VENTABLE PACKAGE WITH ZIPPER CLOSURE, AND METHODS

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ABSTRACT

A reclosable polymeric package having a zipper closure at its mouth and a venting feature that allows air or other fluid to be vented from the package interior when the zipper closure is sealed. In one example, the venting feature includes vents covered by a tape intermittently secured to the package to define fluid passageways. Methods of use are provided.
FIG. 5
VENTABLE PACKAGE WITH ZIPPER CLOSURE, AND METHODS

CROSS REFERENCE TO RELATED APPLICATIONS

[0001] This application is a divisional of U.S. patent application Ser. No. 11/592,490, filed Nov. 2, 2006, which claims the benefit of U.S. Provisional Application Ser. No. 60/735,780, filed on Nov. 12, 2005, which is incorporated herein by reference in its entirety.

TECHNICAL FIELD

[0002] This disclosure relates to polymeric packages, and, in particular, to packages having a resealable closure arrangement and a venting feature, and methods of manufacturing and using the packages.

BACKGROUND

[0003] Flexible polymeric packages may be used to hold a variety of products. Examples of such products include a variety of edible food products such as cheese, meat, crackers, granular sugar, powdered sugar, flour, salt, and baking soda, and non-food products such as laundry detergent, sand, medical supplies, and other products. Reusable packages are convenient because they can be closed and resealed after opening to contain the enclosed contents. Reusable packages are also advantageous in that they extend the life of food products because they can be opened and closed (resealed) multiple times. Reusable polymeric packages are used in environments that include the refrigerator, freezer, and at room conditions.

SUMMARY OF THE DISCLOSURE

[0004] The present disclosure is directed to resealable packages having a zipper closure. The packages include a venting feature that allows flow of fluid, such as air, form the interior of the packages to the outside environment. In use, the venting feature is used to evacuate air from the interior of the packages, without the need to open the zipper closure.

[0005] In one particular aspect, the disclosure is to a polymeric package that has a surrounding wall and a bottom edge, which together form an interior for receiving items therein. A first zipper profile member and a second zipper profile member are present on the surrounding wall opposite the bottom edge. Access can be gained to the interior through the mouth that is defined between the zipper profile members. The package includes a venting feature on the surrounding wall, the venting feature comprising a plurality of vents within the surrounding wall to provide fluid communication between the interior and the exterior of the package, and a tape overlying the vents. The tape may be attached to the surrounding wall along longitudinal edges of the tape, and/or may be attached intermittently at attachment regions. Together, the tape and the surrounding wall define a plurality of passages that provide fluid communication between the package interior and the exterior of the package. The passages allow fluid from the package interior to flow to the exterior of the package, and vice versa.

[0006] Various methods for using the package, and of making the package, are also described.

[0007] These and various other features which characterize the packages of this disclosure are pointed out with particularity in the attached claims. For a better understanding of the packages of the disclosure, their advantages, their use and objectives obtained by their use, reference should be made to the drawings and to the accompanying description, in which there is illustrated and described preferred embodiments of the invention of this disclosure.

BRIEF DESCRIPTION OF THE DRAWINGS

[0008] FIG. 1 is a perspective view of a polymeric package according to the present disclosure;
[0009] FIG. 1A is a cross-sectional view of the package of FIG. 1 taken along line A-A of FIG. 1;
[0010] FIG. 2 is a perspective view of the polymeric package of FIG. 1 illustrating a portion partially removed to facilitate understanding of its construction;
[0011] FIG. 3 is a view of the polymeric package similar to FIG. 2, with three suitable alternate embodiments illustrated enlarged;
[0012] FIG. 4 is a view of the polymeric package similar to FIG. 1, with an enlarged view of a portion of the package; and
[0013] FIG. 5 is a perspective view of the package of FIGS. 1-4 illustrating a method of using the package.

DETAILED DESCRIPTION

[0014] The present invention is directed to a variety of resealable polymeric packaging arrangements, methods of making the packages and methods of using the packages.

[0015] Referring now to the figures, a package according to the present disclosure is illustrated in FIGS. 1 and 1A. Package 10 has a first side panel 12 and an opposite second side panel 14 that are connected at side edges 15, 16, 18. For clarity herein, side edge 15 can be referred to as a bottom edge 15. Side panels 12, 14 are flexible sheets, typically polymeric film. Examples of suitable polymeric films for panels 12, 14 are well known, and include polyethylene, polypropylene, and the like. Laminated materials may also be used, which can include, but are not limited to, low density polyethylene (LDPE) and nylon or LDPE and polypropylene.

[0016] Side panels 12, 14 and side edges 15, 16, 18 define a surrounding wall 11 having an interior 20 therebetween. Interior 20 is configured for receiving item(s), for example a food item, for storage within package 10.

[0017] As provided above, side panels 12, 14 meet at bottom edge 15 and side edges 16, 18. Any or all of edges 15, 16, 18 may be seals or may be folds. In the embodiment illustrated in FIG. 1A, bottom edge 15 is a fold between side panel 12 and side panel 14; that is, a sheet of material has been folded to form panels 12, 14 and bottom edge 15. Typically, in constructions with bottom edge 15 being a fold, side edges 16, 18 are sealed edges; that is, side panels 12, 14 are sealed to one another, for example by heat sealing. In other embodiments, side edge 16 is a folded edge and bottom edge 15 and side edge 18 are sealed. In yet another embodiment, both side edges 16, 18 are folded and bottom edge 15 is sealed. Still further, embodiments of package 10 could have each of edges 15, 16, 18 being sealed edges. These various edge configurations are known in the art and any of these are suitable for package 10.

[0018] Additionally, other configurations of surrounding wall 11 could be used. For example, surrounding wall 11 may include side gussets or gussets in panels 12, 14 to provide increased volume to interior 20. Also for example, surrounding wall 11 may have no discernible side panels 12, 14, but rather, could be a tubular bag-shaped element. Various other
configurations of surrounding walls 11 are known and are suitable for packages in accordance with the principles of this disclosure.

[0019] Returning to FIG. 1, package 10 has a top end 17, which is the side of package 10 opposite bottom edge 15. At top end 17, a resealable zipper 50 is present. Zipper 50 is present across a mouth of package 10 that provides access to interior 20. Referring to FIG. 1A, zipper closure 50 has first zipper profile 52 having a first profile member 56 and a second zipper profile 54 having a second profile member 58; first and second zipper profiles 52, 54 are configured to be repeatedly sealed (e.g., closed, engaged, mated, etc.) and unsealed (e.g., opened, disengaged, unlatched, etc.), for example, by pressure exerted by the user's fingers. In other words, first and second zipper profiles 52, 54 are selectively sealable and resealable. In some embodiments, zipper profiles 52, 54 are configured to provide an indication, for example by color change, when they are sealed together.

[0020] In the embodiment illustrated, first zipper profile 52 is connected to first side panel 12 and second zipper profile 54 is connected to second side panel 14. Zipper profiles 52, 54 could be integral with their respective side panel 12, 14 or could be attached thereto, for example, by a heat seal or adhesive. Zippers 50, profiles 52, 54 and profile members 56, 58 are well known in the art; see for example, U.S. Pat. Nos. 5,244,002, 5,152,600, 5,099,831, and 5,252,281, each of which is incorporated herein by reference.

[0021] Although not illustrated in the figures, zipper closure 50 may be opened and closed by a slider element, as is well known; see for example, U.S. Pat. Nos. 6,679,027; Des. 480,988; Des. 479,467, and 6,450,686, each of which is incorporated herein by reference, for examples of suitable slider elements.

[0022] Still referring to FIGS. 1 and 1A, package 10 includes a venting structure or feature 30, positioned in and/or on surrounding wall 11, e.g., in and/or on at least one of side panels 12, 14, to allow escape of air from interior 20 to the exterior of package 10. If present in and/or on at least one of side panels 12, 14, venting feature 30 may extend from side edge 16 to side edge 14, or may end short of either or both edges 16, 18.

[0023] In the illustrated embodiment, venting feature 30 includes a venting tape 35 positioned over an area 13 of side panel 14 having fluid passageways or vents 100 therethrough. To facilitate understanding of venting feature 30, FIG. 2 illustrates a portion of venting tape 35 removed from area 13, thus exposing vents 100 in side panel 14. Venting tape 35 is attached to side panel 14 in a manner allowing fluid passages 40 between tape 35 and side panel 14. Venting feature 30, specifically venting tape 35 and vents 100, provides a path for fluid flow from interior 20 of package 10 to the exterior of package 10. The fluid to pass through venting feature 30 can be either or both gaseous or liquid. In most uses of package 10, the fluid passing through venting feature 30 will be air with some entrained moisture.

[0024] Vents 100 in area 13 may be any suitable shape or size, although the vents will generally be less than about 5 mm in their largest dimension, often less than about 3 mm. Three alternate configurations for vents 100 are illustrated in FIG. 3. A first embodiment for vents 100 is crosses 110. In this configuration, no material from side panel 14 is removed; rather, side panel 14 is merely cut, slit, punched or otherwise ruptured to allow air to flow through crosses 110. A second embodiment for vents 100 is flaps 120, which are illustrated as arcuate or concave flaps in FIG. 3. In this configuration, no material from side panel 14 is removed; rather, side panel 14 is merely cut, slit, punched or otherwise ruptured to define a flap that allows more air to flow therethrough than through crosses 110. A third embodiment for vents 100 is polygonal apertures 130, which are illustrated as oval or elliptical. In this configuration, material is removed from side panel 14 to form a void in side panel 14. Other polygons, such as circles, rectangles, triangles, etc. could be used.

[0025] FIG. 4 illustrates an enlarged view of venting tape 35, showing passages 40 intermittently spaced between attachment regions 45 (i.e., regions where venting tape 35 is attached to side panel 14, such as by the application of heat and pressure). Each passage 40 is positioned between two adjacent attachment regions 45. In the particular embodiment shown, attachment regions 45 extend at least along the edges of venting tape 35 and preferably provide sufficient volume therebetween for fluid flow. Adherence of venting tape 35 to side panel 14 may be facilitated by adhesive in attachment regions 45; however, it is preferred not to have adhesive across the entire surface of venting tape 35, as it will inhibit air flow. FIG. 4 illustrates fluid flow 60 through passages 40.

[0026] Venting feature 30 allows fluid, e.g., air, to be expelled from interior 20 while zipper closure 50 is sealed. The combination of vents 100 in surrounding wall 11, e.g., in side panel 14 and venting tape 35, particularly passages 40, control the rate of fluid flow from interior 20. It is understood that the flow through vents 100 and passages 40 can be modified by altering the characteristic, e.g., the dimensions, shaped, spacing, etc. of vents 100 and/or passages 40.

[0027] In the illustrated embodiment, venting tape 35 is positioned on an exterior surface of side panel 14; it is understood that venting tape 35 could alternately be positioned on the interior surface of area 13. It is believed that when venting tape 35 is positioned on the exterior of side panel 14, air can easily pass out via venting feature 30 when pressure is applied, but air movement into interior 20 is difficult, which reduces the ingress of contaminants from outside of package 10. It is also believed that when venting tape 35 is positioned on the exterior of side panel 14, air can easily pass out from interior 20 via venting feature 30 when pressure is applied, but the flow of liquid is restricted.

[0028] Various specific details of package 10 have been described. It is understood, however, that the previous descriptions are not limiting to features of package 10, and alternate materials, constructions, and the like could be used to provide a package according to the present invention. For example, package 10 could optionally include a sealant stripe, such as a peel seal, which can be sealed, readily opened, and resealed, on an interior surface of surrounding wall 11, such as panels 12, 14, in close proximity to zipper closure 50. Examples of peel seals include those described in U.S. Pat. Nos. 6,290,393; 6,210,038, and 6,131,248, each of which is incorporated herein by reference. Such a seal could be used to decrease the possibility of leakage through the mouth of package 10. Alternatively or additionally, package 10 could include a textured stand-off area in surrounding wall 11, such as in one or both of panel 12, 14. Such a textured stand-off area is particularly suitable for packages 10 that are configured for use in the freezer, e.g., temperatures below about 20°F.

[0029] FIG. 5 illustrates package 10 in use, retaining an item 150 therein. Item 150 is illustrated as a food item, particularly, a chicken leg. To place item 150 in package 10, the
general following procedure is followed: zipper 50 is opened, if necessary, by unmatting, unsealing, etc. first and second zipper profiles 52, 54. Side panels 12, 14 are spread sufficiently far to place item 150 through the mouth and between panels 12, 14. Item 150 should preferably be positioned between bottom edge 15 and venting feature 30.

[0030] After positioning item 150 in package 10, it is optional to push or otherwise urge air present in package 10 out via unsealed zipper 50. Zipper 50 is sealed, providing a seal across package 10. When pressure is applied to package 10 in an area, such as area 25 between bottom edge 15 and zipper 50, for example by the application of manual pressure by a user 170, at least some of the air remaining in interior 20 of package 10 is pushed through venting feature 30 and out from interior 20 of package 10. In particular, air passes through vents 100 and then through passages 40.

[0031] Package 10 may be made by generally any suitable process. For example, package 10 may be made by a horizontal process (e.g., where the film forming side surrounding wall 11 moves in a generally horizontal direction) or a vertical process (e.g., where the film forming surrounding wall 11 moves in a generally vertical direction). Vents 100 will generally be present in surrounding wall 11 (e.g., one or both of side panels 12, 14) at the beginning of the process. Vents 100 may be formed by melting a film to form edges 15, 16, 18, and may be present at the beginning of the package-making process. As mentioned above, any or all of edges 15, 16, 18 may be folds or seals between side panels 12, 14. If not integral with side panels 12, 14, zipper profiles 52, 54 may be attached to side panels 12, 14 before or after bottom edge 15 is formed. Similarly, a slider device (if present) may be applied to zipper profiles 52, 54 before or after incorporation with side panels 12, 14.

[0032] The above specification and examples are believed to provide a complete description of the manufacture and use of particular embodiments of the invention. Because many embodiments of the invention can be made without departing from the spirit and scope of the invention, the true scope and spirit of the invention reside in the broad meaning of the claims hereinafter appended.

What is claimed is:
1. A method of using a package, comprising:
   (a) providing a package having an interior, a resealable zipper extending across a mouth of the package and a venting feature including vents and a tape covering the vents;
   (b) placing an item in the interior through the mouth of the package;
   (c) closing the resealable zipper after the item is in the interior; and
   (d) expelling air from the interior through the venting feature.
2. The method of claim 1, wherein expelling air from the interior through the venting feature includes squeezing the package to urge air through the vents and around the tape.
3. The method of claim 1 wherein expelling air includes pushing air through the vents and through passages defined by areas between intermittent attachment regions securing the tape to the package.
4. The method of claim 1 wherein expelling air from the interior through the venting feature includes pushing air through cross-shaped vents.
5. The method of claim 1 wherein expelling air from the interior through the venting feature includes pushing air through flaps.
6. The method of claim 1 wherein expelling air from the interior through the venting feature includes pushing air through polygonal-shaped vents.

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