

SUPPORT STRUCTURE FOR SHIPPING AND STORAGE OF REPLACEMENT CONTACT LENSES

TECHNICAL FIELD

[0001] The present systems and methods relate to contact lens packaging and more particularly, to support structures used with contact lens packaging and storage cases for the shipping and storage of contact lenses.

BACKGROUND

[0002] Soft disposable contact lenses are commonly contained in disposable packages. As packaging adds to the overall cost of the lens, it should be made as economically as possible but without compromise to the requisite packaging criteria. The traditional blister pack packaging for disposable lenses (both bi-weekly and daily) consists of a polypropylene receptacle for the lens (herein after referred to as a "boat"), topped by a multi-layer film including polyethylene, aluminum, a bonding agent and polypropylene. The boat is typically an injection molded plastic which has high stiffness and includes a preformed recess. The boat is filled with a suitable storage solution, preferably saline, and receives a single lens in situ. The blister pack is then autoclaved, typically using steam and pressure, to terminal sterility. These blister packs are presented to the patient in boxes of individual packs or as multiple blister strips.

[0003] The boxes used to ship and store the individual packs or blister strips typically comprise paper products. Boxes made of paper product often have a relatively low strength that provides little protection for the individual packs or blister strips. The boxes often rely on the rigidity and strength of the individual packs or blister strips to keep the boxes from being crushed or significantly damaged during shipping and storage. The materials used for the boxes are usually susceptible to damage from water and humidity, which may degrade the box to a condition where the box is unsuitable for its intended purpose of retaining the individual packs or blister strips during shipping and storage.

[0004] There is a need in the contact lens industry to provide improvements in packaging used to ship and store individual packs and blister strips of contact lens packages.

SUMMARY

[0005] One aspect of the present disclosure relates to a contact lens package assembly. The contact lens package assembly includes a primary lens package and a support member. The primary lens package has at least one contact lens sealed therein. The support member is sized to carry the primary lens package within a secondary package during shipping, and sized to removably mount to a storage case to retain the primary lens package within the storage case after removal from the secondary packaging. The support structure may be constructed with a drawer shape having a cavity defined therein sized to receive the primary lens package. The support member may have a generally rigid construction. The support member may comprise recycled polymer material such as polypropylene.

[0006] Another aspect of the present disclosure relates to a contact lens package system that includes at least one primary lens package, at least one support member, and a storage case. The at least one primary package is configured to hold a contact lens product. The at least one support member is configured to hold the at least one first lens package. The storage case is configured to releasably hold at least one of the support members. The support member may hold the at least one primary lens package during shipping and during later storage of the at least one primary lens package in the storage case. The at least one support member may have a greater rigidity than the rigidity of the at least one first lens package. A system may further include a flexible secondary package configured to hold the support member and at least one primary lens package during shipping.

[0007] Another aspect of the present disclosure relates to a method of shipping and storing a contact lens package. The method includes providing a contact lens package having a contact lens sealed therein, and a support structure sized to receive the contact lens package. The method may include positioning the contact lens package in the support structure, inserting the support structure in a secondary packaging for shipping, removing the support structure from the secondary packaging, and inserting the support structure in a storage case for storage.

[0008] Another method in accordance with the present disclosure relates to manufacturing a support structure used for shipping and storing a contact lens package. The method includes forming a contact lens using a polymer mold, wherein the formed

contact lens is retained in the contact lens package. The method further includes recycling the polymer mold, and forming the support structure from the recycled polymer mold. The support structure includes a cavity sized to hold the primary contact lens package. The contact lens package may include the contact lens formed using the polymer mold. The polymer mold may comprise polypropylene.

BRIEF DESCRIPTION OF THE DRAWINGS

[0009] The accompanying drawings illustrate various embodiments of the principles described herein and are a part of the specification. The illustrated embodiments are merely examples and do not limit the scope of the claims.

[0010] FIG. 1 is an exploded perspective view of a portion of an example contact lens package assembly in accordance with the present disclosure.

[0011] FIG. 2 is a perspective view of the portion of the contact lens package assembly of FIG. 1 assembled together.

[0012] FIG. 3 is an exploded perspective view of a primary lens package and support member of the portion of the contact lens package assembly of FIG. 1 arranged for insertion into a storage case.

[0013] FIG. 4 is a front perspective view of the primary lens package and support member inserted into the storage case shown in FIG. 3.

[0014] FIG. 5 is a rear perspective view of the assembly shown in FIG. 4.

[0015] FIG. 6 is a front perspective view showing partial removal of a plurality of support members carrying first lens packages from the storage case shown in FIG. 4.

[0016] FIG. 7 is a top perspective view of the support member shown in FIGS. 1-6.

[0017] FIG. 8 is a top view of the support member of FIG. 7.

[0018] FIG. 9 is a bottom view of the support member of FIG. 7.

[0019] FIG. 10 is a front view of the support member of FIG. 7.

[0020] FIG. 11 is a rear view of the support member of FIG. 7.

[0021] FIG. 12 is a top perspective view of the primary lens package and support member of FIG. 1 inserted into a storage sleeve in accordance with the present disclosure.

[0022] FIG. 13 is a perspective view showing the primary lens package and storage member partially removed from the storage sleeve of FIG. 12.

[0023] FIG. 14 is a perspective view of another example storage case in accordance with the present disclosure holding a plurality of support members carrying first lens packages.

[0024] Throughout the drawings, identical reference numbers designate similar, but not necessarily identical, elements.

DETAILED DESCRIPTION

[0025] The present disclosure relates to support structures for use in contact lens packaging, shipping and storage. An example support structure (also referred to herein as a support member) may be used to support at least one contact lens package during shipping and/or storage of the contact lens package.

[0026] The contact lens package may be a primary contact lens package that includes a contact lens sealed therein (e.g., a single-day use disposable contact lens). The contact lens package may include a substrate that defines a contact lens receiving portion sized to receive the contact lens, and a cover sheet connected to the substrate to seal the contact lens within the contact lens package. At least one of the substrate and cover sheet may include a foil layer. In some arrangements, the contact lens package may include first and second foil layers and may be referred to as a foil-on-foil contact lens package. The support structure used to support the contact lens package may have a greater rigidity property than the contact lens package. The support structure may also provide at least one of additional strength, support and protection for the contact lens package during at least one of shipping and storage of the contact lens package.

[0027] The support structure, whether or not carrying the contact lens package, may be insertable into a secondary or shipping package. The secondary package may further define an interior portion sized to receive at least one support member carrying at least one contact lens package. A secondary package may have a generally flexible, pliable construction and may be used for at least one of shipping and storage of the at least one contact lens package. An opening into the secondary package may be resealable to provide repeated access to the at least one contact lens package.

[0028] The support member may also be configured to be removably positioned within a storage case for storage of at least one contact lens package retained in the support member. The support member may have a drawer-shaped construction having a cavity or interior sized to receive at least one contact lens package. The drawer-shaped support member may slide into and out of a storage case having at least one slot or opening sized to receive the support member. The support member may be substantially enclosed within the storage case. A portion of the support member may be visible from outside of the storage case when the support member is positioned within the storage case.

[0029] The support member may include at least one graphic that is visible when the support member is stowed within the storage case. The graphic may include information related to the at least one contact lens package retained by the support member. The storage case itself may also include at least one graphic. The graphic of the storage case may also provide information related to the at least one contact lens package retained by the support member.

[0030] Another aspect of the present disclosure relates to a storage sleeve or storage cover sized to receive at least one support member that carries at least one contact lens package. The storage sleeve may include a cavity or interior sized to receive at least one support member. The storage sleeve may include at least one graphic. The graphic of the storage sleeve may convey information about the at least one contact lens package held by the support member. The storage sleeve may have physical properties that are different from those of the storage case. For example, the storage sleeve may comprise relatively thin materials and be constructed as a disposable item. In contrast, the storage case may comprise greater thickness and structure, and be intended for a more permanent or long-term use.

[0031] Another aspect of the present disclosure relates to methods of manufacturing the support member. According to one exemplary embodiment, the support member may comprise materials that are recycled from other contact lens-related manufacturing processes. For example, the support member may include materials recycled from the plastic molds used to form the contact lenses that are held in the contact lens packages. Using such recycled materials may reduce overall material

waste in the process of manufacturing, shipping and storing contact lens-related products.

[0032] In the following description, for purposes of explanation, numerous specific details are set forth in order to provide a thorough understanding of the present systems and methods. It will be apparent, however, to one skilled in the art that the present apparatus, systems and methods may be practiced without these specific details. Reference in the specification to "an embodiment," "an example," "an arrangement," or similar language means that a particular feature, structure, or characteristic described in connection with the embodiment or example is included in at least that one embodiment, but not necessarily in other embodiments. The various instances of the phrase "in one embodiment" or similar phrases in various places in the specification are not necessarily all referring to the same embodiment.

[0033] Referring to FIGS. 1-11, an example contact lens package assembly 10 is shown and described. Various features of the contact lens package assembly 10 may be used separately and individually, while other portions of the contact lens package assembly 10 may be combined for a specific use independent of the other portions of the contact lens package assembly 10. In one example, all of the portions of the contact lens package assembly 10 are utilized together and have utility as a shipping and storing system, with multiple options for what is used to ship and store a contact lens. Certain aspects of the contact lens package assembly 10 may have multiple purposes related to shipping and storing of contact lenses in the primary contact lens package.

[0034] The contact lens package assembly 10 may include a first or primary lens package 12, a second or secondary lens package 14, and a support member 16 (see FIGS. 1-2). The support member 16 may be sized and configured to retain at least one of the primary lens packages 12. The primary lens package 12 and support member 16 may be inserted into and stored within the secondary lens package 14. The primary lens package 12 may include at least one contact lens. The support member 16 may provide at least some support, strength and/or protection for the primary lens package 12. The secondary lens package 14 may help maintain the primary lens package 12 within the support member 16 during shipping and storage. The secondary lens package 14 may provide other functions and benefits related to the primary lens package 12.

[0035] The primary lens package 12 may include a plurality of lens package portions 22A-C that each includes a contact lens 24. The lens package portions 22A-C may be separable from each other. Each of the lens package portions 22A-C may include a plurality of layers of material that are separable to obtain access to the contact lenses 24. In one example, each of the lens package portions 22A-C includes a substrate defining a lens receiving portion sized to receive one of the contact lenses 24, and a cover sheet releasably connected to the substrate to seal the contact lens within the contact lens receiving portion. The lens package portions 22A-C may have a generally flexible construction. In other arrangements, at least the substrate portion of the lens package portions 22A-C may have sufficient structural integrity to maintain the lens receiving portion during typical use of the primary lens package 12.

[0036] The support member 16 may have a greater stiffness property and structural integrity than the primary lens package 12. The support member 16 may be configured to provide protection to the primary lens package 12 from forces applied from various directions when the primary lens package 12 is retained in the support member 16. Other features and functionality that may be related to the primary lens package 12 are described in Singapore Patent Application filed on 18 October 2011 and entitled "Packaging for Disposable Soft Contact Lenses Having Pre-Formed Multi-Layer Structural Laminate", which patent application is incorporated herein in its entirety by this reference.

[0037] As disclosed in the above-mentioned Singapore Patent Application entitled "Packaging for Disposable Soft Contact Lenses Having Pre-Formed Multi-Layer Structural Laminate", the primary lens package 12 may relate to a package with a preformed laminate substrate. One layer of the laminate substrate is configured to provide sufficient structural rigidity to maintain a shape (e.g., a lens receiving portion) that is preformed in the substrate. In one example, the first layer includes a polymer material such as polypropylene. Another layer of the laminate substrate may include a second material that provides different properties from the first layer such as, for example, light-reflectivity, strength, and resistance to water/vapor permeability. The package also includes a cover sheet that is connected to the substrate and seals a contact lens within a lens receiving portion formed in the substrate. The cover sheet may also be a laminate having at least two layers. The first layer may comprise, for example, a

polymer that assists in connecting the cover sheet to the substrate. Another layer of the cover sheet may include a material having different properties such as, for example, greater light-reflectivity, strength, or resistance to water/vapor permeability properties.

[0038] Alternatively, the primary lens package 12 may assume any number of primary contact lens packaging configurations, including, but in no way limited to, traditional boat type packaging and/or any primary contact lens packaging disclosed in U.S. Pat. No. 7,828,137, which patent is incorporated herein by reference in its entirety.

[0039] A further aspect related to the primary lens package 12 is directed to a single contact lens package that houses multiple contact lenses. The contact lens package may include a plurality of lens receiving portions (e.g., recesses, depressions or “boats”) formed in the substrate. The lens receiving portions may be arranged in multiple directions such as multiple rows, wherein each row includes at least one contact lens receiving portion. The rows may be arranged opposite each other or side-by-side. Some contact lens packages may provide for separation of at least one lens receiving portion from the other lens receiving portions. Other arrangements may include a plurality of lens receiving portions that are inseparable from each other once the contact lens package is assembled.

[0040] Some primary lens packages 12 may include layers of material for the cover sheet and substrate that are added during assembly of the contact lens package rather than being provided with the substrate and/or cover sheet as a laminate. In one example, at least one layer of light-reflective material or liquid/vapor impermeable material is added to the substrate or the cover sheet after sealing a contact lens within a lens receiving portion of the substrate.

[0041] The primary lens package 12 may include a compression member that covers the lens receiving portion after positioning a contact lens within the lens receiving portion. The compression member may help compress the contact lens within the lens receiving portion to decrease a side profile (e.g., depth) of the contact lens from a sagittal depth to a compressed depth. The compression member may be held in place with the cover sheet. The compression member and portions of the substrate (e.g., lens receiving portion) may include a plurality of perforations that provide a more advantageous interface with some types of contact lenses. Compressing the contact lens within the contact lens package may make it possible to provide the contact lens

package with a reduced overall thickness, which may provide a number of advantages related to packaging, storing, and shipping the contact lens package.

[0042] The primary lens packages 12 may be created in a single manufacturing line. The substrate and sheet may comprise materials capable of maintaining a sterile environment within the package where the lens is disposed. The sterile environment may be created by heating the first material of the substrate. Light-sensitive materials disposed within the package may also be protected from light to limit degradation of the light-sensitive materials. The substrate and cover sheet may comprise materials that permit printing of graphics that minimize negative effects on the light-reflecting attributes or the sterile environment of the contact lens package. In some arrangements, the contact lens package may be configured for use as an insertion aid. The materials of the contact lens package may promote improved sealing between the substrate and cover sheet layers. For example, the laminate materials used for at least one of the substrate and cover sheet may include layers of material in the area where a seal is formed between the substrate and cover sheet that provide improved seals (e.g., releasable seals, permanent seals, hermetic seals, heat seals, etc.).

[0043] The secondary lens package 14 may include a package interior 30 and package closure portions 32 at opposing ends of the secondary lens package 14 (see FIG. 2). The secondary lens package 14 may, according to one exemplary embodiment, have a construction that is less rigid and has less structural integrity than the support member 16. The secondary lens package 14 may, according to one exemplary embodiment, have a generally flexible construction. The secondary lens package 14 may also, according to one exemplary embodiment, be constructed as a pouch. The secondary lens package 14 may be expandable to accommodate a single primary lens package 12 and a single support member 16, or a plurality of primary lens packages 12 and a plurality of support members 16.

[0044] The secondary lens package 14 may be resealable to provide repeated access to the primary lens package 12 and support member 16 retained within the secondary lens package 14. The secondary lens package 14 may, according to one exemplary embodiment, provide an inert environment within the package interior 30. The inert environment provided by the secondary lens package 14 may increase a shelf-life of the primary lens package 12 and its contents. The secondary lens package 14

may have utility for both shipping and storage of the primary lens package 12. Further details concerning the construction and utility of the secondary lens package 14 is described in Singapore Patent Application filed on 18 October 2011, and entitled "Contact Lens Secondary Packaging and Methods", which patent application is incorporated herein in its entirety by this reference.

[0045] As disclosed in the above-mentioned Singapore Patent Application entitled "Contact Lens Secondary Packaging and Methods", at least one contact lens may be held in a first or primary lens package, and the first contact lens package is inserted into and sealed within a second or secondary lens package 14. The secondary lens package may provide an inert environment that helps maintain a useful life or shelf life of the contact lens held in the first or primary contact lens package. The secondary lens package may also provide a waterproof environment within which the first or primary contact lens package is stored. The secondary lens package may also provide at least some protection for the first or primary contact lens package during shipping and handling.

[0046] The secondary lens package 14 may be a resealable package that permits inserting and removing at least one primary contact lens package. The secondary lens package may, according to one exemplary embodiment, comprise inert materials. The secondary lens package may, according to one exemplary embodiment, comprise layers of metal-based materials such as foil. The secondary lens package may, according to one exemplary embodiment, comprise first and second laminate layers that are sealed together around a periphery to define an interior sized to receive the primary lens package that holds at least one contact lens. Each of the laminate layers may comprise a polymer layer and a metal (e.g., foil) layer.

[0047] The secondary lens package may have other uses outside of retaining the at least one primary lens package 12 that holds at least one contact lens. Other example uses include, for example, retaining one or more prepackaged medicaments, vitamins, supplements, and other volatile products that would benefit from storage within an inert secondary storage environment.

[0048] The secondary lens package may be used in combination with the support structure 16 that is configured as, for example, a drawer or tray type structure that retains at least one primary lens package and is insertable with the primary lens

package into the secondary package. The support structure may provide additional rigidity and resistance to deformation and impact forces that might otherwise damage the primary lens package and the at least one contact lens retained therein. In at least some examples, the secondary lens package 14 has a flexible or deformable construction and the support structure provides at least some rigidity for a contact lens package assembly that comprises the primary and secondary lens packages and the support structure.

[0049] The example secondary lens packages 14 disclosed herein may have several advantages as compared to traditional paper-based secondary packages commonly used for storing primary contact lens packages. Traditional secondary lens packaging comprises paper-based materials that generally lack sterility and resistance to water/humidity damage. Further, traditional secondary packages are bulky and occupy a significant amount of space. The example secondary lens packages disclosed herein may be relatively slim, lightweight and take up a smaller volume of space as compared to paper-based secondary lens packaging. Further, the example secondary lens packaging may be waterproof as discussed above and provide an improved sterile environment. The inclusion of foil layers in the secondary packaging may help minimize light and oxygen transmission into the secondary packaging. Further, the secondary lens packaging may be filled with an inert gas that contributes to greater product stability and improved shelf life of the product held within the secondary lens package.

[0050] Referring now to FIGS. 3-11, the support member 16 may include a floor 40, a side wall 42, a cavity 44 and a front surface 46. The support member 16 may also include a plurality of support graphic portions 48A-B, a plurality of holes 50, and an aperture 52. The support member 16 may also have a length L_1 and a width W_1 . The sidewall 42 may extend from the floor 40 and may extend around a periphery of the floor 40.

[0051] According to one exemplary embodiment, the side wall 42 may define one or more tabs intended to interfere with a storage case 18, thereby limiting the amount the support member 16 can be slid into the storage case.

[0052] The floor 40 and sidewall 42 together may define the cavity 44. The cavity 44 may be sized to receive at least one primary lens package 12. In some

arrangements, the cavity 44 is sized to receive a plurality of primary lens packages 12. Typically, the primary lens packages 12 retained in the cavity 44 of a given support member 16 have the same properties (e.g., contain contact lenses having the same prescription and left/right eye designation).

[0053] Information about the contact lenses held in the primary lens packages 12 within the cavity 44 may be designated or displayed via the support graphic portions 48A-B along the front surface 46. Other information may be represented via the support graphic portions 48A-B such as, for example, expiration dates, manufacturer, color schemes, patterns, art work, and other information useful for the user. Further details concerning the possible graphics and information conveyed by graphics on the support member 16 or any of the primary lens package 12, secondary lens package 14, storage case 18 and storage sleeve 20 (described below), and methods of applying and displaying such graphics, are described in Singapore Patent Application filed on 18 October 2011 and entitled “Sequential Artwork Design for Contact Lens Packaging”, which patent application is incorporated herein in its entirety by this reference.

[0054] As disclosed in the above-mentioned Singapore Patent Application entitled “Sequential Artwork Design for Contact Lens Packaging”, the graphic portions disclosure herein relate to graphics such as text and images that are visible on a contact lens package, a support structure used with a contact lens package, or a storage case or a storage sleeve configured to store at least one contact lens package. The graphics included on a contact lens package may have several purposes. One purpose may be to convey information to a user related to the contents of the package. For example, the graphic may include text explaining properties of the contact lens such as a right or left eye contact lens, the prescription of the contact lens, the recommended duration of use of the contact lens, instructions for using the contact lens, and recommended care for the contact lens. Other information may relate to, for example, the manufacturer, brand, product name, etc. At least some of this information may be conveyed in multiple languages.

[0055] Some of the information conveyed may be communicated with non-text graphics such as, for example, colors, images, art, a location of the graphic on the contact lens package, the size, shape or orientation of the graphic, and other visual

indicators separable from the meaning of the text itself. Some aspects of the present disclosure relate to the use of both text and non-text graphics on a contact lens package to convey different types of information. In one example, a non-text graphic (e.g., an image, pattern or color scheme) may be used on a contact lens package to convey information about the contact lens such as, for example, that the contact lens is a right eye contact lens without using text to convey that information. In other examples, both text and non-text graphics may be used to convey similar information, wherein redundancy in conveying information may help ensure the user understands that information. In other examples, a non-text image may include a certain pattern or type of image such as, for example, a flower petal pattern, a landscape pattern, a leaf pattern, an animal pattern, etc., wherein the non-text graphic conveys to the user that any package having that type of that pattern has a contact lens content of a certain type (e.g., a right or left eye contact lens).

[0056] Some of the example contact lens packages disclosed herein include multiple contact lens package portions that each include a receptacle (e.g., a contact lens receiving portion or boat) configured to retain a contact lens. The contact lens package portions may be separable from each other. When the contact lens package portions are connected, the graphic of the contact lens package may include a first portion that extends across all contact lens package portions, and a second portion that extends across only some of the contact lens package portions. Typically, those segments or portions of the graphic that are included on each individual contact lens package portion have meaning that is distinct and separate from the meaning of the graphics shown on each of the other contact lens package portions. For example, one of the graphic portions may include a plurality of words and each contact lens package portion includes at least one complete word in order to limit visual evidence of separation from the remaining contact lens package portions.

[0057] A portion of the graphic may span an entire width and/or entire length of a contact lens package that includes a plurality of contact lens package portions. Another portion of the graphic may span only some of the contact lens package portions. Another portion of the graphic may be isolated to a single one of the contact lens package portions. The graphic may be applied to a contact lens package at

various locations such as, for example, along a bottom side of a substrate or along a top side of a cover sheet of the contact lens package.

[0058] The contact lens package may have different numbers of contact lens package portions. In one example, the contact lens package includes a three pack of contact lens package portions separable from each other along perforated lines defined in the contact lens package. Another example contact lens package includes multiple rows of contact lens package portions, wherein the rows are arranged side-by-side or opposite from each other. The graphic may span the multiple rows of contact lens package portions. In other arrangements, each row of contact lens package portions includes separate graphics with distinct features and/or meaning as compared to the graphics on another row of contact lens package portions.

[0059] The holes 50 formed in the support member 16 may reduce the weight of the support member 16. Typically, the holes 50 do not significantly affect the strength and rigidity of the support member 16. The holes 50 may be formed in portions of the sidewall 42 and the floor 40.

[0060] The aperture 52 may also be formed on the floor 40 or at other locations. A plurality of relatively large-sized apertures 52 may be included on the support member 16 in addition to or in place of the holes 50. The aperture 52 may be used for various purposes including, for example, reducing a weight of the support member 16, providing a centering or locating feature on the support member 16, and/or aiding in removal of the primary contact lens package 12. For example, the aperture 52 may be used for assembly of the primary lens packages 12 into the support member 16, inserting the support member 16 into the secondary lens package 14, applying the support graphic portions 48A-B to the front surface 46 or at other areas on the support member 16, or other processes or steps that may be automated and benefit from a connecting or centering feature on the support member 16.

[0061] The support member 16 may have a length L_1 that is greater than the width W_1 to provide an elongate, generally rectangular-shaped support member 16 as viewed from above. Other non-rectangular constructions are possible including cylindrical shaped with a circular cross section. Typically, a height H_1 of the storage case 18 (see FIG. 10) is less than either of the length L_1 and width W_1 . The height H_1 is typically greater than a maximum height or thickness of the primary lens package 12 so

that the primary lens package 12 is completely positioned within the support member 16.

[0062] Any of the length L_1 , width W_1 and height H_1 may be modified to accommodate primary lens packages of different sizes and shapes. For example, the primary lens package may include a single lens package portion and the support member is reconfigured in size and shape to accommodate that single lens package portion carrying a single contact lens. In other arrangements, the primary lens package may include two or more lens package portions. The support member may be constructed to accommodate primary lens packages of various sizes and shapes. In at least some examples, the support member is constructed to provide a relatively close fit between the primary lens package held within the cavity of the support member and the sidewall of the support member.

[0063] While the support member 16 shown and described with reference to the figures has a floor with a perimeter sidewall and generally open top that provides access to the cavity 44, other configurations are possible for the support member that do not include an open top. For example, access into the cavity 44 may be provided along one of the sides, front or rear rather than along the top of the support member 16. Other constructions are possible that provide greater rigidity, or in other constructions less rigidity. The strength and rigidity characteristics of the support member may be optimized so that the combination of the primary lens package 12 with the support member 16, or the combination of the primary lens package 12 with the secondary lens package 14 and support member 16, provides a desired amount of strength and support for the contact lens held in the primary lens package. In other arrangements, the support member 16 may be constructed with an appropriate amount of strength and rigidity to perform its intended function of support, strength and protection for the primary lens package 12 when used with one of the storage case 18 and storage sleeve 20, as will be described in further detail below.

[0064] Referring to FIGS. 3-6, an example storage case 18 configured to receive at least one support member 16 is shown and described. The storage case 18 includes storage apertures or slots 60A-B, front and rear portions 62, 64, top and bottom portion surfaces 66, 68, and first and second sides 70, 72. Each of the storage apertures 60A-B may be sized to receive one of the support members 16A-B (see FIGS. 4-6). The

storage apertures 60A-B may be sized to receive one of the support members 16 prior to or after removal of the support member 16 from the secondary lens package 14. Each of the storage apertures 60A-B may be sized to receive a plurality of support members 16. Typically, the storage apertures 60A-B are sized to receive a single one of the support members 16 to completely enclose the primary lens package 12 and substantially enclose the support member 16 except for the front surface 46 of the support member 16 that is exposed and visible along the front 62 of the storage case 18 (see FIG. 4).

[0065] The storage case 18 may comprise various materials and have different constructions of various rigidity, strength and durability. The storage case 18 may comprise materials that are resistant to corrosion and water damage. For example, the storage case 18 may comprise a polymer material such as polypropylene that is resistant to corrosion and water. The storage case 18 may comprise the same or similar materials to those used for the support member 16. In one example, the storage case 18 comprises recycled materials that are used in other aspects of the contact lens package assembly 10 such as, for example, the manufacturer of the contact lenses 24. In one case, the storage case 18 comprises recycled polypropylene. Alternatively, the storage case 18 may be formed of other non-corrosive materials such as aluminum or stainless steel.

[0066] The storage case 18 may include a rear cutout 74 along the rear portion 64. The rear cutout 74 may provide a space or opening into which a user may insert an object, such as one of the user's fingers, to apply a force that helps remove the storage case 18 from the storage apertures 60A-B. Other cutouts may be provided on other portions of the storage case 18 such as, for example, along one of the first and second sides 70, 72 or along the top or bottom surfaces 66, 68. In one example, a user may remove one of the support members 16 from the storage case 18 by applying a force to a rear portion of the support member 16 in a direction from the rear 64 towards the front 62 to move the support member 16 into the position shown in, for example, FIG. 6.

[0067] The storage case 18 may include at least one case graphic 76 positioned on one of the surfaces of the storage case 18. In one example, the case graphic 76 is positioned on the top surface 66. The case graphic 76 may include

information in the form of, for example, graphics, text, symbols, patterns and color schemes similar to the support graphic portions 48A-B described above.

[0068] The storage case 18 may have a length L_2 and a width W_2 as shown in FIG. 3. The length L_2 and width W_2 may be similar to the length L_1 and width W_1 of the support member 16. A height H_2 of the storage case 18 may be sufficient to provide space for at least one support member 16 and have a height H_2 that is greater than the height H_1 .

[0069] The storage case 18 may have other shapes, sizes and configurations than those shown in FIGS. 3-6. Referring to FIG. 14, another example storage case 118 is shown. The storage case 118 includes a plurality of storage apertures 160A-D, front and rear portions 162, 164, top and bottom surfaces 166, 168, and first and second sides 170, 172. The storage case 118 may also include at least one rear cutout 174 to assist in the removal of support members 16A-D from the storage apertures 160A-D.

[0070] The storage case 118 may have a plurality of rows and columns of storage apertures 160A-D. For example, the storage apertures 160A, B may represent one column and the storage apertures 160C, D may represent a second column. The storage apertures 160A, C may represent one row, and the storage apertures 160B, D may represent another row. Each of the rows and columns may be designated to store particular types of primary lens packages 12. For example, the different rows may represent the left and right eye contact lenses, respectively, for a single day use, and a separate row may represent a separate day's use of right and left eye contact lenses. Similarly, a single column may represent storage of all left eye contact lenses and the other of the columns may provide storage of the right eyed contact lenses. The support members 16A-D may include graphics that identify the primary lens packages and related contact lenses held within a given row and column. At least one case graphic 176 positioned on one of the surfaces of the storage case 118 may provide additional information related to the primary lens packages held in various rows and columns of support members 16A-D.

[0071] Other embodiments are possible in addition to those of the storage cases 18, 118. For example, other storage cases may include three or more rows or columns, or a single row and column of storage apertures sized to receive at least one support member.

[0072] Referring now to FIGS. 12 and 13, a storage sleeve 20 is shown. The storage sleeve 20 includes a plurality of sleeve graphic portions 80A-B and a sleeve cavity 82. The sleeve graphic portions 80A-B may convey information related to the contact lenses and primary lens packages retained within the storage sleeve 20. The sleeve graphic portions 80A-B may have similar features and functionality as the support graphic portions 48A-B described above.

[0073] The sleeve cavity 82 may be sized to receive at least one support member 16. The sleeve cavity 82 may provide a pass through opening for the support member 16 to be inserted into either open end of the storage sleeve 20. In some arrangements, one end of the storage sleeve 20 is closed while the other end is open to receive the support member 16 within the sleeve cavity 82.

[0074] The storage sleeve 20 may comprise the same or different materials as the support member 16 and storage case 18. In one example, the storage sleeve 20 comprises a paper material such as cardstock or cardboard. In other arrangements, the storage sleeve 20 comprises a polymer-based material. In other arrangements, the storage sleeve 20 comprises a laminate material having at least one polymer layer and at least one foil layer. The storage sleeve 20 may comprise recycled materials, such as recycled polypropylene or other materials used in other aspects of the contact lens package assembly (e.g., the plastic molds used to form the contact lenses 24). The storage sleeve 20 may provide a storage function and a retention function. The storage aspect of the storage sleeve 20 may relate to storing and providing at least some protection and enclosure of the primary lens package 12. The retention aspect relates to containing the primary lens package 12 within the support member 16 so that the primary lens package 12 receives the benefit of the structure, support, protection provided by the support member 16.

[0075] Some example methods related to the contact lens package assembly, support members, storage cases, storage sleeves, and other aspects disclosed herein are now described. One example method relates to a method of shipping a contact lens package. The method includes providing a contact lens package having a contact lens sealed therein, a support structure sized to receive the contact lens package, and a secondary package. The method includes positioning the contact lens package in the support structure, inserting the support structure in the secondary packaging, sealing

closed the secondary packing, and shipping the sealed contact lens package within the secondary packaging. Further aspects of the method may include removing the support structure and contact lens package from the secondary packaging and removing the contact lens package from the support structure to obtain access to the contact lens.

[0076] Another method relates to storing a contact lens package. The method may include providing a contact lens package having a contact lens sealed therein, a support structure sized to receive the contact lens package, and a storage case. The method includes positioning the contact lens package in the support structure, and inserting the support structure in the storage case to store the contact lens package. The method may further include removing the support structure from the support case, removing the contact lens package from the support structure, and obtaining access to the contact lens sealed within the contact lens package.

[0077] Other methods relate to a combination of shipping and storing a contact lens package. One example includes providing a contact lens package having a contact lens sealed therein, and a support structure sized to receive the contact lens package. The method further includes positioning the contact lens package in the support structure, inserting the support structure in a secondary packaging for shipping, shipping the secondary package that is holding the contact lens package and support structure, removing the support structure and contact lens package from the secondary packaging, and inserting the support structure and contact lens package into the storage case for storage of the contact lens package. The method may further include removing the support structure from the storage case, removing the contact lens package from the support structure, and removing the contact lens from the contact lens package. The method may also include inserting a plurality of contact lens packages in the support structure before inserting the support structure in the secondary packaging. The support structure may be generally rigid (or at least more rigid than the contact lens package) and include an open top sized to receive the contact lens package.

[0078] A further method in accordance with the present disclosure relates to manufacturing a support structure for at least one of shipping and storing a contact lens package. The method includes forming a contact lens using a polymer mold, wherein the contact lens is later retained in a contact lens package. The method also includes recycling the polymer mold, and forming the support structure from the recycled

polymer mold. The support structure includes a cavity sized to hold the contact lens package for purposes of shipping, storing, or both shipping and storing the contact lens package. Forming the support structure may include forming a drawer-shaped structure having a floor, a wall extending from the floor, and a cavity defined between the wall and floor that is sized to receive the contact lens package. Recycling the polymer mold may include heating the polymer mold to a melting point of a polymer material from which the polymer mold is formed. The polymer mold may comprise polypropylene.

[0079] Many other methods related to the manufacture, assembly, or use of the example support member, storage cases, and storage sleeves described herein may be possible in accordance with the present disclosure.

[0080] The preceding description has been presented only to illustrate and describe exemplary embodiments of the system and process. It is not intended to be exhaustive or to limit the system and process to any precise form disclosed. Many modifications and variations are possible in light of the above teaching. It is intended that the scope of the system and process be defined by the following claims.

WHAT IS CLAIMED IS:

1. A contact lens package assembly, comprising:
a primary lens package having at least one contact lens sealed therein;
a support member sized to carry the primary lens package within a secondary package during shipping, and sized to removably mount to a storage case to retain the primary lens package within the storage case after removal from the secondary packaging.
2. The contact lens package assembly of claim 1, wherein the support member is constructed with a drawer shape having a cavity defined therein sized to receive the first lens package.
3. The contact lens package assembly of claim 1, wherein the support member has a rigid construction.
4. The contact lens package assembly of claim 1, further wherein the support member comprises recycled polypropylene.
5. The contact lens package assembly of claim 4, wherein the polypropylene is recycled from molds used to form the at least one contact lens.
6. The contact lens package assembly of claim 1, wherein the support member includes a plurality of through holes that reduce a weight of the support member.
7. The contact lens package assembly of claim 1, wherein support member is configured to retain a plurality of first lens packages.
8. The contact lens package assembly of claim 1, wherein the support member is configured to be inserted into a secondary lens package for shipping.

9. The contact lens package assembly of claim 1, further comprising a cover sleeve sized to removably receive the support member and first lens package.

10. The contact lens package assembly of claim 9, wherein the cover sleeve includes opposed open ends sized to slidably receive the support member within the cover sleeve.

11. A contact lens package system, comprising:
at least one primary package configured to hold a contact lens product;
at least one support member configured to hold the at least one first package;
a storage case configured to releasably hold the at least one support member;
wherein the support member holds the at least one primary package during shipping and during later storage of the at least one primary package in the storage case.

12. The contact lens package system of claim 11, wherein the at least one support member includes a bottom layer and a continuous wall extending upward from the bottom layer to define a cavity within which the at least one primary package is positioned.

13. The contact lens package system of claim 11, wherein the at least one support member has a rectangular cross-sectional shape.

14. The contact lens package system of claim 11, wherein the at least one support member has a greater rigidity than the at least one first package.

15. The contact lens package system of claim 11, wherein the storage case holds at least two support members.

16. The contact lens package system of claim 11, wherein the storage case has at least one opening in a front surface thereof sized to slidably receive the at least one support member.

17. The contact lens package system of claim 16, wherein the storage case includes at least one opening at a rear surface thereof to permit access to the at least one support member to remove the at least one support member from the storage case.

18. The contact lens package system of claim 11, further comprising a flexible secondary package configured to hold the at least one support member during shipping.

19. The contact lens package system of claim 18, wherein the storage case comprises a rigid construction.

20. A method of shipping and storing a contact lens package, comprising:
providing a contact lens package having a contact lens sealed therein, and a support structure sized to receive the contact lens package;
positioning the contact lens package in the support structure;
inserting the support structure in a secondary packaging for shipping;
removing the support structure from the secondary packaging;
inserting the support structure in a storage case for storage.

21. The method of claim 20, further comprising removing the support structure from the storage case, removing the contact lens package, and removing the contact lens from the contact lens package.

22. The method of claim 20, further comprising inserting a plurality of contact lens packages in the support structure before inserting the support structure in the secondary packaging.

23. The method of claim 20, wherein the support structure is rigid and includes an open top sized to receive the contact lens package.

24. A method of manufacturing a support structure for shipping and storing a contact lens package, the method comprising:

forming a contact lens using a polymer mold, the contact lens being retained in the contact lens package;

recycling the polymer mold;

forming the support structure from the recycled polymer mold, the support structure including a cavity sized to hold the contact lens package.

25. The method of claim 24, wherein forming the support structure includes forming a drawer shaped structure having a floor, a wall extending from the floor, and the cavity defined between the wall and floor.

26. The method of claim 24, wherein recycling the polymer mold includes heating the polymer mold to a melting point of a polymer material of the polymer mold.

27. The method of claim 24, wherein the polymer mold comprises polypropylene.