CAPTURE THE ESSENCE OF YOUR PATIENTS

EVERYONE'S EYES ARE UNIQUE

Now preloaded with

BAUSCH+LOMB

SimplifEYE™

PRELOADED DELIVERY SYSTEM

Akreos® AO

Akreos® AO Platform

Aspheric intraocular lenses (IOLs)

Aberration free with

ADVANCED OPTICS (AO) Technology

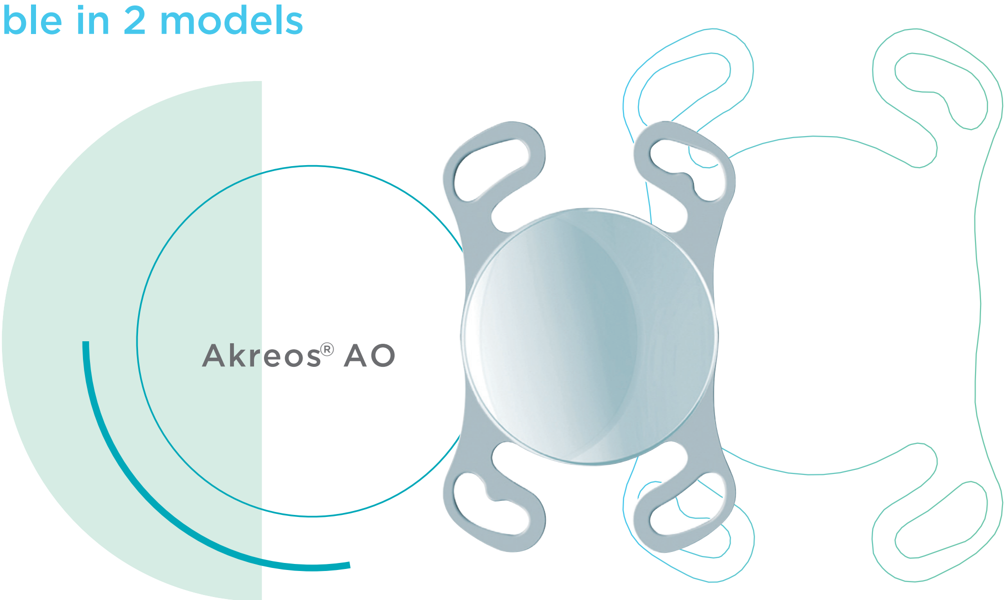
Akreos® AO MICS

CATARACT LASER RETINA

BAUSCH+LOMB

See better. Live better.

Available in 2 models



Benefits of the Akreos® IOLs with Advanced Optics (AO) Technology

- **Thanks to the design of their optic**, they do not introduce higher-order aberrations, providing a better quality of vision[1,2]
- **Uniform power from the center to the periphery of the optic**, for a predictable visual outcome in all patients regardless of the shape of the cornea, size and center of the pupil or the capsular bag
- They **maintain the natural positive spherical aberration of the cornea**, which may result in a greater depth of field compared with aberration correcting IOLs[3]

1. Santhiago MR, et al. Wavefront analysis, contrast sensitivity, and depth of focus after cataract surgery with aspherical intraocular lens implantation. Am J Ophthalmol. 2010 Mar;149(3):383-9.e1-2.
2. Shentu X, Tang X, Yao K. Exp Ophthalmol. 2008 Oct;36(7):620-4. **3.** Johansson B, Sundelin S, Wikberg-Matsson A, Unsbo P, Behndig A. Visual and optical performance of the Akreos Adapt Advanced Optics and Tecnis Z9000 intraocular lenses: Swedish multicentre study. J Cataract Refract Surg. 2007. Sep;33(9):1565-72.

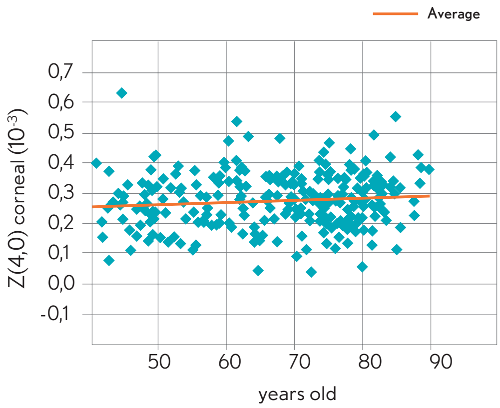
ASPHERIC IOLs - FOR IMPROVED **VISION QUALITY**

The Akreos® platform has an aspheric design that adapts to a wide range of patients*

Distribution of spherical aberration based on age

As reported by Beiko et al.[4], corneal spherical aberration varies widely from one person to the another.

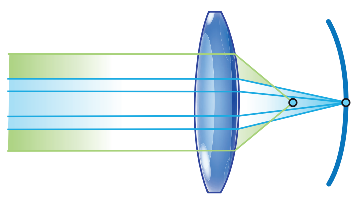
Figure adapted from Beiko et al.[4] Zernike Z coefficient (4.0) against the average age in 301 patients on the right and left eye[4]

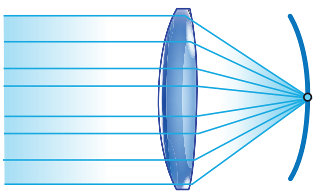


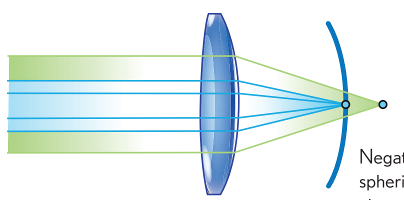
The optical performance of an IOL with AO technology should be better than that of a standard spherical IOL[1]

Advanced Optics (AO)

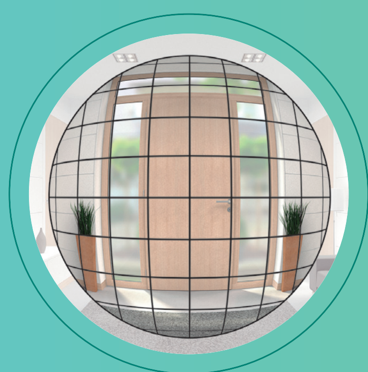
IOLs with BAUSCH + LOMB AO technology with aspheric anterior and posterior optical surfaces that do not induce spherical aberrations



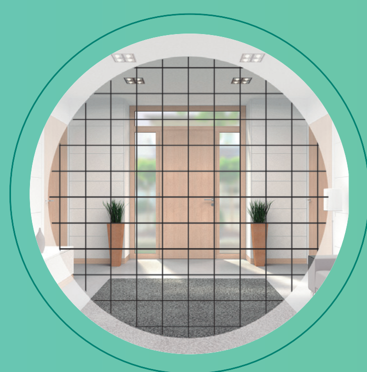




- IOLs with AO technology do not have inherent spherical aberrations.
- Designed to obtain the expected refractive outcome.



Spherical IOL



Aspheric aberrarion free IOL

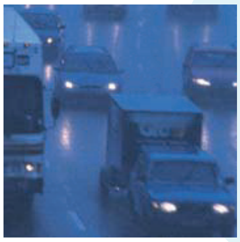
*Refer to the directions for use for contraindications

4. Beiko GH, Haigis W, Steinmueller A. Distribution of corneal spherical aberration in a comprehensive ophthalmology practice and whether keratometry can predict aberration values. J Cataract Refract Surg. 2007 May;33(5):848-58.

ABERRATION-FREE IOLs

Greater contrast sensitivity is especially important in low light conditions





Akreos® AO improves contrast sensitivity in mesopic conditions[1]

Significant higher mesopic conditions in all spatial frequencies was reported by Santhiago, et al.[1] for the Akreos® AO (aspheric optic) compared to the Akreos® Fit (spherical lens of same material)[1]

(1.5, 3, 6, 12, y 18 cpd; P .004, P .042, P .017, P .0017, y P .001, respectively)

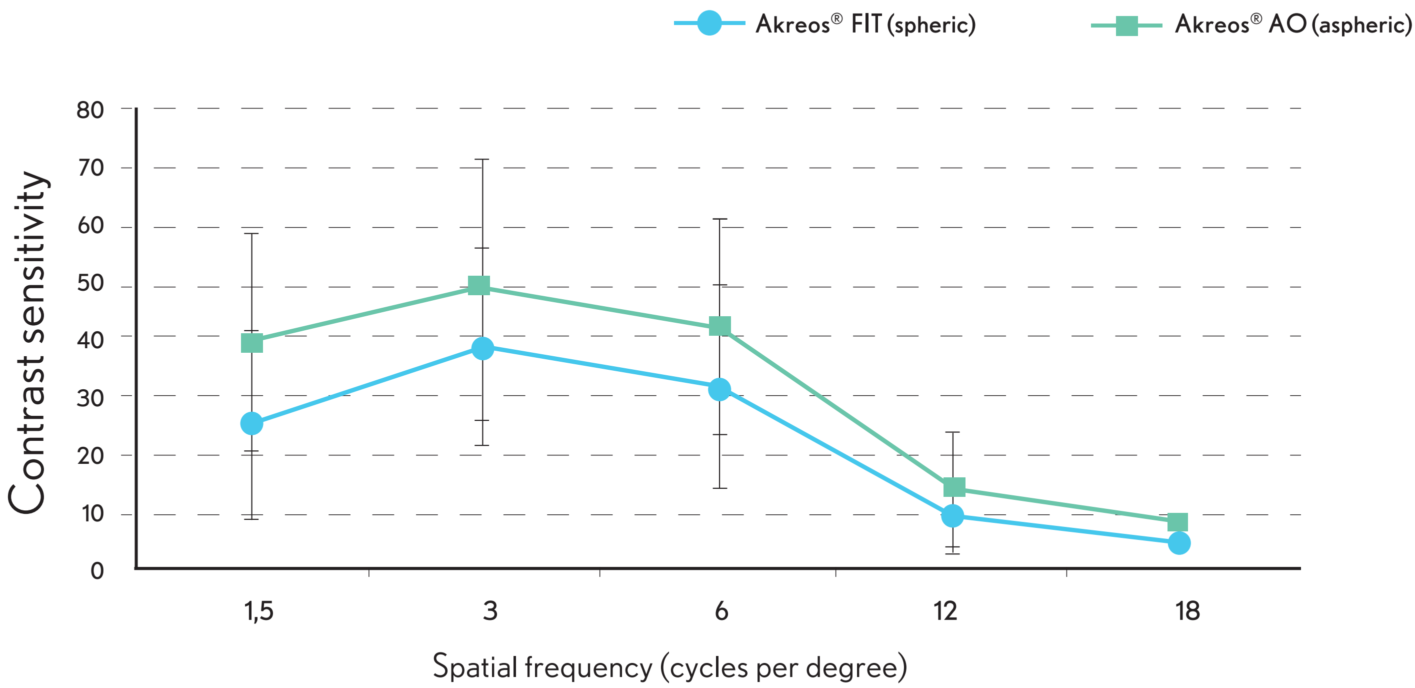


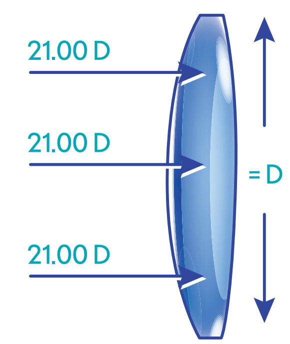
Figure adapted from Santhiago MR, et al.[1] 2010. Sensitivity to contrast in mesopic conditions (3 cd/m^2) in patients with Akreos® AO (pupils 4.01 ± 0.45 mm) and Akreos® spherical Fit (pupil 4.04 ± 0.41 mm)[1]

Decentration is much more frequent than one might think

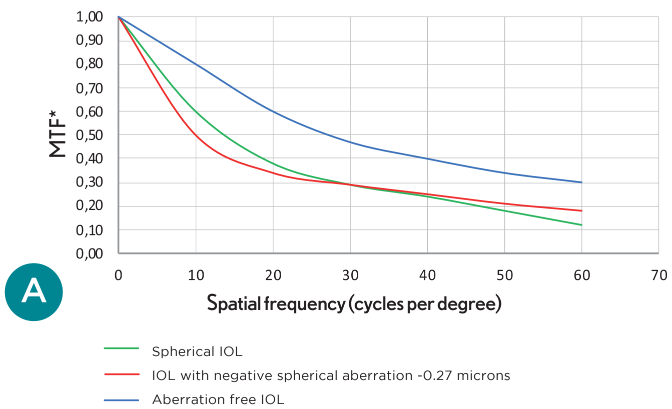
**In general,
the average decentration after uncomplicated cataract surgery reported in studies is 0.30 ± 0.16 mm
(Range 0 to 1.9 mm)[5]**

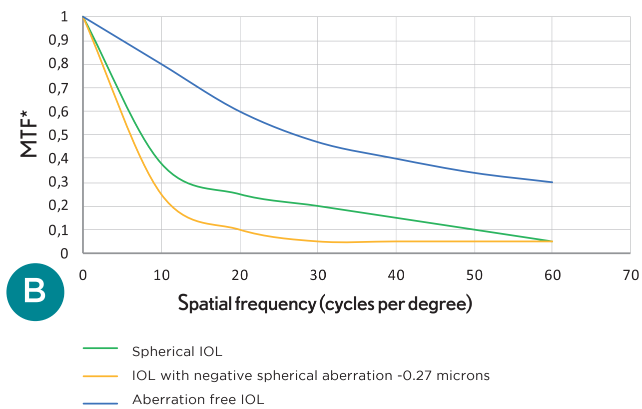
Akreos® AO decentration tolerance

- The neutral aspheric design of both anterior and posterior optics surfaces of the Akreos® AO lens allows for the constant power of the lens, from the centre to the periphery of its optic.
- The Akreos® lens is aberration-free and, therefore, it does not induce other aberrations in case of decentration, even with decentration of 1 mm of more.[6]



Performance of different IOLs based on decentration[6]





A. The IOLs are decentered 0.5 mm. Induction of asymmetrical HOAs degraded the performances of the spherical IOL and the one inducing negative spherical aberration, causing the MTF curves to droop and separate.

B. The IOLs are decentered 1.0 mm, further degrading performance of the spherical IOL and the one inducing negative spherical aberration IOL but not the aberration-free IOL.

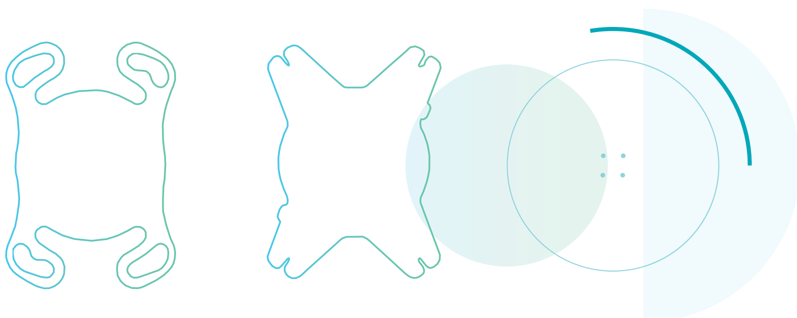
Figure adapted from Altman GE, et al.[6] 2005. Sensitivity to contrast in mesopic conditions (3 cd/m²) in patients with Akreos® AO (pupils 4.01 ± 0.45mm) and Akreos® spherical Fit (pupil 4.04 ± 0.41mm)
*MTF: Modulation Transference Function

5. Alio JL, Plaza-Puche AB, Férnandez-Buenaga R, Pikkel J, Maldonado M. Multifocal intraocular lenses: An overview. Surv Ophthalmol. 2017 Sep - Oct;62(5):611-634. 6 . Altmann GE, Nichamin LD, Lane SS, Pepose JS. Optical performance of 3 intraocular lens designs in the presence of decentration. J Cataract Refract Surg. 2005 Mar;31(3):574-85.

Depth of focus and residual spherical aberration

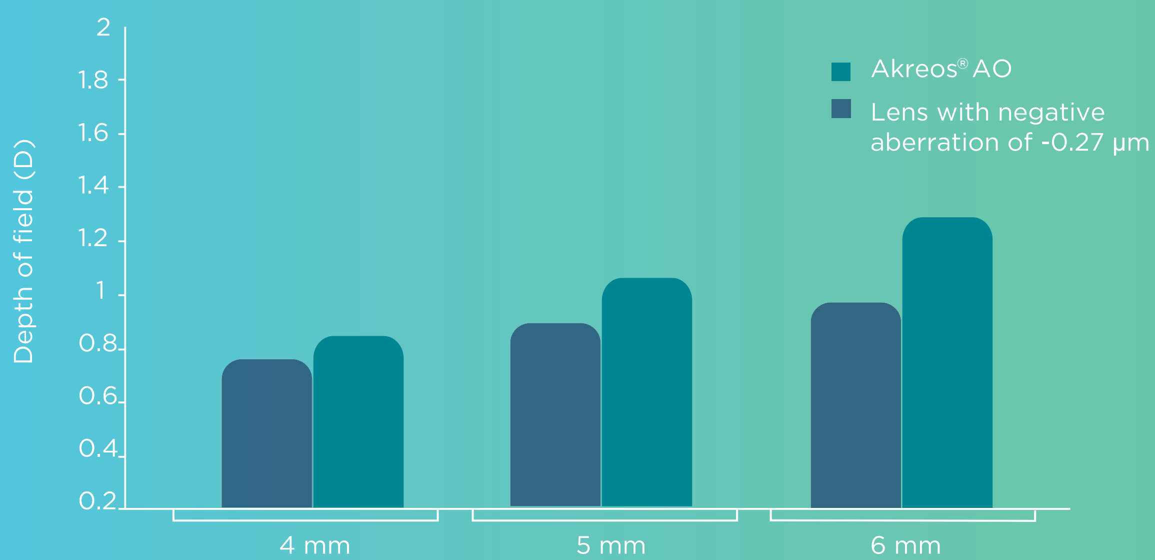
Maintaining a certain amount of positive spherical aberration after surgery can provide greater depth of focus[7]

- Many authors indicate that maintaining residual spherical aberration is beneficial for vision quality[8,9]
- The depth of focus should be greater with an aspheric IOL that does not induce aberration, in comparison with an aspheric IOL that induces negative aberration. Some studies found that the depth of focus was significantly greater[10,11]



Clinical results[3]

A multicentre study has shown that the IOL with Advanced Optics technology provides greater depth of field than the aspheric IOL with negative aberration, which could contribute to greater visual quality perception.

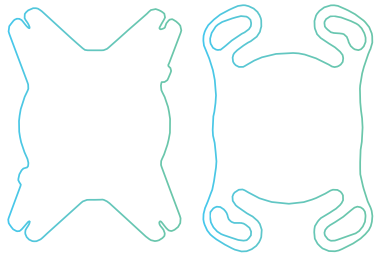


Graph adapted from Johansson B et al. Diagram of boxes that assesses the average depth of field by the Strehl ratio with different sizes of pupil where the medians and 1st and 3rd quartile are shown.

7. Nio YK, Jansonius NM, Fidler V, Geraghty E, Norrby S, Kooijman AC. Spherical and irregular aberrations are important for the optimal performance of the human eye. Ophthalmic Physiol Opt. 2002 Mar;22(2):103-12. **8.** Applegate RA, Marsack JD, Ramos R, Sarver EJ. Interaction between aberrations to improve or reduce visual performance. J Cataract Refract Surg 2003;29:1487–1495. **9.** McLellan JS, Marcos S, Prieto PM, Burns SA. Imperfect optics may be the eye's defence against chromatic blur. Nature. 2002 May; 417(6885):174-6. **10.** Marcos S, Barbero S, Jiménez-Alfaro I. Optical quality and depth-of-field of eyes implanted with spherical and aspheric intraocular lenses. J Refract Surg. 2005 May-Jun;21(3):223-35. **11.** Rocha KM, Soriano ES, Chamon W, Chalita MR, Nosé W. Spherical aberration and depth of focus in eyes implanted with aspheric and spherical intraocular lenses: a prospective randomised study. Ophthalmology. 2007 Nov;114(11): 2050-4.

1.8 mm MICS*

The Akreos® AO MICS and Akreos® AO lenses are crafted from an acrylic hydrophilic material that makes it optimal for today's micro incision cataract surgery requirements. The lenses can be easily compressed to fit through a 1.8 mm incision; it unfolds smoothly once implanted into the eye and recovers its initial shape without damage.



MICS* benefits:

- Minimize the surgically induced corneal astigmatism (SIA)[12,13] and preserve optical properties of the cornea[12,14]
- Minimally traumatic surgery, providing better postoperative outcomes than standard small incision phacoemulsification[12]
- MICS favors the use of fluidics, reducing the use of phacoemulsification power[12]
- Reduces the risk for intraoperative anterior chamber instability[15]
- Less incision bleeding during the surgery[15]
- Higher structural stability of the anterior chamber[15]
- Easy in construction and less incidence of postoperative endophthalmitis[15]

Proven performance

The Akreos® lens material has been successfully implanted in over 8.8 million eyes

Physicians have been implanting the Akreos® lens material since 1998

Moderate refractive index, with an inherently low surface reflectivity for the reduction of glare and its adverse effects[16]

*MICS: Microincision Cataract Surgery
**PCO: Posterior capsule opacification

12. Pawel Klonowski, Robert Rejdak & Jorge L Alió (2013) Microincision cataract surgery: 1.8 mm incisional surgery, Expert Review of Ophthalmology, 8:4, 375-391. **13.** Dick, H. Burkhard. "Controlled Clinical Trial Comparing Biaxial Microincision with Coaxial Small Incision for Cataract Surgery." European Journal of Ophthalmology, vol. 22, no. 5, Sept. 2012, pp. 739–750. **14.** Denoyer A, Denoyer L, Marotte D, et allntraindividual comparative study of corneal and ocular wavefront aberrations after biaxial microincision versus coaxial small-incision cataract surgery British Journal of Ophthalmology 2008;92:1679-1684. **15.** Sousa, Benedito Antônio de et al. "Wound architectural analysis of 1.8mm microincision cataract surgery using spectral domain OCT." Journal of Clinical & Experimental Ophthalmology 3 (2019): 008-012. **16.** Erie, Jay C MDa,*; Bandhauer, Mark Hb,1; McLaren, Jay W PhDa Analysis of postoperative glare and intraocular lens design, Journal of Cataract & Refractive Surgery: April 2001 - Volume 27 - Issue 4 - p 614-621.

Platform Stability

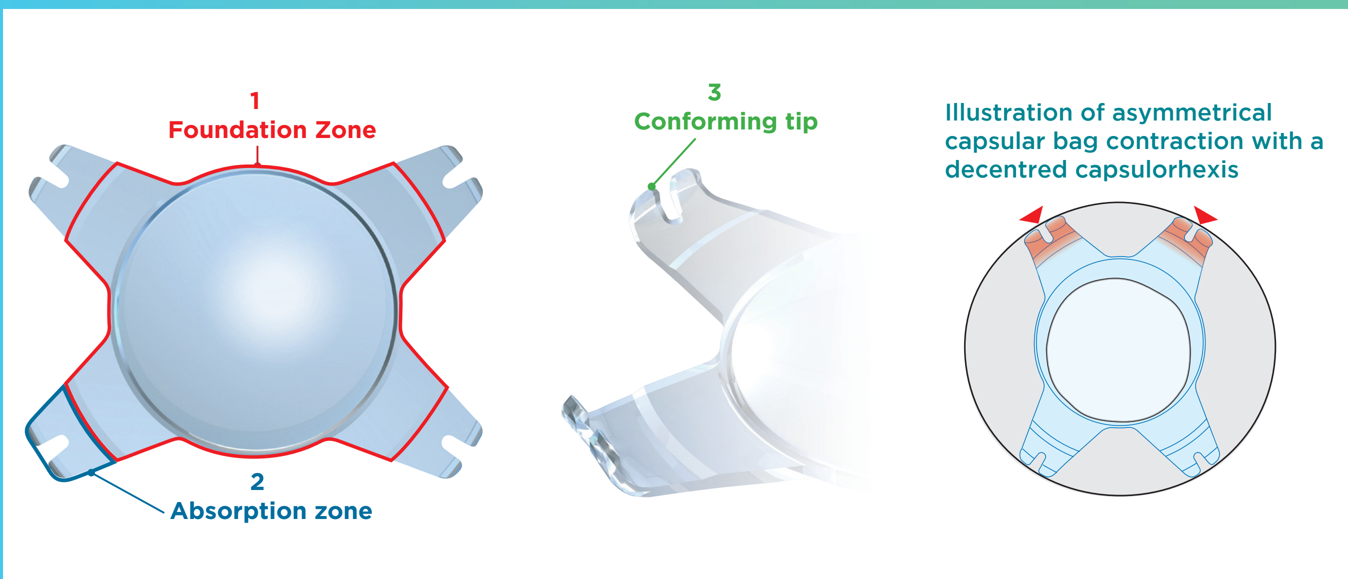
The Akreos® IOL platform has been shown:

- To have good centration[17]
- To have similar postoperative performances in terms of CDVA, inflammation and PCO compared with the same material in C-loop design[17]
- To have rotational stability. 90 % of Akreos® lenses rotate less than 5 degrees at 6 months[18]
- To be stable in the eye and even suitable for the application of a toric surface to correct corneal astigmatism[19]

Axis orientation of the haptics of the lens in the bag seemed to have no clinical impact as they did not find differences in decentration and tilt. Having mean decentration of 0.4 mm ± 0.2 (SD) with vertical orientation and 0.4 ± 0.2 mm with horizontal orientation and the mean tilt of 1.5 ± 1.1 degrees and 2.93 0.9 degrees, respectively[20]

3-dimensional stability

The shape of the Akreos® MICS IOL has been designed to optimize its post-operative behavior in the capsular bag and to allow for the absorption of forces in 3 dimensions.



The Akreos® MICS IOL includes a foundation zone (1) formed by the optic and the base of the four haptics. This is the stable portion of the lens. It is surrounded by an absorption zone (2), which bends under the contraction forces of the capsular bag. The conforming tip (3) conforms to the curve of the periphery of the capsular bag and initiates the inflection of the absorption zone (2), which features an average 10° angulation.

*PCO: Posterior capsule opacification

17. Mingels, A., Koch, J., Lommatzsch, A. et al. Comparison of two acrylic intraocular lenses with different haptic designs in patients with combined phacoemulsification and pars plana vitrectomy. Eye 21, 1379–1383 (2007). **18.** Kwartz J, Edwards K Evaluation of the long-term rotational stability of single-piece, acrylic intraocular lenses British Journal of Ophthalmology 2010;94:1003-1006 .**19.** Buckhurst, Phillip J.; Wolffsohn, James S. PhD; Naroo, Shehzad A. PhD; Davies, Leon N. PhD Rotational and centration stability of an aspheric intraocular lens with a simulated toric design, Journal of Cataract & Refractive Surgery: September 2010 - Volume 36 - Issue 9 - p 1523-1528 **20.** Crnej A, Hirnschall N, Nishi y, et al. Impact of intraocular lens haptic design and orientation on decentration and tilt. J Cataract Refract Surg 2011, 37: 1768-74

IOL WITH
ADVANCED OPTICS (AO) TECHNOLOGY

Akreos® AO MICS
Advanced Optics Microsinicion Lens

Ref MI60Pxxxx
Preloaded Ref: MI60PLCxxxx

MATERIAL
Hydrophilic acrylic
26 % water content
UV Filter
Refractive index: 1.46

DESIGN
Monofocal aberration-free aspheric optic
360° posterior square edge
Haptic angulation 10°
One-piece IOL with four-point fixation
Orientation features to indicate the anterior side
(top right and bottom left)

OPTIC DIAMETER
6.2 mm: 0.00 D to +15.00 D
6.0 mm: +15.50 D to +22.00 D
5.6 mm: +22.50 D to +30.00 D

OVERALL DIAMETER
11.0 mm: 0.00 D to +15.00 D
10.7 mm: +15.50 D to +22.00 D
10.5 mm: +22.50 D to +30.00 D

DIOPTER RANGE
0.00 D to +30.00 D
0.00 D to +10.00 D (increments of 1.00 D)
+10.00 D to +30.00 D (increments of 0.50 D)

INJECTORS
Viscoject™ BIO 1.8 (10 Units/box)

Ref: LP604350C
Recommended incision size: 1.8 mm (Wound assist technique)

SimplifEYE™ preloaded delivery system

Recommended incision size: 1.8 mm

OPTIC CONSTANT
A-Constant SRK/T: 119.1
ACD: 5.67
Surgeon factor: 1.90
Haigis: a_0: 1.49 / a_1: 0.40 / a_2: 0.10

ULTRASONIC CONSTANT
A-Constant: 118.4
ACD: 5.20
Surgeon factor: 1.45

Akreos® AO
Advanced Optics Aspheric Lens

Ref ADAPTAOPxxxx
Preloaded Ref: AO60PLCxxxx

MATERIAL
Hydrophilic acrylic
26 % water content
UV Filter
Refractive index: 1.46

DESIGN
Monofocal aberration-free aspheric optic
360° posterior square edge
Haptic angulation 0°
One-piece IOL with four-point fixation
Orientation features to indicate the anterior side
(top right and bottom left)

OPTIC DIAMETER
6.2 mm: 0.00 D to +9.00 D
6.0 mm: +10.00 D to +30.00 D

OVERALL DIAMETER
11.0 mm: 0.00 D to +15.00 D
10.7 mm: +15.50 D to +22.00 D
10.5 mm: +22.50 D to +30.00 D

DIOPTER RANGE
0.00 D to +30.00 D
0.00 D to +10.00 D (increments of 1.00 D)
+10.00 D to +30.00 D (increments of 0.50 D)

INJECTORS
Hydroport™: AI-28 (1 Unit/box)
Recommended incision size: 2.8 mm (in the bag)

Viscoject™ 2.2 (10 Units/box)

Ref: LP604340
Recommended incision size: 2.2 mm (Wound assist technique)

Viscoject™ BIO 1.8 (10 Units/box)

Ref: LP604350C
Recommended incision size: 1.8 mm (Wound assist technique)

SimplifEYE™ preloaded delivery system

Recommended incision size: 1.8 mm

OPTIC CONSTANT
A-Constant SRK/T: 118.5
ACD: 5.26
Surgeon factor: 1.51
Haigis: a_0: -0.83 / a_1: 0.305 / a_2: 0.191

ULTRASONIC CONSTANT
A-Constant: 118.0
ACD: 4.96
Surgeon factor: 1.22

*The values of the IOLs constants are only estimates. We recommend that each surgeon develops their own values.