
For Cataract and Refractive Lens Exchange (RLE) patients
THE WORLD'S FIRST AND ONLY SINUSOIDAL TRIFOCAL IOL
Acriva UD Trinova
Sinusoidal Vision Technology Trifocal IOL
Rely on the smooth surface
SVT SINUSOIDAL
SINUSOIDAL VISION TECHNOLOGY
Worldwide Patent Pending

ALL TRIFOCAL IOLS ARE NOT THE SAME!

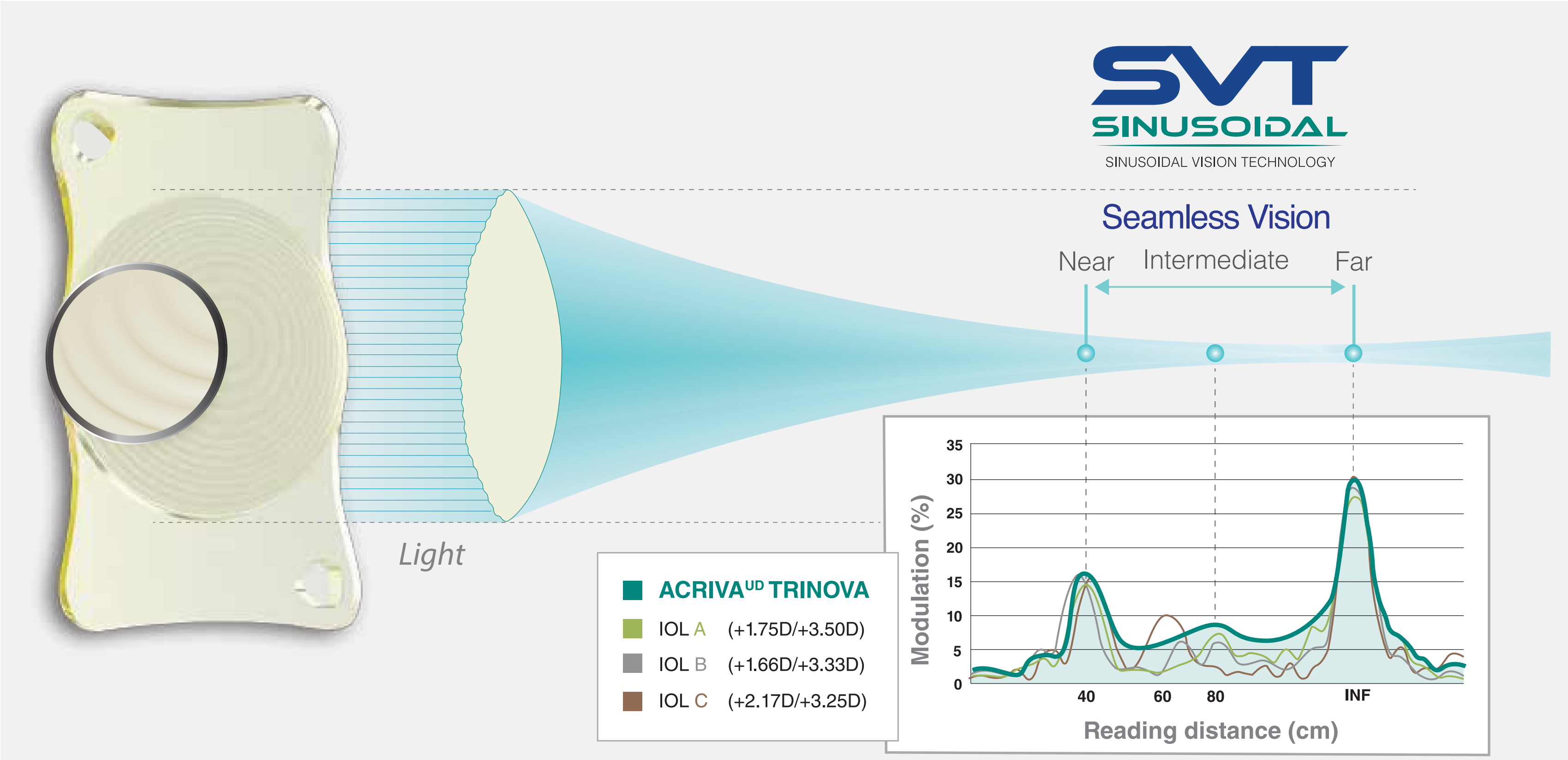
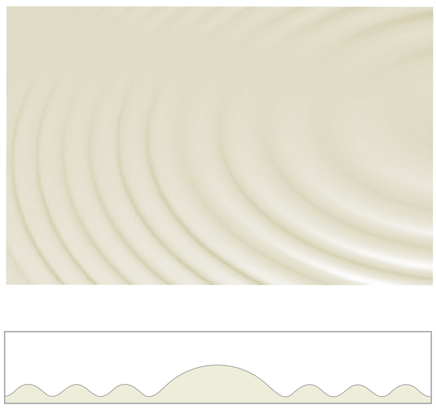


Figure 1: Comparison of MTF Values[1]

THE WORLD'S FIRST AND ONLY SINUSOIDAL TRIFOCAL IOL



• Unique Sinusoidal Pattern

Acriva[UD] Trinova is the next-generation sinusoidal trifocal IOL designed with stepless zones. Twelve unique ridges create the highest light transmission and optimum light distribution through all optical diameters.

This pattern promises better contrast sensitivity and dynamic visual performance at all distances! Ultra Definition (UD) Aspheric optic and chromatic aberration-free structure leading to Enhanced Depth of Focus (EDOF) provide continuous vision – hence, spectacle independence at all distances. With this know-how, VSY Biotechnology improved EDOF optic design, and now introduces Sinusoidal Vision Technology (SVT).

References
1. Data on file.

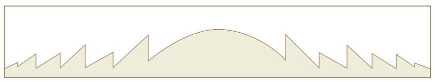
What is Sinusoidal Vision Technology (SVT)?

Acriva[UD] Trinova is manufactured with Sinusoidal Vision Technology (SVT). The SVT is a unique patent-pending technique for producing an IOL optical surface that does not exhibit any sharp edges. It provides the best optical performance in trifocal IOL design. The lens shape is derived from sinusoidal functions and results in smoothly varying surface profiles. Therefore, ideal continuous vision is achieved, as opposed to common traditional overlapping diffraction pattern trifocal IOLs with sharp edges. This concept also helps to reduce halos and scattered light.

Benefits of Sinusoidal Vision Technology (SVT)?

- **Tolerance on**
  - biometry measurement deviation (± 0.75 D post-op refractive surprises)
  - slight post-op tilts
  - higher kappa angle
- **Minimized dysphotopsia due to the reduced scattered light**

TRADITIONAL TRIFOCAL IOLS



• Overlapping Pattern with Sharp Edges

The phase match Fresnel lens concept is widely used nowadays. However, typical outdated overlapping diffractive profiles have four drawbacks:

o Big amount of light loss of between 15% and 20%
o Vision disturbance due to stray light
o Low light distribution in near-intermediate focus under mesopic conditions
o Glare and halo problem at night

Traditional Overlapping Diffractive Pattern
Phase Match Fresnel Optic

IOL A (+1.75D/+3.50D)
IOL B (+1.66D/+3.33D)
IOL C (+2.17D/+3.25D)

Superior Features of Acriva^{UD} Trinova

- 92% effective light transmission to retina
- Widest depth of focus
- Excellent MTF results at all distances
- Outstanding visual outcomes in mesopic conditions

Highest Light Transmission

It is known that overlapping diffractive pattern trifocal IOLs cause significant light loss. Each one percentage of light loss affects patients' overall visual performance exponentially. Acriva^{UD} Trinova ensures maximum light transfer, thanks to its stepless diffractive zones. The higher the light transmission, the better the contrast sensitivity!

IOLs	Light Transmission	
Acriva^{UD} Trinova (+1.50D/+3.00D)	**92%[2]**	- New Generation Trifocal IOL with Sinusoidal Pattern (Patent Pending)
IOL A (+1.75D/+3.50D)	86%[3]	- Traditional Trifocal IOL with Overlapping Diffractive Pattern
IOL B (+1.66D/+3.33D)	85.7%[4]	- Traditional Trifocal IOL with Overlapping Diffractive Pattern
IOL C (+2.17D/+3.25D)	88%[5]	- Traditional Trifocal IOL with Overlapping Diffractive Pattern

Table 1

Comfortable reading distances

+3.00D near addition and +1.50D intermediate addition of Acriva^{UD} Trinova is precisely designed with life quality of the patient in mind. Up to 80 cm reading distance will cover all daily requirements in near and intermediate vision. See the comparison table below.[6,7,8]

IOLs	Intermediate Addition	Theoretical Reading Distance	Near Addition	Theoretical Reading Distance	Distance of Depth of Focus
Acriva^{UD} Trinova	+1.50D	80 cm	+3.00D	38 cm	42 cm
IOL A:	+1.75D	68 cm	+3.50D	34 cm	34 cm
IOL B:	+1.66D	72 cm	+3.33D	36 cm	36 cm
IOL C:	+2.17D	55 cm	+3.25D	35 cm	20 cm

Table 2

References
2. Data on file.
3. Gatinel D, Pagnoulle C, Houbrechts Y, Gobin L. Design and qualification of a diffractive trifocal optical profile for intraocular lenses. J Cataract Refract Surg. 2011;37(11):2060-2067.
4. Mojzis P, Pena-García p, Liehneova I, Ziak P, Alio J L. Outcomes of a new diffractive trifocal intraocular lens. J Cataract Refract Surg. 2014; 40:60–69.
5. Lee S, Choi M, Xu Z, Zhao Z, Alexander E, Liu Y. Optical bench performance of a novel trifocal intraocular lens compared with a multifocal intraocular lens. Clinical Ophthalmology (Auckland, NZ). 2016; 10:1031-1038. doi:10.2147/OPTH.S106646.
6. Data on file.
7. E.Law R. Aggarwal, H. Kasaby. Comparison of a bifocal and a trifocal intraocular lens. Free Paper Session ESRCS 2014 London.
8. K.Gundersen. Diffractive multifocal IOLs: a comparative study of Finevision versus ReSTOR 2.5 and 3.0D. Free Paper Session ESRCS 2014 London.

Balanced Light Distribution

Light distribution plays a big role in obtaining seamless, continuous vision. Conventional trifocal IOL designs distribute light energy in a ratio such that zones of discontinuity may be noticeable to patients. Acriva^{UD} Trinova incorporates a unique sinusoidal surface profile with twelve smooth ridges, providing a more continuous light-energy distribution. This leads to remarkable spectacle-free visual competencies not only in photopic, but also in mesopic conditions.[6]

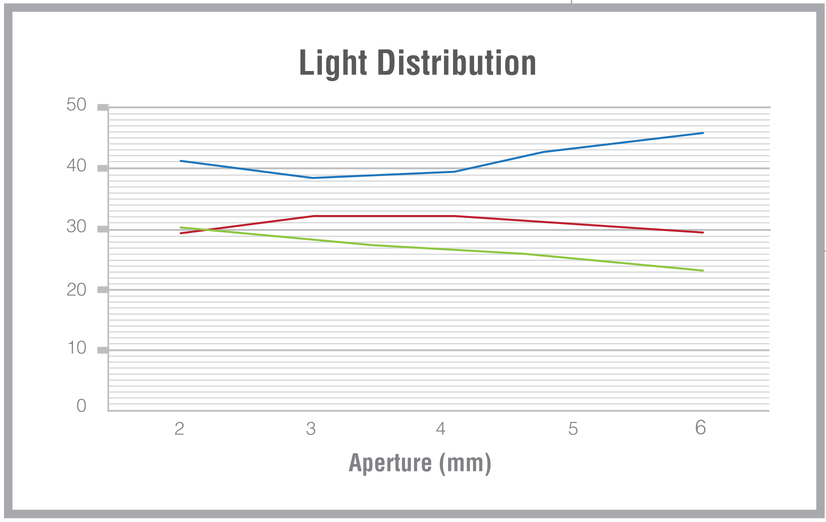


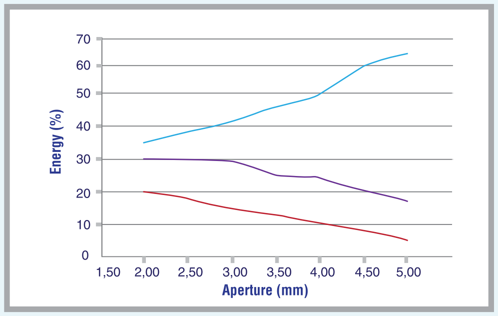
Figure 2

Light distribution in photopic condition:
41% Far, 30% Intermediate, and 29% Near

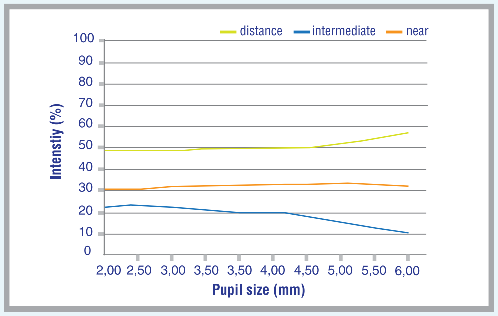
Light distribution in mesopic condition:
45% Far, 25% Intermediate, and 30% Near

Far
Near
Intermediate

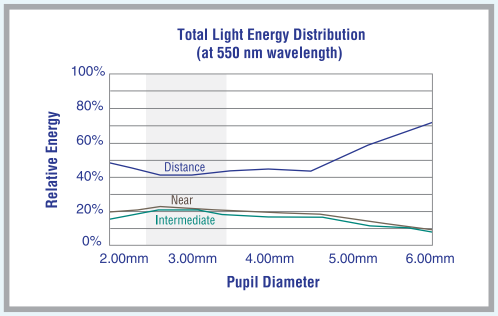
IOL A[3] (+1.75D/+3.50D)



IOL B[4] (+1.66D/+3.33D)



IOL C (+2.17D/+3.25D)



USAF Resolution Target Test

A resolution test pattern is, as the name implies, a tool for measuring the resolving power of an optical system. It consists of reference line patterns with well-defined thicknesses and spacings. The test helps demonstrating the performance of a lens in terms of its resolution in photopic and mesopic conditions.

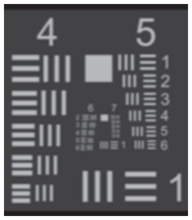
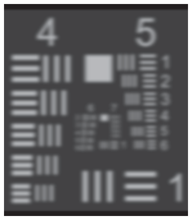
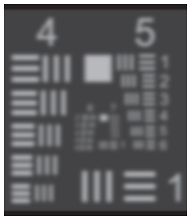
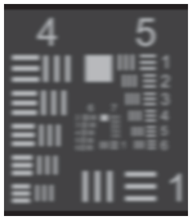
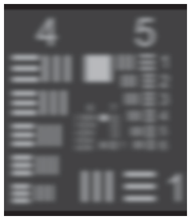
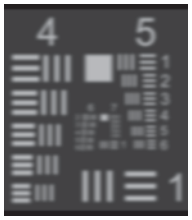
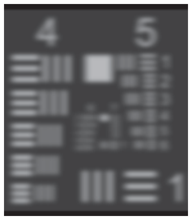
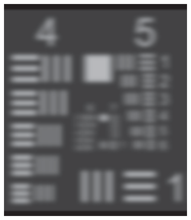
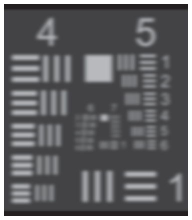
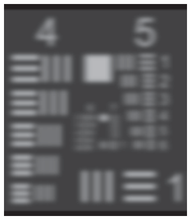
		PHOTOPIC CONDITIONS[9]		
		FAR	**INTERMEDIATE**	**NEAR**
Sinusoidal Pattern (New Generation)	Acriva^{UD} Trinova (+1.50D/+3.00D)			
Overlapping Diffractive Pattern (Traditional)	IOL A (+1.75D/+3.50D)			
	IOL B (+1.66D/+3.33D)			
	IOL C (+2.17D/+3.25D)			

Figure 3

References
9. Data on file.

MESOPIC CONDITIONS[9]

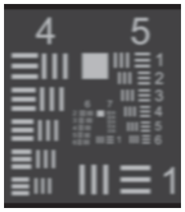
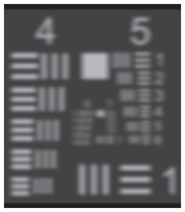
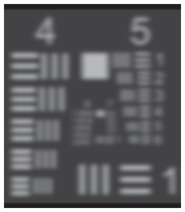
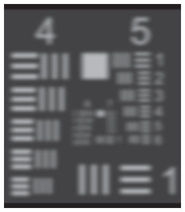
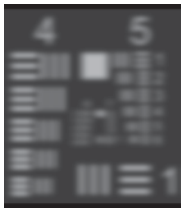
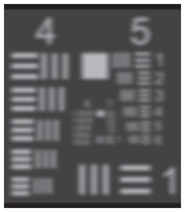
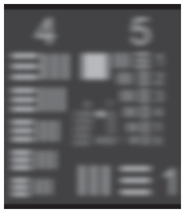
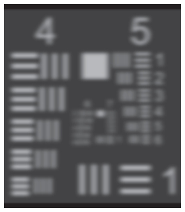
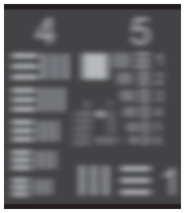
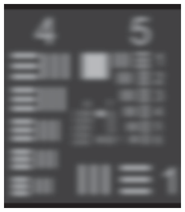
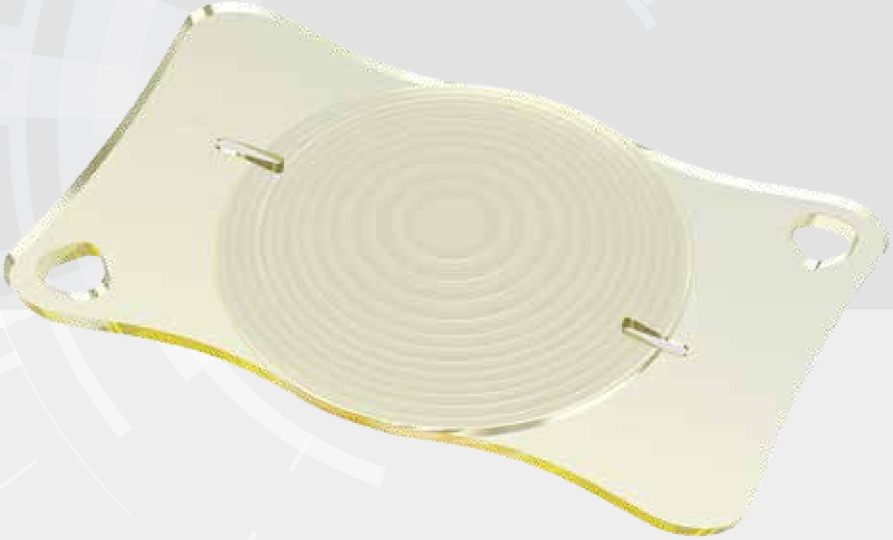
	FAR	INTERMEDIATE	NEAR	
Acriva[UD] Trinova (+1.50D/+3.00D)				Sinusoidal Pattern (New Generation)
IOL A (+1.75D/+3.50D)				Overlapping Diffractive Pattern (Traditional)
IOL B (+1.66D/+3.33D)				
IOL C (+2.17D/+3.25D)				

Figure 4

Acriva UD
Trinova *toric*
Sinusoidal Vision Technology Trifocal Toric IOL

Acriva UD Trinova Toric is also available!

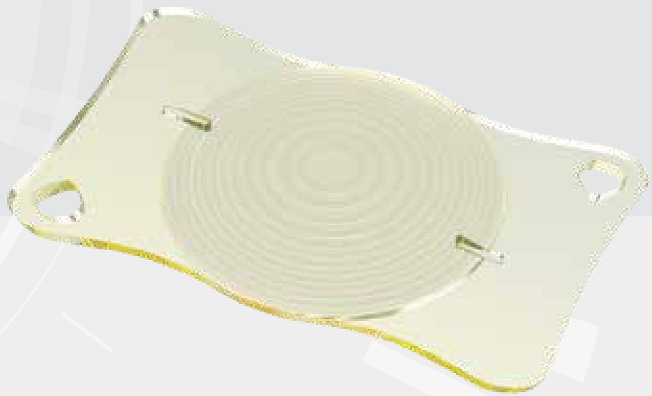


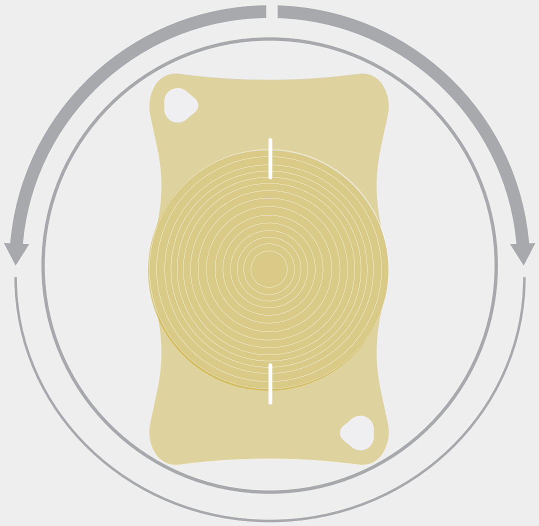
- Perfect Clinical Outcomes in Astigmatism Correction
- Excellent Post-Op Rotational Stability
- Alignment Possibility in Both Directions
- Wide Diopter Range
  Sph 0.00D - 32.00D
  Cyl 1.00D - 10.00D

Best Solution is Plate Haptic

Minimum SIA, Excellent Stability in MICS Design

Larger incision causes higher surgically induced astigmatism and directly affects post-operative refractive outcomes. Since Acriva^{UD} Trinova Toric with plate haptic design enables implantation through a sub-2.0-mm incision, it minimizes surgically induced astigmatism and stays in the capsular bag without rotation. Therefore, Acriva^{UD} Trinova Toric IOL with plate haptic design is the best choice.





The alignment of Acriva^{UD} Trinova Toric IOL is easier, as it can be rotated in both directions during the operation. Since the whole haptic surface is in contact with the capsular bag, plate haptic design always delivers excellent rotational stability.

Simple Tool For Toric Surgical Plan

The Acriva^UD Easy Toric Calculator is developed to assist you to easily plan your surgery and to help you maximize the benefits of your toric lens.

Download
Acriva^UD Easy Toric Calculator App

You can access the **Acriva^UD Easy Toric Calculator** by visiting **www.vsybiotechnology.com**.
Download the application available for iPhone and iPad from the App Store or from the Google Play Store for all Android devices.

For more information, please see Acriva^UD Easy Toric Calculator User Guide.

<table>
<tr><th></th><th>Acriva^{UD} Trinova</th><th>Acriva^{UD} Trinova Toric</th></tr>
<tr><td>General</td><td colspan="2">Trifocal Sinusoidal Vision Technology, Foldable, Single Piece,
Aspheric, Achromatic, Hydrophobic Surface, UV, Violet and Blue Filter</td></tr>
<tr><td>Optic Size</td><td colspan="2">6.00 mm</td></tr>
<tr><td>Optic Design</td><td>Trifocal SVT (Patent Pending)</td><td>Trifocal Toric SVT (Patent Pending)</td></tr>
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<tr><td>Haptic Design</td><td colspan="2">Plate Haptic (suitable for MICS)</td></tr>
<tr><td>Haptic Angle</td><td colspan="2">0^0</td></tr>
<tr><td>Material</td><td colspan="2">Hydrophobic Surface, BB (Blue Balance), Natural Chromophore, Dynamic Photofiltration</td></tr>
<tr><td>Aspheric Value</td><td colspan="2">Ultra Definition Mild Negative Correction</td></tr>
<tr><td>Abbe Number</td><td colspan="2">58</td></tr>
<tr><td>Light Transmission</td><td colspan="2">92.0 %</td></tr>
<tr><td>Light Distribution</td><td colspan="2">Photopic Conditions: 41% far - 30% intermediate - 29% near
Mesopic Conditions: 45% far - 25% intermediate - 30% near</td></tr>
<tr><td>Square Edge</td><td colspan="2">360^0 All Enhanced Square Edge</td></tr>
<tr><td>Refractive Index Wet</td><td colspan="2">20°C / 35°C 1.462/1.462 ± 0.002</td></tr>
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Hoffer Q pACD: 4.82
Holladay sf: 1.04
Barrett Universal II LF: 1.31</td></tr>
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cyl +1.0 D to +10.0 D (0.5 D increments)</td></tr>
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Acrijet Green 2.0 (up to sph 28.0 D)
Acrijet Green 2.2 (up to sph 30.0 D)</td><td>Acrijet Green 1.8 (up to sph 25.0 D, cyl 5.0 D)
Acrijet Green 2.0 (up to sph 28.0 D, cyl 5.0 D)
Acrijet Green 2.2 (up to sph 30.0 D, cyl 5.0 D)</td></tr>
</table>

flyBRIDGE
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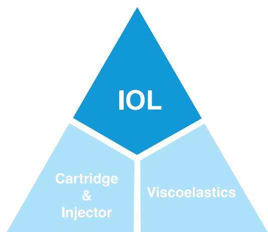

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