesthetic point of view, is achieved by means of a shrink film or by other means, end users or retailers often experience

difficulties in removing individual units or groups thereof from the naked collation package as a whole. This is because the film can be so tightly wrapped around the collated units that the user is unable to gain any substantial purchase on the film in order to tear and remove the exterior film.

- 5 The user may resort to using a sharp implement or brute force to assist with the opening process, but this may then cause damage to the individual units, or may cause the whole package to be compromised, thereby releasing and spilling all of the individual units, even though the intention of the user was to remove only one, or some, of the units from the package.

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In a naked collation package individual units (such as unit-wrapped cigarette cartons by way of example) are generally stacked, laid end-to-end, and then wrapped in a sheet of naked collation film. Stack heights vary from a single unit stack to double or triple (or more) unit stacks. Pack lengths may be from
15 two to about twenty, or more, but will often be in the range of from about three to ten units in length. Pack lengths of from about four to about seven are common in the field of nakedly collated cigarette cartons, for example.

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In a naked collation package the risk of damage to the wrapped article by the use for example of sharp implements to pierce the overwrap film is acute; and it would be desirable to provide a ready means of opening such packs manually. It would also be desirable to provide a means for separating individual units, or groups of units, from the main body of the pack whilst leaving the remaining wrapped units in the pack substantially intact.

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According to the present invention there is provided a naked collation package comprising a plurality of individual units laid end-to-end or side-by-side to form a unit row comprising at least one interface between a neighbouring pair of individual units in the unit row; the unit row being overwrapped with a sheet of
30 polymeric film having a length and a width; the length of the sheet being sufficient to envelop the unit row with sufficient overlap between the ends of the sheet to provide an overlap region for providing a girth seal along at least part of the length of the unit row, the sheet being sealed to itself in that region to provide the girth seal; the width of the sheet being longer than the unit row

to provide an envelope seal region in at least one end of the unit row so that the wrapped and girth-sealed sheet is able to fold over and seal to itself at the at least one end of the unit row to provide an envelope seal, the sheet being folded and sealed to itself in that region to provide the envelope seal; the
5 sheet being provided along its length, or part or parts of it, with a line of weakness positioned in substantial register with the interface.

Also provided according to the present invention is a naked collation package comprising a plurality of individual units laid end-to-end or side-by-side to form
10 a unit row comprising at least one interface between a neighbouring pair of individual units in the unit row; the unit row being overwrapped with a sheet of polymeric film having a length and a width; the length of the sheet being sufficient to envelop the unit row with sufficient overlap between the ends of the sheet to provide an overlap region for providing a girth seal along at least
15 part of the length of the unit row, the sheet being sealed to itself in that region to provide the girth seal; the width of the sheet being longer than the unit row to provide an envelope seal region in at least one end of the unit row so that the wrapped and girth-sealed sheet is able to fold over and seal to itself at the
20 at least one end of the unit row to provide an envelope seal, the sheet being folded and sealed to itself in that region to provide the envelope seal; the sheet being provided along its length, or part or parts of it, with at least one line of weakness positioned in substantial register with the interface.

It would further be desirable to reduce the quantity of overwrap film used in a
25 naked collation packet.

Thus, also provided in accordance with the present invention is a naked collation package comprising a plurality of individual units laid end-to-end or side-by-side to form a unit row comprising at least one interface between a
30 neighbouring pair of individual units in the unit row; the unit row being overwrapped with a sheet of polymeric film having a length and a width; the length of the sheet being sufficient to envelop the unit row with sufficient overlap between the ends of the sheet to provide an overlap region for providing a girth seal along at least part of the length of the unit row, the sheet

being sealed to itself in that region to provide the girth seal; the width of the sheet being not substantially longer than the unit row so that the wrapped and girth-sealed sheet forms an open-ended sleeve around the unit row; the sheet being provided along its length, or part or parts of it, with a line of weakness
5 positioned in substantial register with the interface.

Thus, also provided in accordance with the present invention is a naked collation package comprising a plurality of individual units laid end-to-end or side-by-side to form a unit row comprising at least one interface between a
10 neighbouring pair of individual units in the unit row; the unit row being overwrapped with a sheet of polymeric film having a length and a width; the length of the sheet being sufficient to envelop the unit row with sufficient overlap between the ends of the sheet to provide an overlap region for providing a girth seal along at least part of the length of the unit row, the sheet
15 being sealed to itself in that region to provide the girth seal; the width of the sheet being not substantially longer than the unit row so that the wrapped and girth-sealed sheet forms an open-ended sleeve around the unit row; the sheet being provided along its length, or part or parts of it, with at least one line of weakness positioned in substantial register with the interface.

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The naked collation packages of the invention provide the advantage that by flexing the package in the region of the interface, an individual unit or group of units can be snapped off from the remainder of the package whilst leaving the remainder of the package substantially intact.

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The unit row comprises at least two individual units, but may comprise at least three or at least about four or five individual units, for example. The unit row may be a single unit in height, or may be double or triple-stacked, for example.

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When the unit row comprised more than two individual units, there will be a corresponding plurality of interfaces between neighbouring pairs of individual units. In these circumstances there is preferably provided a plurality of lines

of weakness along the length of the sheet; each line of weakness positioned in substantial register with a respective interface.

5 The naked collation package may comprise at least two lines of weakness in a spaced relationship, said at least two lines positioned in substantial register with a respective interface.

10 The naked collation package may comprise a first line of weakness in a spaced relationship with a second line of weakness, the first line of weakness positioned on one side of the respective interface, and the second line of weakness positioned on an opposite side of the respective interface. This arrangement provides positionally a greater margin of error when registering the at least one line of weakness with the respective interface.

15 The or each line of weakness may be provided in the sheet by any suitable means such as ablation, incision or perforation for example.

20 Typically, the sheet is a polymeric film having a machine direction and a transverse direction. Preferably in this case the length of the sheet is in the machine direction and the or each line of weakness is provided by feeding the sheet in web form to a suitable ablation, incision or perforation tool so that the or each line of weakness is provided in the machine direction.

25 Preferably, the film is a shrink film so that after or during sealing of the film to itself around the unit row, the film can be shrunk to form a tight fit.

30 Preferably each individual unit is of substantially the same shape and size as each other individual unit in the pack. It is also preferred that each individual unit be of substantially regular shape, and that the or each interface between neighbouring units be a substantially straight line interface.

The or each line of weakness provided in substantial register with an interface between neighbouring packs may be a substantially straight line of weakness. However, we have found it to be especially preferable for the or each line of

weakness to have an oscillating pattern. For example, the or each line of weakness may be provided as a zigzag line or with a sinusoidal profile, for example. This allows a greater margin of error in registering the or each line of weakness with the interface. The or each line of weakness is continuous or
5 discontinuous and may comprise a series of repeat patterns.

Preferably, the or each line of weakness is an oscillating line of weakness. More preferably the or each line of weakness is an oscillating line of weakness with a repeat unit which itself is oscillating.

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By oscillating is preferably meant that the or each line of weakness propagates sequentially above and below a longitudinal axis running along the length of the or each line of weakness through the centre thereof.

15 Also provided in accordance with the invention is a process for the production of a naked collation package, the process comprising the steps of:

a) providing a plurality of individual units laid end-to-end or side-by-side to form a unit row comprising at least one interface between a neighbouring pair of individual units in the unit row;

20 b) providing a sheet of polymeric film having a length and a width; the length of the sheet being sufficient to envelop the unit row with sufficient overlap between the ends of the sheet to provide an overlap region for providing a girth seal along at least part of the length of the unit row; and the width of the sheet being longer than the unit row to
25 provide an envelope seal region in at least one end of the unit row;

c) providing along the length of the film a line of weakness;

d) registering the line of weakness with the interface

e) wrapping the length of the film around the unit row and sealing the film to itself to provide a girth seal; and

30 f) folding and sealing the film to itself in the envelope seal region to provide the envelope seal.

Also provided in accordance with the invention is a process for the production of a naked collation package, the process comprising the steps of:

- a) providing a plurality of individual units laid end-to-end or side-by-side to form a unit row comprising at least one interface between a neighbouring pair of individual units in the unit row;
- b) providing a sheet of polymeric film having a length and a width; the length of the sheet being sufficient to envelop the unit row with sufficient overlap between the ends of the sheet to provide an overlap region for providing a girth seal along at least part of the length of the unit row; and the width of the sheet being longer than the unit row to provide an envelope seal region in at least one end of the unit row;
- c) providing along the length of the film at least one line of weakness;
- d) registering substantially the at least one line of weakness with the at least one interface;
- e) wrapping the length of the film around the unit row and sealing the film to itself to provide a girth seal; and
- f) folding and sealing the film to itself in the envelope seal region to provide the envelope seal.

The invention also provides a process for the production of a naked collation package, the process comprising the steps of:

- a) providing a plurality of individual units laid end-to-end or side-by-side to form a unit row comprising at least one interface between a neighbouring pair of individual units in the unit row;
- b) providing a sheet of polymeric film having a length and a width; the length of the sheet being sufficient to envelop the unit row with sufficient overlap between the ends of the sheet to provide an overlap region for providing a girth seal along at least part of the length of the unit row; and the width of the sheet being not substantially longer than the unit row;
- c) providing along the length of the film a line of weakness;
- d) registering the line of weakness with the interface; and

- e) wrapping the length of the film around the unit row and sealing the film to itself to provide an open-ended girth-sealed sleeve around the unit row.

5 The invention also provides a process for the production of a naked collation package, the process comprising the steps of:

- a) providing a plurality of individual units laid end-to-end or side-by-side to form a unit row comprising at least one interface between a neighbouring pair of individual units in the unit row;
- 10 b) providing a sheet of polymeric film having a length and a width; the length of the sheet being sufficient to envelop the unit row with sufficient overlap between the ends of the sheet to provide an overlap region for providing a girth seal along at least part of the length of the unit row; and the width of the sheet being not substantially longer than
15 the unit row;
- c) providing along the length of the film at least one line of weakness;
- d) registering substantially the at least one line of weakness with the at least one interface; and
- e) wrapping the length of the film around the unit row and sealing the film
20 to itself to provide an open-ended girth-sealed sleeve around the unit row.

The films used in accordance with the present invention can be of a variety of thicknesses according to the application requirements. For example they can
25 be from about 10 to about 240µm thick and preferably from about 50 to about 90µm thick. The line of weakness in the film is preferably of a narrower gauge than the rest of the film – for example 1%, 2%, 5%, 10%, 20% or 50% narrower than the bulk of the film, or the line of weakness may extend all or substantially all the way through the film.

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The films used in the present invention, prior to deposition of any coating and/or skin or lamination layer may comprise any suitable polymeric filmic substrate, such as films made from biopolymers such as any of those described herein [preferably polylactic, polygalactic and/or cellulosic films (e.g.

microbial and/or regenerated cellulose film)] ; thermoplastic films; polymeric films (for example films comprising: polyolefins [e.g. polypropylene and/or polyethylene] polyurethanes, polyvinylhalides [e.g. PVC], polyesters [e.g. polyethylene terephthalate-PET], polyamides [e.g. nylons] and/or non-
5 hydrocarbon polymers) ; and/or multilayer and/or composite sheets formed by any suitable combinations and/or mixtures of thereof. Suitable filmic substrates therefore include polyolefinic films, but also polyester films, polyurethane films, cellulosic and PLA films.

10 The films of the present invention may consist of only one layer, or may comprise a plurality of layers. Layers when present can be combined by lamination and/or co-extrusion and/or coating and/or melt coat extrusion. Films may be otherwise treated (for example by corona discharge treatment) to improve certain characteristics of the film; printability or coating adhesion
15 for example.

The films of the invention may comprise one or more additive materials such as: dyes; pigments, colorants; voiding agents; metallised and/or pseudo metallised coatings (e.g. aluminium); lubricants, anti-oxidants, surface-active
20 agents, stiffening aids, gloss-improvers, prodegradants, UV attenuating materials (e.g. UV light stabilisers); sealability additives; tackifiers, anti-blocking agents, additives to improve ink adhesion and/or printability, cross-linking agents; anti-slip and/or anti-block additives and the like.

25 The present invention is described further hereinafter, by way of example only, with reference to the accompanying drawings in which:

Fig. 1 illustrates in perspective a naked collation pack in accordance with a first aspect of the invention.

Fig. 2 illustrates in perspective a naked collation pack in accordance with a second aspect of the invention.

Fig. 3 illustrates in perspective a naked collation pack in accordance with a third aspect of the invention.

Fig. 4 illustrates in perspective a naked collation pack in accordance with a fourth aspect of the invention.

Fig. 5 illustrates in perspective a naked collation pack in accordance with a fifth aspect of the invention.

Fig. 6 illustrates in perspective a naked collation pack in accordance with a sixth aspect of the invention.

Referring to Figure 1 there is shown a naked collation package 1 comprising ten collated individual units 2, double stacked in height and with five along the length of the unit row. Each individual unit 2 is placed side-by-side with its neighbour and with an interface 3 therebetween. Collation film 4 is wrapped around the unit row and sealed to itself by means of a girth seal (not shown, being on the underside of the package 1 as depicted). An envelope seal 5 is provided at each end of package 1, although only one such end is depicted in Figure 1. Lines of weakness 6 in the machine direction of the film 4 are provided in substantial register with each interface 3 and, in the embodiment shown in Figure 1 comprise a straight-line perforation in the film. In use the package 1 may be held as one end and two, four, six or eight individual units 2 may be snapped off from the other end by flexing the package 1 in the region of the appropriate interface 3.

Referring to Figure 2 there is shown a naked collation package 21 with similar features to those described in relation to Figure 1, except that the lines of weakness 26 comprise a sinusoidal-line perforation in the film.

Referring to Figure 3 there is shown a naked collation package 31 comprising ten collated individual units 32, double stacked in height and with five along the length of the unit row. Each individual unit 32 is placed side-by-side with its neighbour and with an interface 33 therebetween. Collation film 34 is wrapped around the unit row and sealed to itself by means of a girth seal (not

shown, being on the underside of the package 31 as depicted). The width of the film 34 is not substantially greater than the length of the unit row so that the film 34 forms an open-ended sleeve around the unit row. Lines of weakness 36 in the machine direction of the film 34 are provided in substantial register with each interface 33 and, in the embodiment shown in Figure 3 comprise a straight-line perforation in the film. In use the package 31 may be held as one end and two, four, six or eight individual units 32 may be snapped off from the other end by flexing the package 31 in the region of the appropriate interface 33.

Referring to Figure 4 there is shown a naked collation package 41 with similar features to those described in relation to Figure 3, except that the lines of weakness 46 comprise a sinusoidal-line perforation in the film.

Referring to Figure 5 there is shown a naked collation package 51 comprising ten collated individual units 52, double stacked in height and with five along the length of the unit row. Each individual unit 52 is placed side-by-side with its neighbour and with an interface 53 therebetween. Collation film 54 is wrapped around the unit row and sealed to itself by means of a girth seal (not shown, being on the underside of the package 51 as depicted). An envelope seal 55 is provided at each end of package 51, although only one such end is depicted in Figure 5. Lines of weakness 56a and 56b in the machine direction of the film 54 are provided in substantial register with each interface 53 and, in the embodiment shown in Figure 5 comprise a straight-line perforation in the film 54. A first line of weakness 56a is in a spaced relationship with a second line of weakness 56b; the first line of weakness 56a positioned on one side 57a of the respective interface 53, and the second line of weakness 56b positioned on an opposite side 57b of the respective interface 53. This arrangement provides positionally a greater margin of error when registering the lines of weakness with the respective interface. Of course, in other embodiments, more than two lines of weakness in spaced relationship may be provided at a respective interface. In other embodiments, the lines of weakness may be oscillating lines of weakness, such as a sinusoidal-line perforation in the film (as seen in Figure 2 for example). In use the package

51 may be held as one end and two, four, six or eight individual units 52 may be snapped off from the other end by flexing the package 51 in the region of the appropriate interface 53.

Referring to Figure 6 there is shown a naked collation package 61 comprising ten collated individual units 62, double stacked in height and with five along the length of the unit row. Each individual unit 62 is placed side-by-side with its neighbour and with an interface 63 therebetween. Collation film 64 is wrapped around the unit row and sealed to itself by means of a girth seal (not shown, being on the underside of the package 61 as depicted). The width of the film 64 is not substantially greater than the length of the unit row so that the film 64 forms an open-ended sleeve around the unit row. Lines of weakness 66a and 66b in the machine direction of the film 64 are provided in substantial register with each interface 63 and, in the embodiment shown in Figure 6 comprise a straight-line perforation in the film. Lines of weakness 66a and 66b in the machine direction of the film 64 are provided in substantial register with each interface 63 and, in the embodiment shown in Figure 6 comprise a straight-line perforation in the film 64. A first line of weakness 66a is in a spaced relationship with a second line of weakness 66b; the first line of weakness 66a positioned on one side 67a of the respective interface 63, and the second line of weakness 66b positioned on an opposite side 67b of the respective interface 63. This arrangement provides positionally a greater margin of error when registering the lines of weakness with the respective interface. Of course, in other embodiments, more than two lines of weakness in spaced relationship may be provided at a respective interface. In other embodiments, the lines of weakness may be oscillating lines of weakness, such as a sinusoidal-line perforation in the film (as seen in Figure 4 for example). In use the package 61 may be held as one end and two, four, six or eight individual units 62 may be snapped off from the other end by flexing the package 61 in the region of the appropriate interface 63.

CLAIMS

1. A naked collation package comprising a plurality of individual units laid end-to-end or side-by-side to form a unit row comprising at least one interface between a neighbouring pair of individual units in the unit row; the unit row being overwrapped with a sheet of polymeric
5 film having a length and a width; the length of the sheet being sufficient to envelop the unit row with sufficient overlap between the ends of the sheet to provide an overlap region for providing a girth seal along at least part of the length of the unit row, the sheet being sealed to itself in that region to provide the girth seal; the width of the
10 sheet being longer than the unit row to provide an envelope seal region in at least one end of the unit row so that the wrapped and girth-sealed sheet is able to fold over and seal to itself at the at least one end of the unit row to provide an envelope seal, the sheet being folded and sealed to itself in that region to provide the envelope seal;
15 the sheet being provided along its length, or part or parts of it, with a line of weakness positioned in substantial register with the interface.
2. A naked collation package comprising a plurality of individual units laid end-to-end or side-by-side to form a unit row comprising at least
20 one interface between a neighbouring pair of individual units in the unit row; the unit row being overwrapped with a sheet of polymeric film having a length and a width; the length of the sheet being sufficient to envelop the unit row with sufficient overlap between the ends of the sheet to provide an overlap region for providing a girth
25 seal along at least part of the length of the unit row, the sheet being sealed to itself in that region to provide the girth seal; the width of the sheet being not substantially longer than the unit row so that the wrapped and girth-sealed sheet forms an open-ended sleeve around the unit row; the sheet being provided along its length, or part or parts
30 of it, with a line of weakness positioned in substantial register with the interface.

3. A naked collation package according to claim 1 or claim 2 wherein flexing the package in the region of the interface causes an individual unit or group of units to be snapped off from the remainder of the package whilst leaving the remainder of the package substantially intact.

4. A naked collation package according to any one of claims 1 to 3 comprising a plurality of interfaces between neighbouring pairs of individual units.

5. A naked collation package according to any one of claims 1 to 4, comprising at least two lines of weakness in a spaced relationship, said at least two lines positioned in substantial register with a respective interface.

6. A naked collation package according to claim 5, comprising a first line of weakness in a spaced relationship with a second line of weakness, the first line of weakness positioned on one side of the respective interface, and the second line of weakness positioned on an opposite side of the respective interface.

7. A naked collation package according to claim 4 comprising a plurality of lines of weakness along the length of the sheet; each line of weakness positioned in substantial register with a respective interface.

8. A naked collation package according to any one of claims 1 to 7 wherein the line of weakness is a substantially straight line of weakness.

9. A naked collation package according to any one of claims 1 to 7 wherein the line of weakness is an oscillating line of weakness.

10. A process for the production of a naked collation package, the process comprising the steps of:

- a. providing a plurality of individual units laid end-to-end or side-by-side to form a unit row comprising at least one interface between a neighbouring pair of individual units in the unit row;
- b. providing a sheet of polymeric film having a length and a width; the length of the sheet being sufficient to envelop the unit row with sufficient overlap between the ends of the sheet to provide an overlap region for providing a girth seal along at least part of the length of the unit row; and the width of the sheet being longer than the unit row to provide an envelope seal region in at least one end of the unit row;
- c. providing along the length of the film a line of weakness;
- d. registering substantially the line of weakness with the at least one interface;
- e. wrapping the length of the film around the unit row and sealing the film to itself to provide a girth seal; and
- f. folding and sealing the film to itself in the envelope seal region to provide the envelope seal.

11. A process for the production of a naked collation package, the process comprising the steps of:

- a. providing a plurality of individual units laid end-to-end or side-by-side to form a unit row comprising at least one interface between a neighbouring pair of individual units in the unit row;
- b. providing a sheet of polymeric film having a length and a width; the length of the sheet being sufficient to envelop the unit row with sufficient overlap between the ends of the sheet to provide an overlap region for providing a girth seal along at least part of the length of the unit row; and the width of the sheet being not substantially longer than the unit row;
- c. providing along the length of the film a line of weakness;
- d. registering substantially the line of weakness with the at least one interface; and

- e. wrapping the length of the film around the unit row and sealing the film to itself to provide an open-ended girth-sealed sleeve around the unit row.