tailed description when taken in conjunction with the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 shows a cross-section and a plan view of a bifocal corneal contact lens in accordance with an embodiment of the invention.

FIG. 2 shows the plan view of the FIG. 1 embodiment, superimposed over the pupil of a patient's eye.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring to FIG. 1, there is shown a diagram of a bifocal corneal contact lens in accordance with an embodiment of the invention. A lens body **10** is formed of a single piece of plastic material, such as silicone acrylate. The rear surface **21** of the lens body, has a symmetrical curve, so that the lens can have a central fit on the corneal surface, and it is designed to be stable on the eye.

The lens body **10** has two distinct power regions formed by two different curves on the front surface thereof. A central region **31**, of circular periphery, has a front surface curve which provides the near vision correction. Surrounding the central region is an annular region **41** having a different front surface curve which provides the distance vision correction. For illustration the curves are exaggerated in the FIGURE.

FIG. 2 shows the lens of FIG. 1 superimposed over the pupil, **50**, of a patient's eye. In FIG. 2 the pupil is assumed to be of the size it assumes in average reading light, i.e., about 80 foot candles. In accordance with a feature of the invention, the area of the near power region **31** is selected to be substantially equal to half the pupillary area under the stated average reading light condition. If the pupil radius under the stated light condition is r (FIG. 2), then the radius R of the central near power region will be $R=r/\sqrt{2}$.

The selection of a near power region in this manner results in a very substantial advantage under important conditions such as night driving, without significantly compromising the near vision characteristics. Under the stated average reading light conditions, about half the light entering the pupil passes through the near power region, and about half through the distance power region, which is found to be quite satisfactory. In bright light, when the pupil is small, the relatively narrow cone through which light is received will result in a good depth of field, so that distance vision impairment, due to viewing through the near power region, will not be a substantial problem. In dim light, the pupil will be large and a major fraction of the light will be received through the annular distance power region, thereby resulting in good distance vision, such as for night driving.

An example of a pair of lenses made in accordance with the invention will now be set forth. The prescription was as follows:

	left eye	right eye
keratometry	41.12 × 42.50	41.50 × 42.37
spec. refr.	−3.25 + 1.00 × 85° D	−2.75 + 0.75 × 100° D
near add	1.50 D	1.50 D

The pupillary diameters in average reading light conditions (about 80 foot candles) was 3.0 mm. The lens specifications were as follows:

	left eye	right eye
diameter	8.7 mm	8.7 mm
optical zone diam.	7.0 mm	7.0 mm
central thickness	0.11 mm	0.11 mm
base curve radius	8.08 mm	8.03 mm
power	−3.00 D	−3.00 D
near region diam.	2.12 mm	2.12 mm
near region add	2.00 D	2.00 D

The lenses were formed from standard silicone acrylate buttons on automated lens cutting equipment of the type disclosed in U.S. patent application Ser. Nos. 377,105 now U.S. Pat. No. 4,434,581 and 394,149, now U.S. Pat. No. 4,460,275 assigned to the same assignee as the present application. Alternatively, lenses in accordance with the invention can be made using a compound radius turning lathe.

I claim:

1. A bi-focal contact lens for the cornea of an eye, comprising:

a thin circular lens body formed of a single piece of plastic material;

said body having a symmetrically curved rear surface adapted to fit centrally and stably on the corneal surface of the eye;

said body having a near power correction region of circular periphery in the central portion thereof, surrounded by a concentric distance power annular correction region;

the near power central region having an area which is substantially equal to half the pupil area of the eye under average reading light conditions.

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