

A CONTAINER

FIELD OF THE DISCLOSURE

[0001] The present disclosure relates to a container that contains more than one product where each product is held separately out of contact from the other until mixing is required whereupon mixing can occur in the container prior to dispensing. The disclosure also relates to a method of manufacturing such a container.

BACKGROUND

[0002] In some instances, it is desirable to provide a container to hold more than one product. Ideally, for reasons such as their potential for interaction with each other, the products are to be separated from one another in distinct chambers. For example, where one or more of the products to be combined is medicinal or pharmaceutical and the products are to be mixed before use, it would be desirable that a container will hold the products in separate chambers to prevent a premature reaction between them. It would be desirable to provide such a container which can be utilized to hold and then combine multiple medicinal/pharmaceutical products or one medicinal/pharmaceutical product with a different product or alternatively which is used for any two or more different products.

[0003] Existing containers for separately holding multiple products from each other include a main chamber which has a main inner volume that contains a liquid and a lid having a compartment above the main inner volume that contains a product to be mixed with the liquid. These containers have a screw top lid. When the lid is opened by rotation, an internal mechanism, triggered by the rotation of the lid, will release the product from its compartment to be mixed with the liquid in the main chamber. The lid can then be rotated further and removed to provide the dispensing opening at the top of the container.

[0004] One example of such containers is the 'Berocca Twist N Go' container which holds a soluble vitamin tablet within the twist cap lid above a water

chamber. When the lid is twisted, the cap cuts a foil material housing the tablet to release the tablet into the water chamber. The user waits for the tablet to dissolve within the water and then drinks the resulting vitamin water directly from the container.

[0005] Containers of the type discussed above can be expensive to manufacture, require a number of components and often complicated mechanisms to release a product to be mixed with a liquid. The use of a screw top lid as by which the internal product is released into a liquid as well as the mechanism by which the dispensing opening of the container is revealed means that the products within the container can be exposed to the external environment while being mixed together. Thus, such containers are not desirable for all applications such as those where products are to be mixed in a sterile environment before dispensing. These containers are also not desirable in all single use applications due to the amount of packaging and cost to produce each container. The containers described above must include a screw top lid to function, and containers without a screw top lid are incompatible with the need to combine products in a container since the manner of their opening risks the loss of the product contained by the lid during opening.

[0006] It is therefore desirable to provide an improved and/or alternative container that allows two or more products to be mixed or combined within the container. It is also desirable to provide a container which overcomes one or more of the problems associated with the prior art.

[0007] Any discussion of documents, devices, acts or knowledge in this specification is included to explain the context of the invention. It should not be taken as an admission that any of the material formed part of the prior art base or the common general knowledge in the relevant art on or before the priority date of the claims herein.

SUMMARY OF THE INVENTION

[0008] An aspect of the present invention provides a container comprising: an outer body having an outer body wall defining an outer body cavity ; a first inner body located within the outer body, the first inner body having a first inner body wall with a first inner fracturable portion, the first inner body wall defining a first inner cavity within the inner body; a first product contained within the first inner cavity of the inner body; and a second product contained within the container separately from the first product, wherein the first inner body is adapted to fracture along the first inner fracturable portion to permit the first product to be released from the first inner cavity to meet the second product, and wherein the outer body is adapted to permit a combination of the first product and the second product to be dispensed from the container.

[0009] According to an embodiment, the outer body has an outer fracturable portion that is fracturable to permit the combination of the first product and the second product to be dispensed from the container. Alternatively, the first product and the second product may be dispensed from the container by an alternate opening action including for example actuation of a valve or a plug located on the outer body, or by applying one or more opening actions to an outer portion of the outer body such as piercing, slicing, perforating, peeling, breaking bursting or the like.

[0010] According to an embodiment, the second product is contained within the outer body cavity.

[0011] According to an embodiment, the container comprises a second inner body located within the outer body, the second inner body having a second inner body wall with a second inner fracturable portion, the second inner body wall defining a second inner cavity. The second product is preferably contained within the second inner cavity.

[0012] The first and second inner bodies are preferably inner packages. The outer body is preferably an outer package. For example, each inner package

may be a distinct and individually formed package which is held within the outer package to form a container which holds the first product and the second product out of contact from one another until a fracturing action has taken place.

[0013] The force required to fracture each inner body or the outer body is dependent on a number of factors, including the type of material from which the respective body is manufactured, thickness of material and shape and size of the body to be fractured. The force for fracturing an inner body may be different to the force required to fracture the outer body. Alternatively, the force to fracture an inner body may be the same as the force to fracture the outer body. It is preferred that the force required to fracture each of the inner and outer bodies respectively is sufficient that unintentional fracturing of either of the bodies is avoided during transport or regular handling of the container.

[0014] 'Sufficient force', as used herein, is the amount of force at or above which the respective fracturable portion is adapted to fracture along its break path. If forces below a sufficient force are applied, the fracturable portion will not fracture and the body/container will remain in an unopened state. Preferably, when forces that exceed the sufficient force are applied, the fracturable portion will fracture at one or more initiating fracture point(s) and then along the break path until the entire break path has fractured and the body is in an opened state. Opening the inner body and/or outer body by fracturing along the break path may be performed through a one handed and/or two handed action of a user.

[0015] The 'break path' is a defined path along which the respective body, inner or outer, of the container fractures. In other words, the break path is the path a fracture will take when the outer body or inner body is opened. In the above aspect, the break path will follow the bend of the fracturable portion of the respective body. A 'fracturable portion' is the portion of the body of the container which fractures.

[0016] The first product may be a single product. Alternatively, the first product may comprise more than one individual product. Where the first product comprises more than one product, the respective products may be the same or

different products. For example, the first product may comprise a tablet, or two or more tablets, or a liquid, or a powder, or any other product or combination thereof. Similarly, the second product may be a single product or may comprise more than one product. Where the second product comprises more than one product, the respective products may be the same or different products. For example, the second product may comprise a tablet, or two or more tablets, or a liquid, or a powder, or any other product or combination thereof.

[0017] According to embodiments of the present disclosure, the products contained within the packages and/or bodies, including the inner body and outer body, may both be the same product or may be different products. Each product can be any desired product and can be selected from, but not limited to, any of the following: a solid material, a tablet, a substance, a powder, a granular material, a reactive material, a liquid, a suspension, a drug, a medicine, a pharmaceutical product, a chemical product, a gas or other fluid, or a combination product which includes more than one previously defined product, such as a liquid centre tablet with a solid or flexible outer substrate.

[0018] According to embodiments of the present disclosure, the first inner body and second inner body are positioned within the outer body such that the second inner fractureable portion and the first inner fractureable portion are adapted to fracture simultaneously to permit the first product to be released from the first inner cavity and received in the second inner cavity. The first inner body and the second inner body may be aligned with one another within the outer body.

[0019] According to embodiments of the present disclosure, the second inner body comprises a dispensing fractureable portion adapted to fracture to permit the first product and the second product to be dispensed. The second inner body may be nested within the outer body. The dispensing fracturing portion in the second inner body may provide a dispensing opening when fractured. The outer fractureable portion of the outer body may provide a dispensing opening when fractured. The dispensing fractureable portion may be positioned relative to the outer fractureable portion such that the dispensing fractureable portion and the outer

fracturable portion are adapted to fracture simultaneously and to provide co-existent dispensing openings in the second inner body and the outer body. The dispensing fracturable portion is preferably an inner fracturable portion of the second inner body.

[0020] According to embodiments, one or more fracturable portions as provided herein are in the form of an elongate bend in the respective body wall that defines an angle between a first portion of the respective body and a second portion of the respective body of about 20° to about 170°. Preferably, the angle is about 45° to about 105°. More preferably, the angle is about 70° to about 90°.

[0021] According to embodiments of the present disclosure, the second inner body comprises a flange about a perimeter of the second inner body wall. The flange of the second inner body may be located at an edge of the second inner body wall defining a filling opening to the second cavity. The container may further comprise a cover affixed to the flange of the second inner body to seal the filling opening to the second inner cavity.

[0022] According to embodiments of the present disclosure, the second inner fracturable portion extends between a first location at the flange of the second inner body or an edge of the second inner body wall and a second location on the second inner body wall distanced from the flange or edge of the second inner body wall. This embodiment of a fracturable portion which extends from a first point on an edge of the body wall or flange to a second point which is located spaced apart from an edge of the body wall or flange is equally applicable to any fracturable portion of an inner or outer package or body as described herein. For example, some embodiments may utilise such a structure of fracturable portion on the outer body in order to provide a dispensing opening when the fracturable portion on the outer body is fractured. Alternatively, the first inner body may comprise a fracturable portion that extends between a point on the edge of the inner body wall and a point spaced from the inner body wall.

[0023] According to embodiments of the present disclosure, a direction of the first inner fracturable portion of the first inner body is oriented substantially parallel to a direction of the second inner fracturable portion of the second inner body. This alignment will assist in permitting a simultaneous fracturing of the fracturable portions of the first and second inner bodies when a sufficient force is applied.

[0024] According to embodiments of the present disclosure, the second inner body is formed as a separate piece to the outer body and is inserted into the outer body during manufacture of the container.

[0025] According to embodiments, one or more inner body comprises an elongate shape along a longitudinal axis of the inner body and first and second ends at either end of the elongate shape. The inner fracturable portion is preferably located between the first and second ends. The inner fracturable portion may have a plane substantially perpendicular to the longitudinal axis of the inner body.

[0026] According to embodiments, the inner body is positioned within the outer body such that the application of a force to fracture the inner body comprises flexing or bending of the outer body. The application of a force to the inner body may comprise applying a force to on either side of the fracturable portion of the inner body. Preferably, the flexing or bending of the outer body occurs at a portion of the outer body which does not comprise the outer fracturable portion.

[0027] According to embodiments, a plane of the fracturable portion of the inner body wall of an inner body is oriented substantially perpendicularly to a plane of the outer fracturable portion of the outer body wall. Alternatively, a plane of the fracturable portion of the inner body wall within the container may be oriented substantially parallel to a plane of the outer fracturable portion of the outer body wall.

[0028] According to embodiments, the outer body comprises a flange about a perimeter of the outer body wall. Preferably, the flange of the outer body is located at an edge of the outer body wall. The edge of the outer body wall may define a filling opening to the first cavity. The container may further comprise a cover affixed to the flange of the outer body to seal the first cavity. According to embodiments, the cover is bonded and sealed to the flange of the outer body through one of heating, ultrasonic welding, pressure sensitive adhesive, heat actuated adhesive or another type of adhesive. The flange of the outer body may include an enlarged portion, i.e. enlarge flange width, directly adjacent to the outer fracturable portion on the outer body wall.

[0029] According to embodiments, the first inner body and/or second inner body comprises a flange about its perimeter. The flange of each inner body may be located at an edge of the inner body defining a filling opening to the cavity of the inner body. The container may further comprise a cover affixed to the flange of the inner body to seal the second cavity. The cover is preferably bonded and sealed to the flange of the inner body through one of heating, ultrasonic welding, pressure sensitive adhesive, heat actuated adhesive or another type of adhesive. The flange of each inner body may include an enlarged portion, i.e. enlarged flange width, directly adjacent to the bend or fracturable portion in the inner body wall.

[0030] According to embodiments, one or more inner body is formed as a separate piece than the outer body. The separately formed inner body may be inserted into the outer body during manufacture. The outer body may include a receiving region which is shaped to correspond to at least a portion of the shape of the inner body, such that at least part of the inner body is located in the receiving region. The outer body may include a plurality of receiving regions which are each adapted to receive a separate portion of the inner body. Preferably, the receiving region comprises at least one shelf or slot which is shaped to receive a corresponding portion of the inner body. For example, the inner body may include an extension and one or both ends of the extension may be seated on a shelf or slot of the outer body. The extension may comprise a

part of the flange of the inner body. The extension may be a longitudinal extension. The inner body may include at least one extension which is received in a corresponding shelf or slot of the receiving region of the outer body.

[0031] According to embodiments, the inner body may be formed by at least one of sheet thermoforming, injection moulding, compression moulding, extrusion blow moulding, blow moulding or additive manufacturing, such as, but not limited to, 3D printing. The outer body may be formed by at least one of sheet thermoforming, injection moulding, compression moulding, extrusion blow moulding, blow moulding or additive manufacturing, such as, but not limited to, 3D printing.

[0032] According to embodiments, one or more fracturable portion is in the form of a bend that defines an angle between a first portion of the respective body and a second portion of the respective body of about 20° to about 170°. Preferably, the angle is about 45° to about 105°. More preferably, the angle is about 70° to about 90°.

[0033] According to embodiments, a thickness of the outer body is substantially constant over the entire outer body wall including at the first fracturable portion. According to embodiments, a thickness of the inner body is substantially constant over the entire inner body wall including at the second fracturable portion.

[0034] According to embodiments, one or more fracturable portions may include at least one fracture conductor. The at least one fracture conductor may be in the form of a localised change of depth of the bend, where the fracture conductor comprises a bend. Preferably, the at least one fracture conductor is in the form of a localised change of cross-sectional shape of the bend. Optionally, the respective inner or outer body is formed from a crystallisable material. The at least one fracture conductor may be a localised change of the degree of extent of crystallisation. According to embodiments, the first fracturable portion and/or the second fracturable portion includes at least one fracture initiator. Wherein, the fracture initiator is a location where the fracturable portion will initially fracture

when a sufficient force is applied. A fracture may then propagate outwardly from the location of the fracture initiator along the fracturable portion, until the entire fracturable portion is fractured, as desired.

[0035] The thickness of the outer and/or inner body wall may be dictated by the product being held, the material from which the respective inner/outer body is formed and/or the dimensions and shape of the respective body. Optionally, the thickness of the outer body wall and/or the inner body wall is about 300µm to about 600µm. For example, the thickness of the outer body wall and/or the inner body wall may be about 350µm to about 550µm. The thickness of the outer body wall and/or the inner body wall may be about 400µm to about 550µm. The thickness of the outer body wall and/or the inner body wall may be about 400µm to about 500µm. The thickness of the outer body wall and/or the inner body wall may be about 300µm. The thickness of the outer body wall and/or the inner body wall may be about 350µm. The thickness of the outer body wall and/or the inner body wall may be about 400µm. The thickness of the outer body wall and/or the inner body wall may be about 450µm. The thickness of the outer body wall and/or the inner body wall may be about 500µm. The thickness of the outer body wall and/or the inner body wall may be about 550µm. The thickness of the outer body wall and/or the inner body wall may be about 600µm.

[0036] The first product may be a liquid. The first product may be a solid substance, for example the first product may be a tablet. The second product may be a liquid. The second product may be a solid substance, for example the second product may be a tablet. One or both of the first and second products may be a pharmaceutical composition. One or both of the first and second products may be a chemical composition. According to embodiments, one or both of the first product and the second product comprises a liquid. For example, the liquid may be water. According to embodiments, one of the first product and the second product comprises a liquid and the other of the first product comprises a solid and/or a powder. According to embodiments one of the first product and second product may be a solvent of the other of the first product and the second product. According to embodiments, the second product is a tablet and the first

product is a liquid, and wherein the tablet is adapted to dissolve in the liquid of the first product. According to embodiments, the first product is a tablet, and wherein the tablet is adapted to dissolve in the liquid of the second product. According to embodiments, the second product is a powder, and the powder is adapted to dissolve in the liquid of the first product. According to embodiments, the first product is a powder and the powder may be adapted to dissolve in the liquid of the second product.

[0037] According to embodiments, the inner body comprises at least one structural feature adapted to retain the second product at a desired location within the inner body. The structural feature may locate the second product adjacent to the second fracturable portion when the inner body is in an unfractured state. The structural feature may be in the form of a seat on or in which the second product will rest until the second fracturable portion has been fractured. According to embodiments where the second product is a liquid, the structural feature may be a well. According to embodiments where the second product is a solid product, such as a tablet, the at least one structural feature may be a holding rib. Preferably, the inner body comprises at least two holding ribs which retain the second product at a desired location. According to other embodiment, the outer body also includes at least one structural feature. The structural feature(s) of the outer body may have any of the characteristics of the structural feature(s) of the inner body as discussed above. According to embodiments, both the inner body and outer body may have at least one respective structural feature. Alternatively, one of the inner body and outer body may have at least one structural feature.

[0038] According to embodiments, the container further comprises at least one second inner body within the outer body cavity, the second inner body comprising a second inner body wall defining a second inner cavity for containing a third product. For example, the first inner cavity contains a first product, the outer cavity contains a second product and the second inner cavity contains a third product. The second inner body wall may comprise a second inner body fracturable portion, and wherein the second inner body is adapted to fracture

along the second inner fracturable portion to form a second inner body opening when a force is applied to the second inner body. The container may be configured such that, in use, the first inner body is fractured to release the first product from the first inner cavity through a first inner body opening into the outer body cavity, the second inner body is fractured to release the third product from the second inner body cavity through the second inner body opening into the outer body cavity, the first product and the second product and the third product being combined or mixed within the outer body cavity. The outer body may be fractured along the outer fracturable portion to form a dispensing opening to allow the combined or mixed first, second and third products to be dispensed through the dispensing opening

[0039] Optionally, the outer body contains a plurality of inner bodies, such as according to the above described embodiments or according to other embodiments. For example, where a plurality of products are to be combined, but held separately prior to their combination, the container can include the respective number of outer and/or inner bodies. The outer body may itself contain no products and each of the products is contained within a respective inner body. The outer body may contain one of the products to be combined. Alternatively, the container has a plurality of inner bodies and each product may be contained within a respective cavity of an inner body, and then some or all of the products within the inner body may be combined together by fracturing their respective inner body to release the products into the cavity of the outer body.

[0040] Another aspect of the present invention provides a method of manufacturing a container, comprising: forming an outer body having an outer body wall defining a first cavity, the outer body wall comprising a first bend forming a first fracturable portion; forming an inner body having an inner body wall defining a second cavity, the inner body wall comprising a second bend forming a second fracturable portion; depositing a first product into the second cavity and sealing the second cavity to retain the first product therein; depositing a second product into the first cavity; inserting the inner body into the first cavity; and sealing the first cavity to retain the second product and the inner body therein.

[0041] A further aspect of the present invention provides a method of manufacturing a container, comprising: forming an outer body having an outer body wall defining a first cavity, the outer body wall comprising a first bend forming a first fracturable portion; forming a first inner body having a first inner body wall defining a second cavity, the first inner body wall comprising a second bend forming a second fracturable portion; forming a second inner body having an second inner body wall defining a third cavity, the inner body wall comprising a second bend forming a third fracturable portion and a fourth bend forming a fourth fracturable portion; depositing a first product into the second cavity and sealing the second cavity to retain the first product therein; depositing a second product into the third cavity and sealing the third cavity to retain the second product therein; inserting the first inner body and the second inner body into the first cavity; and sealing the first cavity to retain the first inner body and the second inner body therein.

[0042] According to embodiment, the first inner body is formed with a flange at an edge of the first inner body that defines a filling opening to the second cavity. Sealing the second cavity may comprise affixing a cover to the flange of the first inner body. The second inner body may be formed with a flange at an edge of the second inner body that defines a filling opening to the third cavity. Sealing the third cavity may comprise affixing a cover to the flange of the second inner body. The cover of the first inner body is bonded and sealed to the flange of the first inner body and the cover of the second inner body is bonded and sealed to the flange of the second inner body through one of heating, ultrasonic welding, pressure sensitive adhesive, heat actuated adhesive or another type of adhesive.

[0043] According to embodiments, the outer body is formed with a flange at an edge of the outer body that defines a filling opening to the first cavity. Sealing the first cavity may comprise affixing a cover to the flange of the outer body. The cover of the outer body may be bonded and sealed to the flange of the outer body through one of heating, ultrasonic welding, pressure sensitive adhesive, heat actuated adhesive or another type of adhesive.

[0044] According to embodiments, the inner body is formed with a flange at an edge of the inner body that defines a filling opening to the second cavity. The sealing of the second cavity may comprise affixing a cover to the flange of the inner body. The cover of the inner body may be bonded and sealed to the flange of the inner body through one of heating, ultrasonic welding, pressure sensitive adhesive, heat actuated adhesive or another type of adhesive.

[0045] According to embodiments, the method comprises forming a receiving region in the outer body that is shaped to correspond to a shape of the inner body, and wherein inserting the inner body into the first cavity comprises positioning the inner body in the receiving region. The receiving region may comprise at least one shelf or slot which receives a corresponding portion of the inner body. For example, the inner body may include at least one extension which is received in a corresponding shelf or slot of the receiving region of the outer body.

[0046] According to embodiments, the outer body and the inner body each share a common cover. The common cover is preferably adapted to seal both the first product in the first cavity and the second product in the second cavity.

[0047] The method may further comprising the step of sterilising the inner body and/or outer body. The sterilisation step may be carried out through one or more of: aseptic manufacturing, ultraclean manufacturing, or secondary sterilisation such as gamma irradiation, ethylene oxide (EtO) gas or application of heat.

[0048] According to embodiments, the inner body and/or outer body are formed from a material comprising at least one of: polystyrene, polypropylene, polyethylene terephthalate (PET), amorphous polyurethane terephthalate (APET), polyvinyl chloride (PVC), high density polyethylene (HDPE), low density polyethylene (LDPE), polylactic acid (PLA), bio material, mineral filled material, thin metal formed material, acrylonitrile butadiene styrene (ABS), Cyclic Olefin Co-Polymer (COC), Polyether Ether Ketone (PEEK) and laminate.

[0049] According to embodiments, the inner body and/or the outer body are formed by at least one of sheet thermoforming, injection moulding, compression moulding, extrusion blow moulding, blow moulding or 3D printing.

[0050] Any reference made to 'inner body' or 'inner package' within this disclosure is understood as being a reference to the only inner body or inner package in embodiments where there is only one inner body, or alternatively, in embodiments where there are a plurality of inner bodies, such as a first inner body and a second inner body, a reference to 'inner body' or 'inner package' within this disclosure may refer to features of any one or more of the inner bodies in that embodiment. It is understood that any features of one described inner body or inner package may be utilised on another inner body or inner package in a different embodiment in order to produce a suitable container, as desired, within the overall scope of the present disclosure.

[0051] The terms 'inner' and 'outer' as used herein are understood as having regard to the positioning of the feature in relation to the container and specifically to reference the body or package to which an element is referenced. For example, 'inner fractureable portion' is understood as referencing a fractureable portion of an inner body or inner package. Similarly, 'outer fractureable portion' is understood as referencing a fractureable portion of an outer body or outer package.

[0052] It is understood that any of the individual features provided above or described below or shown in the accompanying figures may themselves be the subject of independent or dependent claims. The features as described herein may be utilised in any combination as would provide a beneficial outcome and no single embodiment is considered on its own to be limiting to the scope of the invention.

BRIEF DESCRIPTION OF THE DRAWINGS

[0053] Embodiments of the present disclosure will now be described, by way of non-limiting example, with reference to the accompanying drawings, in which:

[0054] Figure 1A shows an exploded rear perspective view of an inner package according to a first embodiment;

[0055] Figure 1B shows an exploded rear perspective view of a container comprising outer package and inner package according to a first embodiment;

[0056] Figure 1C shows a front view including internal features of the container of a first embodiment;

[0057] Figure 1D shows a cross-sectional view along line A-A of figure 1C;

[0058] Figure 1E shows a front view including internal features of the container of a first embodiment when subjected to a force opening the inner package;

[0059] Figure 1F shows a cross-sectional view along line B-B of figure 1E;

[0060] Figure 1G shows a front perspective view including internal features of the container of a first embodiment when subjected to a force opening the outer package;

[0061] Figure 2A shows an exploded rear perspective view of an inner package according to a second embodiment;

[0062] Figure 2B shows an exploded rear perspective view of a container comprising an outer package and inner package according to a second embodiment;

[0063] Figure 2C shows a rear perspective view including internal features of the container according to a second embodiment;

[0064] Figure 2D shows a front view including internal features of the container of a second embodiment;

[0065] Figure 2E shows a cross-sectional view along line C-C of figure 2D;

[0066] Figure 2F shows a rear perspective view including internal features of the container according to a second embodiment when subjected to a force opening the inner package;

[0067] Figure 2G shows a front view including internal features of the container of a second embodiment when subjected to a force opening the inner package;

[0068] Figure 2H shows a cross-sectional view along line D-D of figure 2G;

[0069] Figure 2I shows a rear perspective view of the container of a second embodiment when subjected to a force opening the outer package;

[0070] Figure 3A shows an exploded rear perspective view of an inner package according to a third embodiment;

[0071] Figure 3B shows an exploded rear perspective view of a container comprising an outer package and inner package according to a third embodiment;

[0072] Figure 3C shows a front perspective view including internal features of the container according to a third embodiment;

[0073] Figure 3D shows a front view including internal features of the container of a third embodiment;

[0074] Figure 3E shows a cross-sectional view along line E-E of figure 3D;

[0075] Figure 3F shows a front perspective view including internal features of the container according to a third embodiment when subjected to a force opening the inner package;

[0076] Figure 3G shows a front view including internal features of the container of a third embodiment when subjected to a force opening the inner package;

[0077] Figure 3H shows a cross-sectional view along line F-F of figure 3G;

[0078] Figure 3I shows a front perspective view of the container of a third embodiment when subjected to a force opening the outer package;

[0079] Figure 4A shows an exploded rear perspective view of two inner packages according to a fourth embodiment;

[0080] Figure 4B shows an exploded rear perspective view of a container comprising an outer package and two inner packages according to the fourth embodiment;

[0081] Figure 4C shows a partially exploded view of the container of figure 4B with the inner packages located within a cavity of the outer package;

[0082] Figure 4D shows a front view including internal features of the container according to the fourth embodiment;

[0083] Figure 4E shows a cross-sectional view along line G-G of figure 4D;

[0084] Figure 4F shows a front isometric view including internal features of the container of the fourth embodiment;

[0085] Figure 4G shows a front view including internal features of the container of the fourth embodiment when subjected to a force opening the two inner packages within the outer package;

[0086] Figure 4H shows a cross-sectional view along line H-H of figure 4G;

[0087] Figure 4I shows a front perspective view including internal features of the container according to the fourth embodiment when subjected to a force opening the two inner packages;

[0088] Figure 4J shows a front perspective view of the container of the fourth embodiment when subjected to a force opening the outer package and one inner package;

[0089] Figure 4K shows a front view of a first inner package according to the fourth embodiment;

[0090] Figure 4L shows a front view of a second inner package according to the fourth embodiment;

[0091] Figure 4K shows a front view of a first inner package according to the fourth embodiment when subjected to an opening force;

[0092] Figure 4L shows a front view of a second inner package according to the fourth embodiment when subjected to an opening force;

[0093] Figure 5A shows a front perspective view including internal features of the container of a fifth embodiment;

[0094] Figure 5B shows a front perspective view including internal features of the container according to the fifth embodiment when subjected to a force opening the two inner packages;

[0095] Figure 5C shows a front perspective view including internal features of the container according to the fifth embodiment following the mixing of the first and second products; and

[0096] Figure 5D shows a rear perspective view of the container according to the fifth embodiment.

DESCRIPTION OF PREFERRED EMBODIMENTS

[0097] FIGS. 1A to 1G show a container 10 according to a first embodiment and inner package 11 and outer package 12 structures thereof. As shown in FIG. 1A, the inner package 11 includes a shape which is substantially elongate in a longitudinal direction of the inner package 11 between a first end 115 and a second end 116 compared to a width in a perpendicular direction of the inner package 11. The inner package 11 includes an inner body wall 112 which is shaped to define an inner cavity 17 having an inner volume. The inner cavity 17 is adapted to contain a product 15. As shown in FIG. 1A, the product is a tablet, such as that which includes a medicinal or pharmaceutical composition. The inner body wall 112 comprises a flange portion 113 that surrounds a perimeter of the inner cavity 17. A cover 111 is provided that is sealed and bonded to the

flange portion 113 to seal the inner cavity 17. Preferably, the cover 111 is affixed across the flange 113 in a manner which provides an airtight seal.

[0098] The inner body wall 112 includes a fracturable portion 117 in the form of an elongate bend spanning a width of the inner body wall 112 between opposed portions 114 of the flange 113. The fracturable portion 117 is arranged substantially in a plane perpendicular to the longitudinal axis of the inner package 11. The opposed portions 114 of the flange 113 each include an increased flange width in comparison to sections of the flange directly adjacent to and on either side of said opposed portions 114. The inner package 11 is adapted to fracture along the fracturable portion 117 when a force is applied to the inner package 11 by a user. In particular, a force applied to the inner body 11 is shown in FIG. 1F which depicts the inner package 11 within the outer package 12 having been fractured along the fracturable portion 117.

[0099] The inner package 11 includes ribs 119 which provide a rigidity to the inner package 11. The package 11 also includes holding rib portions 118, which are adapted to contain the product 15 therebetween. In particular, in the case where the product 15 is a tablet or similar, the holding rib portions 118 will ensure that the product 15 is located in a desired location adjacent the fracturable portion 117 such that opening of the package 11 allows the product 15 to be easily dispensed therefrom into the outer package 12. For example, when the inner package 11 is fractured along the fracturable portion 117, an opening is created through which the tablet will pass to be outside of the inner cavity 17 of the inner package and contained within a cavity 16 of the outer package 12. The increased width of the flange 113 at the opposed portions 114 may assist in allowing the fracturable portion 117 to correctly fracture and form a desired opening in the inner package 11, with the opposed portions 114 effectively acting as a hinge.

[00100] FIG. 1B shows the inner package 11 contained within the outer package 12. The outer package 12 has a shape which is substantially elongate in a longitudinal direction of the outer package 12 between a first end 125 and a second end 126, and which is substantially perpendicular to the longitudinal direction of the inner package 11 when contained within the outer package 12 as

shown in FIG. 1B. The outer package 12 includes an outer body wall 122, which defines an outer cavity 16 having an internal volume of the outer package 12. It is noted that the use of the term 'outer cavity' refers to the fact that it is a cavity within the outer package. The outer cavity 12 is adapted to contain a product 14. In the first embodiment shown in FIGS. 1D and 1F, the product 14 is a liquid. The tablet of the product 15 being preferably adapted to dissolve within the liquid of the product 14.

[00101] The outer body wall 122 comprises a flange portion 123 around a perimeter of the outer cavity 16. A cover 121 is provided that is to be sealed and bonded to the flange portion 123 to seal the outer cavity 16. Preferably, the cover 121 is affixed to the flange 123 in a manner which provides an airtight seal. The cover 121 is applied to the flange 123 of the outer package 12 after the inner package 11 and product 14 has been inserted therein, to ensure that the inner package 11 and product 14 are sealed within the cavity 16 of the outer package 12.

[00102] The outer body wall 122 is shaped to include receiving regions 131, 132 which are adapted to receive the ends 115, 116 of the inner package. For example, as shown in FIGS. 1B and 1D, the portions of the body wall 112 of the inner package 11 adjacent ends 115 and 116 are held in the outer package 12 in the receiving regions 131, 132. The receiving regions 131, 132 are in the form of shelves on which the ends 115, 116 of the inner package will rest when the inner package 11 is within the outer package 12, as shown in FIG. 1B. Furthermore, when the cover 121 is affixed to the flange 123 of the outer package 12, the receiving regions 131, 132 combine with the corresponding portions of the cover 121 to retain the ends 115, 116 of the inner package 11 there between. In this manner the ends 115, 116 of the inner package 11 are slotted into the receiving regions 131, 132. The receiving regions 131, 132 of the outer package may therefore be in the form of slots into which portions of the inner package 11, such as the ends 115, 116 may be slotted.

[00103] After the inner package 11 has been fractured along the fracturable portion 117, the ends 115, 116 of the inner package 11 are preferably still

retained within the receiving regions 131, 132 of the outer package. For example, the ends 115, 116 will remain within slots formed between the retaining regions 131, 132 and the corresponding portions of the cover 121. Retaining the inner package 11 in the receiving regions 131, 132 before, during and after the fracturable portion 117 has been fractured ensures that the inner package 11 is held in the desired position at all times and will not interfere with any mixing of the first and second products 14, 15 or with a dispensing action of the outer package 12 when desired.

[00104] As further seen in FIG. 1D, the fracturable portion 117 of the inner package 11 is spaced apart by a substantial distance from an opposite part 129 of the outer body wall 122. Thus, when the inner package is fractured, as shown in FIG. 1F, the outer body wall 122 and, particularly the opposite part 129, will not interfere with the opening created in the inner package 11 to allow the product 15 to be easily released from the inner package 11.

[00105] The fracturing mechanism of the inner package 11 when contained within the outer package 12 is adapted to be difficult to fracture unintentionally, such as during transport and general handling thereof. When it is desired to fracture the fracturable portion 117 of the inner package 11, a user will apply a force to the outer package 12 which is transferred to the inner package 11. In the first embodiment of FIGS. 1E and 1F, a user will apply a force by pushing the surface of the cover 121 opposite the fracturable portion of the inner package 117 inwardly of the outer package 12. Simultaneously, the user will apply a force to either side of the outer package body 12 adjacent to the receiving regions 131, 132. Thus, the result of the application of these forces is that the inner package 11 is bent between the ends 115, 116 in a direction substantially perpendicularly to the longitudinal direction of the inner package 11. Once the force applied to the inner package 11 exceeds a sufficient value, a fracture will form in the fracturable portion 117 at one or more initiating fracture points. From this position, the fracture will travel outwardly of the one or more fracture points until the entire fracturable portion 117 has been fractured along an entire break path between each of the opposed portions 114 of the flange 113. Once the

fracturable portion 117 is entirely fractured, an opening is formed in the inner body wall 112. The product is then dispensed into the outer cavity 16 through the opening in the inner body wall 112. The opening mechanism of the inner package 11 may be similar to a snapping mechanism.

[00106] The elongate or pointed shape of the outer body 12 as shown in FIGS. 1C and 1E is adapted such that it assists with creating a structure that can easily flex in the desired directions when a user desires to fracture the inner package 11 and/or outer package 12. In particular, it may be preferable to shape the outer package 12 such that it flexes in a desired manner to assist in rupturing and fracturing the fracturable portion of the inner package 11. The mechanism for fracturing the fracturable portion 117 of the inner package 11 is configured to be either a one handed or two handed action.

[00107] The outer package 12 also possesses a means for dispensing the product 14, and preferably the mixed products 14 and 15, therefrom. The outer package 12 includes a fracturable portion 127 in the outer body wall 122. The fracturable portion 127 is in the form of an elongate bend spanning the width of the outer body wall between opposed portions 124 of the flange 123. The fracturable portion may also be an indented channel. The fracturable portion 127 is arranged substantially in a plane perpendicular to the longitudinal axis of the outer package 12. The opposed portions 124 of the flange 123 each include an increased flange width in comparison to sections of the flange directly adjacent to and on either side of said opposed portions 124. The outer package 12 is adapted to fracture along the fracturable portion 127 when a specific force is applied to the outer package 12 by a user. In particular, a force applied to the outer body 12 is shown in FIG. 1G in which the outer package 12 has been fractured along its fracturable portion 127. The increased width of the flange 123 at the opposed portions 124 may assist in allowing the fracturable portion 127 to correctly fracture and form a desired opening 140 in the outer package 12, with the opposed portions 124 effectively acting as a hinge.

[00108] The fracturable portion 127 splits the outer package 12 into a head portion 135 towards the first end 125 and a body portion 136 towards the second

end 126. To assist a user in opening the outer package 12, the head portion 135 includes a gripping surface 128 within the outer body wall 122. The gripping surface 128 is adapted to be gripped by a thumb or finger of a user when the outer package 12 is being opened.

[00109] The outer package 12 is opened by applying a force to the head portion 135, preferably at the gripping surface 128, while holding the body portion 135 firmly. The action of opening the package may be a single handed action or a double handed action. Where a single handed action is selected, it is preferable to grip the body portion 136 with the palm and fingers and then apply a force to the gripping surface 128 with a thumb. Once the force applied to the outer package 12 reaches a certain amount, a fracture will form in the fractureable portion 127 at one or more initiating fracture points. From this position, the fracture will travel outwardly from each fracture point until the entire fractureable portion 127 has been fractured along a break path between each of the opposed portions 124 of the flange 123. Once the fractureable portion 127 is entirely fractured, an opening 140 is formed in the outer body wall 122 along the fractureable portion. The opening mechanism of the outer package 11 may be similar to a snapping mechanism. The product 14 and preferably mixture of products 14 and 15 may then be dispensed through the opening 140.

[00110] According to preferred embodiments, a spout will be formed in a lip of the opening 140 in the outer package 12. Thus, when one or more products 14, 15 are to be dispensed, the products may be poured outwardly through the usage of the spout feature. A spout is of particular advantage where one or both of the products 14, 15 are liquid or a flowable substance such as a powder. However, an outer package 12 without a spout could also be used to dispense the products 14, 15 adequately provide more care was taken during a dispensing operation.

[00111] When provided with the container 10, a user may follow the following routine to combine the products 14, 15 and to dispense a combined product 14, 15: first, the user will apply a force to the outer package 12 at a location adjacent to the inner package 11 to fracture the inner package 11 along the fractureable portion 117; next, the user will allow the second product 15 to be released from

the inner cavity 17 of the inner package 11 into the outer cavity 16 of the outer package 12 where it will meet with the first product 14; the user may allow the first product 14 to mix or otherwise combine with the second product 15, if necessary; next, the user may fracture the fractureable portion 127 of the outer package 12 to form a dispensing opening 140 in the outer package 12; finally, the user may dispense a combined first and second product from the opening 140 in the outer package 12. It is noted that the fracturing actions of the inner package 11 and outer package 12 of the first embodiment are substantially perpendicular to one another. For example, with the inner package 11 positioned within the outer package 12, the planes of the respective fractureable portions 117, 127 of the inner and outer packages are substantially perpendicular to one another. Other arrangements are also possible within the scope of the claims, such as shown in the second embodiment as discussed further below.

[00112] US patent 8,485,360, of the present applicant, provides a container with a so-called 'snap feature', fractureable along a break path. The wall of the container may have a generally constant wall thickness across the break path. The body of the container is configured to concentrate stress along the break path by increasing the distance (y) between a neutral axis and the base surface of the bend and decreasing the second moment of area (I_x) at the break path. The inner and outer packages shown in the accompanying figures preferably include fractureable portions which are adapted to fracture in a manner similar to that described in US patent 8,485,360, the contents of said patent being incorporated herein by reference. Of course, a person skilled in the art will understand that other opening mechanisms may be utilised on one or both of the inner and outer packages and that the scope of the present disclosure is not restricted to a container which includes one or more fractureable portions as described in US patent 8,485,360. However, said fractureable portions described in said US patent provide in this context a preferred manner of opening each of the first and second packages.

[00113] Further, PCT patent publication no. WO/2018/187824, also of the present applicant, describes a fractureable container similar to that of US patent

8,485,360 and additionally including one or more fracture conductors. The contents of WO/2018/187824 being entirely incorporated herein by reference. The fracture conductors are provided along the fracturable portion of the container of WO/2018/187824 and enable a consistent and correctly directed break path to be formed along the fracturable portion when the container is opened. According to the present disclosure it is envisaged that in some situations it may be desirable to include one or more fracture conductors along the fracturable portion of one or both of the inner and outer packages to provide a desired break path, such as where the respective break path must traverse a number of directions or where the break path traverses a comparatively long distance.

[00114] FIGS. 2A to 2I show a container 20 according to a second embodiment and inner package 21 and outer package 22 structures thereof. As shown in FIG. 2A, the inner package 21 includes a shape which is substantially elongate in a longitudinal direction of the inner package 21 between a first end 215 and a second end 216 compared to a width in a perpendicular direction of the inner package 21. The inner package 21 includes an inner body wall 212 which is shaped to define an inner cavity 27 having an inner volume. The inner cavity 27 is adapted to contain a product 25. As shown in FIG. 2E, the product 25 is a liquid, such as a medicinal or pharmaceutical composition. The inner body wall 212 includes an enlarged protrusion 219 which defines a particular part of the volume of the inner cavity 27 which holds the product 25.

[00115] The inner body wall 212 of the inner package 21 comprises a flange portion 213 that surrounds a perimeter of the inner cavity 27. A cover 211 is provided that is to be sealed and bonded to the flange portion 213 to seal the inner cavity 27. Preferably, the cover 211 is affixed across the flange 213 in a manner which provides an airtight seal.

[00116] The inner body wall 212 includes a fracturable portion 217 in the form of an elongate bend spanning a width of the inner body wall 212 between opposed portions 214 of the flange 213. Unlike the first embodiment shown in FIG. 1 where the fracturable portion 117 of the inner package 11 is located

centrally of the inner package 11 along its longitudinal axis, in the second embodiment of FIGS. 2A to 2I the fracturable portion 217 is located towards the first end 215 of the inner package. This arrangement of the second embodiment is useful in order to provide the larger holding volume for a liquid which utilises the enlargement 219 of the body 212. Other arrangements of the fracturable portion are envisaged within the scope of the disclosure.

[00117] The fracturable portion 217 is arranged substantially in a plane at an angle to the longitudinal axis of the inner package 21. The opposed portions 214 of the flange 213 each include an increased flange width in comparison to sections of the flange 213 directly adjacent to and on either side of said opposed portions 214. The inner package 21 is adapted to fracture along the fracturable portion 217 when a force is applied to the inner package 21 by a user. In particular, a force applied to the inner body 21 is shown in FIGS. 2F to 2H which depicts the inner package 21 within the outer package 22 and the inner package 21 having been fractured along the fracturable portion 217. The increased width of the flange 213 at the opposed portions 214 may assist in allowing the fracturable portion 217 to correctly fracture and form a desired opening in the inner package 21, with the opposed portions 214 effectively acting as a hinge.

[00118] FIG. 2B shows the inner package 21 contained within the outer package 22. The outer package 22 includes a shape which is substantially elongate in a longitudinal direction of the outer package 22 between a first end 225 and a second end 226. In this second embodiment, when the inner package 21 is positioned within the outer package 22, the longitudinal axis of both the inner and outer packages are parallel. The outer package 22 includes an outer body wall 222, which defines an outer cavity 26 having an internal volume of the outer package 22. It is noted that the use of the term 'outer cavity' refers to the fact that it is a cavity of the outer package, and does not relate a cavity outside of the container or outer package. The outer cavity 22 is adapted to contain a product 24. In the embodiment shown in FIGS. 2C, 2E, 2F and 2H, the product 24 is a liquid. In preferred embodiments, the first and second products can be

mixed, blended or otherwise combined with one another when brought together into contact.

[00119] The outer body wall 222 comprises a flange portion 223 around a perimeter of the outer cavity 26. A cover 221 is provided that is to be sealed and bonded to the flange portion 223 to seal the outer cavity 26. Preferably, the cover 221 is affixed across the flange 223 in a manner which provides an airtight seal. The cover 221 is applied to the flange 223 of the outer package 22 after the inner package 21 and product 24 has been inserted therein, to ensure that the inner package 21 and product 24 are sealed within the cavity 26 of the outer package 22.

[00120] The outer body wall 222 is shaped to include a receiving region 230 towards the second end 226 of the outer package 22 and adjacent the surrounding flange 223. The receiving region 230 is in the form of a shelf which spans opposite sides and around an end region of the internal cavity 16 of the outer package 12 inward of the adjacent flange 223. The receiving region 230 is configured such that the flange 213 of the inner package 11 will sit on the shelf sections. When the cover 221 is affixed to the flange 223, a slot is formed in the space between the receiving region 230 and the adjacent portions of the cover 221 in which at least portions of the inner package 21, including portions of the flange 213, are held.

[00121] In addition to the shelf section of the receiving region 230, the outer package 22 includes a tail portion 237 which is shaped to meet the outer surface of the inner body wall 212. The tail portion 237 includes a contour 233 which is shaped to receive the protrusion 219 in the inner body wall 212. The receiving region 230 and the shape of the tail portion 237 ensure that the inner package 21 is held in the correct position in the outer package 22 at all times. As seen in FIGS. 2E and 2H, when the inner package 21 is retained in the out package 22, the fracturable portion 217 of the inner package 21 is spaced apart from the opposed section of the outer body wall 222 to ensure that the second product within the inner package 21 can be dispensed easily into the outer cavity 26 of the outer package 22.

[00122] The fracturing mechanism of the inner package 21, when contained within the outer package 22, is adapted to be difficult to fracture unintentionally, such as during transport and general handling thereof. When it is desired to fracture the fracturable portion 217 of the inner package 21, a user will apply a force to the outer package 22 which is transferred to the inner package 21. As shown in FIGS. 2E and 2F, a user will apply a force by pushing the contour 233 to bend the tail portion 237 relative to the rest of the outer body wall 222. This force will also bend the inner package 21 with a portion of the force concentrated on the fracturable portion 217 of the inner package 21. Once the force applied to the inner package 21 in this manner exceeds a certain value, a fracture will form in the fracturable portion 217 at one or more initiating fracture points. From this position, the fracture will form outwardly of the one or more fracture points until the entire fracturable portion 217 has been fractured along an entire break path between each of the opposed portions 214 of the flange 213. Once the fracturable portion 217 is entirely fractured, an opening is formed in the inner body wall 212. The liquid product 25 is then dispensed into the outer cavity 26 through the opening in the inner body wall 212. The first product 24 and the second product 25 will then mix within the cavity 26 in body portion 236 of the outer package 22. The opening mechanism of the inner package 21 is similar to a snapping mechanism. The mechanism for fracturing the fracturable portion 217 of the inner package 21 is configured to be either a one handed or two handed action.

[00123] The outer package 22 possesses a means for dispensing the product 24, and preferably the mixture of the combined products 24 and 25, therefrom. The outer package 22 includes a fracturable portion 227 in the outer body wall 222. The fracturable portion 227 is in the form of an elongate bend spanning a width of the outer body wall between opposed portions 224 of the flange 223. The fracturable portion 227 is arranged substantially in a plane at an angle to the longitudinal axis of the outer package 22, as seen in FIG. 2E. The opposed portions 224 of the flange 223 each include an increased flange width in comparison to sections of the flange directly adjacent to and on either side of said opposed portions 224. The outer package 22 is adapted to fracture along the

fracturable portion 227 when a force is applied to the outer package 22 by a user. In particular, a force applied to the outer body 22 is shown in FIG. 21 in which the outer package 22 has been fractured along its fracturable portion 227. The increased width of the flange 223 at the opposed portions 224 may assist in allowing the fracturable portion 227 to correctly fracture and form a desired opening 240 in the outer package 22, with the opposed portions 224 effectively acting as a hinge

[00124] The fracturable portion 227 splits the outer package 22 into a head portion 235 towards the first end 225 and a body portion 236 towards the second end 226. The head portion 235 being located at an opposite end 225 of the outer package 22 from the tail portion 237. To assist a user in opening the outer package 22, the head portion 235 includes a gripping surface 228 within the outer body wall 222. The gripping surface 228 is adapted to be gripped by a thumb or finger of a user when the outer package 22 is being opened. The tail portion 237 also preferably includes a similar gripping surface to assist a user in fracturing the inner package 21.

[00125] The outer package 22 is opened by applying a force to the head portion 235, preferably at the gripping surface 228, while holding the body portion 235 firmly. The action of opening the package 22 may be a single handed action or a double handed action. Where a single handed action is selected, it is preferable to grip the body portion 236 with the palm and fingers and then apply a force to the gripping surface 228 with a thumb. A similar action may be utilised to fracture the inner package 21 within the outer package 22. Once the force applied to the outer package 22 at the head portion 235 reaches a certain amount, a fracture will form in the fracturable portion 227 at one or more initiating fracture points. From this position, the fracture will spread outwardly from each fracture point until the entire fracturable portion 227 has been fractured along a break path between each of the opposed portions 224 of the flange 223. Once the fracturable portion 227 is entirely fractured, an opening 240 is formed in the outer body wall 222 along the fracturable portion. This opening mechanism of the outer package 21 may be similar to a snapping mechanism. The product 24 and

preferably mixture of products 24 and 25 may then be dispensed through the opening 240 in the outer package 22.

[00126] According to preferred embodiments, a spout will be formed in a lip of the opening 240 in the outer package 22 after it has been fractured open. Thus, when one or more products 24, 25 are to be dispensed, the products may be poured outwardly via the spout feature. A spout is of particular advantage where one or both of the products 24, 25 are liquid or a flowable substance such as a powder. However, an outer package 22 without a spout could also be used to dispense the products 24, 25 adequately provide more care was taken during a dispensing operation.

[00127] When provided with the container 20, a user may follow the following routine to combine the products 24, 25 and to dispense a combined product 24, 25: first, the user will apply a force to the outer package 22 at the contour 233 of the tail portion 237 of the outer package 22 to fracture the inner package 21 along the fracturable portion 217; next, the user will allow the second product 25 to be released from the inner cavity 27 of the inner package 21 into the outer cavity 26 of the outer package 22 where it will meet with the first product 24; the user may allow the first product 24 to mix or otherwise combine with the second product 25; next, the user may fracture the fracturable portion 227 of the outer package 22 to form a dispensing opening 240 in the outer package 22; finally, the user may dispense a combined first and second product from the opening 240 in the outer package 22.

[00128] FIGS. 3A to 3I show a container 30 according to a third embodiment and inner package 31 and outer package 32 structures thereof. Many aspects of the container 30 of the third embodiment are similar to those as discussed above in relation to the containers 10, 20 of the first and second embodiments. It is understood that those descriptions of like features in the other embodiments are equally applicable to the third embodiment without being reiterated.

[00129] The outer package 32 includes an outer body wall 322 and a peripheral flange 223. A cover 321 is affixed across the flange sealing an internal

outer cavity 36 within the outer package 32. The outer package 32 includes a fracturable portion 327 in the form of an elongate bend across a width of the outer body wall 322. The fracturable portion 327 being positioned generally centrally of the outer package 32 along its longitudinal axis X, between the first end 325 and second end 326. The fracturable portion 327 splits the outer package 32 into a head portion 335 and a body portion 336, which are substantially similar in size in this third embodiment. The head portion 335 includes a receiving region 330 which is adapted to receive the inner package 31. The receiving region 330 of the third embodiment functions similarly to the receiving regions 131, 132 as described above in relation to the first embodiment. The outer cavity 36 within the outer package 32 is adapted to hold a first product 34. As shown in FIG. 3E, the first product 34 is held within the body portion 336 of the outer package 32.

[00130] The inner package 31 includes an inner body wall 312 which defines an inner cavity 37 adapted to hold a second product 35. Surrounding the cavity 37 is a peripheral flange 313. Fracturable portion 317 is located centrally of the inner package 31 and spans a width of the inner body wall 312 between opposed portions 314 of the flange 313. A cover 311 can be affixed over the flange 313 to seal the second product 35 within the inner cavity 37.

[00131] As shown in FIGS. 3C and 3D, when the inner package 31 is positioned within the outer package 32, the fracturable portion 317 of the inner package 31 is in a plane that is aligned substantially with the longitudinal axis X of the outer package 32. The fracturable portion 327 of the outer package 32 is in a plane which is at an acute angle to being perpendicular to the longitudinal axis X.

[00132] In order to provide a degree of strength and stability to the body portion 336 of the outer package 32, a horizontal wall 338 is provided at the second end 325 of the outer package 32. The horizontal wall 338 lies substantially in plane Y, shown in FIG. 3C. The horizontal wall 338 hinders flexing of the body portion 336 of the outer package 32 in a direction about the longitudinal axis X.

[00133] To allow the head portion 335 to be more flexible and, in particular, to be adapted to pivot or flex about the longitudinal axis X, the head portion 335 is

not provided with a horizontal wall such as the one at the second end 326. Instead, the head portion 335 at the first end 325 of the outer package has a peak 339 in the outer body wall 322. The peak 339 is part of the pointed geometry provided in the surface of the outer body wall 322 of the head portion 335. The peak 339 mean that the surface of the head portion 335 at the first end 325 do not lie along the plane Z. Having a surface or substrate at or adjacent to the first end 325 which lies along plane Z would hinder flexibility of the head portion 335 outer package 32 and may prevent a user from being able to correctly fracture the inner package 31 by flexing the outer package 32. This pointed geometry permits the required flexibility of the head portion 335 in the direction as desired to fracture the inner package 31, as shown in FIGS. 3F to 3H. The fracturing mechanism and action required to fracture the inner package 31 is substantially similar to that of the first embodiment discussed above.

[00134] To fracture the outer package 32 along the fracturable portion 327, the head portion 335 and body portion 336 are rotated relative to one another about the opposed portion 324 of the flange 323 adjacent to the fracturable portion 327. This rotation or folding action of the head portion 335 and body portion 336 will generate a rupture in the fracturable portion 327 which propagates upon maintained force until a dispensing opening 340 is created, as shown in FIG. 3I. Once the inner package 31 has been fractured to release the second product 35 to mix with the first product 36 and then the outer package 32 is fractured open, the mixed products 35, 36 may be dispensed through the dispensing opening 340.

[00135] A method of manufacturing the containers 10, 20, 30 of the above first, second and third embodiments may include the following steps. A body and flange portions, where they are required, of the inner package may be formed. Preferably, the body is formed from a plastic or polymer substance. Forming the inner package may occur from any one or more of: thermoforming, injection moulding, compression moulding, extrusion blow moulding, blow moulding, or 3D printing, or any other suitable manufacturing method. A product may then be inserted and contained within the cavity of the inner package. A cover or lid

portion may be affixed and sealed across the inner body to seal the product within the inner cavity. The cover can be bonded and sealed to the inner body by any suitable process, including: heating, ultrasonic welding, pressure sensitive adhesive, heat actuated adhesive or another type of adhesive or any suitable sealing technology. An outer package may also be formed, preferably from a plastic or polymer material. The method of forming the outer package may be the same or different to the process of forming the inner package, and may include: thermoforming, injection moulding, compression moulding, extrusion blow moulding, blow moulding, or 3D printing, or any other suitable manufacturing method. Another product may be inserted into the cavity defined by the body of the outer package and the inner package may also be received in the outer body. A cover or lid portion may be affixed and sealed across the outer body to seal the product and the inner package within the cavity of the outer package. The cover can be bonded and sealed to the outer body by the same or a different process used to seal the inner package, including: heating, ultrasonic welding, pressure sensitive adhesive, heat actuated adhesive or another type of adhesive or any suitable sealing technology. It is preferred that the sealing of the packages is airtight to prevent or reduce any degradation or contamination of the products within.

[00136] According to alternative embodiments the action of fracturing the outer package along its fracturable portion may also simultaneously fracture the inner package along its fracturable portion. For example, by the action of applying a force to fracture the outer package will also fracture the inner package, such that the product within the inner package will be dispensed into the outer package and will simultaneously create a dispensing opening in the outer package. In order to facilitate such an arrangement, the inner package would be positioned and oriented proximal to the fracturable portion in some manner. Alternatively, the fracturable portions of the inner and outer packages may be positioned substantially along a common plane such that application of a force perpendicularly to this plane will cause both fracturable portions to fracture at the same time or one after the other. These embodiments of simultaneous fracturing are less preferred since there is the possibility of one of both of the products

within the container could be spilt out of the dispensing opening of the outer package before the two products have been combined.

[00137] Further embodiments may include a container having more than two packages. For example, a single outer package may be utilised to contain more than one inner package. Such embodiments having more than one inner package within an outer package may contain a product within each of the inner packages and no product within the outer package (other than the products within the inner packages within the outer package). For example, the fourth embodiment shown in figures 4A to 4N provides a container 40 having two inner packages 41, 42 within an outer package 43. Other possible embodiments, not shown herein, may have products held separately within a plurality of inner packages and a further product held within the outer package. Alternatively, in other possible embodiments, not shown, more than two packages of a container could have a 'Russian Doll' arrangement, where a first package is within a second package, which is within a third package, and so on, if necessary according to the number of packages. It is important that any embodiments which utilise more than two packages remain simple and intuitive for a user to utilise, combine the products within and fracture for mixing and dispensing purposes.

[00138] As previously described, the fourth embodiment in figures 4A to 4N has three packages comprised of two inner packages 41, 42 and an outer package 43 that together form a container. Figure 4A shows the first inner package 41 and the second inner package 42. The first inner package 41, also shown in figure 4K, includes a shape which has a width that extends between opposed ends 406. The first inner package 41 includes a first inner body wall 402 which is shaped to define a cavity 47. The inner cavity 47 of the first inner package 41 is adapted to contain a first product 44. As shown in FIG. 4A, the product 44 is a liquid, which may include a medicinal or pharmaceutical composition or may be water or another aqueous solution. The first inner body wall 402 comprises a flange 403 which surrounds a perimeter of the first inner cavity 47. A cover 401 is provided that may be sealed and bonded across the flange 403, such as shown in FIG. 4B. Preferably, the cover 401 is affixed across

the flange 403 in a manner which is airtight to effectively seal the product 44 within the first inner cavity 47.

[00139] The inner body wall 402 includes a fracturable portion 407 in the form of an elongate bend which spans the width of the first inner body wall 402 between opposed portions 404, 405 of the flange 403. In this embodiment, the fracturable portion 407 is aligned substantially perpendicularly to the width of the first inner package 41 between the two ends 406. One opposed portion is provided at a pointed section 404 of the first inner body wall 402 and flange 403. When the first inner package 41 is fractured along the fracturable portion 407, an opening is created through which the first product 44 may pass to outside of the first inner cavity 47. The pointed section 404 may assist in a dispensing action of the first product 44 from the first inner package 41 and may assist in directing a flow of the first product 44 where the first product 44 is a liquid or other flowable substance.

[00140] The opposed sides 405, 404 of the first inner package 41 may include a localised increase in the width of the flange 403 due to the shape of the bend of the fracturable portion 407 as it meets the flange 403. The increased width of the flange 403 at the opposed portions 405, 404 may assist in allowing the fracturable portion 407 to correctly fracture and form a desired opening in the first inner package 41 by acting as a hinge. If the flange 403 is not enlarged at portions 405, 404 then the package may still function and the portions 405, 404 may still act as hinges in a desired manner. Any of the features previously described in relation to the inner packages 11, 21, 31 could be utilised in the first inner package 41 of the fourth embodiment, where desired.

[00141] FIGS. 4A and 4L show the second inner package 42 including a second inner body wall 412 defining a second inner cavity 48 with an inner volume. The second inner cavity 48 is adapted to contain a second product 45. As shown in FIG. 4A, the second product 45 may be a powder, such as is a medicinal or pharmaceutical composition. The use of the powder in place of a tablet may permit the second product 45 to mix with the first product 44 more

quickly or easily. According to other embodiments, a liquid may be contained in the second inner package 42 and a powder may be contained within the first inner package 41. The first and second products 44, 45 may each be selected from any of a liquid, a powder, a tablet, a solid other than a tablet, a gas, or any other desired product type including combinations of those previously mentioned.

[00142] The second inner body wall 412 comprises a flange portion 413 that surrounds a perimeter of the second inner cavity 47. A cover 411 is provided that may be sealed and bonded across the flange 413, such as shown in FIG. 4B. Preferably, the cover 411 is affixed across the flange 413 in a manner which is airtight to effectively seal the product 45 within the second inner cavity 47.

[00143] The second inner package 42 has a shape which includes a holding region 414 at one end and diverging projections 415, 416 at another end. The holding region 414 extends a distance in a longitudinal direction of the second inner package 42 and includes a curved profile along the second inner body wall 412. In use, the internal cavity 48 at the holding region will retain the second product 45 or, after fracturable portions 407, 417 of the first inner package 41 and second inner package 42 have been fractured, a mixture of the first product 44 and the second product 45. The diverging projections 415, 416 are collectively similar in shape to rabbit ears or a dolphin tail.

[00144] A first fracturable portion 417 is provided on the second inner body wall 412 between the diverging projections 415, 416. As can be seen in FIG. 4L, The first fracturable portion 417 of the second inner package 42 is unique in comparison to the fracturable portion 407 of the first inner package 41 in that the first fracturable portion 417 begins at a portion 419 of the flange 413 but has a terminating location 420 which is located approximately centrally on the second inner body wall 412 distanced from the flange 413. The second inner body wall 412 adjacent the terminating location 420 includes a surface structure which includes curved protrusions 442. The curved protrusions 442 assist in increasing a rigidity of the second inner body wall 412 at the terminating location 420 to assist in the creation of a suitable fracture which substantially terminates at the termination location 420 when a fracturing force has been applied.

[00145] The second inner package 42 includes a second fracturable portion 418 located approximately centrally across the second inner body wall 412 between the end having diverging projections and the end having a holding region 414. The second fracturable portion 418 spans a width of the second inner body wall 412 between portions of the flange 413 on either side. The first fracturable portion 417 and second fracturable portion 418 are each in the form of an inward bend in the surface of the second inner package 42 that extend along sections of the second inner body wall 412.

[00146] FIG. 4B shows the outer package 43 which is substantially elongate in shape in a longitudinal direction between a first end 425 and a second end 426. The outer package 43 comprises an outer body wall 422 which defines an outer package cavity 46 having an internal volume of the outer package 43. In this embodiment, the outer body wall 422 and thus outer package cavity 46 are shaped and sized to receive the first inner package 41 and second inner package 42, as shown in FIG. 4C. The first inner package 41 is shaped to be located adjacent to the second inner package 42 when located within the cavity 46 of the outer package 43, and particularly the first inner package 41 is located partially between the diverging portions 415, 416 of the second inner package 42 as shown in FIG. 4C.

[00147] The outer body wall 422 includes two internal protrusions 430 which each have a first face 431 and a second face 432. The internal protrusions 430 are located and shaped such that to one side, and in conjunction with the shape of the outer body wall 422 at the second end 426, they provide a region for receiving the first inner package 41. When the first inner package 41 is positioned within the outer package 43, corresponding sections of the first inner body wall 402 contact and engage the first faces 431 of the two internal protrusions 430. Similarly, to the other side of the two internal protrusions and in combination with the shape of the outer body wall 422 at the first end 425, there is provided a region for receiving the second inner package 42. When the second inner package 42 is received within the cavity 46 of the outer package 43,

sections of the second inner body wall 412 at the diverging projections 415, 416 contact and engage the second faces 432 of the two internal protrusions 430.

[00148] The outer body wall 422 comprises a flange 423 around a perimeter of the outer cavity 46. A cover 421 is provided that is to be sealed and bonded to the flange 423 to seal the outer cavity 16. Preferably, the cover 421 is affixed to the flange 423 in a manner which provides an airtight seal. The cover 421 is applied to the flange 423 of the outer package 43 after the first and second inner packages 41, 42 have been inserted therein, to ensure that the first and second inner packages 41, 42 are sealed within the cavity 16 of the outer package 12. When both of the first inner package 41 and second inner package 42 are received within the cavity 46 of the outer package 43, portions of the flanges 403, 413 of the first and second inner packages 41, 42 overlap one another. This arrangement means that the size of the outer package 43 may be slightly more compact than if portions of the flanges 403, 413 of the first and second inner packages 41, 42 did not overlap one another.

[00149] The fracturable portions of the first and second inner packages 41, 42, when contained within the outer package 43, are adapted to be difficult to fracture unintentionally, such as during transport and general handling thereof. When it is desired to fracture the fracturable portion 407 of the first inner package 41 and the first fracturable portion 417 of the second inner package, a user will apply a force to the outer package 43 which is transferred to the first and second inner packages 41, 42 therein.

[00150] As shown in FIGS. 4D, 4E and 4F, the outer package 43 includes a central longitudinal protrusion 434 which extends outwardly such that the surface of the outer body wall 422 on the longitudinal protrusion 434 is spaced apart from the inner body walls 402, 412 of the first and second inner packages 41, 42 within the cavity 46 of the outer package 43. The longitudinal protrusion 434 serves two purposes: first, the spacing from the inner packages 41, 42 prevents the outer body wall 422 at the longitudinal protrusion from hindering the fracturing of the fracturable portions 407, 417 of the inner packages 41, 42; second, the longitudinal nature of the longitudinal protrusion 434 may permit folding about its

longitudinal axis to substantially act as a hinge to ensure that fracturing of the fracturable portions 407, 417 of the first and second inner packages 41, 42 can occur in the correct manner and successfully.

[00151] The outer package 43 further includes ears 435 on either side of the longitudinal protrusion 434. The ears 435 serve as locations which a user may grip on the outer package 43 when actioning fracturing of the fracturable portions 407, 417 of the first and second inner packages 41, 42. Each ear 435 includes a protruding ridge 436 which extends outwardly around the location of the internal protrusions 430 on the outer body wall 422. The protruding ridges 436 act to strengthen the outer package 43 at the ears 435 such that they substantially retain their shape when a bending force is applied. The strength and rigidity of the outer package 43 at the ears helps to ensure that a bending force applied will be concentrated centrally such that the outer package will bend along the longitudinal protrusion 434.

[00152] One difference between the fourth embodiment of figures 4A to 4N and the first to third embodiments previously described is that the outer package 43 does not contain a product itself. Instead, according to this embodiment, the first inner package 41 contains the first product 44 and the second inner package 42 contains the second product 45. The outer package 43 thus contains both the first and second inner packages 41, 42. For this reason, the general outward shape of the outer body wall 422 reflects the shapes of the first and second inner packages 41, 42 contained therein. One or more of the inner packages may be nested within the outer package.

[00153] As shown in figures 4G to 4F, when the first and second inner packages 41, 42 are held within the outer package 43, the fracturable portion 407 of the first inner package 41 and the first fracturable portion 417 of the second inner package are each aligned substantially with the longitudinal axis of the outer package 43.

[00154] As shown in FIGS. 4D to 4J, the fracturable portion 427 of the outer package 43 and the second fracturable portion 418 of the second inner package

42 are located directly adjacent to and substantially parallel to one another when the second inner package 42 is positioned within the outer package 43. The fracturable portion 427 of the outer package 43 and the second fracturable portion 418 of the second inner package 42 are each aligned substantially perpendicularly to the longitudinal axis of the outer package 43, or at least a section of each of the fracturable portion 427 of the outer package 43 and the second fracturable portion 418 of the second inner package 42 are substantially perpendicular to the longitudinal axis of the outer package 43. The positioning of the fracturable portions of the each of the first and second inner packages 41, 42 and outer package 43 may be selected depending on the outer shapes of each of the packages 41, 42, 43 and the direction of the force to be applied to fracture each fracturable portion 407, 417, 418, 427.

[00155] In order to mix the first product 44 and the second product 45, the first inner package 41 must be fractured along the fracturable portion 407 and the second inner package 42 must be simultaneously fractured along the first fracturable portion 417. As shown in FIGS. 4G to 4I, to fracture these fracturable portions 407, 417, a force is applied to either side of the outer package 43 in the vicinity of the ears 435 such that the outer package bends substantially along the central longitudinal protrusion 434 and the sides of the outer package 43 are pushed towards each other at the rear (cover 421 side) of the outer package 43. This bending force on the outer package 43 will transmit a force to the first and second inner packages 41, 42. Once the force applied to the first and second inner packages 41, 42 exceeds a sufficient value, a fracture will form in the fracturable portion 407 of the first inner package 41 and the first fracturable portion 417 of the second inner package at one or more initiating fracture points. From this position, as the bending force on the outer package 43 continues to be applied a respective fracture will travel from each initiating fracturing point along each of the fracturable portions 407, 417 to form an opening 408, 409 in each of the first and second inner packages 41, 42. FIG. 4M shows the first inner package 41 when the fracturable portion 407 has been entirely fractured to form the opening 408. FIG. 4N shows the second inner package 42 when the fracturable portion 417 has been entirely fractured to form the opening 409. The

first product 44 may then be dispensed through the opening 408 in the first inner package 41 and through the opening 409 in the second inner package 42 into the second inner package cavity 48 to be mixed with the second product 45, as shown in FIG. 4H. It is desired to maintain the outer package 43 in a substantially upright position when fracturing and after the fracturable portions 407, 417 of the first and second inner packages 41, 42 have been fractured to maintain the mixture of the first and second products 44, 45 within the holding region 414 of the second inner package 42 and to prevent any loss of one or both of the products.

[00156] Once the fracturable portions 407, 417 have been fractured and the first and second products 44, 45 are contained within the second inner package cavity 48, the user may then action fracturing the outer package 43 and second inner package 42 to dispense the two products 44, 45. FIG. 4J shows the fourth embodiment when the outer package 43 have been fractured to create a dispensing arrangement. The outer package 43 and second inner package 42 are adapted to fracture along their respective adjacent fracturable portions 427, 418 when a sufficient force is applied to the outer package on either side of these fracturable portions 427, 418 in the direction as shown in FIG. 4J. The flanges 413, 423 of the second inner package 42 and outer package 43 act as hinges about which the package will bend when the desired force is applied in the correct direction. To apply the desired force, a user will hold and apply forces to the first and second ends 425, 426 of the outer package until the force is sufficient to cause the second fracturable portion 418 of the second inner package 42 and the fracturable portion 427 of the outer package to fracture at one or more respective initiating fracture points. As the applied force is maintained, a fracture will quickly propagate along each of these fracturable portions 418, 427 until they have fractured along their entire length between their respective flanges 413, 423. At this stage, a dispensing opening 440 is formed through the body walls 412, 422, second inner package 42 and outer package 43 to permit the mixture of the first and second products 44, 45 contained within the holding region 414 to be dispensed.

[00157] The fourth embodiment shown in FIGS. 4A to 4N presents just one possible embodiment of a container having two inner packages that each separately contain a respective product within an outer package. Many other shapes, configurations and sizes of a container and its respective inner and outer packages are possible within the overall scope of the present disclosure.

[00158] One possible advantage of the fourth embodiment relates to situations in which one of the products to be mixed is a powder and the other product to be mixed is a liquid. In those situations, where the powder is contained within an outer package and the liquid is contained in an inner package held within the outer package, the powder may become trapped behind the inner package within the cavity of the outer package. This may be undesirable where the powder is a pharmaceutical composition or drug and the amount to be delivered has been carefully selected; particularly having powder trapped and unable to mix with the liquid product is undesirable. Embodiments which include two inner packages within the outer package and allow the products to be mixed within one of the inner packages, such as the further embodiment of FIG. 4, rather than in a cavity of the outer package, may prevent or reduce any possibility of a powder product becoming trapped.

[00159] Figures 5A to 5D show a fifth embodiment of the container 50 which is ostensibly the same as the fourth embodiment of the container 40. The container 50 houses the first and second inner packages 41, 42 in the same manner as previously described for container 40. However, the container 50 does not have a fracturable portion on the outer packaging 53. In contrast, the container 50 is opened by applying one or more of the following opening actions to an outer portion of the outer package 53 such as piercing, slicing, perforating, peeling, breaking, bursting or the like.. For example, a piercing action on the outer packaging 53 may be performed by a needle; slicing or perforating actions may be performed by a blade; and a peeling, breaking or bursting action may be performed by hand. The cover 521, shown in Figure 5D, may be provided with perforations or a frangible tab to assist in one or more of the above actions.

[00160] It is also envisaged that a valve and/or plug could be incorporated into the outer 53. The valve or plug can be actuated in order to permit the combination of the first and second product to be dispensed from the container. The valve or plug can be partially or fully formed in the outer wall 522 when forming the outer wall 522, i.e. during a molding process. Alternatively, the valve or plug can be assembled with the outer wall 522 after forming the outer wall 522. The valve or plug may also be incorporated into the cover 521 – as shown in Figure 5D.

[00161] As shown in Figure 5B to fracture the fractureable portions 407, 417, a force is applied to either side of the outer package 53 in the vicinity of the ears 535 such that the outer package bends substantially along the central longitudinal protrusion 534 and the sides of the outer package 53 are pushed towards each other at the rear (cover 521 side – as shown in Figure 5D) of the outer package 53. This bending force on the outer package 53 will transmit a force to the first and second inner packages 41, 42. Once the force applied to the first and second inner packages 41, 42 exceeds a sufficient value, a fracture will form in the fractureable portion 407 of the first inner package 41 and the first fractureable portion 417 of the second inner package at one or more initiating fracture points. From this position, as the bending force on the outer package 53 continues to be applied a respective fracture will travel from each initiating fracturing point along each of the fractureable portions 407, 417 to form an opening 408, 409 in each of the first and second inner packages 41, 42. Once the fractureable portion 417 has been entirely fractured to form the opening 409, the first product 44 may then be dispensed through the opening 408 in the first inner package 41 and through the opening 409 in the second inner package 42 into the second inner package cavity 48 to be mixed with the second product 45 to form a mixture 51, as shown in Figure 5C. It is desired to maintain the outer package 53 in a substantially upright position when fracturing and after the fractureable portions 407, 417 of the first and second inner packages 41, 42 have been fractured to maintain the mixture 51 of the first and second products 44, 45 within the holding region 414 of the second inner package 42 and to prevent any loss of one or both of the products.

[00162] A method of manufacturing the containers 10, 20, 30, 40, 50 of the above described embodiments may include the following steps. A body and flange portions, where they are required, of the inner package or inner packages may be formed, preferably from a plastic or polymer substance. Forming the inner package or inner packages may occur from any one or more of: thermoforming, injection moulding, compression moulding, extrusion blow moulding, blow moulding, or 3D printing, or any other suitable manufacturing method. A product may then be inserted and contained within the cavity of the inner package, or a distinct product may be inserted and contained within the cavity of each package where the container comprises more than one inner package. A cover or lid portion may be affixed and sealed across each inner body to seal the product within the inner cavity. The cover can be bonded and sealed to the inner body by any suitable process, including: heating, ultrasonic welding, pressure sensitive adhesive, heat actuated adhesive or another type of adhesive or any suitable sealing technology.

[00163] An outer package may also be formed, preferably from a plastic or polymer material. The method of forming the outer package may be the same or different to the process of forming the inner package, and may include: thermoforming, injection moulding, compression moulding, extrusion blow moulding, blow moulding, or 3D printing, or any other suitable manufacturing method. Another product may be inserted into the cavity defined by the body of the outer package, where required, and the inner package or inner packages may also be received in the outer body. A cover or lid portion may be affixed and sealed across the outer body to seal the product and the inner package and/or the inner packages within the cavity of the outer package. The cover can be bonded and sealed to the outer body by the same or a different process used to seal the inner package, including: heating, ultrasonic welding, pressure sensitive adhesive, heat actuated adhesive or another type of adhesive or any suitable sealing technology. It is preferred that the sealing of the packages is airtight to prevent or reduce any degradation or contamination of the products within.

[00164] According to embodiments, the inner package, including the inner body wall and flange, and/or outer package, including the outer body wall and flange, may be formed from a material comprising at least one of: polystyrene, polypropylene, polyethylene terephthalate (PET), amorphous polyurethane terephthalate (APET), polyvinyl chloride (PVC), high density polyethylene (HDPE), low density polyethylene (LDPE), polylactic acid (PLA), bio material, mineral filled material, thin metal formed material, acrylonitrile butadiene styrene (ABS), Cyclic Olefin Co-Polymer (COC), Polyether Ether Ketone (PEEK) and laminate.

[00165] According to embodiments, the container may be manufactured in a sterile environment or through a sterile manufacturing process. For example, the inner body and/or the outer body may be sterilised. A sterile manufacturing process may include aseptic manufacturing or ultraclean manufacturing. Alternatively, the container or any part of the container, such as the inner body and/or the outer body, may be subjected to a secondary sterilisation. For example, the container, inner body or outer body may be treated by gamma irradiation, ethylene oxide (EtO) gas or be heat treated.

[00166] In interpreting the present disclosure, all terms should be interpreted in the broadest reasonable manner consistent with the context. For example, comprises/comprising and grammatical variations thereof when used in this specification are to be taken to specify the presence of stated features, integers, steps or components or groups thereof, but do not preclude the presence or addition of one or more other features, integers, steps, components or groups thereof.

[00167] The first, second, third, fourth and fifth embodiments shown in the drawings and described herein are but five of a vast plurality of possible shapes, configurations and/or embodiments of a container within the scope of the present disclosure. It would be clear to a person skilled in the art that the teaching herein can be put to use in any one of a number of embodiments and that the scope of the claimed invention is not restricted by specific features depicted or described herein.

[00168] The preceding description relates to features of preferred embodiments of a deformable probe according to the present disclosure. It is contemplated that one or more features may be replaced with equivalent or alternative features. It is therefore to be understood that numerous modifications may be made to the illustrative examples and that other arrangements may be devised without departing from the spirit and scope of the technology. The invention according to the following claims in its broadest sense is not to be limited to the specific features as shown in the accompanying figures or described in the present description.