OPHTHALMIC LENS PACKAGE WITH A DEFORMABLE BOTTOM AND METHODS OF ITS USE

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ABSTRACT
An ophthalmic lens package including a deformable bottom and deformable arms.
OPHTHALMIC LENS PACKAGE WITH A DEFORMABLE BOTTOM AND METHODS OF ITS USE

This application is a non-provisional filing of a provisional application, U.S. Ser. No. 60/720,753, filed on Sep. 27, 2005.

FIELD OF THE INVENTION

The present invention relates to an ophthalmic lens package and, more particularly, to an ophthalmic lens package adapted for improved accessibility to the contents thereof.

BACKGROUND OF THE INVENTION

Ophthalmic lenses, including contact lenses, intraocular lenses and overlay lenses and particularly disposable contact lenses, have been conventionally packaged in “blister packs.” In general, a blister pack comprises a rigid plastic (e.g., polypropylene), concave-shaped receptacle for receiving an ophthalmic lens and a flexible cover, typically made from a laminate material (such as metal foil), which is removably attached to the receptacle for enclosing the lens therein. Within such blister pack are a single ophthalmic lens and a sufficient amount of contact lens solution to prevent drying of the ophthalmic lens and to maintain the ophthalmic lens readily available for use. While conventional blister packs provide many users with a convenient means for shipping and storing ophthalmic lenses, some users have trouble removing the lens from the contact lens solution and the lenses are damaged during removal from the package. Further, lens can often stick to the inner surface of the laminate and may damaged or lost when users open their packages. Accordingly, there is a need for an ophthalmic lens package that provides user’s easy access to its contents on a consistent basis. This need is met by the following invention.

BRIEF DESCRIPTION OF THE DRAWINGS

For a more complete understanding of the present invention, reference is made to the following detailed description of an exemplary embodiment considered in conjunction with the accompanying drawings, in which:

FIG. 1 is a top perspective view of an ophthalmic lens package constructed in accordance with an exemplary embodiment of the present invention;

FIG. 2 is a cross-sectional view of the ophthalmic lens package of FIG. 1 in a closed position;

FIG. 3 is a top perspective view of, an ophthalmic lens package of the invention in an open position; and

FIG. 4 is a cross-sectional view of the ophthalmic lens package in an open position.

DETAILED DESCRIPTION OF THE INVENTION

The invention includes a package for enclosing an ophthalmic lens comprising, a deformable bottom comprising a deformable well, said deformable bottom comprising an outer surface, an inner surface and two or more deformable arms extending from said inner surface wherein said two or more deformable arms and said deformable well may be moved together between an open and a closed position, wherein an ophthalmic lens and its packaging solution are enclosed by said two or more deformable arms and said deformable well in the closed position and said ophthalmic lens is exposed when said package is in the open position.

FIGS. 1, 2 and 3 illustrate an ophthalmic lens package 10 includes circular side wall 14, deformable bottom 16, and four deformable arms 18. Circular side wall 14 has a top 15 and a bottom 17. Deformable well 20 extends from deformable bottom 16 and deformable arms 18 extend from the inner surface 22 of deformable bottom 16. Referring to FIG. 1 deformable arms 18 and deformable well 20 are closed to enclose ophthalmic lens (not shown) and its solution (not shown) therein. Flexible cover 12 is shown as partially attached to top 15 of side wall 14. FIG. 2 illustrates a cross sectional view of a closed package. Deformable arms 18 and deformable well 20 enclose ophthalmic lens 24 and its solution. This package is sealed by flexible cover 12, which is attached to top 15 of side wall 14.

As illustrated in FIGS. 1 and 2, the furthest surface of said deformable arms from said deformable bottom do not touch in the closed position. The furthest surface of said deformable arms 18 may contact or overlap one another when the package is in the closed position. However, when package 10 is in the closed position, it is preferred that the furthest surface of said deformable arms 18 be close enough to one another to enclose lens 24 if package 10 is moved by any or all of the following, seating the package on its flexible cover, rolling it on its side wall, shaking it, and the like. FIGS. 3 and 4 illustrate package 10 in the opened position. Deformable well 20 of FIG. 4 is moved in the direction of arrow 26 by a force such as a user’s finger. The movement of deformable well 20, from the outer surface 28 displaces deformable arms 18 to expose lens 24. Lens 24 is presented to the user and may be easily removed without requiring the user to insert his or her finger into a well containing packaging solution. An additional advantage of the invention is that the enclosed ophthalmic lens does not come into contact with the flexible cover when said two deformable arms and said deformable well are in the closed position. This prevents the ophthalmic lens from sticking to the flexible cover.

As used herein, “ophthalmic lens” refer to a device that resides on the eye, including but not limited to soft contact, lenses, hard contact lenses, intraocular lenses, overlay lenses, preferably soft contact lenses. Flexible cover 12 may be manufactured from a foil/polymer laminate or coextrusion, comprising a metal layer, such as aluminum, and a polymer layer, such as polypropylene, coating the metal layer. Alternatively, flexible cover 12 may be manufactured from other materials, such as a combination of polymers with various barrier and sealing characteristics formed into a laminate or coextrusion. In the illustrated embodiment, when package 10 is closed, flexible cover 12 is sealed to the top 15 of circular side wall 14 in order to prevent the loss or evaporation of the solution from the package 10 and to prevent contamination of the contents thereof from foreign objects such as debris and dirt particles. The preferred method of sealing the surface preferably by heat sealing. Alternatively, other sealing means, such as adhesives, induction sealing or sonic welding, may be utilized.

Packaging solutions for the ophthalmic lenses include but are not limited to saline solution, water or buffered aqueous solutions, and the preferred solution is aqueous saline solution. The packaging solution is present in a quantity sufficient to keep the ophthalmic lens saturated to retain its intended shape (i.e., convex shape) and softness when release from package 10.
The invention includes a method of packaging an ophthalmic lens comprising inserting an ophthalmic lens into a package comprising, a deformable bottom comprising a deformable well, said deformable bottom comprising an outer surface, an inner surface and two or more deformable arms extending from said inner surface wherein said two or more deformable arms and said deformable well may be moved together between an open and a closed position, wherein an ophthalmic lens and its packaging solution are enclosed by said two or more deformable arms and said deformable well in the closed position and said ophthalmic lens is exposed when said package is in the open position and sealing said package with a flexible cover.

Further, the invention includes a package for an ophthalmic lens comprising, side walls and a deformable bottom comprising a deformable well, said deformable bottom comprising an outer surface, an inner surface and two or more deformable arms extending from said inner surface wherein said two or more deformable arms and said deformable well may be moved together between an open and a closed position, wherein an ophthalmic lens and its packaging solution are enclosed by said two or more deformable arms and said deformable well in the closed position and said ophthalmic lens is exposed when said package is in the open position.

Still further the invention includes a method of inserting an ophthalmic lens into the eye of a user comprising opening a package comprising, a deformable bottom comprising a deformable well, said deformable bottom comprising an outer surface, an inner surface and two or more deformable arms extending from said inner surface wherein said two or more deformable arms and said deformable well may be moved together between an open and a closed position, wherein an ophthalmic lens and its packaging solution are enclosed by said two or more deformable arms and said deformable well in the closed position and said ophthalmic lens is exposed when said package is in the open position and sealing said package with a flexible cover into the eye of a user comprising opening a package comprising, a deformable bottom comprising a deformable well, said deformable bottom comprising an outer surface, an inner surface and two or more deformable arms extending from said inner surface wherein said two or more deformable arms and said deformable well may be moved together between an open and a closed position, wherein an ophthalmic lens and its packaging solution are enclosed by said two or more deformable arms and said deformable well in the closed position and said ophthalmic lens is exposed when said package is in the open position and sealing said package with a flexible cover.

It will be understood that the embodiments described herein are merely exemplary and that a person skilled in the art may make many variations and modifications without departing from the spirit and scope of the invention. Specifically, the present invention has been adapted for use in housing a single ophthalmic lens and an amount of solution. However, the present invention can be utilized to house a plurality of ophthalmic lenses and an amount of solution therefor. Further features and advantages of the invention will appear more clearly on a reading of the detailed description of an exemplary embodiment of the invention, which is given below by way of example only with reference to the accompanying drawings. All such variations and modifications are intended to be included within the scope of the invention as defined in the appended claims.

What is claimed is:

1. A package for enclosing an ophthalmic lens comprising, a deformable bottom comprising a deformable well, said deformable bottom comprising an outer surface, an inner surface and two or more deformable arms extending from said inner surface wherein said two or more deformable arms and said deformable well may be moved together between an open and a closed position, wherein an ophthalmic lens and its packaging solution are enclosed by said two or more deformable arms and said deformable well in the closed position and said ophthalmic lens is exposed when said package is in the open position.

2. The package of claim 1, further comprising side walls comprising a top and a bottom.

3. The package of claim 2, further comprising a flexible cover, detachably sealed to said top.

4. The package of claim 1 comprising at least three deformable arms.

5. The package of claim 1 comprising at least four deformable arms.

6. The package of claim 1, further comprising illustrated or printed instructions that instruct the user to open said package.

7. A method of inserting an ophthalmic lens into the eye of a user comprising opening a package comprising, a deformable bottom comprising a deformable well, said deformable bottom comprising an outer surface, an inner surface and two or more deformable arms extending from said inner surface wherein said two or more deformable arms and said deformable well may be moved together between an open and a closed position, wherein an ophthalmic lens and its packaging solution are enclosed by said two or more deformable arms and said deformable well in the closed position and said ophthalmic lens is exposed when said package is in the open position and sealing said package with a flexible cover.

8. The method of claim 7 wherein said package comprises three or more deformable arms.

9. The method of claim 7 wherein said package comprises side walls.

10. The method of claim 9 further comprising instructing said user how to remove an ophthalmic lens from said package using illustrated or printed instructions.

11. A method of packaging an ophthalmic lens comprising inserting an ophthalmic lens into a package comprising, a deformable bottom comprising a deformable well, said deformable bottom comprising an outer surface, an inner surface and two or more deformable arms extending from said inner surface wherein said two or more deformable arms and said deformable well may be moved together between an open and a closed position, wherein an ophthalmic lens and its packaging solution are enclosed by said two or more deformable arms and said deformable well in the closed position and said ophthalmic lens is exposed when said package is in the open position and sealing said package with a flexible cover.

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