Claims

1. A contact lens, the lens including an optic zone comprising:

a central region, the central region having a centre of curvature that is on an optical axis; and

a first annular region, the first annular region having an off-axis centre of curvature that is a first distance from the optical axis;

wherein the first annular region has a radial sagittal power profile that increases with increasing radial distance from the optical axis, with a gradient of between about 4.0 D/mm and about 12.0 D/mm, and wherein at a point halfway across the radial width of the first annular region, the radial sagittal power equals the average radial sagittal power of the central region, and wherein the first annular region has a curvature providing a radial curvature add power, wherein the radial curvature add power is between +2.0 D and +20.0 D.

2. A contact lens, the lens including an optic zone comprising:

a central region, the central region having a centre of curvature that is on an optical axis, wherein light from a distant point source that passes through the central region is focused at a distal focal surface and generates a blur circle at a proximal focal surface, the proximal focal surface being closer to a posterior surface of the lens than the distal focal surface; and

a first annular region, the first annular region having an off-axis centre of curvature that is a first distance from the optical axis;

wherein the first annular region has a radial sagittal power profile that increases with increasing radial distance from the optical axis, with a gradient of between about 4.0 D/mm and about 12.0 D/mm, wherein at a point halfway across the radial width of the first annular region the radial sagittal power equals the average radial sagittal power of the central region, wherein the first annular region limits the spread of off-axis light at the distal focal surface thereby generating a spot of light at the distal focal surface, and wherein light from a distant point source that passes through the first annular region generates a focused annulus that surrounds the blur circle at the proximal focal surface.

3. The contact lens according to claim 1 or claim 2, wherein the radial sagittal power profile across the first annular region is linear.

4. The contact lens according to any of claims 1-3, wherein the radial sagittal power profile across the first annular region defines a curve having an average gradient of between about 4.0 D/mm and about 12.0 D/mm.

5. The contact lens according to any of claims 1-3, wherein the radial sagittal power at an inner edge of the first annular region is between 0.5 D and 2.5 D less than the radial sagittal power at an outer edge of the central region.

6. The contact lens according to any of claims 1-3, wherein the radial sagittal power at an outer edge of the first annular region is between 0.5 D and 2.0 D greater than the radial sagittal power at an outer edge of the central region.

7. The contact lens according to any of claims 1-3, wherein the central region has a curvature providing the base radial curvature power, wherein the base radial curvature power is between 0.5 and -15.0 D.

8. The contact lens according to any of claims 1-3, wherein the first annular region extends radially outwards from a perimeter of the central region by between 0.5 and 1.5 mm.

9. The contact lens according to any of claims 1-3, comprising at least one additional annular region that is concentric to the first annular region, each additional annular region having an off-axis centre of curvature that is a first distance from the optical axis, wherein each annular region will have a sagittal power profile that increases with increasing radial distance from the optical axis, with a gradient of between about 1.0 D/mm and about 20.0 D/mm.

10. The contact lens according to claim 9, wherein each additional annular region has a different radial sagittal power gradient to the first annular region.

11. The contact lens according to claim 9, wherein the radial sagittal power gradient of each additional annular region is dependent upon the radial position of the annular region.

12. The contact lens according to claim 11, wherein an annular region at a greater radial distance from the optical axis has a smaller radial sagittal power gradient than the first annular region.

13. The contact lens according to claim 9, wherein each additional annular region has a radial sagittal power profile that increases with increasing radial distance from the optical axis with a gradient of between about 1.0 D/mm and 3.5 D/mm.

14. The contact lens according to claim 9, wherein at a point halfway across the radial width of each additional annular region, the radial sagittal power equals the average radial sagittal power of the central region.

15. The contact lens according to claim 9, comprising a plurality of concentric additional annular regions, wherein the additional annular regions are separated by distance regions having the base radial curvature power.

16. The contact lens according to claim 7, wherein the base radial curvature power of the central region results from a curvature of an anterior surface and/or a posterior surface of the lens.

17. The contact lens according to claim 1, wherein the radial curvature power of the first annular region and any additional annular regions results from the curvature of an anterior surface and/or a posterior surface of the lens.

18. The contact lens according to any of claims 1-3, wherein the lens comprises an elastomer material, a silicone elastomer material, a hydrogel material, or a silicone hydrogel material, or mixtures thereof.

19. The contact lens according to any of claims 1-3, wherein the lens is a molded contact lens.

20. The contact lens according to claim 1 or claim 2, wherein the first annular region has a curvature providing a radial curvature add power of between +2.0 D and +10.0 D.

21. A method of manufacturing a contact lens according to any preceding claim, the method comprising:

forming a contact lens, wherein the lens comprises:

a central region, the central region having a centre of curvature that is on an optical axis; and

a first annular region, the first annular region having an off-axis centre of curvature that is a first distance from the optical axis, wherein the first annular region has a radial sagittal power profile that increases with increasing radial distance from the optical axis, with a gradient of between about 4.0 D/mm and about 12.0 D/mm, and wherein at a point halfway across the radial width of the first annular region, the radial sagittal power equals the average radial sagittal power of the central region, and wherein the first annular region has a curvature providing a radial curvature add power, wherein the radial curvature add power is between +2.0 D and +20.0 D.

22. A method of reducing progression of myopia, comprising:

providing a contact lens according to any one of claims 1 to 20 to a myopic person who is able to accommodate for varying near distances.