

CONTACT LENS AND METHOD OF MAKING SAME

This application is a continuation application of application Ser. No. 296339, filed Jan. 9, 1989, abandoned concurrently herewith, which in turn was a continuation of the original application Ser. No. 869,728 filed 06/0286, abandoned.

BACKGROUND AND BRIEF SUMMARY OF THE INVENTION

This invention relates to the field of contact lenses and the method of making them.

Basically, the invention relates to multisurface contact lenses at least one of whose surfaces is contoured to satisfy a prescription requirement of an individual patient. Whenever multisurface surfaces are provided on a contact lens, some provision must be made to assure that the lens orients itself naturally upon the eye so as to position the lens for natural usage. To specify a particular case, the corrective surface for far distances should be so oriented that it is within the upper portion of the lens, the corrective surface for nearer distance should be so oriented that it occupies a next lower position of the lens, and so on, when the lens is in use on the patient's eye.

The lenses of this invention are characterized in that as a natural consequence of making the lens, it is asymmetrically weighted so that the aforesaid orientation of the various surfaces occurs. It is to be noted that not all of the surfaces need provide optical correction, this being a factor dependent upon the user's requirements.

In a broad aspect, then, the invention relates to contact lenses of the multisurface type in which the lens will naturally orient itself by rotation on the user's eye to position the nearest distance zone of the lens in a lowermost position, the farthest distance zone in an uppermost position and an intermediate distance zone, if any, in a position intermediate these two, all in consequence of the physical characteristics of the lens as obtained from the novel method disclosed herein.

Stated otherwise, an object of the invention involves the method of making a multisurface contact lens in which the lens is asymmetrically weighted so as naturally to position the surfaces in predetermined relation on the user's eye.

Another object of the invention resides in the novel method which comprises the steps of providing a contact lens blank having a posterior surface conforming to the corneal requirements of the user, forming an initial anterior surface on the lens blank in generally centered relation to the optical axis thereof, then forming a second anterior surface on the lens blank centered in offset relation to the initial anterior surface to remove a portion of the initial surface and intersect smoothly therewith to leave a residual portion of the initial surface which defines a zone of the lens providing asymmetrical weighting thereof, at least one of the surfaces being contoured in conformity with a prescription requirement of the user.

Another object of the invention resides in the method as aforesaid wherein the optical axis of the lens, the axis on which the initial surface is centered and the axis on which the second surface is centered all lie substantially in a common plane.

Another object of the invention is to provide a method of making a contact lens having an asymmetri-

cally positioned and weighted presbyopic correction zone so that the presbyopic zone naturally positions itself lowermost in relation to the user's eye, the method involving the steps of providing a contact lens blank having a posterior surface conforming to the corneal requirements of the patient, forming an initial anterior surface on the lens blank corresponding to the required presbyopic correction, and then forming a second anterior surface on the lens blank in offset relation to the initial surface partially to remove the initial surface and intersect smoothly there-with to form the presbyopic correction zone.

Another object of the invention is to provide a method of making a multifocal contact lens which comprises the steps of forming the anterior surface of a contact lens blank with a corrective surface conforming with the nearest distance correction of a user's prescription, and forming a second anterior surface portion of the lens blank with a corrective surface conforming with a greater distance correction of a user's prescription than the aforesaid near distance correction and which smoothly intersects the first formed surface to leave a residual of such first formed surface which is of generally crescent shape.

In conformity with the preceding object, a further object of the invention is to provide a method which includes the step of forming a third anterior surface portion of the lens blank with a corrective surface conforming with far distance correction of the user's prescription which smoothly intersects the second formed surface portion to leave a residual thereof between the first formed surface and the far distance surface.

Another object of the invention is to provide a method of making a multifocal contact lens which comprises providing a contact lens blank having a posterior surface corresponding to the corneal requirements of a patient, forming an initial anterior corrective surface on the lens blank in conformity with a relatively near distance requirement of the patient's prescription and in such relation to the posterior surface as to determine the maximum thickness of the contact lens to be produced, forming a second anterior surface on the lens blank in offset relation to the initial surface in accord with a farther distance requirement of the patient's prescription so as to remove a portion of the initial surface and intersect smoothly therewith to leave a generally crescent-shaped initial zone of relatively near distance correction surmounted by a second zone of the farther distance correction.

Still another object of the invention is to provide a method as above including the further step of forming a third anterior surface on the lens blank in offset relation to the second anterior surface and in accord with the farthest distance correction required by the patient's prescription to intersect smoothly with the second surface and leave a generally crescent-shaped second zone surmounted by a third zone of the farthest distance correction.

It is also an object of this invention to provide novel contact lenses having physical and corrective characteristics as described above.

These and further objects of this invention will become more apparent as this description proceeds with relation to the drawing Figures in which: