efficiently use storage and/or shipping space, and therefore may result in unnecessary cost; and/or may not have satisfactory dispense rates, for example. Accordingly, there is a need for a storage and dispense system that is better than traditional storage and dispense systems in one or more ways and overcomes or reduces the effects of the disadvantages provided above.

Brief Summary of the Invention

[004] ~~The present disclosure, in one embodiment, relates to~~ Disclosed herein is a liner-based assembly having an overpack and a liner disposed within the overpack. The liner may be formed by blow molding a liner preform within the overpack to form a blow molded liner substantially conforming to the interior of the overpack and generally forming an interface with an interior of the overpack. The overpack may be manufactured by an extrusion, stamping, or punching process, or by blow molding. In some embodiments, the overpack may be composed of a metal. In particular embodiments, the liner may be blow molded within the overpack while the overpack is still cooling from its own blow molding process. For improved performance, the overpack may be absent any bottom vent.

[005] ~~The present disclosure, in another embodiment, relates to~~ Disclosed herein is a method for pressurizing a liner-based assembly for transportation and/or handling, wherein the liner-based assembly includes an overpack and a liner positioned within the overpack. The method may include pressurizing an interior of the liner to a first pressure, P1, and an annular space between the liner and the overpack to a second pressure, P2, such that a resulting pressure relationship is: P1 > P2 > an ambient pressure external to the overpack. In particular embodiments, the pressurizing is performed by at least partially filling the interior of the liner with a gas at a first temperature, Tl, such that a resulting temperature relationship generally immediately after filling is: Tl < a temperature of gas in the annular space < an ambient temperature external to the overpack, and then sealing the liner and overpack. The gas within the interior of the liner may then be permitted to warm toward the ambient temperature, thereby increasing the pressures within the liner and the annular space.

[006] ~~The present disclosure, in yet another embodiment, relates to~~ Disclosed herein is a liner-based assembly including an overpack, a liner disposed within the overpack, and a substantially rectangular box of corrugated material having an opening at one end and an interior dimensioned to receive the overpack. The box of corrugated material may include a reinforcing element providing support and/or stability within the box for the overpack. The box of corrugated material may also include a handle opening on at least one side thereof.

[007] ~~The present disclosure, in still another embodiment, relates to a method for detecting when a collapsible liner of a liner-based assembly nears empty during pressure dispense of the contents of the liner. The method may include controlling introduction of an inlet pressure gas by the alternate switching of a control valve between an activated and non-activated setting, the inlet pressure gas being introduced in an annular space between an overpack and the liner when the control valve is activated. The method may also include monitoring the amount of time the control valve is activated between periods of non-activation and determining when the liner is near empty based on the amount of time the control valve is activated.~~

According to a first aspect of the present invention, there is provided a method for detecting when a collapsible liner of a liner-based assembly nears empty during pressure dispense of the contents of the liner, the method comprising: controlling introduction of an inlet pressure gas by the alternate switching of a control valve between an activated and non-activated setting, the inlet pressure gas being introduced in an annular space between an overpack and the liner when the control valve is activated; monitoring the amount of time the control valve is activated between periods of non-activation; and determining when the liner is near empty based on the amount of time the control valve is activated.

[008] ~~The present disclosure, in a further embodiment, also relates to a method for detecting when a collapsible liner of a liner-based assembly nears empty during pressure dispense of the contents of the liner. The method similarly includes controlling introduction of an inlet pressure gas by the alternate switching of a control valve between an activated and non-activated setting, the inlet pressure gas being introduced in an annular space between an overpack and the liner when the control valve is activated. The method may also include monitoring the frequency of the control valve activation and determining when the liner is near empty based on the frequency of the control valve activation.~~

According to a second aspect of the present invention, there is provided a method for detecting when a collapsible liner of a liner-based assembly nears empty during pressure dispense of the contents of the liner, the method comprising: controlling introduction of an' inlet pressure gas by the alternate switching of a control valve between an activated and non-activated setting, the inlet pressure gas being introduced in an annular space between an overpack and the liner when the control valve is activated; monitoring the frequency of the control valve activation; and determining when the liner is near empty based on the frequency of the control valve activation.

[009] ~~The present disclosure, in still a further embodiment, relates to~~ Disclosed herein is a liner-based assembly including a blow-molded overpack comprised of polyethylene terephthalate, a blow-molded liner disposed within the overpack, the liner comprised of a polymer material, wherein the overpack and liner have a combined wall thickness of about 0.3 mm or less, and a base cup configured to at least partially surround an exterior of the overpack. The overpack and/or the liner may be blow-molded with one or more

CLAIMS

What is claimed is:

1. A liner-based assembly comprising:

an overpack; and

a liner disposed within the overpack, the liner formed by blow molding a liner preform within the overpack to form a blow molded liner substantially conforming to the interior of the overpack and generally forming an interface with an interior of the overpack.

2. The liner-based assembly of Claim 1 , wherein the overpack comprises metal.

3. The liner-based assembly of Claim 1 , wherein the overpack is blow molded.

4. The liner-based assembly of Claim 3, wherein the liner is blow molded within the overpack while the overpack is cooling from a blow molding process during which a preform was blow molded into the overpack.

5. The liner-based assembly of Claim 1 , wherein the overpack is manufactured by one of at least an extrusion, stamping, or punching process.

6. The liner-based assembly of Claim 1 , wherein the overpack is absent a bottom vent.

7. A method for pressurizing a liner-based assembly for transportation and/or handling, the liner-based assembly having an overpack and a liner positioned within the overpack, the method comprising:

pressurizing an interior of the liner to a first pressure, P_1, and an annular space between the liner and the overpack to a second pressure, P_2, such that a resulting pressure relationship is:

$P_1 > P_2 >$ an ambient pressure external to the overpack.

8. The method of Claim 7, wherein the pressurizing is performed by:

~~at least partially filling the interior of the liner with a gas at a first temperature, T_1, such that a resulting temperature relationship generally immediately after filling is:~~

~~T_1 < a temperature of gas in the annular space < an ambient temperature external to the overpack; and~~

~~sealing the liner and overpack.~~

~~9. The method of Claim 9, further comprising permitting the gas within the interior of the liner to warm toward the ambient temperature, thereby increasing the pressures within the liner and the annular space.~~

~~10. A liner-based assembly comprising:~~

~~an overpack;~~

~~a liner disposed within the overpack; and~~

~~a substantially rectangular box of corrugated material having an opening at one end and an interior dimensioned to receive the overpack.~~

~~11. The liner-based assembly of Claim 10, wherein the box of corrugated material comprises a reinforcing element providing at least one of support or stability within the box for the overpack.~~

~~12. The liner-based assembly of Claim 10, wherein the box of corrugated material comprises a handle opening on at least one side thereof.~~

~~13~~1. A method for detecting when a collapsible liner of a liner-based assembly nears empty during pressure dispense of the contents of the liner, the method comprising:

controlling introduction of an inlet pressure gas by the alternate switching of a control valve between an activated and non-activated setting, the inlet pressure gas being introduced in an annular space between an overpack and the liner when the control valve is activated;

monitoring the amount of time the control valve is activated between periods of non-activation; and

determining when the liner is near empty based on the amount of time the control valve is activated.

~~14~~2. A method for detecting when a collapsible liner of a liner-based assembly nears empty during pressure dispense of the contents of the liner, the method comprising:

controlling introduction of an' inlet pressure gas by the alternate switching of a control valve between an activated and non-activated setting, the inlet pressure gas being introduced in an annular space between an overpack and the liner when the control valve is activated;

monitoring the frequency of the control valve activation; and

determining when the liner is near empty based on the frequency of the control valve activation.

~~15. A liner-based assembly comprising:~~

~~a blow-molded overpack comprised of polyethylene terephthalate;~~

~~a blow-molded liner disposed within the overpack, the liner comprised of a polymer material, the overpack and liner having a combined wall thickness of about 0.3 mm or less; and~~

~~a base cup configured to at least partially surround an exterior of the overpack.~~

~~16. The liner-based assembly of Claim 15, wherein at least one of the overpack and liner are blow-molded with one or more panels of generally rectangular shape molded into a wall thereof.~~

~~17. The liner-based assembly of Claim 15, wherein the liner has a volume of up to about 4.7 liters.~~

~~18. The liner-based assembly of Claim 17, further comprising an empty weight of between about 260-265 grams.~~

~~19. The liner-based assembly of Claim 15, wherein at least one of the liner, overpack, and base cup includes a UV protectant selected such that the liner-based assembly has less than 1% light transmittance in a wavelength range of about 190-425 nm.~~

~~20. The liner-based assembly of Claim 15, wherein the overpack is comprised of a non-hazardous material and is recyclable and the liner is incineratable.~~

~~21. The liner-based assembly of Claim 15 , further comprising a liner collar configured to fit substantially around a neck of the liner to maintain a position of the liner at a specified vertical position with respect to a mouth of the overpack.~~

~~22. The liner-based assembly of Claim 21 , wherein the liner collar comprises a feature to prevent rotation of the liner within the overpack.~~

~~23. The liner-based assembly of Claim 15, further comprising a cap configured for coupling with at least one of the overpack and liner for sealing the contents of the liner therein, the cap comprising a teartab which may be removed permitting access to the liner.~~

~~24. The liner-based assembly of Claim 23, wherein the cap comprises misconnect prevention means for preventing misconnection between the cap and a dispense connector.~~

~~25. The liner-based assembly of Claim 23, wherein the cap further comprises a breakseal that is configured to be at least one of pierced, removed, or punctured permitting access to the interior of the liner.~~