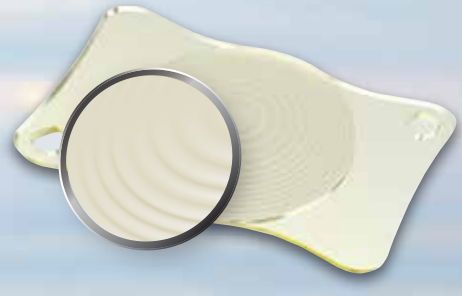
For Cataract and Refractive Lens Exchange (RLE) patients

THE WORLD'S FIRST AND ONLY SINUSOIDAL TRIFOCAL IOL

Acriva UD
Trinova®
Sinusoidal Vision Technology Trifocal IOL



Rely on the smooth surface

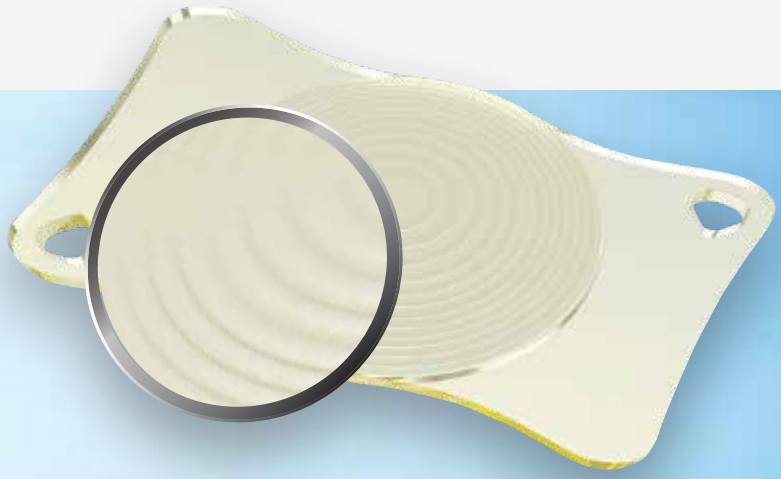
SVT® SINUSOIDAL
SINUSOIDAL VISION TECHNOLOGY

Patented Technology

WHAT IS SINUSOIDAL VISION TECHNOLOGY (SVT™)?

Sinusoidal Vision Technology is inspired by the sinusoidal pattern seen in nature. We created trifocality with the help of Sinusoidal Vision Technology that displays Sine wave like surface profile. This revolutionary patented technology is designed to obtain the best optical performance from an IOL. More light transmission, optimum light distribution, less scattered light, less halo&glare, real continuous vision...

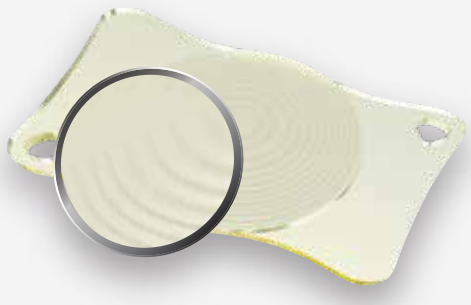
SVT® SINUSOIDAL
SINUSOIDAL VISION TECHNOLOGY



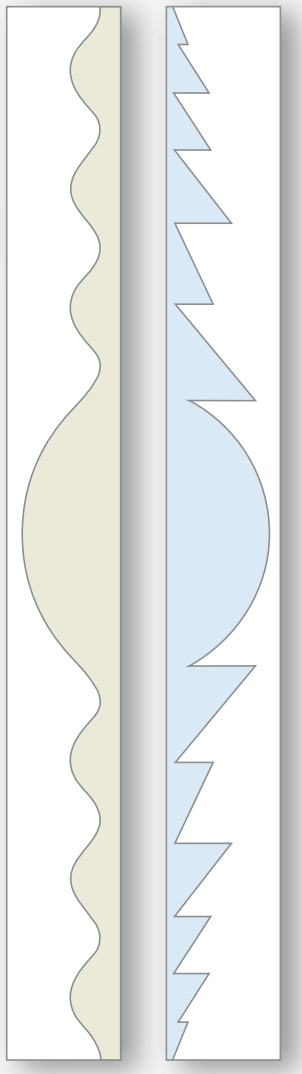
We Are Inspired by the Nature

GET RID OF THE SHARP EDGES

Sharp edges and pointy peaks of the overlapping pattern on the traditional trifocal IOLs are the main causes of positive dysphotopsia. Acriva[UD] Trinova® has smoothly varying surface profile that helps to reduce halos and glare due to reduced scattered light.



Acriva[UD] Trinova®,
Sinusoidal Trifocal IOL
Surface Profile,
Unique
Sinusoidal Pattern



Traditional
Trifocal IOL
Surface Profile
Overlapping
Pattern with
Sharp Edges

Acriva[UD] Trinova®, Sinusoidal Trifocal IOL

Traditional Trifocal IOL

MAXIMUM LIGHT TRANSMISSION TO RETINA

92%

Acriva[UD] Trinova® provides the highest light transmission to retina by 92% among all available trifocal IOLs. The crystalline lens of a 30 year-old healthy individual has 95% light transmission and Acriva[UD] Trinova® has the closest light transmission to this rate.[1]

It is known that overlapping diffractive pattern trifocal IOLs cause significant light loss. Each one percentage of light loss affects patient's overall visual performance exponentially. Acriva[UD] Trinova® ensures maximum light transmission, thanks to its stepless diffractive zones and thus improves contrast sensitivity.

IOLs	Light Transmission	
Acriva[UD] Trinova® (+1.50D/+3.00D)	**92%[2]**	**- New Generation Trifocal IOL with Sinusoidal Pattern** (Patented Technology)
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
Natural Crystalline Lens	**95%[1]**	**30 year-old healthy individual eye**

Table 1

SUPERIOR OPTICAL PERFORMANCE

MTF (Modulation transfer function) is a bench measurement of the ability of an optical system to transfer contrast from the object to the image. The criteria of a "Good" optical system has been set by the International Organization for Standardization (ISO 11979-2).

The higher the MTF value, the more contrast is transferred to the image, resulting in higher image contrast. As it is seen in Figure 1 below, Acriva[UD] Trinova® shows greater performance in total focus area from far to near.[6,7]

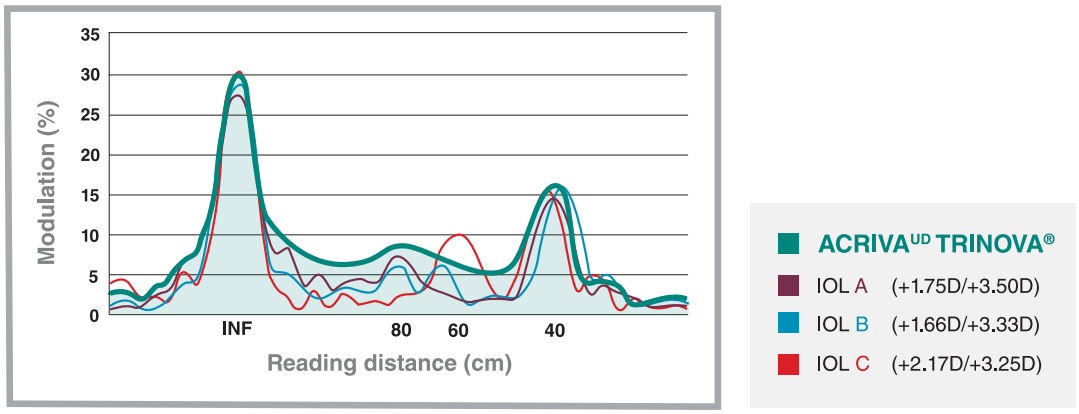


Figure 1: Comparison of MTF Values[7]

References
1. Artigas, Jose M & Felipe, Adelina & Navea, Amparo & Fandiño, Adriana & Artigas, Cristina. (2012). Spectral Transmission of the Human Crystalline Lens in Adult and Elderly Persons: Color and Total Transmission of Visible Light. Investigative ophthalmology & visual science. 53. 4076-84. 10.1167/iovs.12-9471.
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., Peña-García, P., Liehneova, I., Ziak, P. and Alió, J. (2014). Outcomes of a new diffractive trifocal intraocular lens. Journal of Cataract & Refractive Surgery, 40(1), pp.60-69.
5. Lee, S., Choi, M., Xu, Z., Zhao, Z., Alexander, E., & Liu, Y. (2016). Optical bench performance of a novel trifocal intraocular lens compared with a multifocal intraocular lens. Clinical ophthalmology (Auckland, N.Z.), 10, 1031–1038. doi:10.2147/OPTH.S106646.
6. Data on file
7. Daniel Carson, Zaiwei Xu, Elsinore Alexander, Myoung Choi, Zeyu Zhao, Xin Hong, Optical bench performance of 3 trifocal intraocular lenses, J Cataract Refractive Surgery, 09.2016;42:1364.

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. Comparison table can be seen below.[8,9,10]

IOLs	Near Addition	Theoretical Reading Distance	Intermediate Addition	Theoretical Reading Distance
Acriva[UD] Trinova	+3.00D	38 cm	+1.50D	80 cm
IOL A:	+3.50D	34 cm	+1.75D	68 cm
IOL B:	+3.33D	36 cm	+1.66D	72 cm
IOL C:	+3.25D	35 cm	+2.17D	55 cm

Table 2

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. They might fail to distribute the light to the focal points evenly. Usually, most of the light contributes to far vision leading to inadequate near and intermediate vision performances, especially in mesopic conditions.

Acriva[UD] Trinova® incorporates a unique sinusoidal surface profile that doesn't exhibit any sharp edges, providing a more continuous light-energy distribution. This leads to remarkable spectacle-free visual competencies not only in photopic, but also in mesopic conditions.[8]

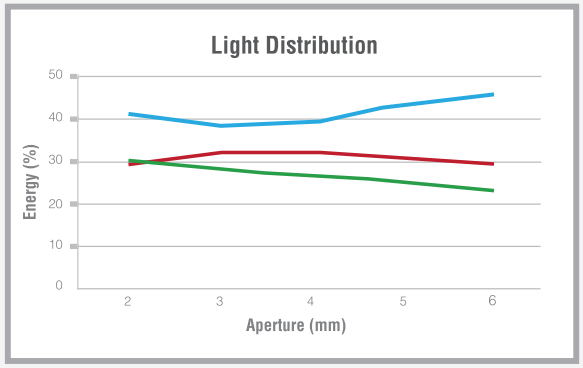


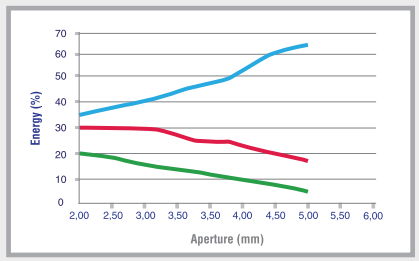
Figure 2

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

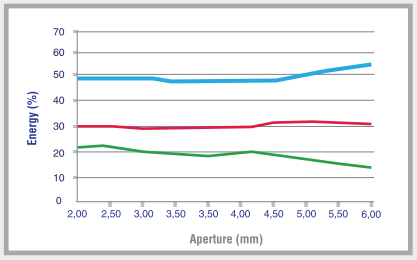
Light distribution in mesopic condition:
45% Far, 25% Intermediate, and 30% Near

Far
Near
Intermediate

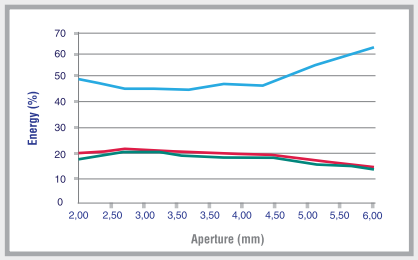
IOL A[3] (+1.75D/+3.50D)



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



IOL C[11] (+2.17D/+3.25D)



References
8. Data on file
9. Law EM, Aggarwal RK, Kasaby H. Clinical outcomes with a new trifocal intraocular lens. Eur J Ophthalmol. 2014;24(4):501–508.
10. K.Gundersen. Diffractive multifocal IOLs: a comparative study of Finevision versus ReSTOR 2.5 and 3.0D. Free Paper Session ESRCS 2014 London.
11. Ratón, Alvaro Rodríguez. Update in intraocular lenses Dr. Alvaro R. Raton Lecture at Oviedo, EMYO 2016

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.

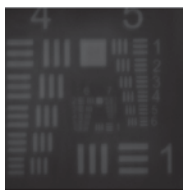
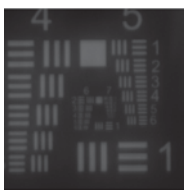
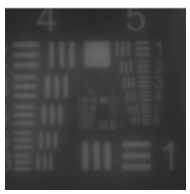
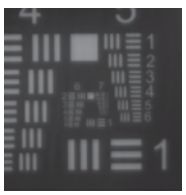
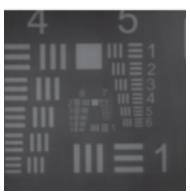
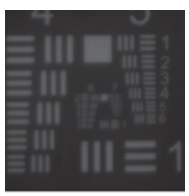
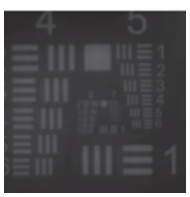
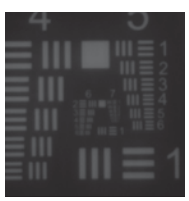
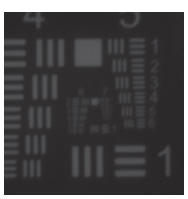
		PHOTOPIC CONDITIONS[12]			MESOPIC CONDITIONS[12]		
		FAR	INTERMEDIATE	NEAR	FAR	INTERMEDIATE	NEAR
Sinusoidal Pattern (New Generation)	Acriva[UD] Trinova® (+1.50D/+3.00D)						
Overlapping Diffractive Pattern (Traditional)	IOL A (+1.75D/+3.50D)						
	IOL B (+1.66D/+3.33D)						
	IOL C (+2.17D/+3.25D)						

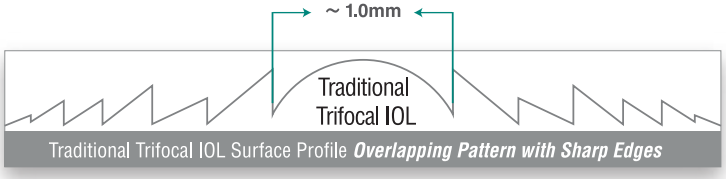
Figure 3

References
12. Data on File

TOLERANCE TO DECENTRATION AND LARGE ANGLE KAPPA

Acriva[UD] Trinova® has the highest tolerance to decentration and angle Kappa with its central diameter of 1.4 mm.

Acriva[UD] Trinova®, Sinusoidal Trifocal IOL Surface Profile ***Unique Sinusoidal Pattern***



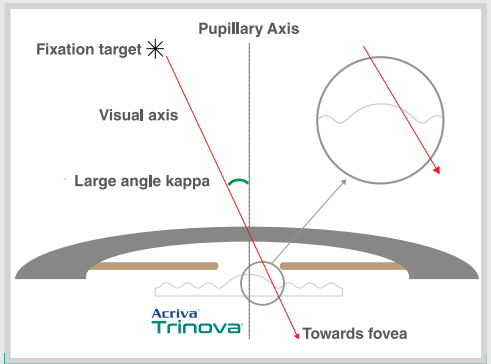
Traditional Trifocal IOL Surface Profile ***Overlapping Pattern with Sharp Edges***

Angle Kappa May Play Important Role For A Successful Premium IOL Implantation

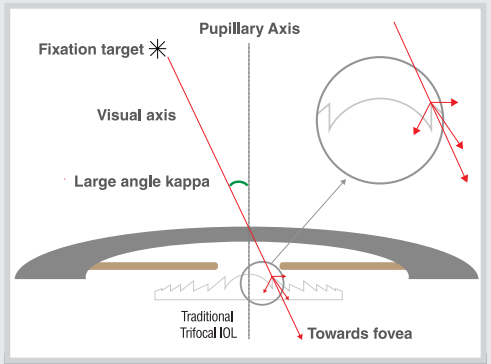
Studies suggest that the traditional multifocal IOLs are unacceptable for use, if the angle kappa is greater than half of the diameter of the central optical zone of the respective lens.[13]

If the lens is significantly decentered because of failure to accommodate for angle kappa, then central light rays may miss the central optical zone and pass through one of the multifocal rings, leading to glare.[13] In this case, the size of the central ring plays an important role. An IOL with a wide central ring may tolerate large angle kappa much more than an IOL with a small central ring.

Angle Kappa



Acriva[UD] Trinova®, Sinusoidal Trifocal IOL



Traditional Trifocal IOL

	Central Ring Diameter
Acriva[UD] Trinova®	**1.4 mm**
IOL A	1.0 mm
IOL B	1.04 mm
IOL C	1.164 mm

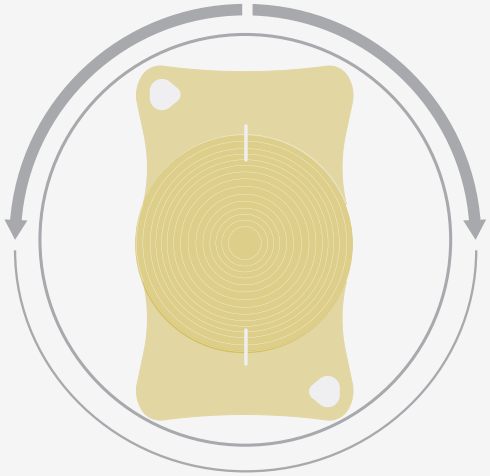
Table 3

References
13. Moshirfar, M., Hoggan, R. N., & Muthappan, V. (2013). Angle Kappa and its importance in refractive surgery. Oman journal of ophthalmology, 6(3), 151–158. doi:10.4103/0974-620X.122268

ASTIGMATISM CORRECTION

Sinusoidal Trifocal Toric IOL

- Perfect Clinical Outcomes in Astigmatism Correction
- Excellent Post-Op Rotational Stability
- Alignment Possibility in Both Directions
- Wide Diopter Range
  Sph 0.0 D - 32.0 D (0.5 D increments)
  Cyl 1.0 D - 10.0 D (0.5 D increments)



Minimum SIA, 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.

Excellent Rotational Stability, Easy Alignment

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.

Acriva[UD] Easy Toric Calculator

Simple Tool For Toric Surgical Plan

The Acriva[UD] Easy Toric Calculator is developed for you to plan your surgery easily and to maximize the benefits of the selected toric lens.

How to Use Toric Calculator?

1

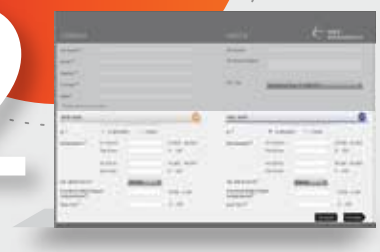
Input Data & Select IOL Model

Choose the appropriate toric IOL model (Toric or Multifocal Toric). Fill in the surgeon information and patient demographics.

2

Enter Values For Calculation and Press "Next" Button

- K Values for steep and flat axis
- IOL Spherical Power
- Surgically Induced Astigmatism
- Incision Location



3

See Calculator Results and Axis of Placement Map

- Equivalent Spherical IOL
- Cylinder Power (Corneal Plane)
- Cylinder Power (IOL Plane)
- Axis of Alignment
- Axis of Placement Map

4

Download and Print

You can download and print your calculation results.

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.

ANDROID APP ON Google play

Available on the App Store

Scan the QR code to access Acriva[UD] Easy Toric Calculator

www.easytoriccalculator.com

	Acriva^{UD} Trinova®	Acriva^{UD} Trinova® Toric
General	Trifocal Sinusoidal Vision Technology, Foldable, Single Piece, Aspheric, Achromatic, Hydrophobic Surface, UV, Violet and Blue Filter	
Optic Size	6.00 mm	
Optic Design	Trifocal SVT™(Patented Technology)	Trifocal Toric SVT™(Patented Technology)
Haptic Size	11.00 mm	
Haptic Design	Plate Haptic (suitable for MICS)	
Haptic Angle	0^0	
Material	Hydrophobic Surface, BB (Blue Balance), Natural Chromophore, Dynamic Photofiltration	
Aspheric Value	Ultra Definition Mild Negative Correction	
Abbe Number	58	
Light Transmission	92.0 %	
Light Distribution	Photopic Conditions: 41% far - 30% intermediate - 29% near Mesopic Conditions: 45% far - 25% intermediate - 30% near	
Square Edge	360^0 All Enhanced Square Edge	
Refractive Index Wet	20^oC / 35^oC 1.462/1.462 ± 0.002	
Acoustic A Constant	118.0	
Optical A Constant	SRK- II: 118.0 SRK-T: 117.9 Haigis a0, a1, a2: 0.58, 0.4, 0.1 Hoffer Q pACD: 4.82 Holladay sf: 1.04 Barrett Universal II LF: 1.31	
Diopter Power Range	sph 0.0 D to +32.0 D (0.5 D increments)	sph 0.0 D to +32.0 D (0.5 D increments) cyl +1.0 D to +10.0 D (0.5 D increments)
Recommended Injector	Acrijet Green 1.8 (up to sph 25.0 D) Acrijet Green 2.0 (up to sph 28.0 D) Acrijet Green 2.2 (up to sph 30.0 D)	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)

Halo and Glare?

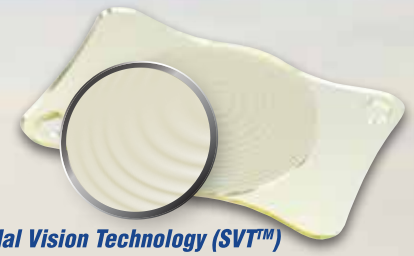
Not a problem anymore!

THE WORLD'S FIRST AND ONLY SINUSOIDAL TRIFOCAL IOL

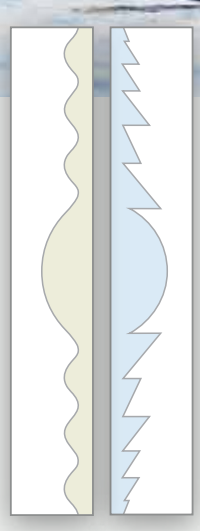
Rely on the smooth surface

Acriva[UD] Trinova®

Sinusoidal Vision Technology Trifocal IOL



Sinusoidal Vision Technology (SVT™)
Patented Technology



Acriva[UD] Trinova®,
Sinusoidal Trifocal IOL
Surface Profile
Unique
Sinusoidal Pattern

Traditional Trifocal IOL
Surface Profile
Overlapping Pattern with Sharp Edges

GET RID OF SHARP EDGES!

Halo/Glare is not a problem anymore!

Sinusoidal Vision Technology (SVT®) is a unique patented technology for producing a trifocal IOL optical surface that does not exhibit any sharp edges. The lens optic has smoothly varying surface profile that helps to reduce halo/glare due to the reduced scattered light.

For **Cataract** and **Refractive Lens Exchange** (RLE) patients

VSY BIOTECHNOLOGY
we inspire...

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vsy-biotechnology vsybiotechnologylife vsybiotechnology