Updating Premium IOLs

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enVista ASPIRE IOL
Bausch & Lomb

Monofocal Plus IOL for the modern world

a fusion of uncompromised distance vision with an optic designed for a broader depth of focus

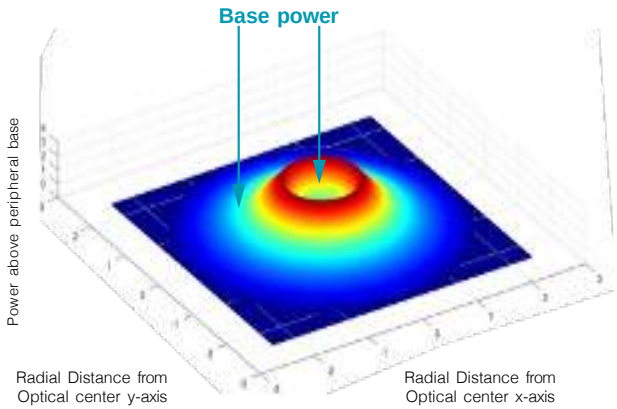
Patients are navigating their world with more complexities than ever before. As the world progresses, so should their standard of cataract care. The need for broader range of vision is apparent, as adults spend more than 13 hours a day interacting with digital devices.[1] As a surgeon, enVista™ Aspire provides you with the opportunity to deliver modern expectations.

- In optical bench testing, enVista™ Aspire demonstrated a broader depth of focus compared to enVista™ AO (Advanced Optics) monofocal IOLs
- Glistening-free optic material

1. UnitedHealthcare. UnitedHealthcare Screen Time Report 2020. Published 2020. Accessed October 17, 2023. Available at: https://www.uhc.com/ content/dam/uhcdotcom/en/BrokersAndConsultants/UnitedHealthcare- Screen-Time-Report-2020.pdf
2. enVista® and Enhanced enVista® shipments extract 2011-June 2024
3. enVista™ Aspire Instructions for use, Figure 2.

enVista ASPIRE IOL Optical Design

enVista™ Aspire IOL Power Surface Plot showing the power distribution on the posterior side of theAspire IOL optic.



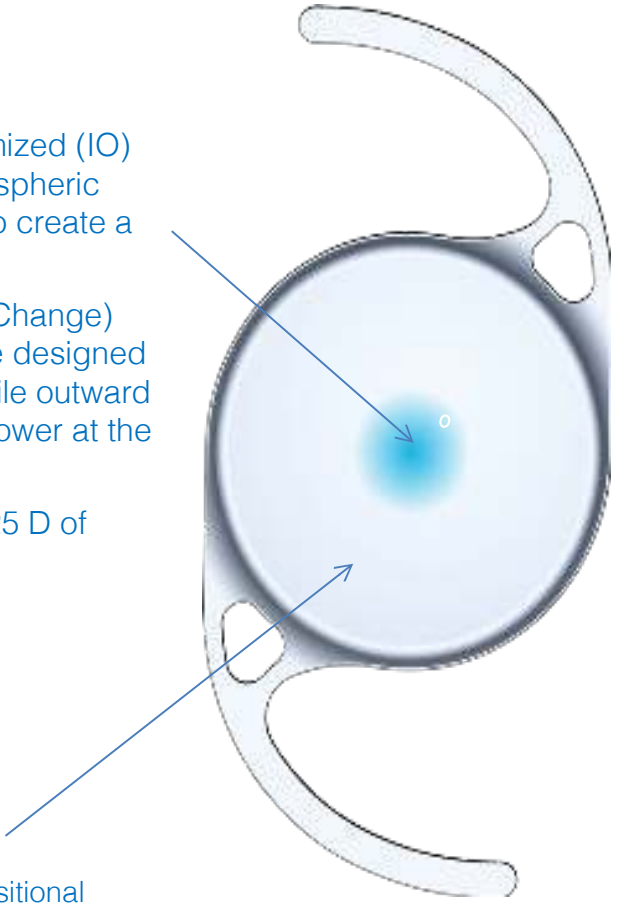
This image is not a topographical map of the lens, it is a power map of the lens

Central zone

enVista™ Aspire´s Intermediate Optimized (IO) central zone, utilizes higher-order aspheric coefficients on the posterior surface to create a broader depth of focus.

Featuring 3C (Controlled Curvature Change) technology, enVista™ Aspire optics are designed to harmonize the geometric power profile outward between the central base power and power at the periphery.

enVista™ Aspire demonstrated 1.25 D of continuous depth of focus

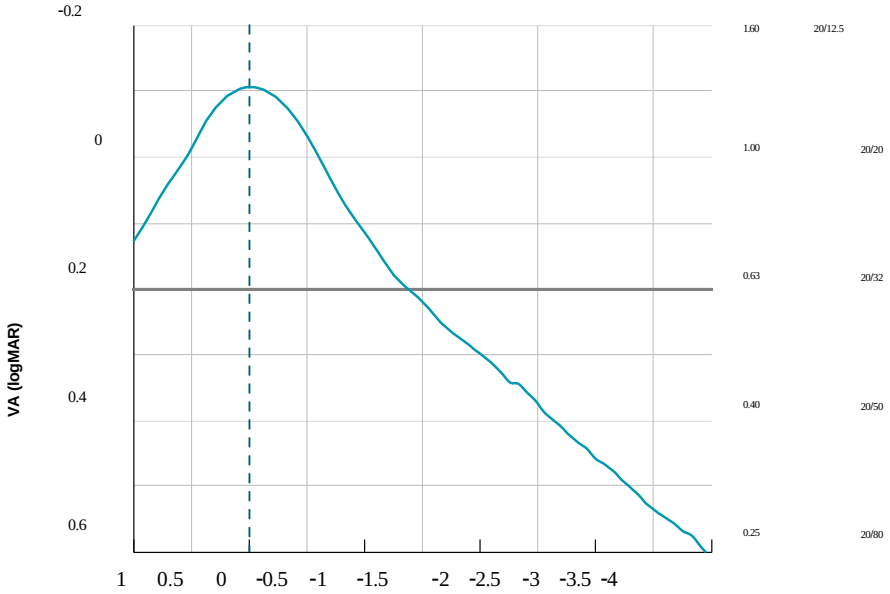


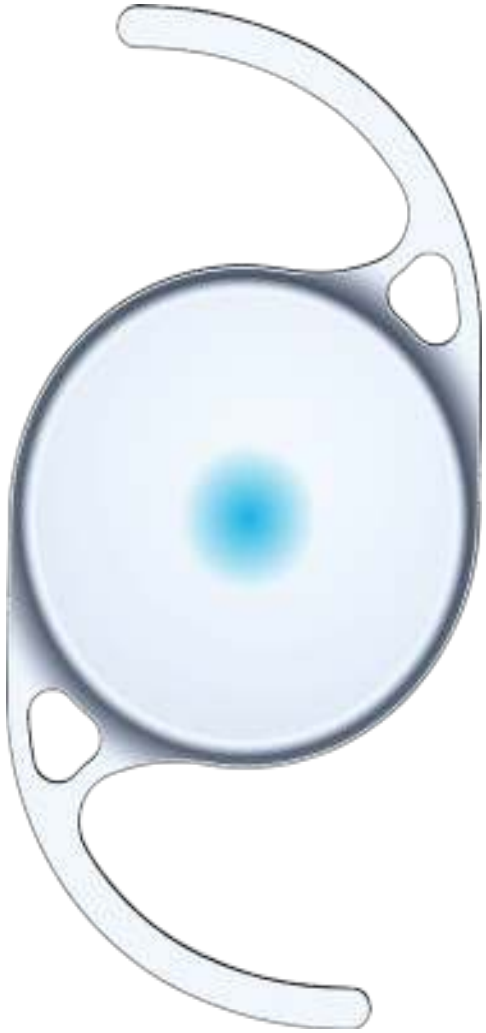
Optic power profile

The unique optic of enVista™ Aspire creates a gradual transitional distribution of light energy from center to the periphery

enVista ASPIRE IOL
Uncompromising distance vision

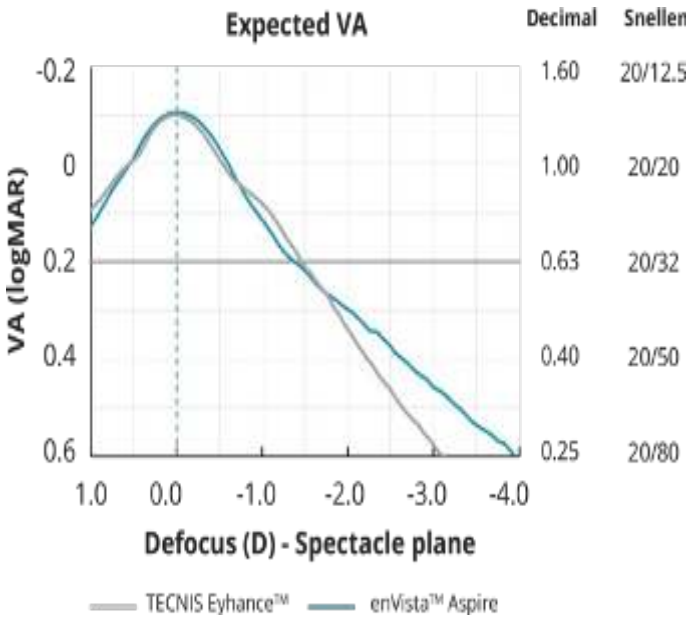
enVista™ Aspire Expected Visual Acuity (EVA) at 3.00 mm pupil size, +0.27 µm corneal spherical aberration and 550 µm monochromatic light.





enVista ASPIRE IOL
Intermediate Optimized optic

Expected Visual Acuity at 3.00 mm pupil size, +0.27 µm corneal spherical aberration and 550 µm monochromatic light.



- In optical bench testing enVista Aspire demonstrated similar depth of focus compared to TECNIS Eyhance

This expected Visual Acuity (EVA) is a pre-clinical metric, estimated using a formula from the through focus MTFa obtained with the 3.00 mm pupil size.
This MTFa results from the integration of MTF function in a range of spatial frequencies and has been shown to strongly correlate with average clinical visual acuity.

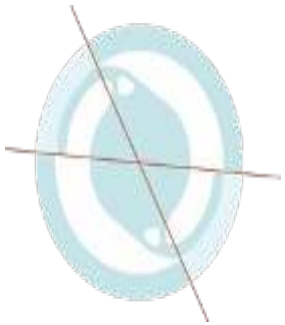
The EVA provides a useful tool to predict the expected visual performance of a lens.

5. Juan Antonio Azor, Fidel Vega, Jesus Armengol, Maria S. Millan. Characterization of various presbyopia-correcting intraocular lenses on optical bench. Comparative study. Grupo de Optica Aplicada y Procesado de Imagen (GOAPI). Department of Optics and Optometry Universitat Politecnica de Catalunya BARCELONATECH
6. Alarcon A, Canovas C, Rosen R, et al. Preclinical metrics to predict through-focus visual acuity for pseudophakic patients. Biomed Opt Express. 2016;7(5):1877-1888
7. American National Standards Institute (ANSI) Z80.35-2018, "Extended depth of focus intraocular lenses"
8. Vega F., Met al "Visual acuity of pseudophakic patients predicted from in-vitro measurements of intraocular lenses with different design," Biomed. Opt. Express 9(10),4893–4906 (2018)

Toric enVista ASPIRE IOL
Lock in rotational stability

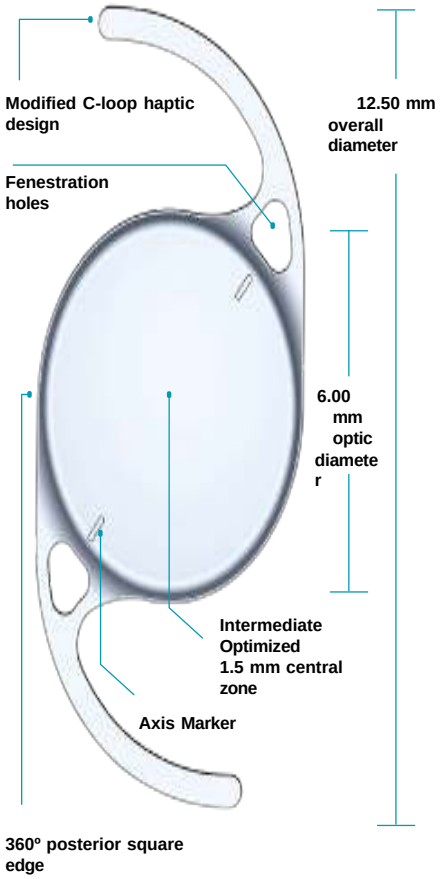
Accuset Haptics - designed for refractive predictability and stable centration

- **Fenestrated haptics** to prevent transfer of stress from the haptic to the optic
- **Haptics designed to** maximize the contact angle against the capsular bag



enVista® IOL[16]
Based on 10 mm capsular bag

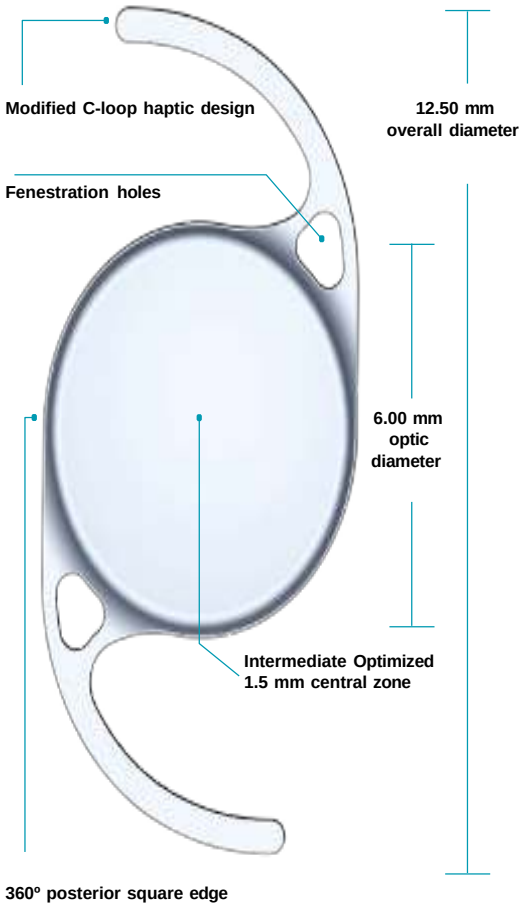
100 % of eyes with rotational stablity



enVista ASPIRE

HYDROPHOBIC ACRYLIC IOL

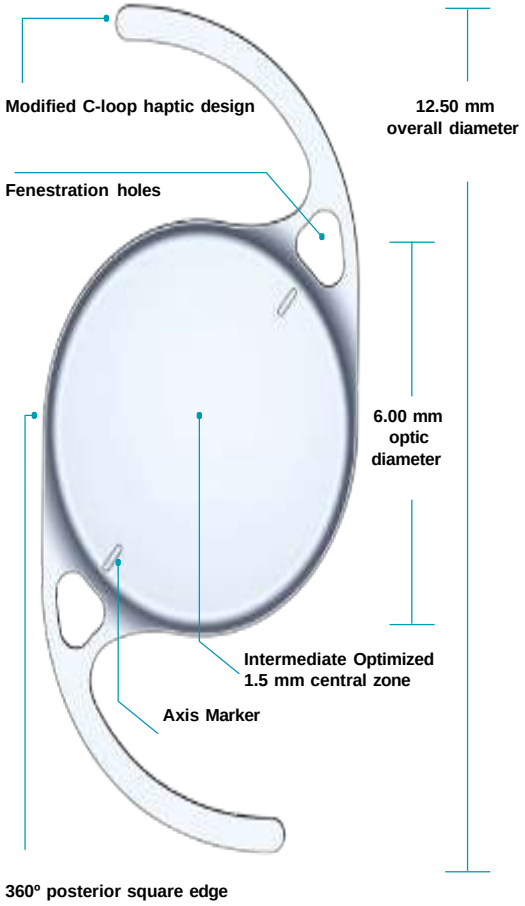
SKU EAxxxx



enVista ASPIRE TORIC

HYDROPHOBIC ACRYLIC IOL

SKU ETAxxx+xxx



NEW EDOF IOL Lux Smart
Bausch & Lomb

PURE REFRACTIVE OPTICS TECHNOLOGY

NEW EDOF IOL Lux Smart

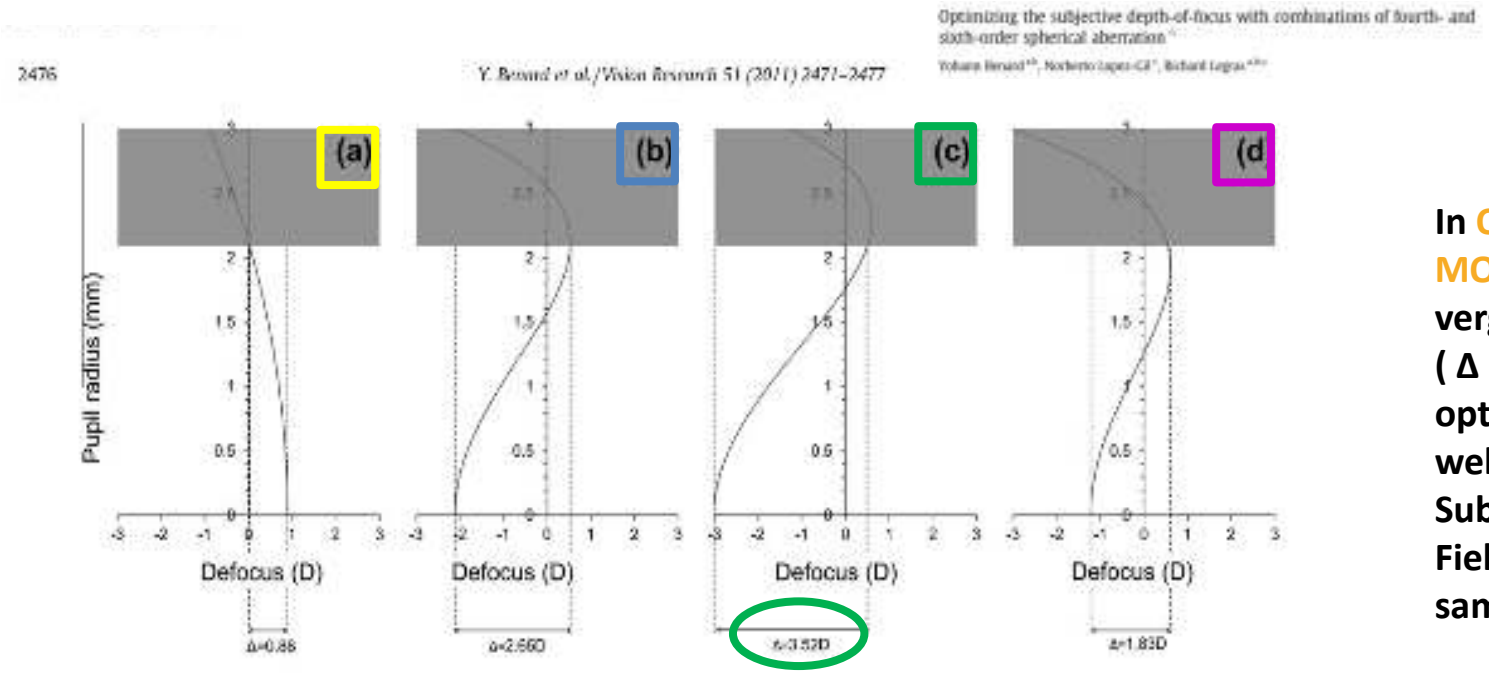


Fig. 5. Examples of the evolution of the vergence with the pupil size, depending on the induced aberrations: (a) 0.3 μm of SA4, (b) 0.3 μm of SA6, (c) combination of 0.3 μm of SA4 and −0.3 μm of SA6, and (d) combination of 0.3 μm of SA4 and 0.3 μm of SA6. Gray zones represent a pupil larger than 2.1 mm as an example to represent the larger change of defocus measured for this pupil radius.

SA 4th only

SA 6th only

SA 4th SA 6th Opposite signs

Largest change of defocus

SA 4th SA 6th Same signs

In OPTICAL MODELING the vergence of the optic (Δ) measured on an optical curve was well correlated to the Subjective Depth of Field obtained for same pupil size.

Bernard, 2011

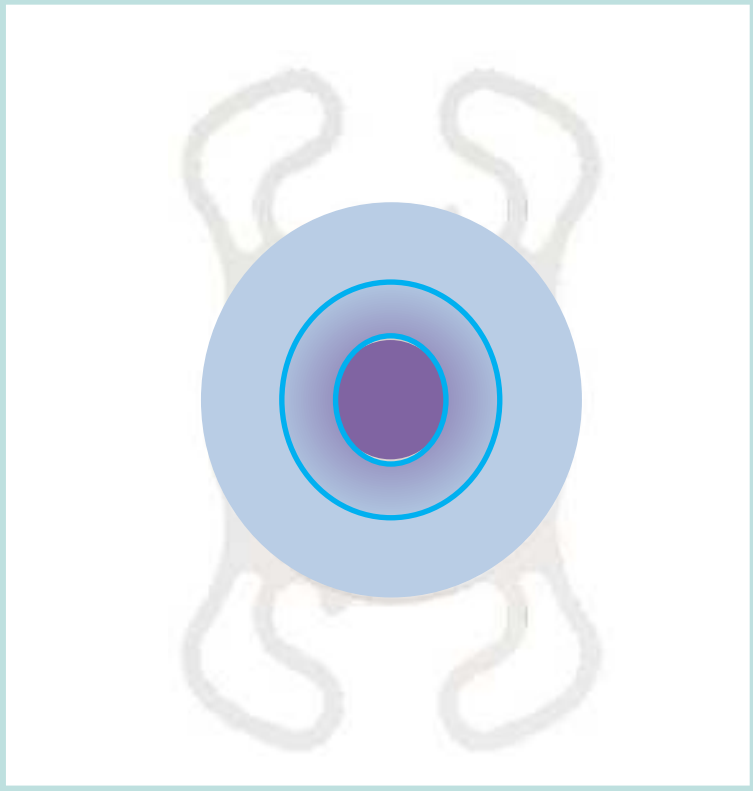
Optimizing the subjective Depth-of-focus with combinations of fourth- and sixth-order spherical aberration. Bernard, 2011

Change In The Depth Of Focus In Relation To The Induced Aberration

Sherical Aberration only **4⁰** order	→	Increases the depth of field **30 %**
Sherical Aberration only **6⁰** orden	→	Increases the depth of field **45 %**
Sherical Aberration **4⁰** y **6⁰** Opposite Signs	→	**Increases the depth of field 63 %**
Sherical Aberration **4⁰** y **6⁰** Same Sign	→	Increases the depth of field **24 %**

Bernard et al. Subjective depth of field in presence of 4th-order and 6th-order Zernike spherical aberration using adaptive optics technology. JCRS 2010; 36:2129-2138

NEW EDOF IOL Lux Smart

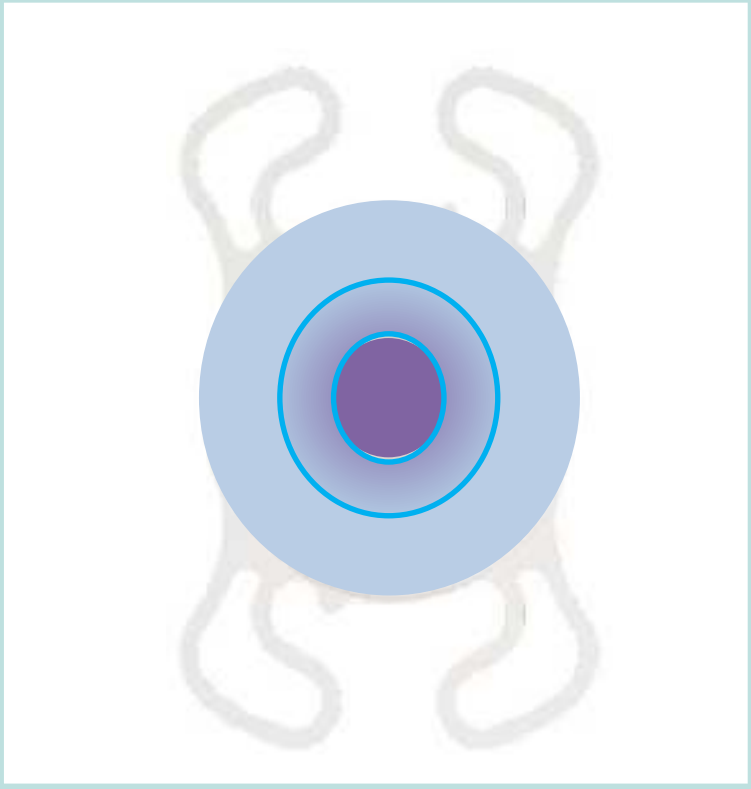


PURE REFRACTIVE OPTICS (PRO™ Technology)

EDOF CENTER

2 mm of EDOF center with increased depth of focus created by the combination of 4th and 6th order spherical aberration of opposite signs

NEW EDOF IOL Lux Smart

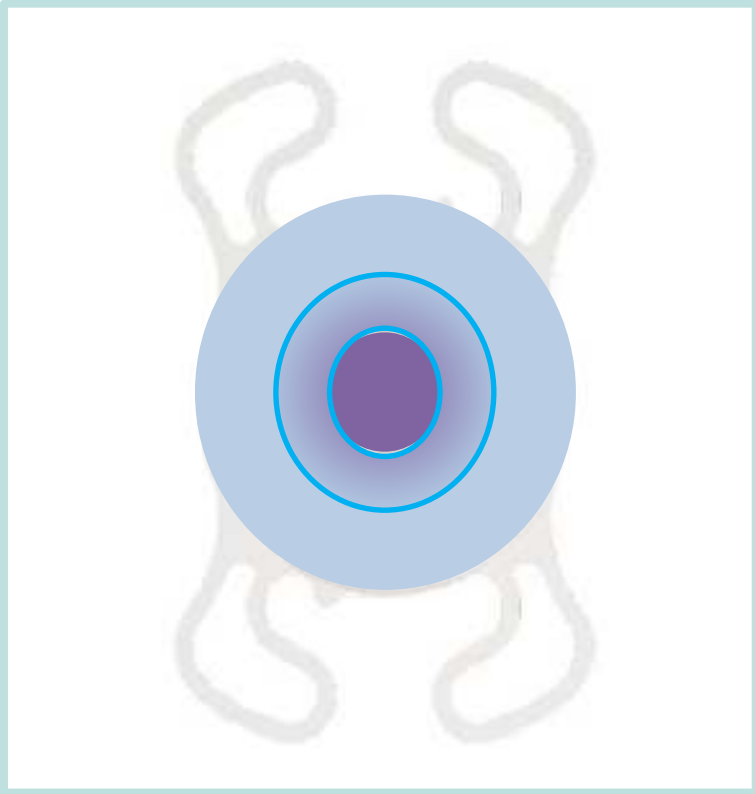


PURE
REFRACTIVE OPTICS

PATENTED TRANSITION ZONE

- **Transition zone designed to smoothly decrease the optic vergence from the center to the periphery.**
- **Transition designed to take part of the 4th and 6th spherical aberration orders management.**
- **Transition designed to control the trajectory of light rays to ensure no light is outside range of vision (no light loss).**

NEW EDOF IOL Lux Smart



PURE
REFRACTIVE OPTICS

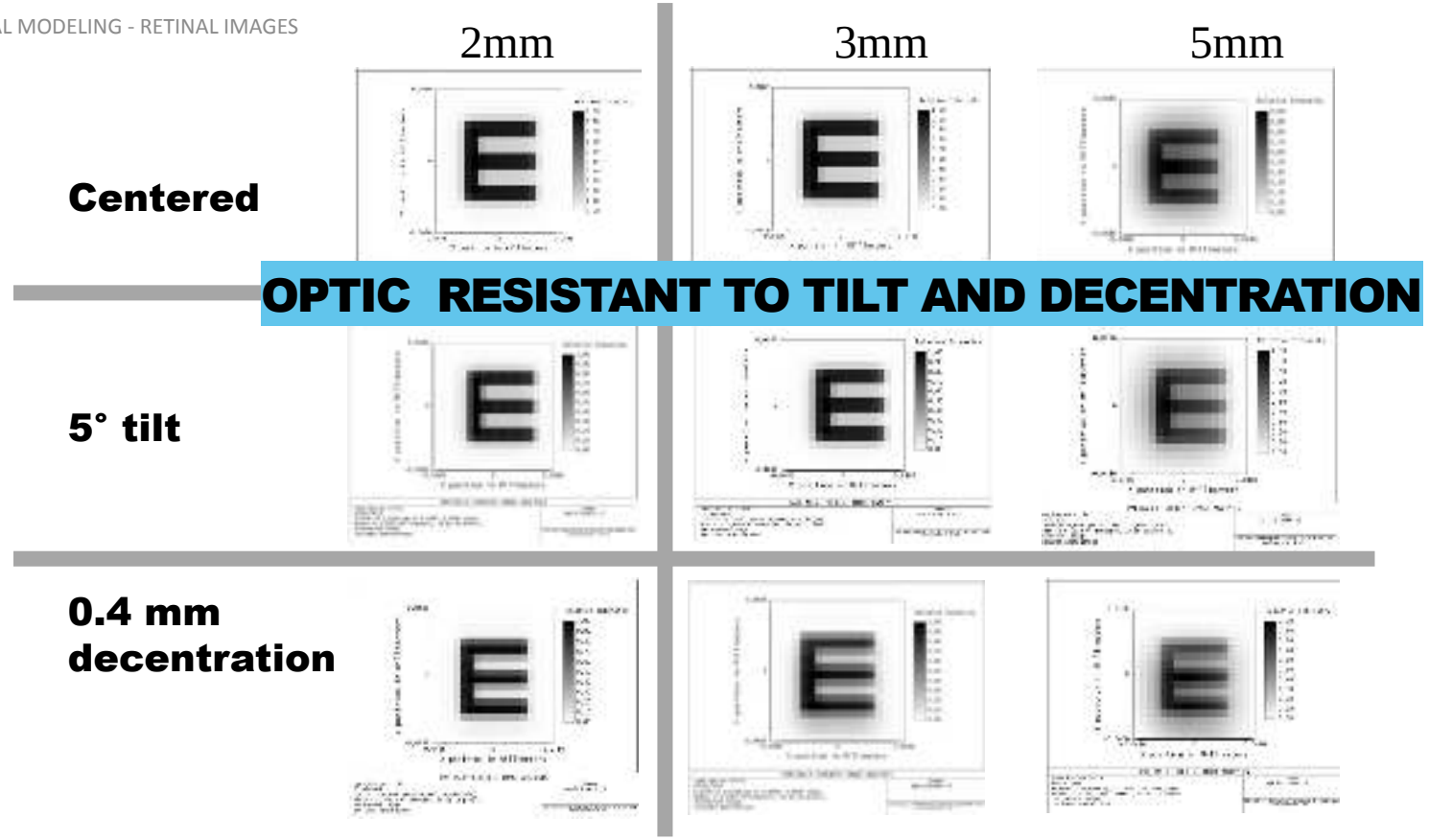
MONOFOCAL PERIPHERY

Monofocal aspheric surface

Aberration free

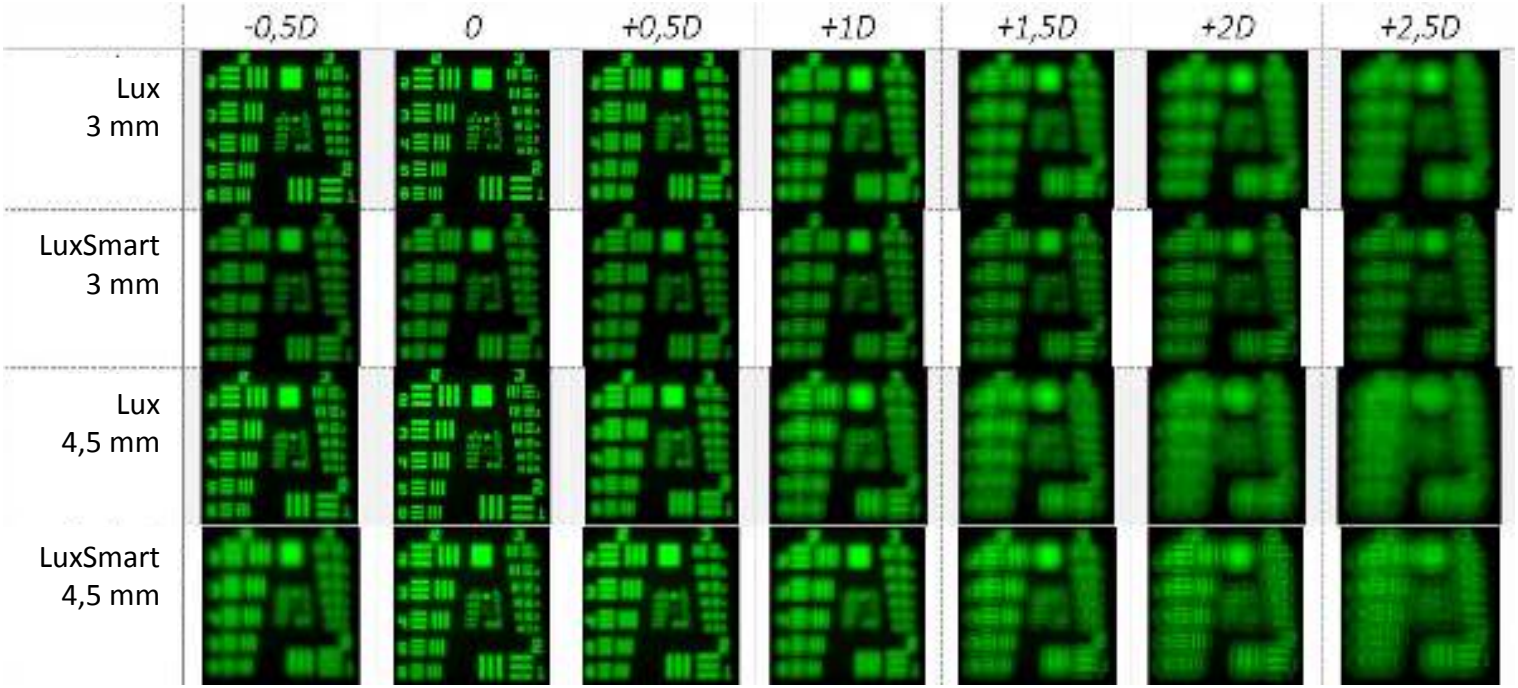
NEW EDOF IOL Lux Smart

OPTICAL MODELING - RETINAL IMAGES



NEW EDOF IOL Lux Smart

USAF Images



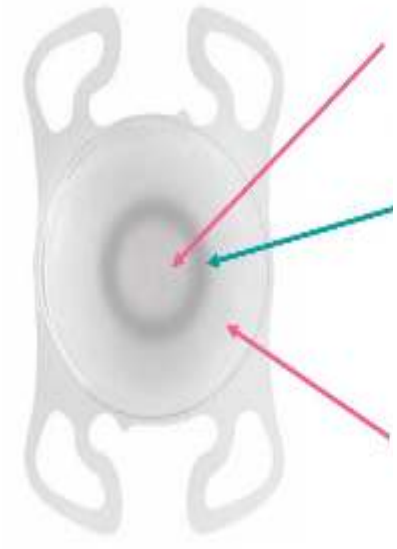
The quality of the image affected by blurring:
LUXsmart - Greater depth of field - Sharper images (some details can still be distinguished down to 2D, even 3D)

NEW Full Range of visión
IOL Lux Life
Bausch & Lomb

PURE REFRACTIVE OPTICS TECHNOLOGY

LUXLife Optical Concept

Continious Refractive Optical Design with an Aspheric Central Zone that links to the peripheral Monofocal Zone through a Transtion Zone.



2mm Central Aspheric Zone

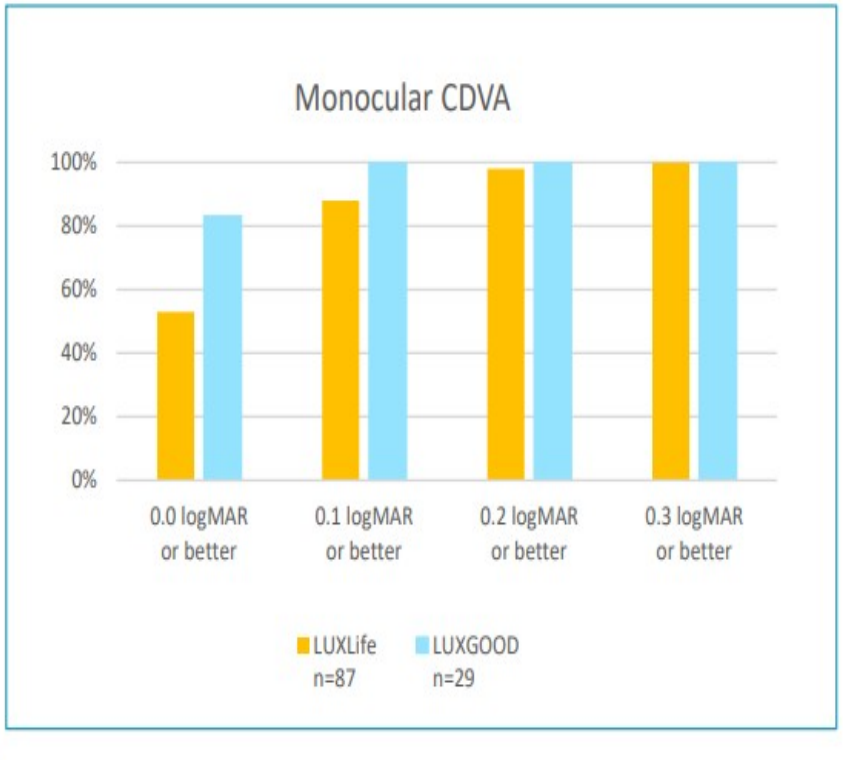
Combination of Spherical Aberrations of 4º and 6º order of opposite signs to provide an intermediate vision of 2,2 D and near vision of 3,4D

Continious Transtion Zone

Optical vergence descreases gradually from the center towards the periphery. Controls the trayectory of the light rays to garantee minimal light loss.

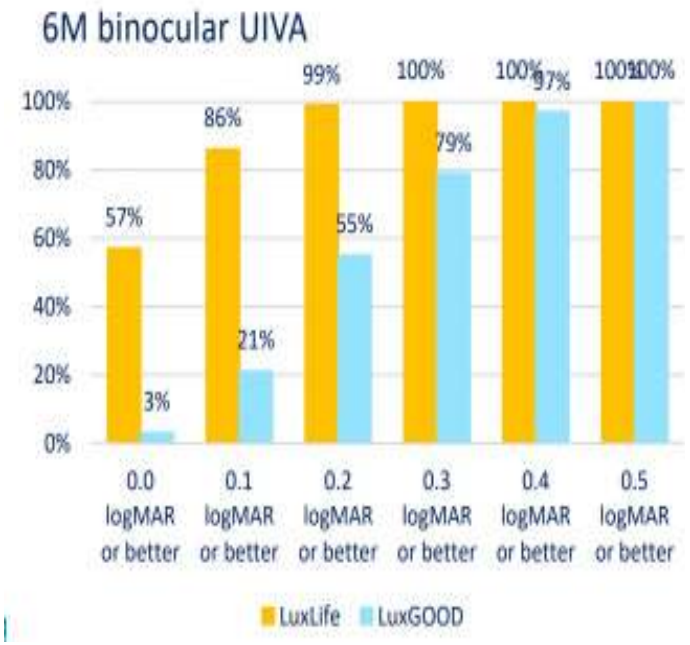
Monofocal Peripherical Zone

UnAided Distance Vision



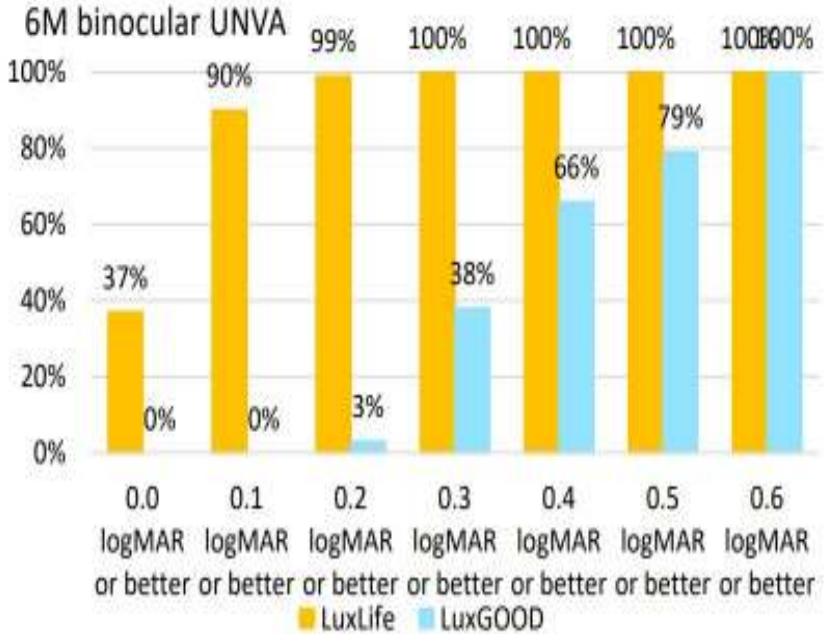
99% achieve CDVA monocular 20/32 or better

UnAided Intermediate Vision (66 cms)



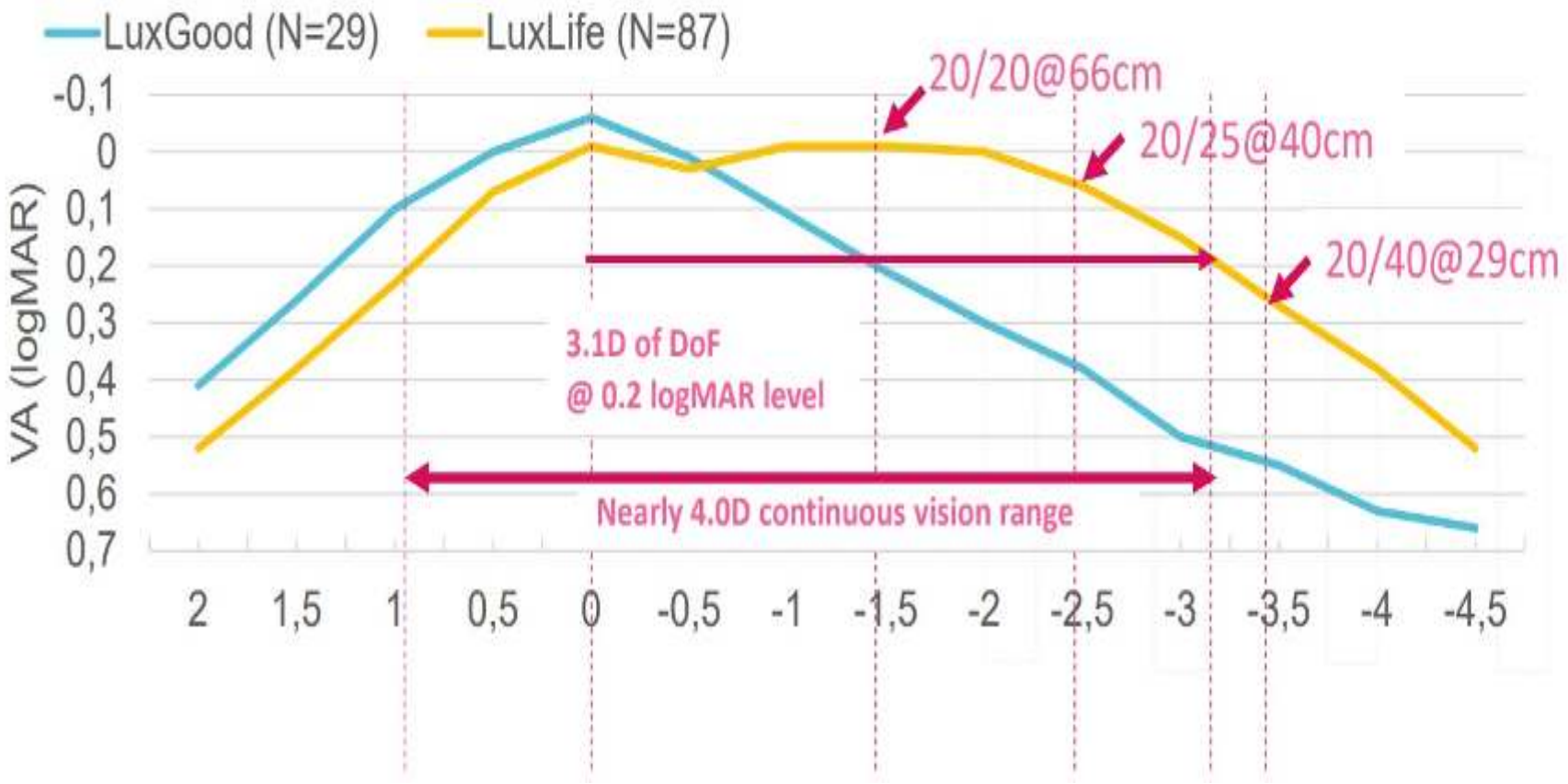
binocular UIVA of 20/25 or better in
86% of LUXLife patients as compared to **21 %**
of Monofocal IOL Patients.

Unaided Near Vision (40 cms)



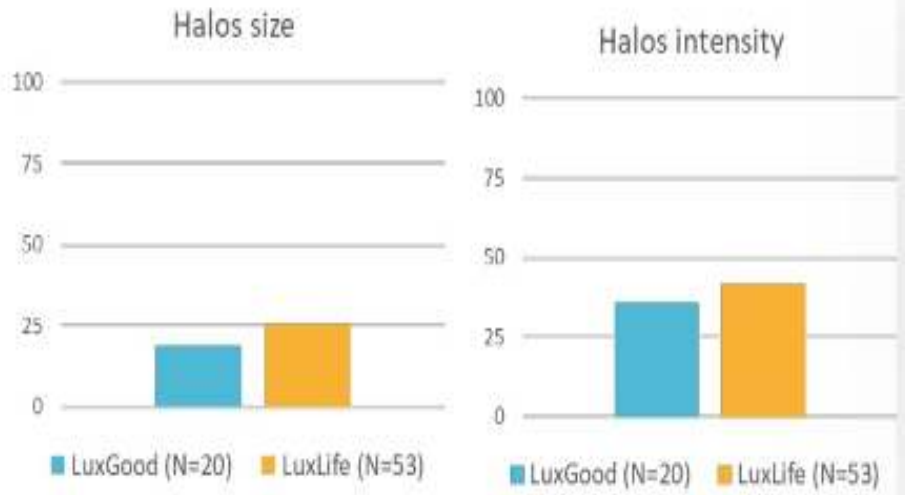
binocular UIVA of 20/25 or better in
95% of LUXLife patients as compared to **0%** of
Monofocal IOL Patients.

Binocular Defocus Curve

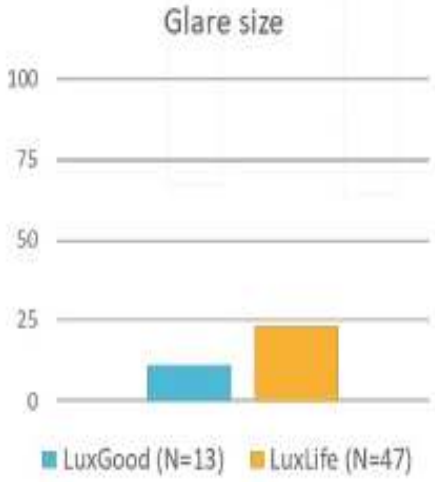


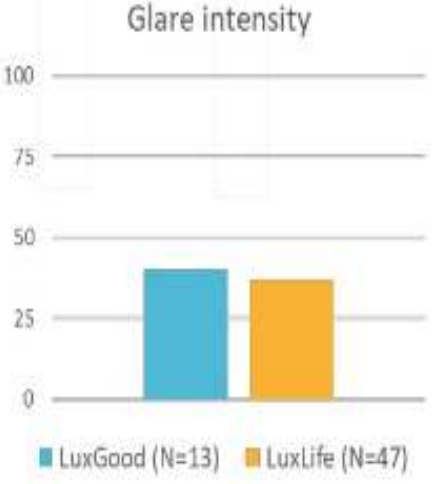
Halo & Glare

Halo

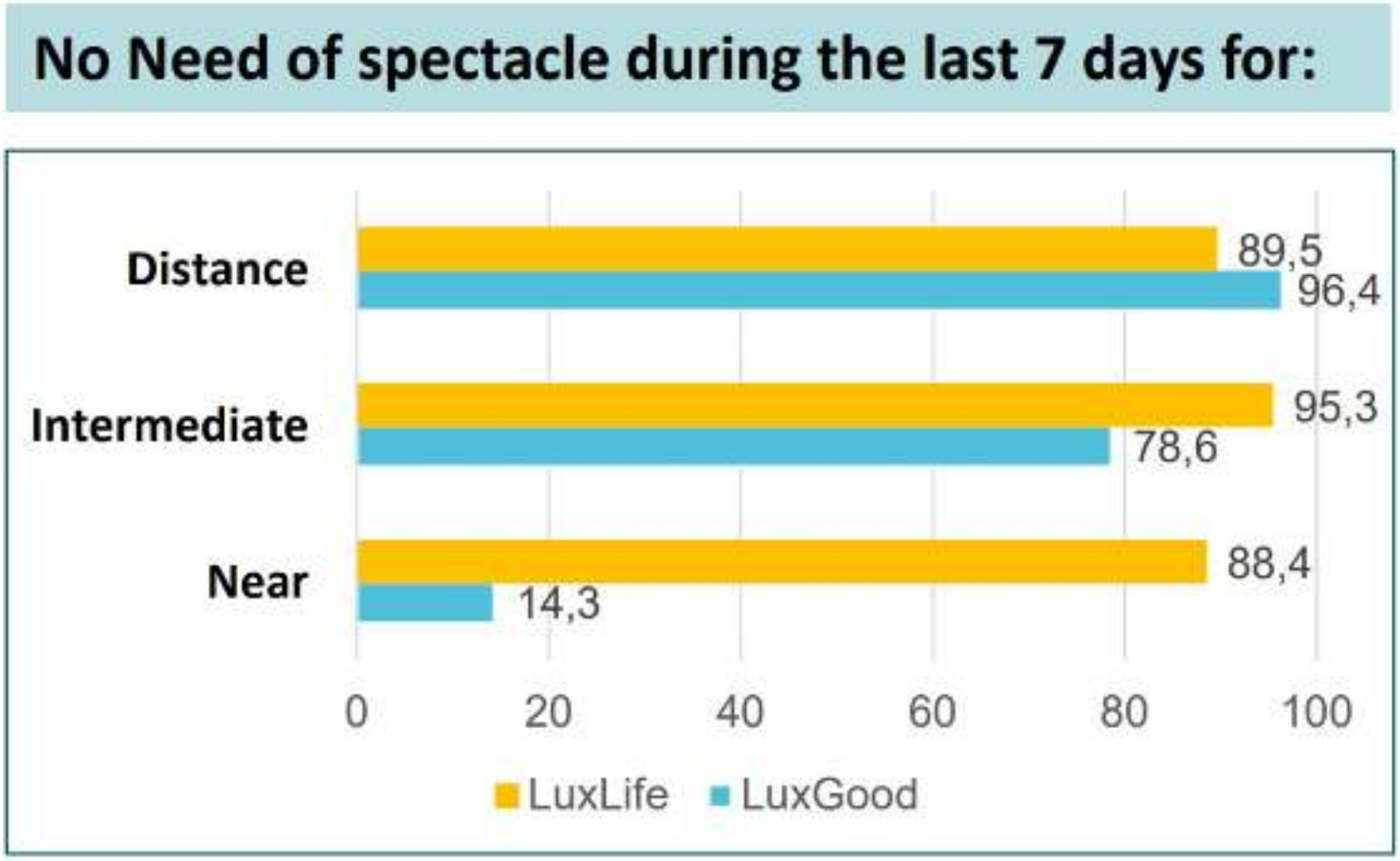


Glare





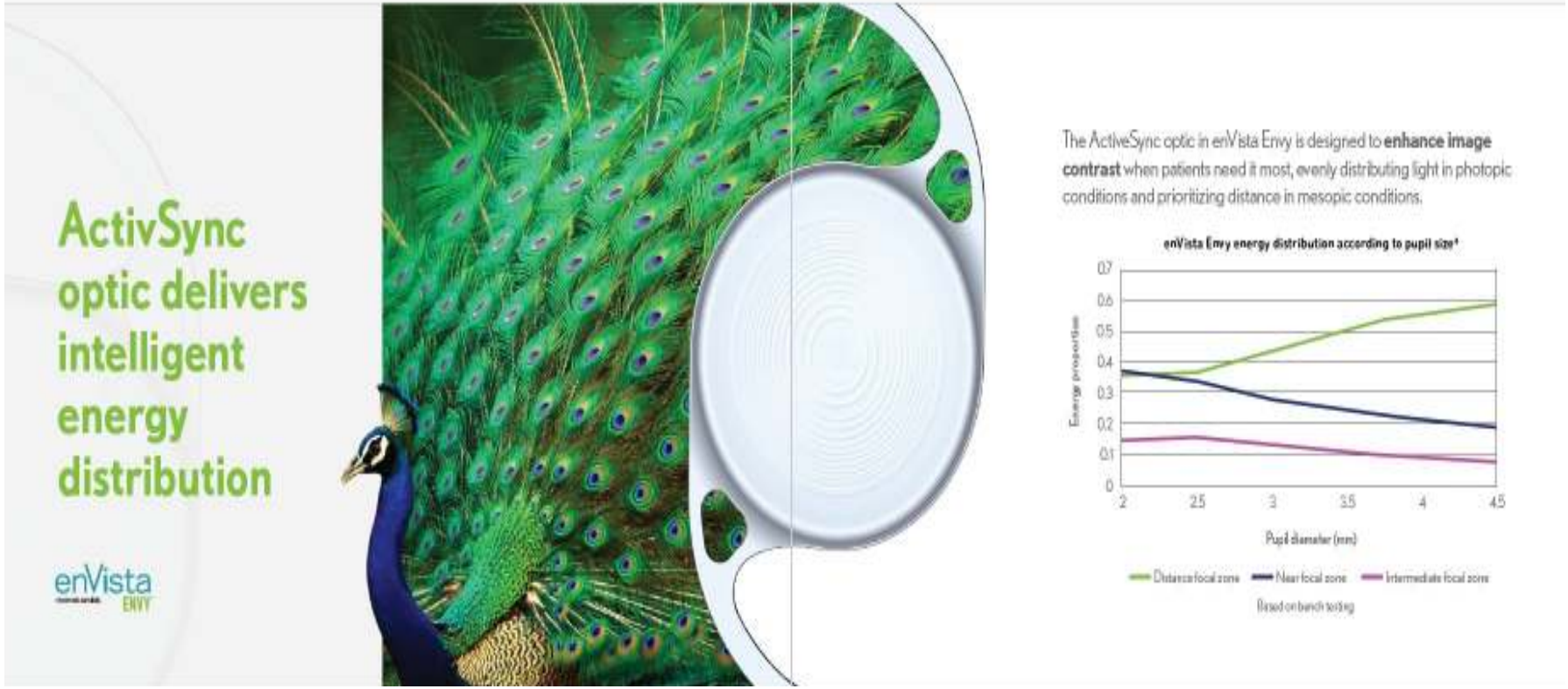
Independence from Spectacles



80% Spectacle free patients at all distances in the LUXLife group as compared to 14% in the Monofocal IOL group


BAUSCH + LOMB
enVista Envy™
Full Range of
Vision IOLs

enVista Envy Full Range of Vision IOL
Bausch & Lomb




Intelligent optic design meets exceptional engineering
• Full range of vision diffractive anterior surface
• 1.2mm central zone
• 1.6 D intermediate and 3.1 D near adds
• Consistent -0.15µm SA profile across full diopter range
6mm optic diameter
12.5mm lens length
enVista
ENVY
SA = spherical aberration

enVista Envy Full Range of Vision IOL Bausch & Lomb

A lens with an enviable tolerance to dysphotopsia[1,2,3*]

	enVista Envy[1,2*]			
Types of dysphotopsia	% of patients with little to no bothersomeness		% of patients with severe disturbance	
Country	US (n=309)	Canada (n=110)	US	Canada
Glares	88%	96%	3%	0%
Halos	80%	88%	6%	6%
Starbursts	91%	94%	3%	1%

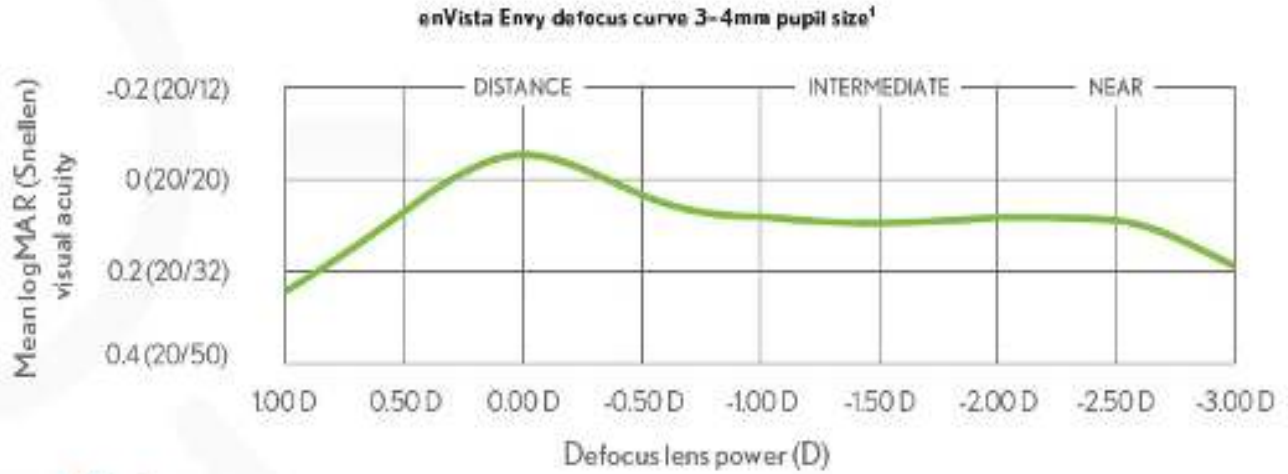
	PanOptix (n=127)[3*]	
Type of dysphotopsia	% of patients with little to no bothersomeness	% of patients with severe disturbance
Glares	73%	3%
Halos	73%	13%
Starbursts	72%	16%

*Respective patient reported outcome data at 4–6 months post-op (non-head-to-head) from enVista Envy US clinical study (n=309), 4–6 months post-op enVista Envy Canadian clinical study (n=110) and 6-month post-op AcrySof PanOptix clinical study (n=127)

enVista Envy Full Range of Vision IOL Bausch & Lomb

enVista Envy demonstrated excellent performance

In **photopic conditions**, ActivSync optic maintained excellent full range of vision for patients.[1,4]



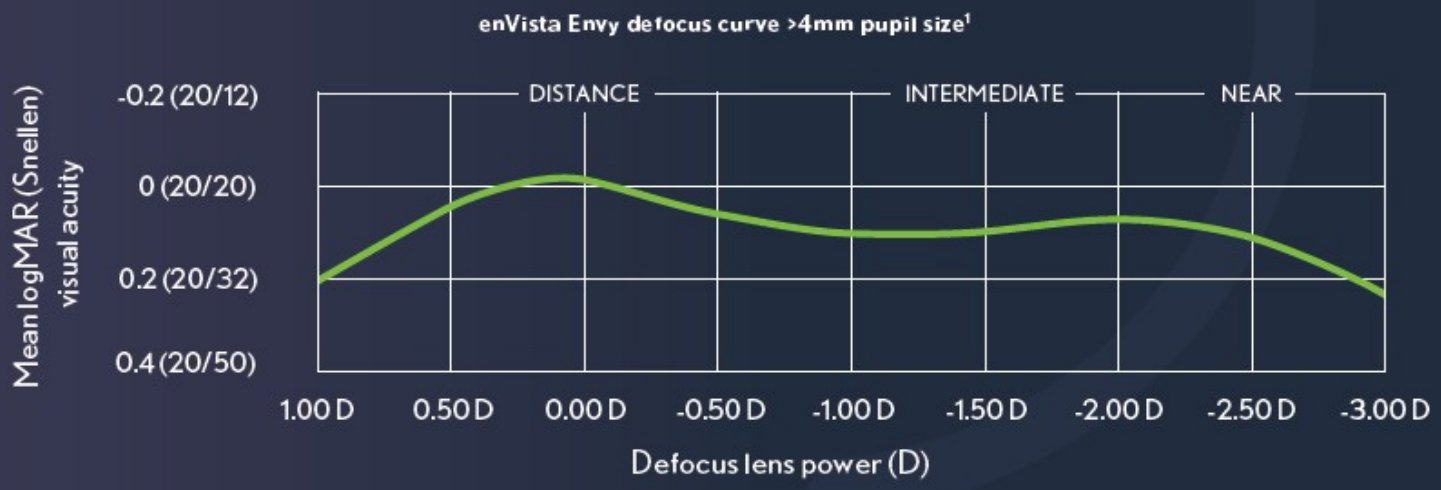
enVista ENVY

enVista Envy US Clinical Study, binocular implantation, 4–6-month post-op, n=42 eyes

enVista Envy Full Range of Vision IOL Bausch & Lomb

...in all lighting conditions

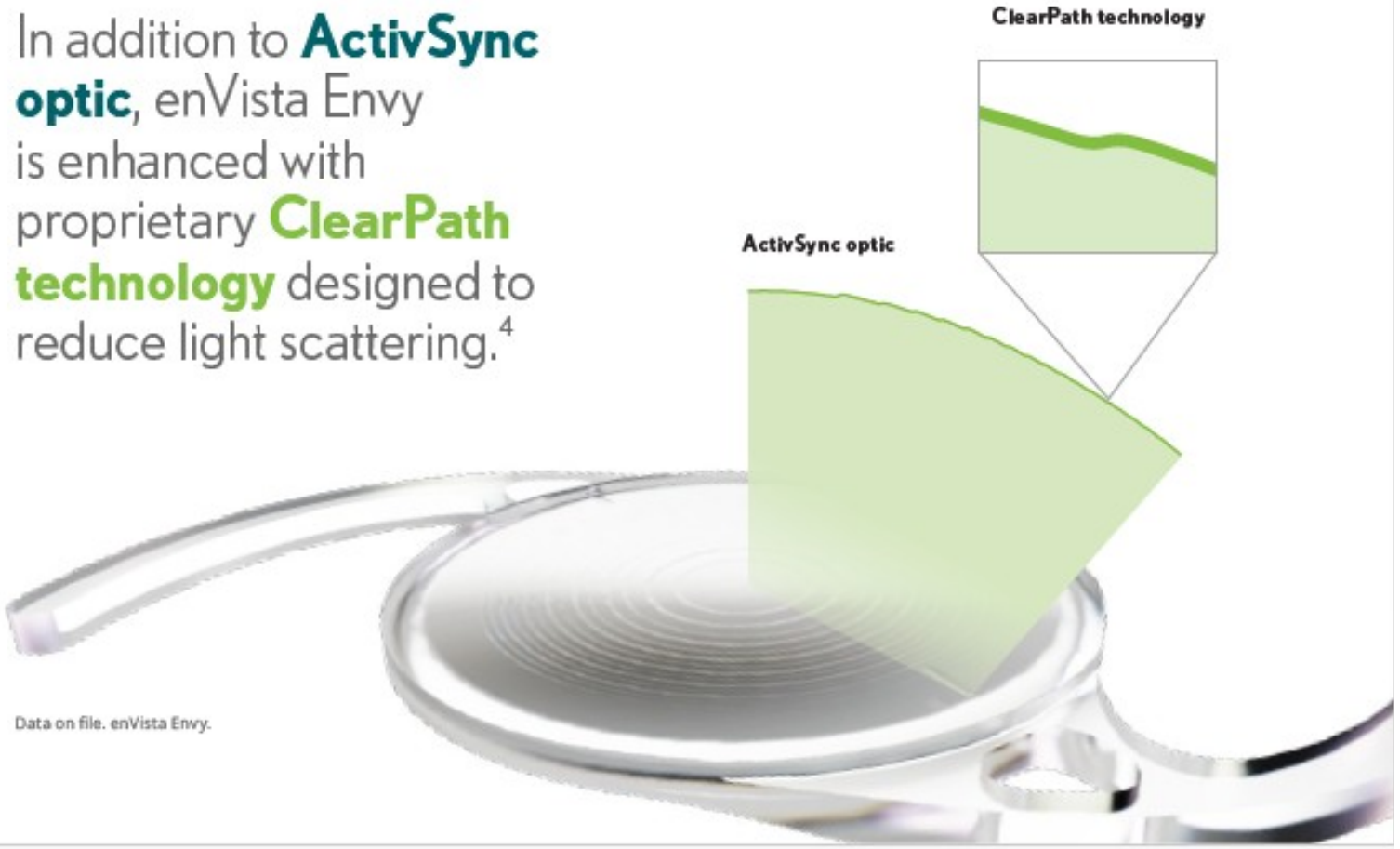
In pupils larger than 4mm, ActivSync optic is able to prioritize light energy, which facilitates night vision.[1,4]



enVista Envy US Clinical Study, binocular implantation, 4–6-month post-op, n=36 eyes

enVista Envy Full Range of Vision IOL Bausch & Lomb

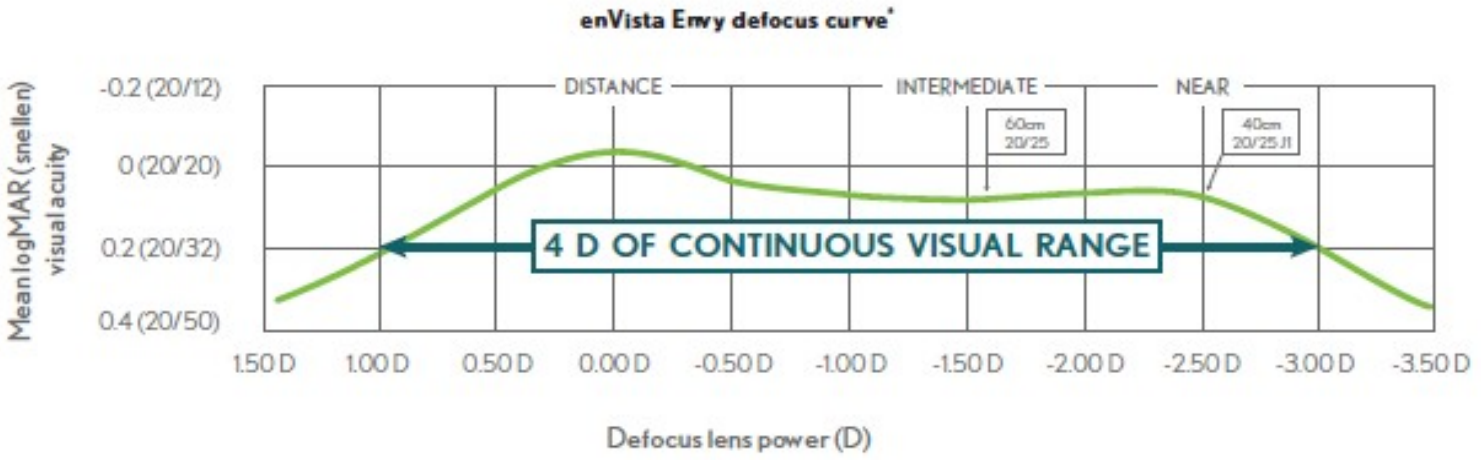
In addition to **ActivSync optic**, enVista Envy is enhanced with proprietary **ClearPath technology** designed to reduce light scattering.[4]



Data on file. enVista Envy.

enVista Envy Full Range of Vision IOL Bausch & Lomb

Help your patients achieve spectacle independence[1]



*enVista Envy US Clinical Study, n=53 patients reported outcomes 4–6-month post-op, bilateral

enVista Envy Full Range of Vision IOL Bausch & Lomb

enVista ENVY™ TORIC

Spectacle independence is achievable

Studies have shown that patients who received a full range of vision IOL lens with >0.5 D of residual astigmatism see a significant reduction in their quality of distance vision.[6,7,9]

New ZEISS AT ELANA 841P Trifocal IOL

Enhanced Trifocal Design hydrophobic C-loop platform

AT LISA tri 839MP

Based on the optical design of the AT LISA tri with further improvements for near-to-intermediate vision

CT LUCIA 621P

Hydrophobic C-loop platform

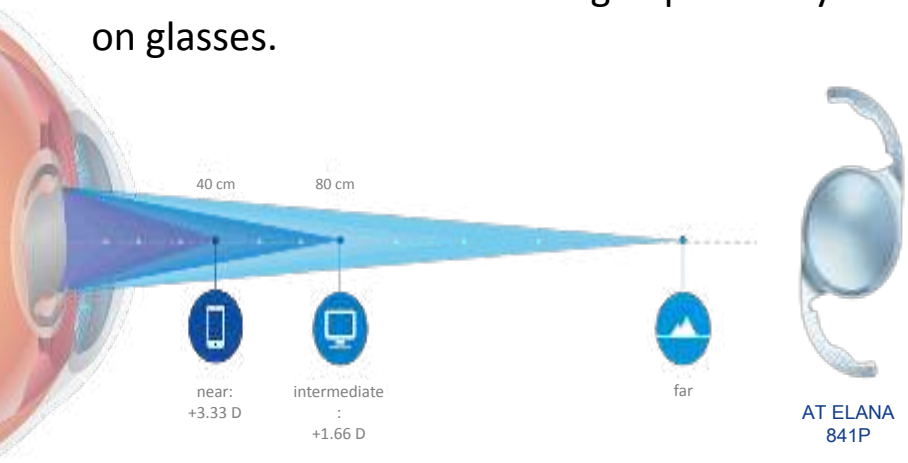
AT ELANA 841P

ZEISS AT ELANA 841P **further enhances near-to-intermediate vision** while maintaining **excellent distance visual acuity**: designed to achieve even **greater patient satisfaction**.

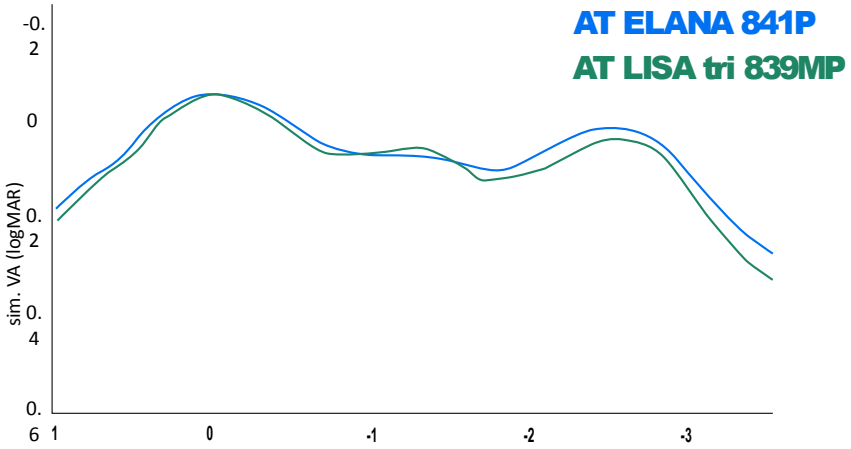
Optical design – trifocal technology

- Designed to achieve excellent visual outcomes across all distances

AT ELANA 841P has focal planes at **40 cm and 80 cm** and is designed to provide patients with a continuous range of vision from far to near thus reducing dependency on glasses.



Increased overall light transmission due to **improved diffractive structure** and **increased light allocation** towards **near** vision result in **improved near-to-intermediate** vision **without compromising far** vision*.

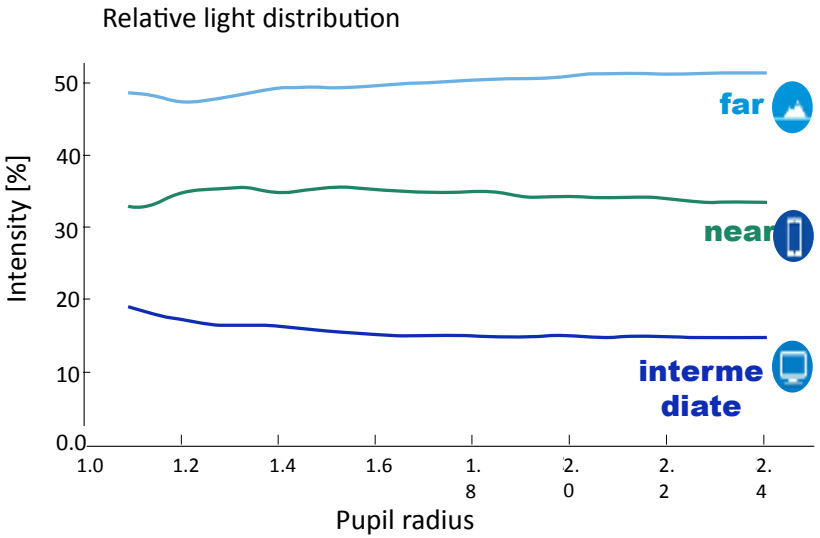


Unpublished data or measurements
Pupil size: 3 mm. Aberration neutral (ISO 1) cornea model

Optical design – light distribution

Consistent visual performance at all distances and under all light conditions

Main light allocation for far ensures **excellent distance visual acuity**.
No apodization or switch to monofocal distance



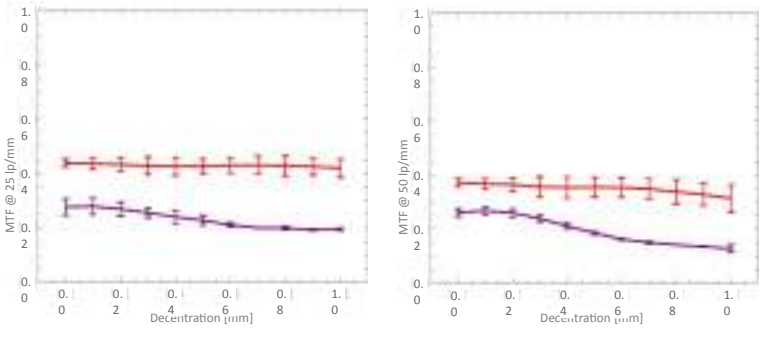
Unpublished data on file. Intensity distribution of polychromatic light vs. pupil radius

AT ELANA 841P remains trifocal over the whole optical diameter for **consistent visual performance** at **all distances** and **under all light conditions**.

Optical design – Spherical Aberration (SA) neutral profile

- **AT ELANA 841P** has an **aspheric aberration neutral design**:
  - Neutral to the cornea, therefore, is suitable for patients regardless of their corneal SA.

Comparing an impact of decentration on MTFs of AT ELANA and SA correcting IOL



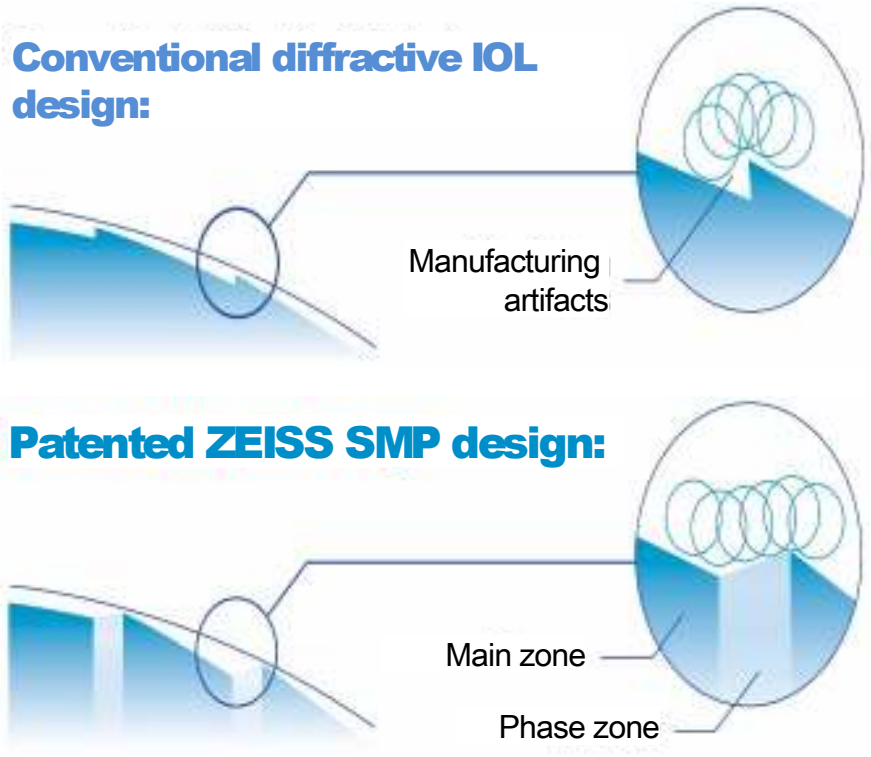
Unpublished data on file. Optical MTF measurements under various decentration. Pupil size: 3 mm. Aberration neutral (ISO 1) cornea model

Aberration-neutral design decreases a negative impact of decentration and tilt on the image quality and does not have an impact on the net SA of the eye.

Optical design Smooth Micro Phase (SMP)

SMP technology

- In conventional diffractive IOL designs, the ideal surface contains steps with sharp angles that cannot be manufactured perfectly using the current technologies. As a consequence, a certain amount of light will be scattered in undefined directions causing glare.
- **ZEISS SMP** technology introduces so-called phase zones as part of the optical design. This **creates** an **ideal surface design with** much **shallower angles** that can be **manufactured more precisely**, **minimizing** the amount of uncontrolled **light scatter and** thus **glare**.



ZEISS Smooth Micro Phase technology provides better image quality due to reduced **light scattering and related photic phenomena.**

Minimizing light scattering for more visual comfort

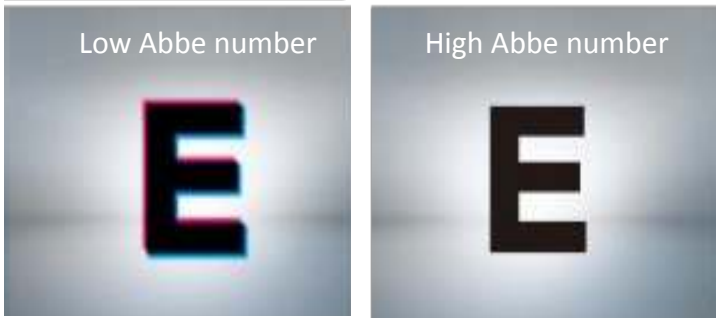
Platform design Glistening-free material

- High Abbe number for excellent clarity and image quality

- The **higher the Abbe number**, the **smaller the chromatic aberration** and the **better the image clarity**

- AT ELANA 841P is made of **glistening-free hydrophobic acrylate material.**

Long term clarity and better image quality due to the glistening free material and high Abbe number.



Brand	Abbe Number
ZEISS AT ELANA 841P	**51**
J&J Vision Tecnis[2]	55
Hoya Nanex[3]	43
B+L enVista[4]	40.5
Alcon AcrySof[2]	37

1. Grade 1(traces) or better for 85% of the patients up to and including 12 months according to Christiansen scale and based on internal clinical trial outcomes and on published clinical data for CT LUCIA 621P
2. Huawei Zhao et al: The effect of chromatic dispersion on pseudophakic optical. performance Br J Ophthalmol 2007;91:1225–1229
3. Vaishnavi Balendiran et al: Uveal and capsular biocompatibility of a new hydrophobic acrylic microincision intraocular lens. Cataract Refract Surg 2020; 46:459–464
4. Edoardo A. Ligabue et al: Nov/Dec 2011 I Insert to CATARACT & REFRACTIVE SURGERY TODAY EUROPE

Platform design – IOL architecture

- Haptic design and anti-PCO edge inherited from CT LUCIA

Reinforced optic-haptic junction – designed to ensure refractive stability. Coupled with **step-vaulted** C-loop haptics, it enables easy centering while maximizing direct capsular contact, thus ensuring **stability** and supporting a **consistent** and **stable axial IOL position** in the **capsular bag**[1]
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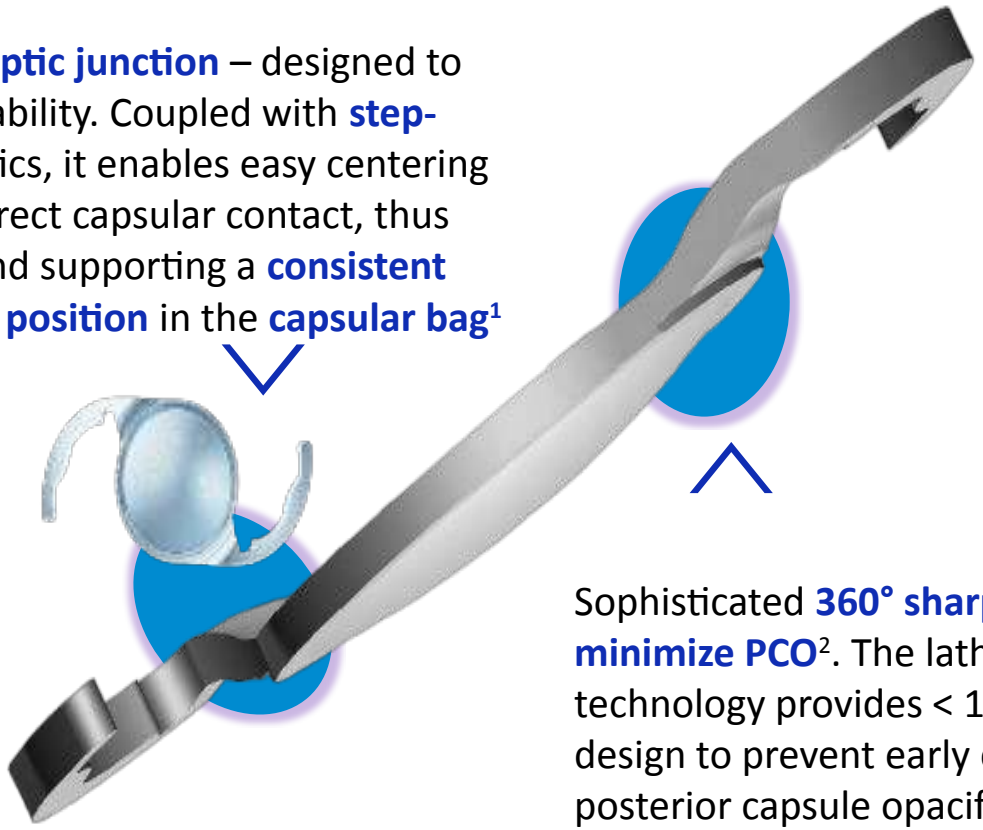
Clinical reference:

93%

of 55 eyes implanted with CT LUCIA 621P within ±0.50 D SE[4]



Sophisticated **360° sharp edge design** to **minimize PCO**[2]. The lathe-cut manufacturing technology provides < 10 µm radius sharp-edge design to prevent early cell migration and posterior capsule opacification.

High level of **refractive stability** and low **PCO rates** comparable with other hydrophobic IOLs on the market

1. Examining the stability of a new aspheric IOL in cataract patients Cuttitta (2021) Ophthalmology Times Europe
2. The "Evaluation of Nd:YAG Laser Capsulotomy Rates in a real-Life Population" Clinical Ophthalmology, 2020
3. Based on available clinical data for CT LUCIA 611P and CT LUCIA 621P/PY
4. Clinical outcomes of a monofocal, optimized, aspheric, hydrophobic acrylic intraocular lens implant Garcia-Tomas Clin Opthalmol.
2023 Oct 27:17:3215-3234


THANK YOU