



US 20130213827A1

(19) **United States**(12) **Patent Application Publication**
Hammad(10) **Pub. No.: US 2013/0213827 A1**(43) **Pub. Date: Aug. 22, 2013**(54) **FLEXIBLE CONTAINER WITH LIQUID
BLOCK**(52) **U.S. Cl.**CPC **B65D 85/00** (2013.01)USPC **206/204**(71) Applicant: **Sunbeam Products, Inc., (US)**(72) Inventor: **Jamal F. Hammad, Boynton Beach, FL
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(57)

ABSTRACT(73) Assignee: **SUNBEAM PRODUCTS, INC., Boca
Raton, FL (US)**(21) Appl. No.: **13/770,670**(22) Filed: **Feb. 19, 2013****Related U.S. Application Data**(60) Provisional application No. 61/599,972, filed on Feb.
17, 2012.**Publication Classification**(51) **Int. Cl.**
B65D 85/00

(2006.01)

A flexible storage container is provided which includes first and second panels of film having opposing first and second edges interconnected by a seal. A bottom end of the flexible container is formed by interconnecting the first and second panels with a seal. An opening is formed from the first and second panels on a top end of the flexible container to allow food items to be inserted into an interior volume formed between the first and second panels. An absorbent pad is disposed between an inner surface of the first and second panels a distance D from the opening and extending an entire length of the opening. The absorbent pad includes opposing tabs that are inserted between the first and second panels before being interconnected. The tabs are firmly held between the first and second panels in an extra wide portion of the seals having a width W.

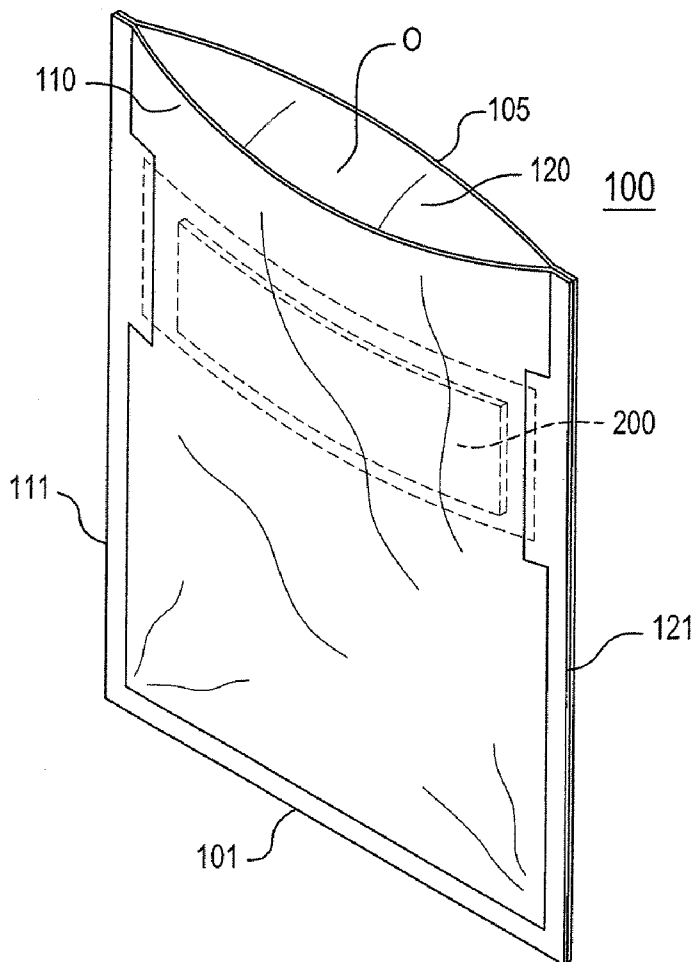


FIG. 1

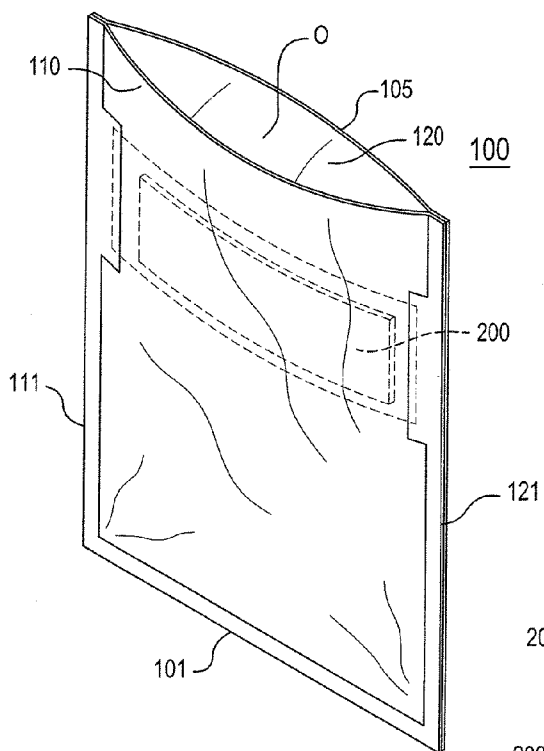


FIG. 2

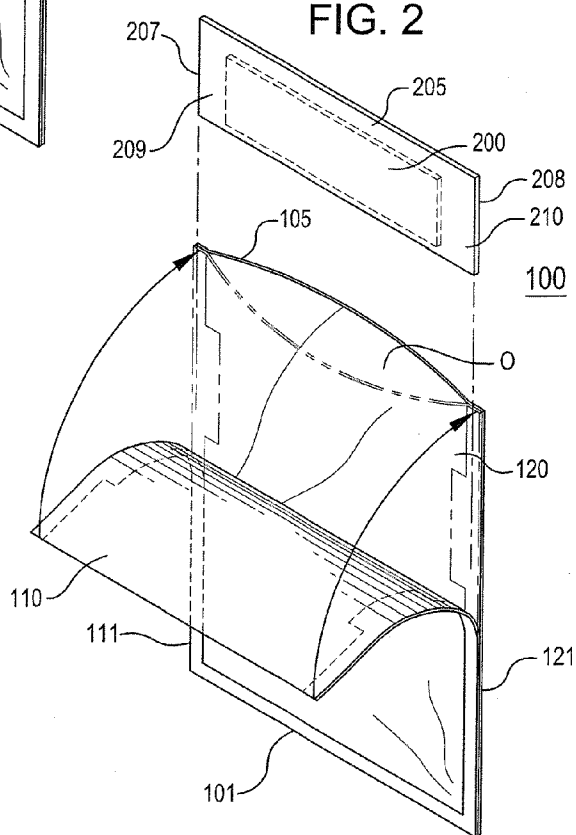


FIG. 3

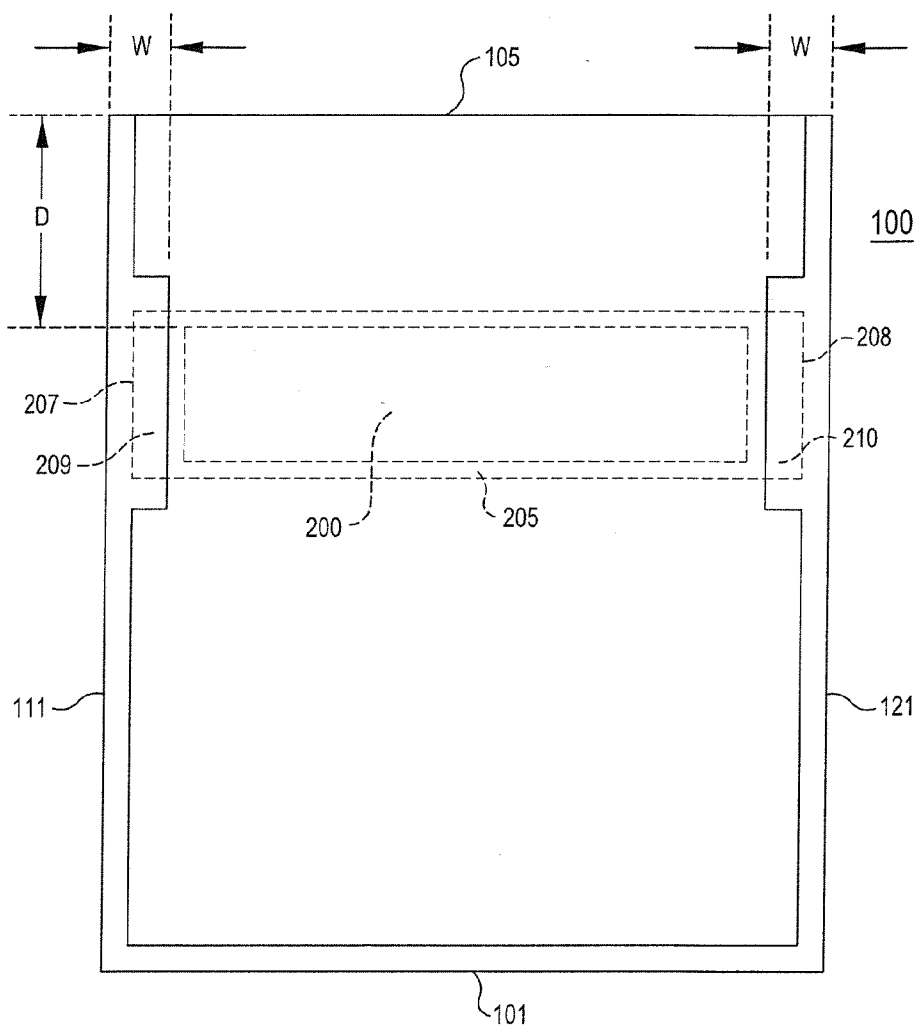
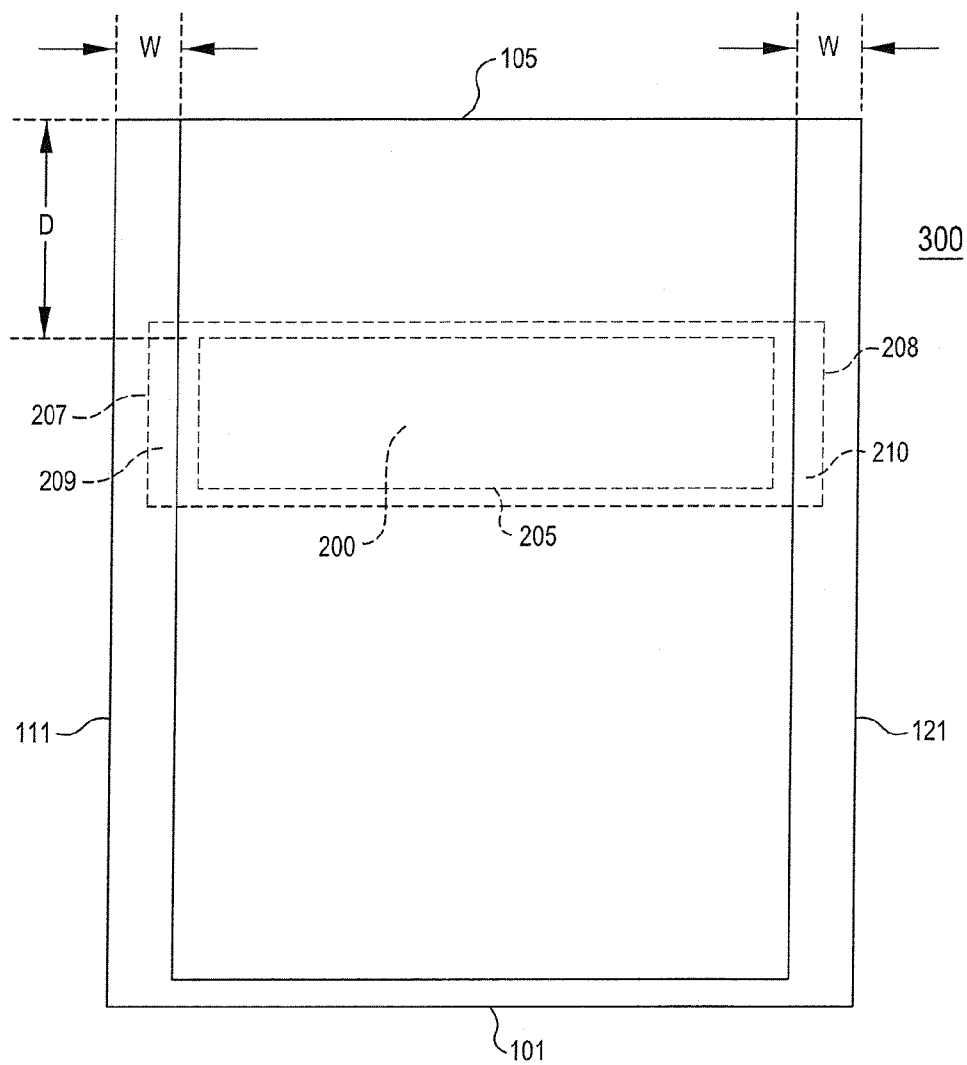


FIG. 4



FLEXIBLE CONTAINER WITH LIQUID BLOCK

RELATED APPLICATIONS

[0001] The present application claims priority to U.S. Provisional Patent Application No. 61/599,972 filed Feb. 17, 2012, which is incorporated by reference as if fully rewritten herein.

FIELD OF THE INVENTION

[0002] The invention relates to preservation of perishable items, and more particularly, to a flexible container for storing perishable items such as food having a pad of liquid absorbing material disposed proximate the open end for absorbing liquid while the flexible container is evacuated prior to heat sealing the open end.

BACKGROUND OF THE INVENTION

[0003] It is known to preserve food and other perishable items such as food in flexible containers including storage bags made from layers of film. The film is a barrier for air, and in particular oxygen, which rapidly spoils the perishable items. It is also known to use a vacuum packaging machine to evacuate the flexible container of air/oxygen and thereafter heat seal the open end where the perishable item was inserted into the flexible container. Unfortunately, when evacuating the flexible container liquids such as food juices are also drawn into the vacuum packaging machine which is messy. In addition, the liquids inhibit the ability of the heat sealing element of the vacuum packaging machine to form a proper seal which could result in a leaking flexible container. Thus, there exists a need for preventing liquids from escaping the flexible container during evacuation and inhibiting heat sealing in the area of the flexible container being heat sealed.

SUMMARY OF THE INVENTION

[0004] In an embodiment, there is provided a food preservation and storage bag, including a first and second sidewall having opposing first and second edges interconnected along an entire length of the first and second edges by a seal having at least a portion having a width W, an opening formed from the first and second sidewalls on a first end of the bag configured to allow food items to be inserted into an interior volume formed between the first and second sidewalls, a second end of the bag formed from the first and second sidewalls opposite the first end, wherein the first and second sidewalls are interconnected along an entire length of the second end with a seal, an absorbent pad disposed between an inner surface of the first and second sidewalls a distance D from the opening and extending an entire length of the opening, the absorbent pad having opposing tabs that are inserted between the first and second sidewalls before being interconnected and are firmly held between the first and second sidewalls in the portion of the seal having the width W after the opposing first and second edges are interconnected.

[0005] In an embodiment, there is provided a flexible container, including a first and second panel having opposing first and second edges interconnected along an entire length of the first and second edges by a seal having at least a portion having a width W, an opening formed from the first and second panels on a first end of the bag configured to allow food items to be inserted into an interior volume formed between the first and second panels, a second end of the bag

formed from the first and second panels opposite the first end, wherein the first and second panels are interconnected along an entire length of the second end with a seal, an absorbent pad disposed between an inner surface of the first and second panels a distance D from the opening and extending an entire length of the opening, the absorbent pad having opposing tabs that are inserted between the first and second panels before being interconnected and are firmly held between the first and second panels in the portion of the seal having the width W after the opposing first and second edges are interconnected

BRIEF DESCRIPTION OF THE DRAWINGS

[0006] FIG. 1 is a perspective view of a flexible container with a liquid absorbing pad mounted proximate to an open end;

[0007] FIG. 2 is a partially exploded view of the flexible container of FIG. 1 with the liquid absorbing pad exploded from the flexible container;

[0008] FIG. 3 is a front view of the flexible container with absorbent pad of FIG. 1; and

[0009] FIG. 4 is a front view of the flexible container of FIG. 1 with an alternate embodiment mounting of the absorbent pad proximate the open end.

DETAILED DESCRIPTION

[0010] Referring to FIGS. 1-3, illustrated is an embodiment of a flexible storage container 100 that is used for vacuum packaging perishable items including food items. The flexible container 100 is formed by overlapping two sheets or panels 110, 120 of generally planar-shaped film that may pre-sealed together at the factory along first and second opposing side edges 111, 121 and a bottom or second end 101 with a seal. Typically, the seals are formed by heat sealing or sonic welding. This leaves a single opening O at a remaining top or first end 105 of the flexible container 100 for insertion of perishable items before vacuum packaging and heat sealing the top end 105. Alternately, the two panels 110, 120 may be formed into a roll of continuous tubular container material where the first and second opposing side edges 111, 121 are pre-sealed at the factory and sections of the container material are cut to form the flexible storage container 100. The remaining bottom end 101 and the top end 105 may then be sealed by a vacuum packaging machine in a known manner.

[0011] Each piece of sheet material 110, 120 may be formed from one or more layers of film including a heat sealable inner layer and a high barrier material outer layer resistant to gas permeation, particularly oxygen, which rapidly deteriorates perishable items such as food items. Either sheet 110, 120 may be transparent or one or both of the sheets 110, 120 may be opaque or of the same or dissimilar colors. The inner layer preferably consists of polyethylene, but can instead be of any other type of heat sealable thermoplastic (e.g., polyethylene, polypropylene, ethylene-vinyl acetate, and the like). The outer layer preferably consists of nylon, but can instead be of any other type of gas impermeable or high barrier plastic (e.g., polyester, polyvinyl chloride, ethylene vinyl alcohol (EVOH) and the like). A material is considered "a high oxygen barrier" if its oxygen transmission rate is around 1 cc/100i²/24 hr. Other examples of exemplary packaging films having low oxygen transmission rates are shown in Table 1. It should be understood that this is not meant to be limiting as other films known to one of ordinary skill in the art may be used in either layer.

TABLE 1

Film Type	OTR @ 73° F. (23° C.), 0% RH	
	(cc/100 in2/24 hr)	(cc/m2/24 hr)
The following OTRs are bulk material properties displayed at 1 mil. Divide by the gauge (in mil) in order to approximate OTR at a different thickness.		
EVOH* (ethylene vinyl alcohol)	.005-.12	.08-.19
Biax Nylon-6	1.2-2.5	18.6-39
OPET (oriented polyester)	2-6	31-93
OPP	100-160	1550-2500
Cast PP	150-200	2300-3100
HDPE (high density polyethylene)	150-200	2300-3100
OPS (oriented polystyrene)	280-400	4350-6200
LDPE (low density polyethylene)	450-500	7000-8500
The following OTRs are enhanced by coating or metallizing. Therefore, these are not bulk film properties, and total film thickness has little impact on the OTR value.		
Metallized OPET	.01-.11	.16-1.7
PVOH-coated OPP (AOH)	.02	.31
Metallized biax Nylon-6	.05	.78
PVdC-coated OPET	.30-.50	4.7-7.8
High Barrier PVdC-coated OPP	.30-.60	4.7-9.3
PVdC-coated biax Nylon-6	.35-.50	4.7-7.8
OPP	1.2-10	19-160
Scalable PVdC-coated OPP	1.5-3.5	23-54

[0012] The flexible container 100 may be evacuated and sealed in any conventional manner, dependent at least partially upon the container material and the material employed to seal the flexible container 100. By way of example only, the heat-sealable container 100 illustrated in the figures can be sealed by application of heat to the top end 105 of the container 10 in any manner, such as by a conventional vacuum sealer (not shown). During vacuum sealing operations, the opposing first and second sidewalls 110, 120 of the flexible container 100 are drawn toward one another, which can interfere with the ability of air and/or liquids to be drawn from the flexible container 100. One or both of the inner sidewalls of the panels 110, 120 may be embossed to provide pathways for air and/or liquids to flow from within the interior of the flexible container 100.

[0013] In an embodiment, an absorbent pad 200 is mounted between the inner sides of the panels 110, 120 of the flexible container 100 a pre-determined distance D from the top end 105 of the flexible container 100. It has been found that the distance D from the top end 105 of the flexible container 100 to the absorbent pad 200 works well when in the range of fifty (50) to seventy (70) millimeters. The absorbent pad 200 is contained in an envelope 205 which may be comprised of two layers of porous film or non-woven material sealed together at its outer edges. The sealed side edges 207, 208 of the envelope 205 form a pair of tabs 209, 210 that may be used to hold the absorbent pad 200 in position by the tabs 209, 210 being secured between the opposing sealed edges 111, 121 of the flexible container 100. The width W of the seal sealing the edge portions of the flexible container 100 in the proximity of the tabs 209, 210 of the envelope 205 containing the absorbent pad 200 may be extra wide to ensure that the tabs 209, 210 are secured between the opposing sealed edges 111, 121 of the flexible container 100.

[0014] Typically, the width of the sealed edge portions 111, 121 is in the range of zero (0) to ten (10) millimeters. It has been found that the width W for the portion of the seal of the sealed edge portions 111, 121 holding the tabs 209, 210 of the

absorbent pad 200 in the subject flexible container 100 works well when in the range of ten (10) to twenty (20) millimeters. Alternately, in another embodiment illustrated in FIG. 4, the seal sealing the edge portions 111, 121 of the flexible container 300 along their entire length may be extra wide having the width W to ensure that the tabs 209, 210 of the envelope 205 containing the absorbent pad 200 are secured between the sealed opposing first and second edges 111, 121 of the flexible container 300.

[0015] In an embodiment, the absorbent pad 200 is comprised of a food-grade absorbent material including but not limited to fluff, pulp, cellulose or airlaid paper. The absorbent pad 200 may include an absorbent medium body that may be made of one or more absorbent layers, such as tissue layers. The absorbent layers may be arranged to form pockets or compartments in the absorbent pad 200 to hold active agents, to control the availability and timing of release of an active agent in a food storage container such as the flexible container 100. Active agents that may be used include but are not limited to one or more carbon dioxide generators, oxygen scavengers, ethylene scavengers and/or antimicrobials. Alternately, the absorbent pad 200 may include a superabsorbent material with active agents separately or in combination with the absorbent material but in a different pocket or compartment. The superabsorbent material may include superabsorbent polymers such as polyacrylate and polyvinyl alcohol.

[0016] In another embodiment, an adhesive (not shown) may be used on one side of the envelope 205 containing the absorbent pad 200 to fasten the absorbent pad 200 on the inner surface of one of the sidewalls 110, 120 of the flexible container 100 prior to heat sealing the opposing edges 111, 121. Alternately, the absorbent pad 200 may be tack-welded to the inner surface of one of the sidewalls 110, 120 of the flexible container 100 prior to heat sealing the opposing edges 111, 121. The porous film allows liquid being drawn from within the interior of the flexible container 100 to flow into the absorbent pad 200. The absorbent pad 200 absorbs the liquid so that no liquid flows out of the envelope 205 and through the opening O of the flexible container 100 while it is being evacuated and heat sealed.

[0017] All references cited herein are expressly incorporated by reference in their entirety.

[0018] It will be appreciated by persons skilled in the art that the present invention is not limited to what has been particularly shown and described herein above. In addition, unless mention was made above to the contrary, it should be noted that all of the accompanying drawings are not to scale. A variety of modifications and variations are possible in light of the above teachings without departing from the scope and spirit of the invention, which is limited only by the following claims.

What is claimed is:

1. A food preservation and storage bag, comprising:
 - a first and second sidewall having opposing first and second edges interconnected along an entire length of the first and second edges by a seal having at least a portion having a width W;
 - an opening formed from the first and second sidewalls on a first end of the bag configured to allow food items to be inserted into an interior volume formed between the first and second sidewalls;
 - a second end of the bag formed from the first and second sidewalls opposite the first end, wherein the first and

- second sidewalls are interconnected along an entire length of the second end with a seal;
- an absorbent pad disposed between an inner surface of the first and second sidewalls a distance D from the opening and extending an entire length of the opening, the absorbent pad having opposing tabs that are inserted between the first and second sidewalls before being interconnected and are firmly held between the first and second sidewalls in the portion of the seal having the width W after the opposing first and second edges are interconnected.
2. The bag of claim 1, wherein the seals with the portion having the width W are formed by heat sealing.
 3. The bag of claim 1, wherein the first sidewall is comprised of a sheet of material from the group consisting of polyethylene, polypropylene and ethylene-vinyl acetate.
 4. The bag of claim 1, wherein the second sidewall is comprised of a sheet of material from the group consisting of nylon, polyester, polyvinyl chloride and ethylene vinyl alcohol (EVOH).
 5. The bag of claim 1, wherein the width W is in the range of ten to twenty millimeters.
 6. The bag of claim 1, wherein the distance D is in the range of fifty to seventy millimeters.
 7. The bag of claim 1, wherein the material comprising the absorbent pad is an absorbent that includes one or more of the materials from the group consisting of fluff, pulp, cellulose and airlaid paper.
 8. The bag of claim 1, wherein the absorbent pad includes an active agent.
 9. The bag of claim 1, wherein the active agent is one or more of the active agents from the group consisting of carbon dioxide generators, oxygen scavengers, ethylene scavengers and antimicrobials.
 10. The bag of claim 1, wherein the absorbent pad includes a superabsorbent.
 11. A flexible container, comprising:
 - a first and second panel having opposing first and second edges interconnected along an entire length of the first and second edges by a seal having at least a portion having a width W;
 - an opening formed from the first and second panels on a first end of the bag configured to allow food items to be inserted into an interior volume formed between the first and second panels;
 - a second end of the bag formed from the first and second panels opposite the first end, wherein the first and second panels are interconnected along an entire length of the second end with a seal;
 - an absorbent pad disposed between an inner surface of the first and second panels a distance D from the opening and extending an entire length of the opening, the absorbent pad having opposing tabs that are inserted between the first and second panels before being interconnected and are firmly held between the first and second panels in the portion of the seal having the width W after the opposing first and second edges are interconnected.
 12. The bag of claim 11, wherein the seals with the portion having the width W are formed by heat sealing.
 13. The bag of claim 11, wherein the first panel is comprised of a sheet of material from the group consisting of polyethylene, polypropylene and ethylene-vinyl acetate.
 14. The bag of claim 11, wherein the second panel is comprised of a sheet of material from the group consisting of nylon, polyester, polyvinyl chloride and ethylene vinyl alcohol (EVOH).
 15. The bag of claim 11, wherein the width W of the portion of the seals is in the range of ten to twenty millimeters.
 16. The bag of claim 11, wherein the distance D is in the range of fifty to seventy millimeters.
 17. The bag of claim 11, wherein the material comprising the absorbent pad is an absorbent that includes one or more of the materials from the group consisting of fluff, pulp, cellulose and airlaid paper.
 18. The bag of claim 11, wherein the absorbent pad includes an active agent.
 19. The bag of claim 11, wherein the active agent is one or more active agents from the group consisting of carbon dioxide generators, oxygen scavengers, ethylene scavengers and antimicrobials.
 20. The bag of claim 11, wherein the absorbent pad includes a superabsorbent.

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