



The way you think about CATARACTS is about to change



MBI
MILLENNIUM
Biomedical Inc.



More than meets the eye®



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Make a difference every time

**We believe perfect eyesight
can be restored.**

It's not a theory, it's a reality.

A reality called PreciSAL.

PreciSAL is an aspheric intraocular lens with negative spherical aberration. It will transform patients' lives by giving them back what they thought was lost forever – clear, sharp vision.

PreciSAL is revolutionary new technology, proprietary to MBI, and exclusive to IQ Medical.

As people who care about eyesight, we want to see optimum results, and to see them consistently. We want the products we use to be reliable and of the highest quality. We want to be certain we are helping you make a difference every time you treat someone.

While some are content to use current technology, IQ Medical embraces the forward thinkers of this world – the people who are developing tomorrow's technology.

Every time you use PreciSAL, you'll perform more precise surgery, exceed expectations, and restore sight.

PreciSAL



MBI inspired us, and the feeling is mutual. Our relationship is built on supplying surgeons with the world's best hydrophobic IOLs.

Why we chose MBI

Some may think of us as a distribution company, simply on-selling the products we are supplied. We are nothing of the kind.

We delve for difference, we search for innovation, and we insist on world's best technology and precision manufacturing.

When we find it, we are excited, because truly innovative companies are few and far between. But that's still not enough – we have to *believe* in the people who run the company; that they have the same vision as us, and are truly focused on making a difference to people's lives.

When we find *that*, we are inspired.

MBI inspired us, and the feeling is mutual. Our relationship is built on supplying surgeons with the world's best hydrophobic IOLs – PreciSAL (Precision Soft Acrylic Lenses).

We wanted 0.25 Dioptre precision – MBI delivered.

We wanted no micro-vacuoles and no mie-scatter – MBI delivered.

We wanted outstanding contrast sensitivity and visual acuity – MBI delivered.

We wanted ease of use – MBI delivered.

MBI is an FDA registered and ISO 13485 certified company located in Southern California. Since 1997, MBI have been engaged in the development, prototyping and manufacturing of innovative medical products. Nothing is outsourced – all works are carried out at MBI.

MBI not only meet the ISO standards, they *exceed* them.

PreciSAL

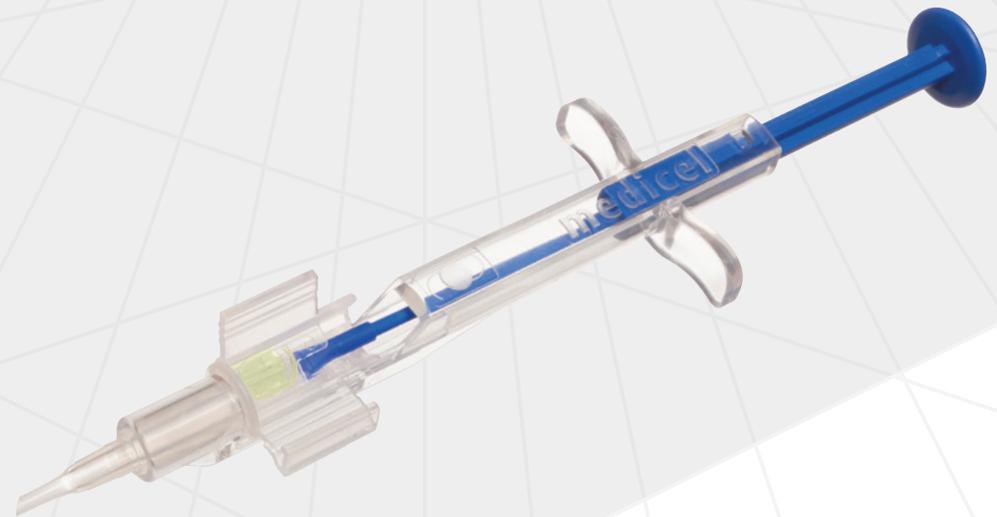


Our vision is clear

The proprietary material, unique manufacturing processes and better than ISO precision make PreciSAL a vastly superior product. In every way – quality, precision, performance, usability and repeatability – PreciSAL out-performs all other IOLs, and represents a significant advancement in ophthalmic surgery.

Manufactured in 0.25 Dioptre increments⁺ to a tolerance of only 0.125D in a range from 0 – 30 Dioptres, you can be assured that what's written *on* the box is what's *in* the box.

⁺ PreciSAL Toric available in 0.5 Dioptre spherical increments



PreciSAL

PreciSAL quality

PreciSAL Clear IOLs are made from a unique, soft, hydrophobic acrylic material, with less than 0.5% water content that incorporates the most desirable UV blocking properties. PreciSAL Yellow IOLs have the same benefits, with the addition of a proprietary violet filter.

They behave much like hydrophilic lenses. They unfold and centre perfectly, and sit in the bag exactly where you want them, making them easy to implant. In fact, there is no need to change your implant technique – PreciSAL lenses can be inserted through a 2.2mm incision with MBI's Pre-loaded Injector, or with the injection system of your choice.

They are simply beautiful to use.



PreciSAL precision

PreciSAL means using the best, not the adequate.

We believe the current tolerance for error in IOL labelling (established by the International Standards Organisation) is obsolete, and significantly contributes to today's refractive errors.

Take a 20 Dioptre IOL, for example: 20D is written on the box, but the ISO tolerance allows for an error of $\pm 0.4D$. The IOLs could actually be anywhere from 19.6 – 20.4D. Added to this are the constraints of 0.5D steps, and the judgement involved in selecting the appropriate power. This creates the potential for a refractive error of up to ± 0.7 Dioptre. The error can be even more significant with higher powered lenses. This means a patient could be given, quite unintentionally, IOLs that are almost a Dioptre out.

We believe it's better to have the lens fit the patient, rather than the other way round.

We believe that what's written *on* the box should be what's *in* the box.



PreciSAL results

PreciSAL are the only hydrophobic lenses available in 0.25 Dioptre increments[†], with a manufacturing tolerance of 0.125D, so you can give your patients exactly what their vision needs.

In a recent Australian study^{*}, the sight of 100 consecutive PreciSAL recipients was tested 3 months after surgery. The mean refractive error was +/- 0.03 Dioptre, with 89% of patients within 0.5D of target.

The result is unprecedented. The patients overjoyed.

* Conducted by Dr. Peter Stewart, Lasersight Maroochydore (2013). Data available on file, IQ Medical.

† PreciSAL Toric available in 0.5 Dioptre spherical increments

PreciSAL

PreciSAL design

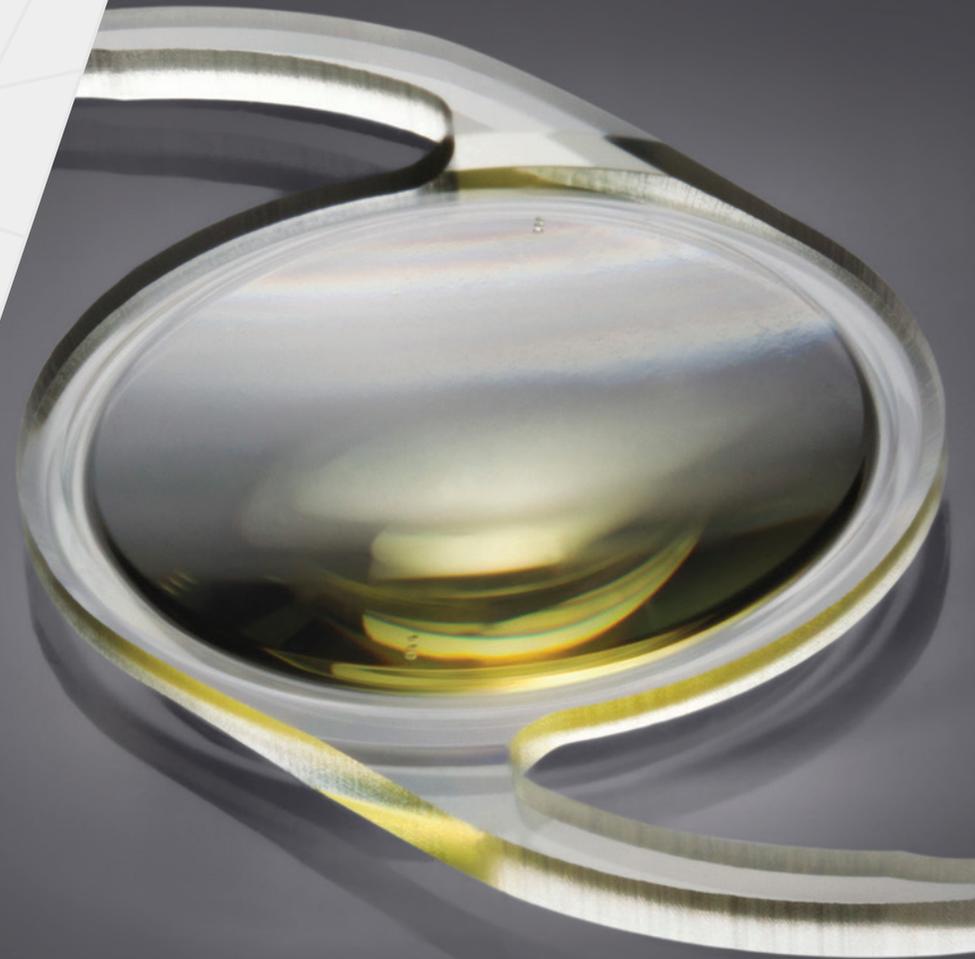
The way an IOL performs is defined by how it is made.

The general way – Injection Moulding is used to make hydrophobic IOLs. This process can create micro cracks and spaces between the lens material polymer chains. Over time, water in the material, along with aqueous, may condense into these spaces, forming fluid-filled micro vacuoles. These glistenings may then create mie-scatter within the eye, causing a significant loss of contrast and a decline in visual acuity.

The MBI way – The PreciSAL manufacturing process is state-of-the-art. The lens material is tray-polymerised and then lathe cut, eliminating the occurrence of glistenings and, consequently, mie-scatter.

It's the MBI material and ultimate precision of their lathing technique which makes PreciSAL exceptional.

Since the launch of PreciSAL in 2008, no glistenings have been reported.



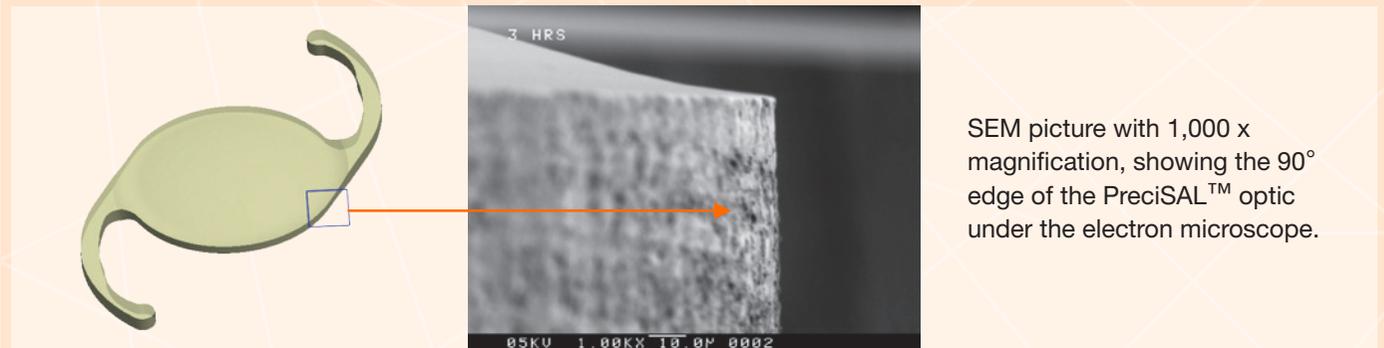
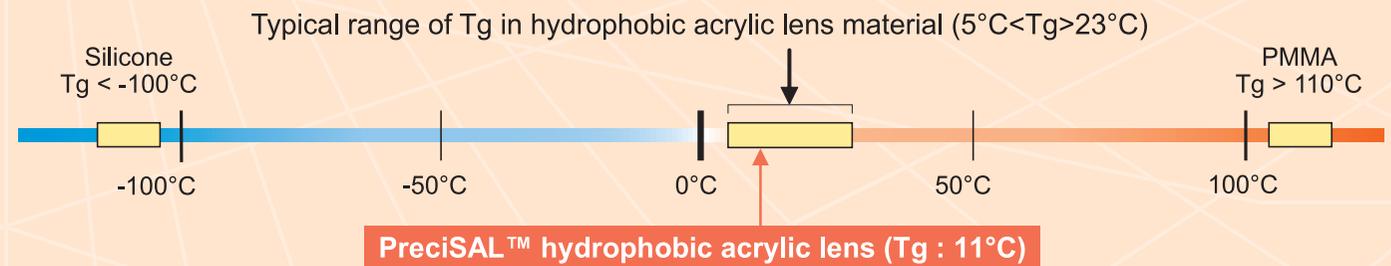
PreciSAL

It's also about finesse.

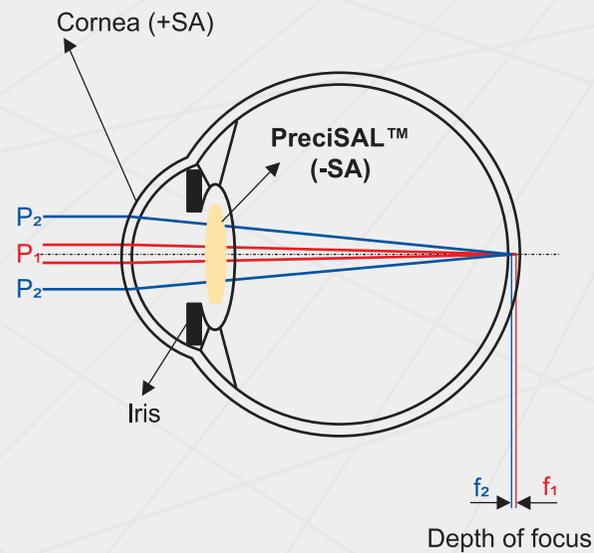
The lathe cutting forms a genuine 90° square edge – a result not possible with injection moulding. Again, the results are compelling: in over 500,000 implants, no PCO cases were reported to MBI.

The unique PreciSAL material (developed in MBI's laboratories, with a proprietary process) has less than half the water content of other hydrophobic materials, yet it remains soft and pliable for ease of implantation.

Engineered with a low glass transition temperature (T_g), PreciSAL is also designed for the operating room: from 11°C, the material becomes soft and easy to inject. No waiting, no pressure – just simple smooth unfolding.



PreciSAL asphericity



Your patients want clear, crisp sight in all conditions – day, night, dim or bright.

They get it with PreciSAL.

Contrast sensitivity is particularly important in environments such as driving at night or dining in a dimly lit restaurant.

Negative spherical aberration (-SA) improves vision in these situations, producing the best visual acuity and contrast sensitivity with a modest depth of focus.

PreciSAL lenses have negative spherical aberration (-SA) in both clear (302AC) and yellow (302A) models. The residual SA is $0.21\mu\text{m}$ at a 6mm corneal diameter and the Q value is -0.11.

PreciSAL

Chromatic aberration

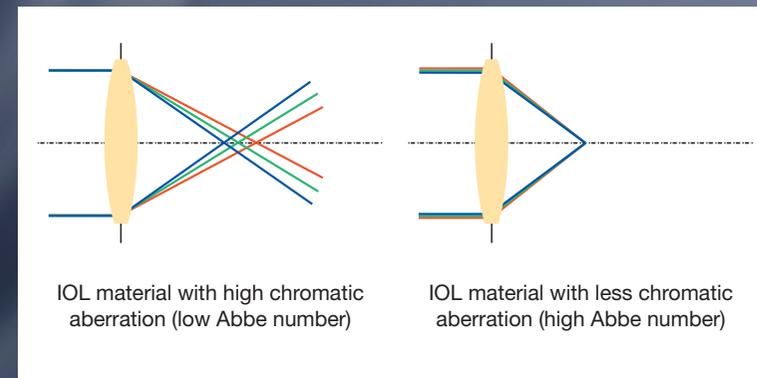
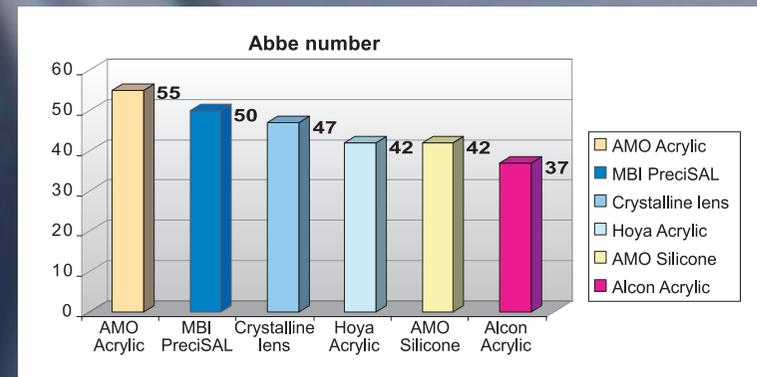
PreciSAL lenses have a high Abbe number.

That's a good thing.

The Abbe number, also known as the V number, is a measure of a transparent material's dispersion in relation to the refractive index, with high values of V indicating low dispersion (or low chromatic aberration).

In optics, the Abbe number indicates material quality and the capacity of an IOL to focus all colours to the same point. A high Abbe number not only means less chromatic aberration, it means better contrast and optical performance.

Abbe numbers are not often quoted by manufacturers of IOLs, but MBI are proud of theirs: PreciSAL lenses have an Abbe number of 50.



Toric – the cutting edge difference

Easy to use, with precise, reliable results.

That's what PreciSAL Toric lenses bring to you as a surgeon. What they do for your patients is correct their astigmatism, and bring them back to a world of colour, contrast and clarity.

The tray-polymerised, lathe-cut technology used to create PreciSAL lenses provides precision and keenness that is unmatched in the world of ophthalmology. It's a precision you can see.

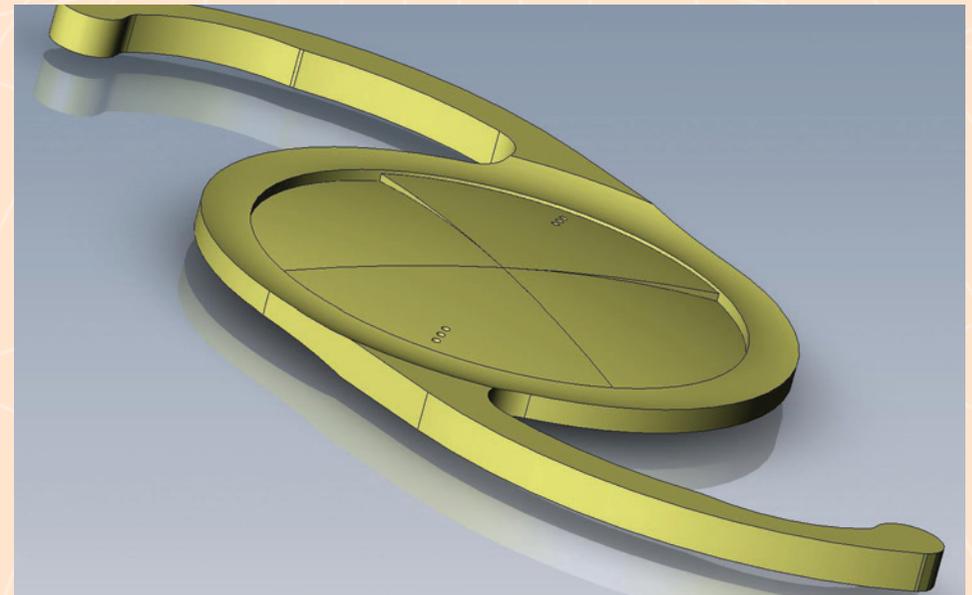
Less rotation – The lens is easy to position and remains stable once in position because of its milled edge. This milling provides a much higher co-efficient of friction which, in turn, facilitates a much better attachment of the capsular bag to the lens post-op to hold it in place.

AccuPlace™ – The precise quadrant lathing means the lens power is spread over a greater area (up to 94% of the cylinder) and, therefore, is far more forgiving of rotational misplacement. In conjunction with improved attachment of the capsular bag, PreciSAL Toric promotes lens positioning that is virtually fail-safe. It's what we call AccuPlace™.

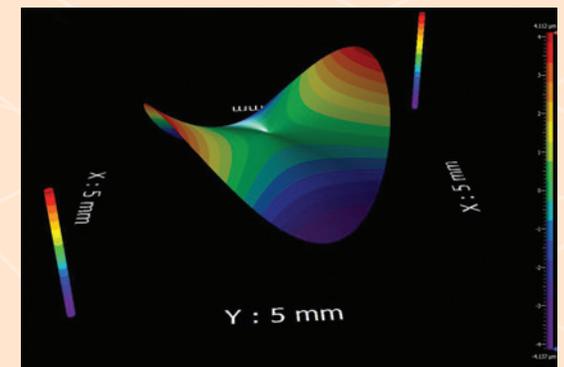
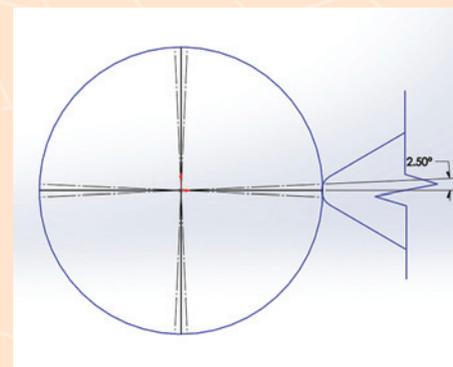
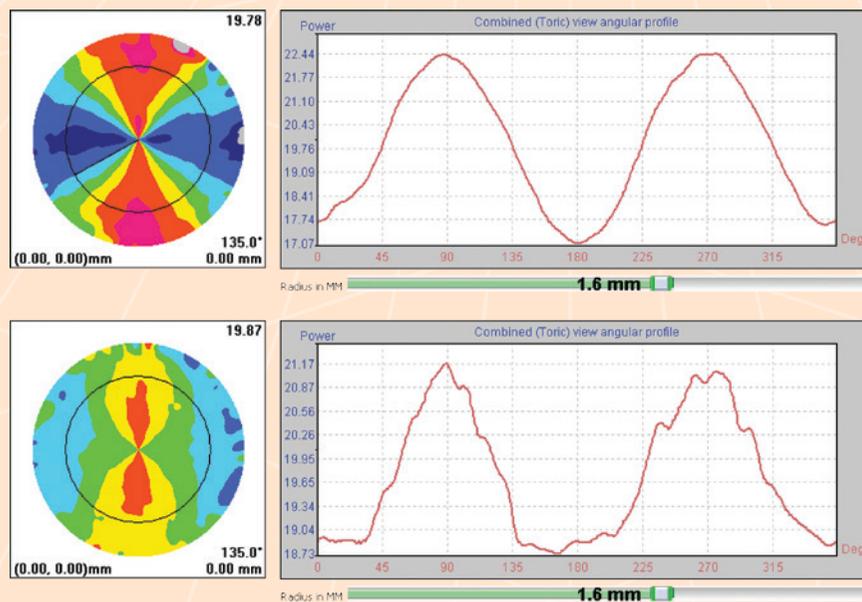
Prevents PCO – The 90° square edge around the entire optic diameter and haptics, along with a higher co-efficient of friction, virtually eliminates the risk of cell migration and, therefore, PCO.

Greater accuracy / more capacity – Both spheres and cylinders are available in 0.5 Dioptre increments, providing unparalleled accuracy in treatment. Cylinders start at 1.0D, so you'll be able to treat the majority of people more effectively.

The way they are made, the ease with which they perform, and the results they achieve will take you and your patients to a new level of satisfaction.



The figure above shows the quadrants of a PreciSAL Toric IOL. The two steeper quadrants have increased curvature (added power) for the cylinder, and blend crisply with the flatter (reduced power; marked with three dots) quadrants. The cylinder quadrants have a straight and minimal transition zone to the sphere, meaning the cylinder correction covers up to 85° of the available 90° surface. The quadrants also extend to within 0.5mm of the optic edge, so the power is more precise across a significantly greater area than from competing Toric IOLs. PreciSAL Toric with AccuPlace™ is more forgiving of both rotation and off-axis implantation, as well as providing a crisp, clear astigmatic correction.



The topographic images (above left), compare the Toric quadrant definition between PreciSAL Toric (top) and the industry standard. The superior PreciSAL Toric technology is also highlighted by the histograms (above right), the precise transition edge of PreciSAL between cylinder and sphere with minimal transition can be seen on the optical bench (top), showing the maximum available area topographically, with the desired smooth and straight 'M-shaped' histogram peaks, when compared with the industry standard (bottom).

The figure above shows the 2.5° transition angle used by MBI when lathing the cylinder onto the optic. The maximum available area is used for the Toric correction, reducing susceptibility to rotation or miss-alignment. The cylinder edge transition is also straight from the centre to the edge, giving a crisp, clear astigmatic correction unparalleled in Toric IOLs.

The 3D wavefront topography of the PreciSAL Toric lens objectively displays MBI's manufacturing precision. The Modulation Transfer Function (MTF) of 0.65 at 100 LP/mm is 95% of the defraction limit: proof of PreciSAL optical quality.

PreciSAL

PreciSAL Yellow

PreciSAL Yellow is not the yellow lens you think it is.

It looks different because it is different.

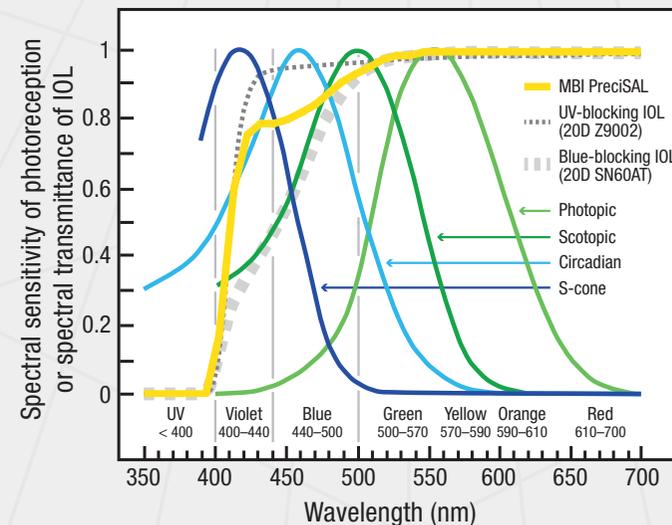
PreciSAL Yellow gives your patients the clarity and filtering properties equivalent to the lens of a 4½ year old. They will see in all kinds of light – clearer, crisper and more colourfully. And they will sleep better.

The high-energy filter protects the macula from cytotoxic violet light. However, it doesn't block all the benign blue wavelengths (440nm–500nm) that contribute significantly to the body's sense of diurnal rhythm, effective dim-light vision, colour perception and circadian photoreception.¹

With PreciSAL Yellow, MBI achieve this with transmission values of 78%–94% (440nm–500nm) compared to the industry standard of 32%–81%. Therefore, PreciSAL Yellow more accurately replicates the spectral transmission of a normal, healthy eye.

Your patients will see better *and* sleep better – their lives will be transformed.

Spectral sensitivity of photoreception and spectral transmittance of IOLs ²



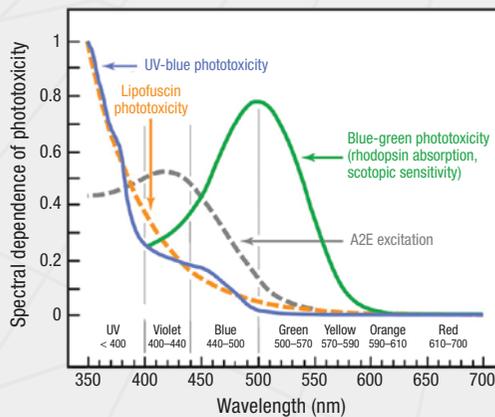
S-cone (Imax z 420 nm), circadian (Imax z 460 nm), aphakic scotopic (Imax z 500 nm) and photopic (Imax z 555 nm) spectral sensitivities, where Imax is the wavelength of peak spectral sensitivity... The spectral transmittances of [PreciSAL 302A (20D)], a UV-blocking (AMO Technis Z9002 20D), and a blue-blocking (Alcon AcrySof Natural SN60AT 20D) IOL are also shown.

¹ Mainster M.A., Turner P.L.: 'Blue-blocking IOLs Decrease Photoreception Without Providing Significant Photoprotection', Table 1. Surv. Ophthalm. 55(3) May-June 2010 p 273. 2010

^{2,3,4} Reprinted from Survey of Ophthalmology, Vol 55, Number 3, May-June 2010, Mainster M.A., Turner P.L.: 'Blue-blocking IOLs Decrease Photoreception Without Providing Significant Photoprotection', pp 274–275. Copyright 2010, with permission from Elsevier.

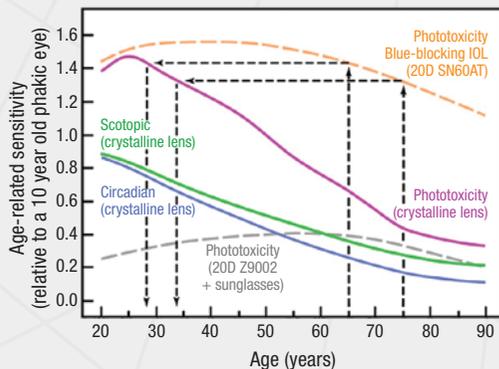
Believing is seeing

Spectral dependence of phototoxicity ³



The action spectra for UV-blue phototoxicity and RPE lipofuscin phototoxicity are quite similar. Both increase rapidly with decreasing wavelength. Thus, UV-radiation is much more hazardous than violet light, which in turn is more hazardous than blue light. Acute blue-green retinal phototoxicity has an action spectrum similar to scotopic sensitivity...[where it]...peaks around 500 nm (blue-green) and decreases at shorter and longer wavelengths, as depicted in this figure by the absorption spectrum of rhodopsin.

Age-related sensitivity (relative to a 10 year old phakic eye) ⁴



Acute retinal phototoxicity risk (UV-blue phototoxicity), scotopic sensitivity (rod photoreception) and circadian photoreception (melatonin suppression) for phakic eyes ("crystalline lens") relative to a 10-year-old phakic eye, taking into consideration age-related decreases in crystalline lens transmittance and pupil area and increases in RPE cell phototoxicity consistent with the age-related accumulation of lipofuscin.

We believe perfect eyesight is achievable.

We believe that 0.25D precision, 0.125D tolerance, no glistenings and no PCO will transform people's vision.

We believe you can experience an unprecedented refractive accuracy of +/- 0.03D, and up to 89% of patients within 0.5D of target, because it's been shown across a study* of 100 consecutive patients in Australia.

We believe in embracing better ways, where attention to detail is unique. In over 500,000 implants, no PCO and no glistenings were reported.

We believe PreciSAL will change the way you think about cataracts and give you the confidence to perform life-changing surgery, to believe in seeing, and restore what was thought lost.

* Conducted by Dr. Peter Stewart, Lasersight Maroochydore (2013). Data available on file, IQ Medical.

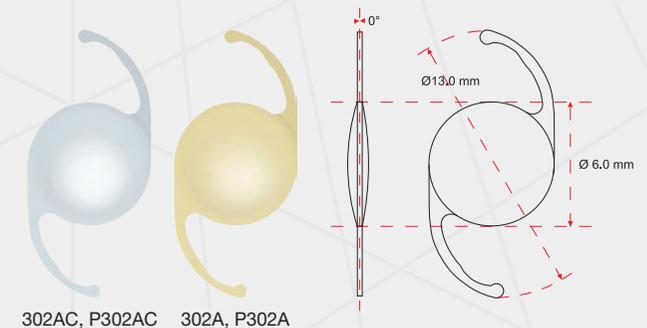
PreciSAL

PreciSAL Monofocal specifications

IOL design	Aspheric single piece for posterior capsular bag
Material	Hydrophobic Acrylic with UV absorbers Aspheric: Models 302AC and 302A (with violet filter)
UV cut off at 10% T	> 385nm (model 302AC), > 392nm (model 302A)
Material water content	<0.5%
Refractive index	1.5
Abbe number	50
Q value	-0.11
Optic design	Biconvex, square edged optic and haptic
Optic diameter	6.0mm
Overall length	13.0mm
Haptic angle	0°
Dioptr range	Available in powers from 1.0D to 30.0D: 18.0D to 28.0D in 0.25D increments 10.0D to 17.5D & 28.5D to 30.0D in 0.5D increments 1.0D to 9.0D in 1.0D increments

Manufacturing tolerance	+/- 0.125D
Pre-loaded mechanism	2.2mm Incision (P302AC; P302A)
Manufacturer's A-constant	118.7 (for contact AND immersion biometry)
Recommended A-constant*	•SRK II: 119.2 •SRK-T: 118.9 •sf: 1.75 [Holladay I] •HAIGIS: [a0: 1.32, a1: 0.40, a2: 0.10]
ACD*	5.337 [Holladay II]; 5.51 [Hoffer Q]; 5.16 [Manufacturer]
Method of sterilisation	Ethylene Oxide (ETO)
Rebate codes	IQ013 (302AC); IQ014 (P302AC); IQ015 (302A); IQ016 (P302A)

* These values are shown as guidelines only for use with optical biometry for calculation of implant power. IQ Medical and MBI recommend that surgeons develop their own values based on individual technique, measuring equipment and desired post-operative results. In no way are these values meant to be definitive.



PreciSAL

PreciSAL Toric specifications

IOL design	Aspheric single piece for posterior capsular bag
Material	Hydrophobic Acrylic with UV absorbers and violet filter, model T302A
UV cut off at 10% T	> 392nm (model T302A)
Material water content	<0.5%
Refractive index	1.5
Abbe number	50
Q value	-0.11
Optic design	Toric, biconvex, square edged optic and haptic
Optic diameter	6.0mm
Overall length	13.0mm
Haptic angle	0°
Spherical equivalent range	Available in spherical equivalent powers from +1.0D to +30.0D: 1.0D steps: +1.0D to +10.0D 0.5D steps: +10.5D to +30.0D
Cylinder range	+1.0D to +6.0D in 0.5D steps
Manufacturing tolerance	+/- 0.125D

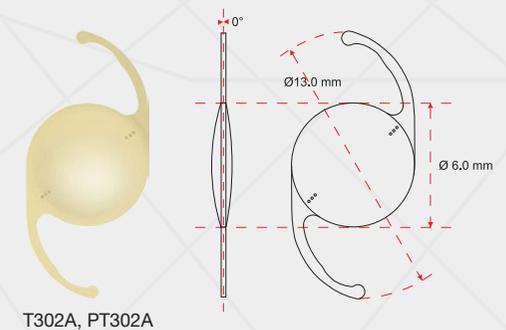
Pre-loaded mechanism	2.2mm Incision (PT302A)
Manufacturer's A-constant	118.7 (for contact AND immersion biometry)
Recommended A-constant*	•SRK II: 119.2 •SRK-T: 118.9 •sf: 1.75 [Holladay I] •HAIGIS: [a0: 1.32, a1: 0.40, a2: 0.10]
ACD*	5.337 [Holladay II]; 5.51 [Hoffer Q]; 5.16 [Manufacturer]
Method of sterilisation	Ethylene Oxide (ETO)
Rebate codes	IQ019 (T302A); IQ020 (PT302A)

* These values are shown as guidelines only for use with optical biometry for calculation of implant power. IQ Medical and MBI recommend that surgeons develop their own values based on individual technique, measuring equipment and desired post-operative results. In no way are these values meant to be definitive.

MBI Toric Calculator: www.mbius.com/en/calculator.php

Barrett Toric Calculator: www.ascrs.org/barrett-toric-calculator

NOTE: For those wishing to cross-reference competitors' models, please visit www.iqmedical.com.au/toric



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