

fone, polysulfone, polymethylmethacrylate (PMMA), polyesters, silicones, and polyethyltoluene (PET). Also by way of example, conventional techniques may be employed to build astigmatism-corrective curvatures and axial orientation into the integral haptic and lens structure, complete with a recognition profile or the like from which correct astigmatic-correction axis orientation can be recognized by the physician prescribing and/or installing the structure. Such orientation-refining techniques are described in my copending application Ser. No. 225,349 (filed Jan. 15, 1981), and in FIG. 17, I show an integrally formed lens 40 and haptic 41 wherein a small asymmetrical fillet 42 provides the means of recognizing correct orientation to achieve proper use of the astigmatism-correcting lens prescribed for the particular user.

FIG. 18 illustrates that for any of the haptic configurations contemplated herein, and specifically in the context of the haptic configuration of FIG. 17, the deformation step used to create lens curvature may also be used to impart a haptic curvature generally in accordance with the curvature of the cornea. As noted from FIG. 18, this curvature is generally away from the originally flat nature of the starting sheet of material, but is generally tangent to the plane of the starting sheet in the vicinity of haptic juncture with the central lens element.

The reference to etching herein is to be understood as contemplating any of various well recognized selective erosion techniques. For the case of plastic erosion, these techniques include plasma etching, ion milling, and chemical etching. For the case of glass erosion, these techniques include hydrofluoric-acid etching and hydrofluoric-gaseous etching.

While the invention has been described in detail for various illustrative forms and processes, it will be understood that modifications may be made without departing from the scope of the invention.

For example, in either of the techniques illustrated by FIGS. 10 and 11, the severable tie elements 25-26-27 (25'-26') may be characterized by a central "pin-hole" opening external to the perimeter of each of the haptics thereby connected. Such pin-hole opening is illustratively shown at 27' in FIG. 10 and will be understood, in context with other such pin-hole openings (i.e., at other severable connections) to provide a precise optically scannable reference, as when automatically positioning a severably connected array of etched lens blanks with haptics, the positioning being for accurate placement in a multiple-lens press, and/or for precise automated laser cut-off of completed lens-haptic units 10-11 from the array.

Also, in connection with the pressing of lens elements as described above, it will be understood that the die used for pressing may be configured to develop in the lens a rounded outer edge, rather than the sharply defined outer edge shown for example at the circular peripheral edge of the convex surface of lens 10 in FIG. 5. A sharp exposed corner is thereby avoided.

Further, it will be understood that the lens-pressing operations described are purely illustrative, in that not only may astigmatism-corrective curvature be embodied in the pressing die, but so also may other complex curvatures, as for example the curvatures which will embody multifocal (e.g., bi-focal, tri-focal) properties in the single piece of press-formed lens-blank material.

What is claimed is:

1. A unitary contact lens and haptic construction removably applicable to a corneal surface and integrally formed from the same single sheet of transparent material, comprising a relatively thick rigid central lens component having a generally circular periphery, and a

relatively thin pliant generally annular outer haptic component comprising plural leg formations radiating from the lens periphery at angular offset from each other, said haptic component being normally flat but so thin and of such axially compliant nature as to be self-conforming to the curvature of the cornea and to adhere thereto via surface moisture on the cornea.

2. The construction of claim 1, wherein the lens-component diameter is in the range of 5 to 8 mm.

3. The construction of claim 1, wherein the haptic-component thickness is in the order of one thousandth of an inch.

4. The construction of claim 1, wherein one surface of the haptic component is substantially flush with the corresponding surface of the lens component.

5. The construction of claim 1, wherein both surfaces of the haptic component are axially inwardly offset from both surfaces of the lens component.

6. The construction of claim 1, wherein said construction is one of plurality of like constructions in laterally offset relation and formed from the same single plastic sheet, being integrally but severably joined to each other at local proximity of their respective haptic components.

7. The construction of claim 6, wherein a short integrally formed tie between adjacent haptic components is the means of severable connection.

8. The construction of claim 1, wherein the pattern of haptic formations includes an observable asymmetric indicium which establishes a recognizable reference orientation, and wherein the central lens component includes an astigmatic-correction curvature having an axis orientation of predetermined angular orientation with respect to said reference orientation.

9. The construction of claim 1, in which said single sheet is initially flat and deformed into bowed curvature away from the initial flat of said sheet, the arc of the bow being substantially tangent to the initial flat of said sheet of haptic juncture with the lens component.

10. A unitary lens and haptic construction integrally formed from the same single sheet of transparent material, comprising a relatively thick rigid central lens component having a generally circular periphery, and a relatively thin pliant generally annular outer haptic component comprising plural leg formations radiating from the lens periphery at angular offset from each other, said construction being one of plurality of like constructions in laterally offset relation and formed from the same single plastic sheet, adjacent haptic components being integrally but severably joined to each other by a short integrally formed tie between adjacent haptic components, there being a locating aperture which characterizes a region of said tie external to the peripheral contour of each of the adjacent haptics thereby severably joined, whereby lens blanks associated with the severably connected haptics may be accurately positioned via such apertures, as for die-pressing alignment and orientation, and for cut-off.

11. A unitary contact lens and haptic construction removably applicable to a corneal surface and integrally formed from the same single sheet of transparent material, comprising a relatively rigid central lens component having a generally circular periphery, and a substantially fenestrated relatively pliant generally annular outer haptic component, said haptic component being normally flat but so thin and of such axially compliant nature as to be self-conforming to the curvature of the cornea and to adhere thereto via surface moisture on the cornea.

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