

REFILLABLE, FLEXIBLE DISPENSER FOR STACKED MOIST WIPES

BACKGROUND OF THE INVENTION

There are a variety of storing and dispensing containers in the market, particularly those for storing and dispensing wipe-type products. Wipe-type products or wipes have been made from a variety of materials which can be dry or wet when used. Wet wipes can be moistened with a variety of suitable wiping solutions. Typically, wet wipes have been stacked in a container in either a folded or unfolded configuration. For example, containers of wet wipes have been available wherein each of the wet wipes stacked in the container has been arranged in a folded configuration such as a c-folded, z-folded or quarter-folded configuration as are well known to those skilled in the art. Sometimes each folded wet wipe is interfolded with the wet wipes immediately above and below it in the stack of wipes. In an alternative configuration, the wet wipes have been placed in a container in the form of a continuous web of material that includes perforations adapted to allow for separation of individual wet wipes from the web upon the application of a pulling force. Such wet wipes have been used for baby wipes, hand wipes, personal care wipes, household cleaning wipes, industrial wipes and the like.

Conventional wipes dispensers may be classified into two categories: (1) relatively stiff, durable tubs that are relatively large, are designed to be refilled, and that do not change in volume as wipes are removed; and (2) rigid "flip-top" packages that are made of highly flexible, plastic film material and that shrink in volume as wipes are removed, but that are not refillable. What is needed in the art is a wipes dispenser that in particular embodiments does not possess the enormity and resistance of common baby wipes "tubs"; is refillable; that shrinks in volume as wipes are removed; and dispenses wipes efficiently.

SUMMARY OF THE INVENTION

In one embodiment of the invention, the refillable dispenser for pre-moistened wipes includes a flexible pouch. The pouch has a front wall, a back wall, and an

interior space between the front wall and the back wall. The dispenser includes a dispensing opening formed in the front wall, and in particular embodiments includes a movable cover adapted to cover the dispensing opening. The dispenser includes a seam that can be opened to an open position and resealed to a closed position to connect the front wall to the back wall. The open position is configured to define a refill opening. The front wall and the back wall are each formed from a flexible material having a bending resistance of between 21.0 milligrams of force and about 300 milligrams of force.

In particular embodiments, the front wall has a top edge and first and second side edges that extend perpendicularly from opposite ends of the front wall top edge, and the back wall has a top edge and first and second side edges that extend perpendicularly from opposite ends of the back wall top edge. The front wall is connected to the back wall via a first side seam that connects the front wall first side edge to the back wall first side edge, via a second side seam that connects the front wall second side edge to the back wall second side edge, and via a bottom gusset wall that extends between and is formed integrally with the front wall and the back wall. The dispenser includes a dispensing opening formed in the front wall, and further includes a movable cover adapted to cover the dispensing opening. The dispensing opening is surrounded by a rigid ring, and the cover is hingedly attached to the ring. The dispenser includes a seam that can be opened to an open position and resealed to a closed position to connect the front wall to the back wall. The open position is configured to define a refill opening. The front wall and the back wall are each formed from a flexible material having a bending resistance of between about 40 milligrams of force and 150 milligrams of force. The flexible material has a thickness of at least 5.0 mils.

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a front perspective view of one embodiment of the dispenser of the present invention.

Fig. 2 is a front view of one embodiment of the dispenser of the present invention, with the cover assembly not present.

Fig. 2A is a cross-sectional view of the dispenser of Fig. 2 taken along line 2A-2A, the refill opening shown in a closed position.

Fig. 2B is a cross-sectional view of the dispenser of Fig. 2 taken along line 2A-2A, but with the refill opening shown in an open position.

5 Fig. 3 is a front view of an alternative embodiment of the dispenser of the present invention, with the cover assembly not present.

Fig. 4 is a front view of another alternative embodiment of the dispenser of the present invention, with the cover assembly not present.

10 Fig. 5 is a front view of still another alternative embodiment of the dispenser of the present invention, with the cover assembly not present.

DETAILED DESCRIPTION OF PARTICULAR EMBODIMENTS

In particular embodiments, a refillable dispenser 20 houses a stack 22 of pre-moistened or wet wipes, such as diapering wipes, toileting wipes, feminine care wipes, or other wipes known in the art. The dispenser defines a length
15 dimension 21 and a width dimension 23. The dispenser 20 comprises a flexible pouch 30 that has a top 27 and a bottom 29 spaced apart from each other in the width dimension 23. The top 27 terminates at a top edge 33 and the bottom 29 terminates at a bottom edge 35. The pouch 30 has a front wall 32, a back wall 34, and an interior space 36 between the front wall 32 and the back wall 34.

20 The dispenser further includes a dispensing opening 40 formed in the front wall 32. The dispensing opening 40 can be a hole (Figs. 1-3), a slit (Figs. 4-5), or other opening through which a moist wipe can suitably be dispensed. In particular embodiments, the dispensing opening 40 has a dispensing opening width 42 that extends in the width dimension 23. As representatively illustrated in Figs. 3-5, the
25 dispensing opening width 42 is defined as the distance in the width dimension 23 between a first imaginary line 41 that passes through the point of the dispensing opening 40 that is closest to the top 27 and a second imaginary line 43 that passes through the point of the dispensing opening 40 that is closest to the bottom 29.

The dispensing opening 40 defines a midpoint 44 spaced halfway along its width 42.

The dispenser 20 further in particular embodiments includes a movable cover 50 adapted to cover the dispensing opening 40 to help keep the moist wipes from drying out between uses. In particular embodiments, the dispensing opening 40 is surrounded by a rigid ring 46, and the cover 50 is hingedly attached to the ring 46 via a hinge 48.

The dispenser includes a seam 60 that extends generally in the length dimension 21. The seam is located generally at the pouch top 32. The seam 60 can be opened to an open position 62 and resealed to a closed position 64. In the closed position 64, the seam 60 connects the front wall 32 to the back wall 34, either directly, or indirectly by way of intermediate materials. The open position 62 is configured to define a refill opening 66. The refill opening 66 allows a user to replenish the wipe supply into the interior space 36. The seam 60 defines a seam inner edge 61 distal to the top edge 33, and the seam defines a seam outer edge proximal 63 the top edge 33. Although the seam 60 may include a single or multiple strips or lanes along which the front wall 32 is connected to the back wall, the seam 60 as a whole has only one seam inner edge (namely, the innermost edge of the seam, relatively distal to the top edge 33) and has only one seam outer edge (namely, the outermost seam of the edge, relatively proximal to the top edge 33). In particular embodiments, the seam 60 is press and seal seam, and/or can include a sliding zipper. In particular embodiments, a carrying strap 68 can be attached to the pouch 30, such as at the pouch top 27.

In particular embodiments, the front wall 32 and the back wall 34 are each formed from a flexible material having a bending resistance of between 21.0 milligrams of force and about 300 milligrams of force. As used herein, "bending resistance" means the bending resistance as measured in accordance with the protocol outlined below. In particular embodiments, the flexible material has a bending resistance of between 21.0 milligrams of force and 150 milligrams of force, more particularly between about 40 milligrams of force and 150 milligrams of force, more particularly between about 40 milligrams of force and 125 milligrams of force, more particularly between about 40 milligrams of force and 100 grams, more

particularly between about 60 milligrams of force and about 100 milligrams of force, and more particularly between about 60 milligrams of force and about 90 milligrams of force. It has been discovered that by constructing the front wall 32 and back wall 34 of such materials, the pouch 30 is durable, is perceived as being high in quality, is efficiently processable, is reasonable in cost, in particular
5 embodiments exhibits minimal “crinkling” noise as it is manipulated, and is flexible enough to bend to fit into a purse, diaper bag, or similar container, and will, furthermore, become thinner / shrink in volume as the wipe supply is depleted.

In particular embodiments, the front wall 32 and the back wall 34 are each
10 formed from a flexible material that has a thickness of at least 5.0 mils (0.127 mm), more particularly at least about 8 mils (0.203 mm), and still more particularly between about 8 mils (0.203 mm) and about 15 mils (0.381 mm). As used herein, “thickness” means the thickness as measured in accordance with the protocol outlined below. Materials having the bending resistance and thickness features
15 described above are described in the Examples below.

In conventional moist wipes dispensers, the dispensing orifice is centered over the interior space of the container or package in both length and width directions. While developing particular aspects of the present invention, it was discovered, in a pouch sized for a stack of wipes having a given length and width,
20 that if the wipes stack was positioned too close to the seam 60, the front wall 32 and back wall 34 pinched the stack of wipes, and thereby negatively impacted dispensing. It was discovered that by offsetting the dispensing opening toward the bottom edge 35 of the pouch 30, this pinching problem could be minimized.

Accordingly, in particular embodiments, the midpoint 44 of the dispensing
25 opening 40 is disposed closer to the bottom edge 35 than to the seam inner edge 61. In particular embodiments, the midpoint 44 of the dispensing opening 40 is disposed at least 5 millimeters closer, more particularly at least 10 millimeters closer, and still more particularly at least 15 millimeters closer to the bottom edge 35 than to the seam inner edge 61.

Referring to Figs. 2 and 2A, in particular embodiments, the dispenser
30 includes a stack 22 of pre-moistened wipes. The stack has a stack width 25 that extends in the width dimension 23. The interior space 36 defines an interior space

width 37 that extends from the seam inner edge 61 to the bottom edge 35. (For ease of measurement, the interior space width 37 is intentionally described and illustrated as including the thickness of the bottom wall 80, and should be measured as such for purposes herein.) In particular embodiments, the stack width 25 is X% of the interior space width 37, wherein X is at most 90, and the midpoint 44 of the dispensing opening 40 is disposed closer to the bottom edge 35 than to the seam inner edge 61 by an amount of approximately $(100-x)\%$ of the interior space width 37. For example, if the interior space width 37 is 10 centimeters and the stack width is 8 centimeters, the stack width 25 is 80% of the interior space width 37, and the midpoint 44 of the dispensing opening 40 is disposed closer to the bottom edge 35 than to the seam inner edge 61 by 20% of the interior space width 37 – that is, by approximately 2 centimeters. Thus, the midpoint 44 of the opening 40 would in this example be positioned 4 centimeters from the bottom edge 35, and 6 centimeters from the seam inner edge 61.

In particular embodiments of the pouch 30, the front wall 32 has a top edge 72 and first and second side edges 73, 74 that extend perpendicularly from opposite ends of the front wall top edge 72. Similarly, the back wall 34 has a top edge 76 and first and second side edges 77, 78 that extend perpendicularly from opposite ends of the back wall top edge 76. In particular embodiments, the front wall 32 is connected to the back wall 34 via a first side seam 75 that connects the front wall first side edge 73 to the back wall first side edge 77, as well as a second side seam 79 that connects the front wall second side edge 74 to the back wall second side edge 78. The front wall 32 is further connected to the back wall 34 by a bottom gusset wall 80 that can extend between and be formed integrally with the front wall 32 and the back wall 34. For example, in one embodiment, the front wall 32, the back wall 34, and the bottom gusset wall 80 are all integrally formed from a single sheet of flexible material that is configured in an M-fold. The M-fold defines three fold lines 81, 82, 83 that extend in the length dimension 21. The M-fold is held permanently in place at the first side seam 75 and the second side seam 79.

Test Procedures and Comparative Examples

Stated generally, the resistance of a material is its resistance to deflection or deformation (e.g., bending) when acted on by an applied force. The resistance of dispenser materials is herein determined with respect to a bending moment produced by a force that is directed perpendicular to the plane substantially defined by the length and width of the component being tested. As used herein, “bending resistance” means the resistance measured via a Gurley resistance test as set forth in TAPPI Standard Test T 543 om-11 (Bending Resistance of Paper (Gurley type tester)), and reported in milligrams of force. A suitable testing apparatus is a Gurley Digital Resistance Tester, model 4171-D manufactured by Teledyne Gurley, a business having offices in Troy, N.Y., U.S.A. A specimen is cut from a wipes dispenser and tested in accordance with the above-referenced TAPPI test. Although the length and width dimensions of the specimen that is cut and tested may be adjusted to accommodate the size or nature of a sample as noted in section 6 of the procedure, the force measurement for any given sample size is normalized to correspond to a 50.8 mm (2 inches) by 63.5 mm (2.5 inches) sample size, as set forth in TAPPI Standard Test T 543 om-11, including the use of the correct specified conversion factor depending on the test parameters used.

To contrast certain aspects of the invention from certain aspects of conventional dispensers, the bending resistance of several prototype dispenser materials as well as of a variety of commercially available dispensers were measured. For purposes of the comparative examples of Table 1, 25.4 mm x 25.4 mm (1 in x 1 in) specimens were cut from a section of each flexible dispenser wall (codes 1-6 and 9-13) that was free of seams, welds, or other interfering elements. The “test length” for these codes was 12.7 mm (0.5 inches). For the highly rigid, “hard case” dispensers (codes 7-8), 12.7 mm x 63.5 mm (0.5 in x 2.5 in) specimens were cut from a section of each dispenser that was free of seams, corners, reinforcing flanges, or other interfering elements. The “test length” for these codes was 50.8 mm (2 inches). “Test length” means the gap from the clamp jaws to the top edge of the pendulum vane of the test apparatus. Five specimens per sample code were prepared and measured.

The orientation of the material relative to the Gurley resistance testing equipment may, for some materials, affect the measured bending resistance. This

is because some materials may have microscopic structural differences in different dimensions (e.g., length versus width) stemming from certain manufacturing processes (e.g., machine direction vs. cross-machine direction). As used and claimed herein, in addition to that described above, "bending resistance" means
5 the bending resistance of the plane of the material containing the length dimension 21 and the width dimension 23, regardless of the orientation at which the sample is cut or placed in the testing apparatus.

To contrast certain aspects of the invention from certain aspects of conventional dispensers, the thickness of several prototype dispenser materials as
10 well as of a variety of commercially available dispensers were measured. A Thwing-Albert, Model 89-100 thickness tester (available from Thwing-Albert Instrument Co., a business having offices in West Berlin, New Jersey, U.S.A.) or comparable apparatus is used to measure the thickness of each material. For purposes of the comparative examples of Table 1, 3 in. by 2 in. specimens were
15 cut from a section of each dispenser wall that was free of seams, welds, or other interfering elements. Five specimens per sample code were prepared and measured. An upper, circular pressure foot has a diameter of 28.7 mm, for an area of 645 sq. mm (1 square inch). A lower pressure foot should have a diameter equal to or larger than that of the upper pressure foot. The total dead load applied
20 to the test specimen is 235 gm-f (~ 3.57 kPa). The thickness should be measured after a dwell time of approximately three (3) seconds.

Table 1 sets forth the bending resistance and thickness for various materials, and also lists the weight, mounting position, specimen size, and conversion factor used to generate the bending resistance for each material in
25 accordance with TAPPI Standard Test T 543 om-11 as described above. Codes 1-8 are dispenser wall materials taken from commercially available wet wipes dispensers. Codes 9-13 are examples that embody principles of the present invention. Codes 9-11 are examples employing high density poly ethylene films available from Berry Plastics, a business having offices in Chippewa Fall, WI,
30 U.S.A. Code 12 is an example of a material employing 100% ethylene vinyl acetate (EVA) material, and Code 13 is an example of a material employing 80%

ethylene vinyl acetate (EVA) material and 20% polyethylene, both available from Promotion Services Group, Chicago IL, U.S.A.

TABLE 1

Code	Description	Wgt (g)	Distance of wgt from pivot (in)	Width (in)	Length (in)	Conversion Factor	Mean Resistance (mgf)	Mean Thickness (mils)
1	HUGGIES® Natural Care Soft Pack 32 ct.	5	1	1	1	2.78	8.01	2.1
2	Pampers® Sensitive Soft Pack 64 ct.	5	1	1	1	2.78	11.79	3.0
3	Pampers® Baby Fresh® Soft Pack 72 ct.	5	2	1	1	5.56	14.40	3.0
4	Wal-Mart Parent's Choice Soft Pack - 80 ct	5	2	1	1	5.56	17.63	1.9
5	Walgreens Premium Baby Wipes Soft Pack	5	1	1	1	2.78	8.20	2.5
6	Target Up & Up Soft Pack 88 wipes	5	2	1	1	5.56	19.85	2.3
7	HUGGIES® Natural Care Travel Case 16 ct	200	4	0.5	2.5	14,222	41,528	41.6
8	HUGGIES® Natural Care Tub 64 ct (front panel)	50	4	0.5	2.5	3,556	15,753	31.6
9	6 mil HDPE	5	2	1	1	5.56	21.24	5.8
10	8 mil HDPE	25	1	1	1	13.9	61.85	6.6
11	10 mil HDPE	25	2	1	1	27.8	85.90	9.8
12	100% EVA	25	1	1	1	13.9	69.78	11.7
13	80% EVA / 20% PEI	25	2	1	1	27.8	84.79	10.8

- 5 As shown in Table 1, Codes 9-13 all having bending resistance that are greater than Codes 1-6 (conventional flexible bags for wet wipes) but that are far less than Codes 7-8 (conventional hard containers for wet wipes). Furthermore, Codes 9-13 all have thicknesses that are greater than Codes 1-6 (conventional

flexible bags for wet wipes) but that are far less than Codes 7-8 (conventional hard containers for wet wipes).

It will be appreciated that details of the foregoing embodiments, given for purposes of illustration, are not to be construed as limiting the scope of this invention. Although only a few exemplary embodiments of this invention have been described in detail, those skilled in the art will readily appreciate that many modifications are possible in the exemplary embodiments without materially departing from the novel teachings and advantages of this invention. Accordingly, all such modifications are intended to be included within the scope of this invention, which is defined in the following claims and all equivalents thereto. Further, it is recognized that many embodiments may be conceived that do not achieve all of the advantages of some embodiments, particularly of the preferred embodiments, yet the absence of a particular advantage shall not be construed to necessarily mean that such an embodiment is outside the scope of the present invention.

We claim:

1. A refillable dispenser for pre-moistened wipes, the dispenser comprising a flexible pouch, the pouch having a front wall, a back wall, and an interior space between the front wall and the back wall,

the dispenser comprising a dispensing opening formed in the front wall, the dispenser further comprising a movable cover adapted to cover the dispensing opening,

the dispenser comprising a seam that can be opened to an open position and resealed to a closed position to connect the front wall to the back wall, the open position configured to define a refill opening,

wherein the front wall and the back wall are each formed from a flexible material having a bending resistance of between 21.0 milligrams of force and about 300 milligrams of force.

2. The refillable dispenser of claim 1, wherein the flexible material has a bending resistance of between 21.0 milligrams of force and 150 milligrams of force.

3. The refillable dispenser of claim 1, wherein the flexible material has a bending resistance of between about 40 milligrams of force and 150 milligrams of force.

4. The refillable dispenser of claim 1, wherein the flexible material has a bending resistance of between about 40 milligrams of force and 125 milligrams of force.

5. The refillable dispenser of claim 1, wherein the flexible material has a bending resistance of between about 60 milligrams of force and about 100 milligrams of force.

6. The refillable dispenser of any of claims 1-5, wherein the flexible material has a thickness of at least 5.0 mils.

7. The refillable dispenser of any of claims 1-5, wherein the flexible material has a thickness of at least about 8 mils.

8. The refillable dispenser of any of claims 1-5, wherein the flexible material has a thickness of between about 8 mils and about 15 mils.

9. The refillable dispenser of any of claims 1-8, wherein the dispensing opening is surrounded by a rigid ring, wherein the cover is hingedly attached to the ring.

10. The refillable dispenser of any of claims 1-9, wherein the seam comprises a press and seal seam or a sliding zipper seam.

11. The refillable dispenser of any of claims 1-10, wherein the front wall has a top edge and first and second side edges that extend perpendicularly from opposite ends of the front wall top edge, and wherein the back wall has a top edge and first and second side edges that extend perpendicularly from opposite ends of the back wall top edge.

12. The refillable dispenser of claim 11, where the front wall is connected to the back wall via a first side seam that connects the front wall first side edge to the back wall first side edge, via a second side seam that connects the front wall second side edge to the back wall second side edge, and via a bottom gusset wall that extends between and is formed integrally with the front wall and the back wall.

13. A refillable dispenser for pre-moistened wipes, the dispenser comprising a flexible pouch, the pouch having a front wall, a back wall, and an interior space between the front wall and the back wall,

wherein the front wall has a top edge and first and second side edges that extend perpendicularly from opposite ends of the front wall top edge, and wherein

the back wall has a top edge and first and second side edges that extend perpendicularly from opposite ends of the back wall top edge,

wherein the front wall is connected to the back wall via a first side seam that connects the front wall first side edge to the back wall first side edge, via a second side seam that connects the front wall second side edge to the back wall second side edge, and via a bottom gusset wall that extends between and is formed integrally with the front wall and the back wall,

the dispenser comprising a dispensing opening formed in the front wall, the dispenser further comprising a movable cover adapted to cover the dispensing opening, wherein the dispensing opening is surrounded by a rigid ring, wherein the cover is hingedly attached to the ring.

the dispenser comprising a seam that can be opened to an open position and resealed to a closed position to connect the front wall to the back wall, the open position configured to define a refill opening,

wherein the front wall and the back wall are each formed from a flexible material having a bending resistance of between about 40 milligrams of force and 150 milligrams of force,

wherein the flexible material has a thickness of at least 5.0 mils.

14. The refillable dispenser of claim 13, wherein the flexible material has a bending resistance of between about 40 milligrams of force and 125 milligrams of force.

15. The refillable dispenser of claim 14, wherein the flexible material has a bending resistance of between about 60 milligrams of force and about 100 milligrams of force.

16. The refillable dispenser of any of claims 13-15, wherein the flexible material has a thickness of at least about 8 mils.

17. The refillable dispenser of any of claims 13-15, wherein the flexible material has a thickness of between about 8 mils and about 15 mils.

18. The refillable dispenser of any of claims 1-17, wherein the dispenser further includes a stack of pre-moistened wipes.