



**Acriva<sup>UD</sup>**  
ULTRA DEFINITION INTRAOCULAR LENS

Monofocal

# The World of Acriva<sup>UD</sup>

Premium Material

Innovative Optic Engineering

Ultra Definition

All Square 360° Enhanced Edge

Wide Diopter Range and Different Haptic Platforms

Best of Both Worlds

Better Visual Quality

Advanced Vision of Aspheric Design

Real PCO Barrier

Complete Solutions

# Excellent Combination<sup>1</sup>

## 1 Premium Material

### Best of Both Worlds

Excellent material combination of 2-Oxiethylmethacrylate and 2-Hydroxymethacrylate monomers creates hydrophobic surface behavior with the advantage of hydrophilic flexibility.

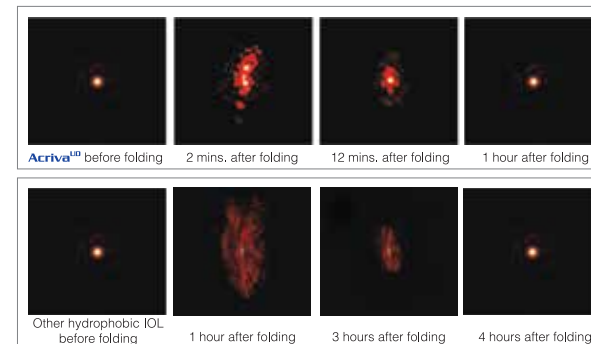


### Proven Hydrophobic Surface Behavior

Acriva<sup>UD</sup> has similar contact angle measurements with similar to pure hydrophobic IOLs. An independent comparative study showed that the hydrophobic surface of Acriva<sup>UD</sup> is similar to that of pure hydrophobic competitors<sup>1</sup>.

### Benefits of Hydrophobic and Hydrophilic Monomers

- No glistening
- Limited PCO
- High biocompatibility
- Low inflammatory response
- No calcification
- Easy to fold and inject
- MICS capability
- Quickly unfolding in the eye



### Better Flexibility

The elastic co-polymer of Acriva<sup>UD</sup> has precise memory. Point Spread Function (PSF) shows that the optic quickly recovers its initial shape within an hour, much quicker than hydrophobic IOLs.

#### References

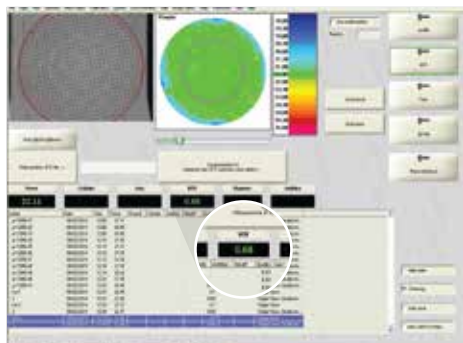
1- Tuncer ÇAYKARA, Contact Angle Measurements of Intra-Ocular Lenses (IOL). Republic Of Turkey Gazi University Office Of Dean Of School Of Sciences And Letters File: B.30.2.GÜN.0.10.82.00-2431 July 14, 2009. 2- Data on file

# Advanced Vision<sup>1</sup>

## 2 Innovative Optic Engineering

### Better Visual Quality

The MTF of all Acriva<sup>UD</sup> lenses is checked one by one and value is always above international standards. All Acriva<sup>UD</sup> products demonstrate superior MTF and smooth surface topography, thanks to our innovative optic engineering.



### Modular Transfer Function

MTF is a direct and quantitative measurement of optic system quality. The best result through obstacles is 0.7 at 100 lpm. According to international standards the MTF results with an IOL must be above 0.43 at 100 lpm<sup>3</sup>. VSY Biotechnology has determined its own quality control limits far stricter than international standards.

## 3 Ultra Definition Optic

### Advanced Vision of Aspheric Design

Ultra Definition optic design corrects spherical aberrations coming from both cornea and IOL. However, Acriva<sup>UD</sup> IOLs have a slight negative asphericity, which maintains part of the positive aberration of the cornea, helping patient to keep better depth of focus.<sup>4,5</sup>



### Advantage of Ultra Definition Design

- Improved contrast sensitivity under low light conditions
- Preserved depth of focus
- Less sensitive to decentration

#### References

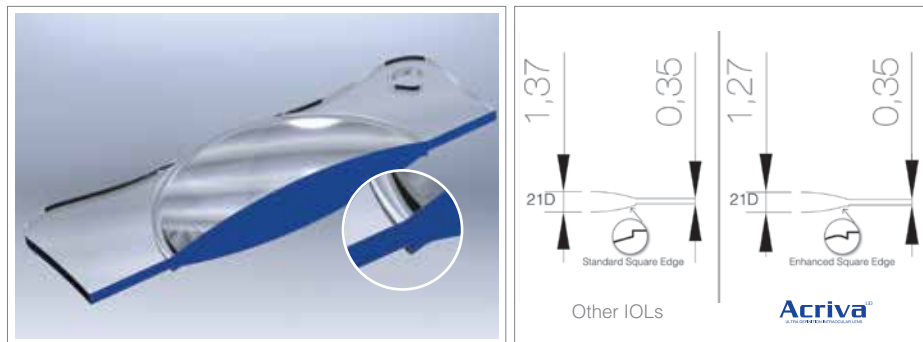
3- International Standard Iso 11979-2:1999 Technical Corrigendum 1 ICS 11.040.70 Ref. No. ISO 11979-2:1999/Cor.1:2003(E) Published 2003-11-01 4- Holladay JT, Piers PA, Korayni G, et al. A new intraocular lens design to reduce spherical aberration of pseudophakic eyes. J Refract Surg. 2002, 18 (6):683-691. 5- Bellucci R, Morselli S, Piers P. comparison of wavefront aberrations and optical quality of eyes implanted with five different intraocular lenses. J Refract Surg. 200,20(4):297-306.

# Different Platforms

## 4 All Square 360° Enhanced Edge

### Real PCO Barrier

The innovative edge design tends to greatly reduce PCO risk by making a geometric and mechanical barrier against cells proliferation. The edge design allows for thinner lenses for equivalent power than other competitors



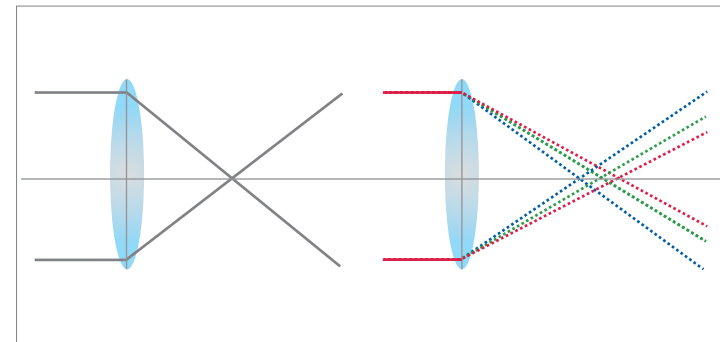
### Exceptional Design

All Square 360° enhanced edge and premium material form a dual barrier against the risk of posterior capsule opacification after implantation. Recent studies have shown that square edge on posterior surface of the optic is the most important IOL-related factor against PCO formation.<sup>6, 7</sup>

## 5 Superior Chromatic Aberration Control

### Clear Vision

Abbe Number of Acryva<sup>UD</sup> is 58, one of the highest numbers on the IOL market, measured by an independent laboratory<sup>8</sup>. The entire Acryva<sup>UD</sup> line goes through this Superior Chromatic aberration control.



### The Importance of Abbe Number

Chromatic aberration is a type of distortion in optical system formed by different wavelengths of light to have different focal points. The higher the Abbe number is the lower the chromatic dispersion is<sup>9</sup>.

References

6- Can I., Ceran BB., Soyugelen G., Takmaz T. Comparison of clinical outcomes with 2 small-incision diffractive multifocal intraocular lenses. Journal of Cataract & Refractive Surgery 2012 Vol 38 No1 7- Data on file. 8- VSY Biotechnology R&D Technical Report RD19062014-1 9- Huawei Zhao, Martin A Mainster The effect of chromatic dispersion on pseudophakic optical performance Br J Ophthalmol 2007;91:1225-1229.



UD 613



UDB 625

Optic Size	6.00mm
Optic Design	Biconvex
Haptic Size	13.00mm
Haptic Design	Modified C
Haptic Angle	0°
Recommended Ac. A Constant	118.0
Recommended Op. A Constant	Srk-T : 118.4 - Srk-II : 118.6
Diopter Power Range	From 0.0D to +32.00 D (0.50D increments)
Special Production	From -20.00D to -0.50D and +32.50D to +45.00D (0.50D increments)
Refractive Index Dry	20°C /35°C 1.509 / 1.509 ± 0.002
Refractive Index Wet	20°C /35°C 1.462 / 1.462 ± 0.002
Recommended Injector & Cartridge System	Acrijet Green 2.0 (Up to 25.0 D) Acrijet Green 2.2 (Up to 30.0 D)

Optic Size	6.00mm
Optic Design	Biconvex
Haptic Size	12.50mm
Haptic Design	Balance Modified C
Haptic Angle	0°
Recommended Ac. A Constant	118.0
Recommended Op. A Constant	Srk-T : 118.4 - Srk-II : 118.6
Diopter Power Range	From 0.0D to +32.00 D (0.50D increments)
Special Production	From -20.00D to -0.50D and +32.50D to +45.00D (0.50D increments)
Refractive Index Dry	20°C /35°C 1.509 / 1.509 ± 0.002
Refractive Index Wet	20°C /35°C 1.462 / 1.462 ± 0.002
Recommended Injector & Cartridge System	Acrijet Green 2.0 (Up to 25.0 D) Acrijet Green 2.2 (Up to 30.0 D)





UDM 611



HAF

Optic Size	6.00mm
Optic Design	Biconvex
Haptic Size	11.00mm
Haptic Design	Plate Haptic
Haptic Angle	0°
Recommended Ac. A Constant	118.0
Recommended Op. A Constant	Srk-T : 118.7 - Srk-II : 119.0
Diopter Power Range	From 0.0D to +32.00 D (0.50D increments)
Special Production	From -20.00D to -0.50D and +32.50D to +45.00D (0.50D increments)
Refractive Index Dry	20°C /35°C 1.509 / 1.509 ± 0.002
Refractive Index Wet	20°C /35°C 1.462 / 1.462 ± 0.002
Recommended Injector & Cartridge System	Acrijet Green 1.8 (Up to 25.0 D) Acrijet Green 2.0 (Up to 28.0 D) Acrijet Green 2.2 (Up to 30.0 D)

Optic Size	6.50mm
Optic Design	Biconvex
Haptic Size	13.75mm
Haptic Design	Balance Modified C
Haptic Angle	0°
Recommended Ac. A Constant	118.0
Recommended Op. A Constant	Srk-T : 118.4 - Srk-II : 118.6
Diopter Power Range	From 0.0D to +32.00 D (0.50D increments)
Special Production	From -20.00D to -0.50D and +32.50D to +45.00D (0.50D increments)
Refractive Index Dry	20°C /35°C 1.509 / 1.509 ± 0.002
Refractive Index Wet	20°C /35°C 1.462 / 1.462 ± 0.002
Recommended Injector & Cartridge System	Acrijet



# Blue Light Filtration

Optimum Filtration Range

Natural Chromophore

Ideal Concentration

Balanced Photoprotection of UVA and Violet Spectrum

Same Transmission Properties than Natural Lens

Improved Contrast Sensitivity



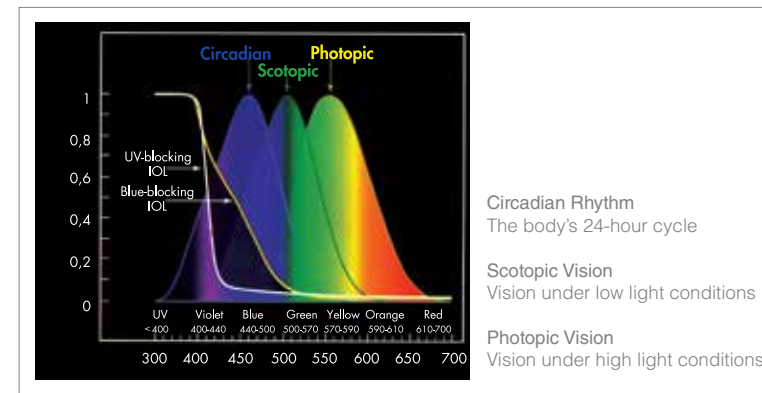
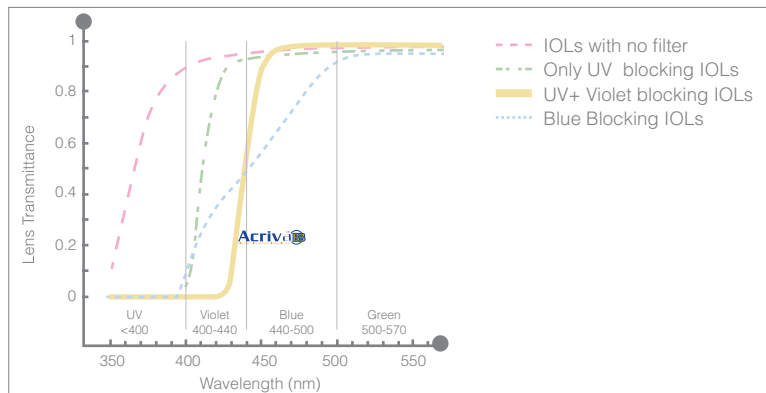
# Efficient Protection<sup>1</sup>

## 1 Optimum Filtration Range

### Balanced Photoprotection of UVA and Violet Spectrum

Acriva<sup>UD</sup> BB provides excellent photoprotection from potential damage of the UVA and violet spectrum without blocking blue light. Acriva<sup>UD</sup> BB ensures 95% blue light transmission at 480nm which is known as critical in controlling the circadian rhythm<sup>8, 9, 10, 11, 12</sup>.

The chromophore used in Acriva<sup>UD</sup> BB material has a similar chemical structure to the chromophore naturally present in the human lens, thus giving a transmission structure comparable to the one of a young healthy eye.



### Importance of Blue Light

Blue light plays a crucial role in controlling the circadian rhythm and endogenous melatonin secretion. Disorganisation of the circadian rhythm is more common in older adults and people with insomnia<sup>13</sup>, depression<sup>14, 15</sup> and dementia<sup>16</sup>. Blue-blocking IOLs, which contain synthetic dye filter up to 500 nm causes excessive filtering of blue light.

**References**

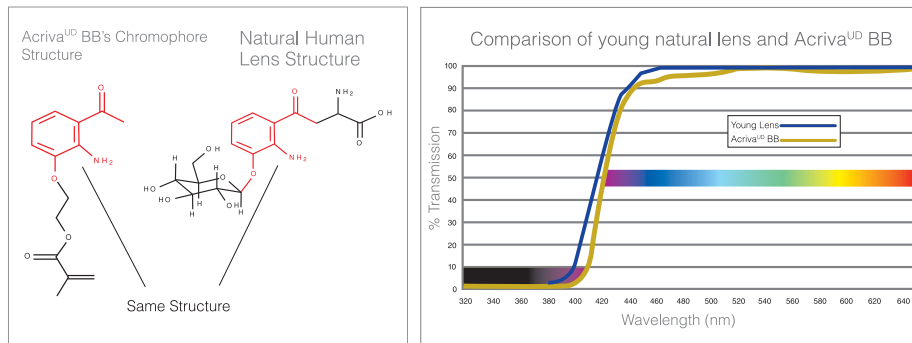
8- Dacey DM, Liao HW, Peterson BB, et al. Melanopsin-expressing ganglion cells in primate retina signal colour and irradiance and project to the LGN. Nature 2005; 433: 749-54. 9- Qiu X, Kumbalasisri T, Carlsson SM et. al. Induction of photosensitivity by heterologous expression of melanopsin. Nature 2005;433:745-9 10- Abbott A. Restless nights, listless days. Nature 2003. 425896-898.898 11- Foster R G. Neurobiology: bright blue times. Nature 2005. 433698-699.699 12- Van Gelder R N. Blue light and the circadian clock. Br J Ophthalmol 2004. 881353 13- Haimov I, Laudon M, Zisapel N. et al Sleep disorders and melatonin rhythms in elderly people. BMJ 1994. 309167 14- Terman M, Terman J S. Light therapy for seasonal and nonseasonal depression: efficacy, protocol, safety, and side effects. CNS Spectr 2005. 10647-63 quiz 672.63 quiz 672 15- Jones S H. Circadian rhythms, multilevel models of emotion and bipolar disorder - an initial step towards integration? Clin Psychol Rev 2001. 211193-1209.1209 16-Reiter R J, Tan D X, Pappolla M A. Melatonin Relieves the Neural Oxidative Burden that Contributes to Dementias. Ann N Y Acad Sci 2004. 1035179-196.196 17- Mainster MA. Violet and blue light blocking intraocular lenses: photoprotection versus photoreception. British Journal of Ophthalmology. 2006;90:784-792

# Superior Clarity<sup>1</sup>

## 2 Natural Chromophore

Similar Transmission Properties to Natural Lens

Acryva<sup>UD</sup> BB contains 3-hydroxykynurenine which is similar to the chromophore present in the human natural lens.

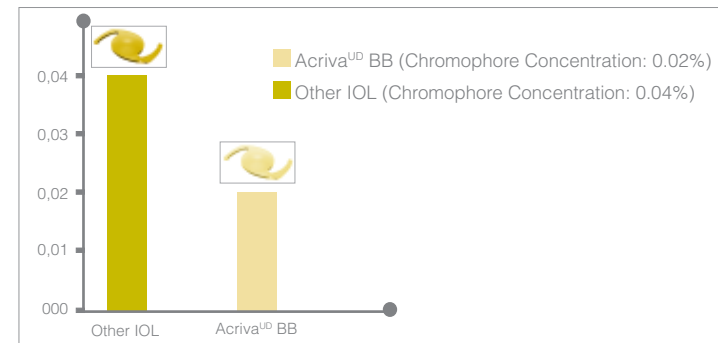


Chromophore structure of Acryva<sup>UD</sup> possesses the same transmission as a human natural crystalline lens with a good protection of the macula against UV-A and blue light thanks to the absorption curve which mimics the human crystalline lens, preserving the natural color perception and contrast sensitivity.

## 3 Ideal Concentration

Improved Contrast Sensitivity

Acryva<sup>UD</sup> BB's chromophore concentration is 0,02%. It has a clearer color in comparison to IOLs with higher concentrations of chromophores. Low concentration of Acryva<sup>UD</sup> BB doesn't influence color perception of the patient.



Natural chromophore and its lower concentration provide a higher contrast sensitivity under low light conditions.



BB UD 613



BB UDM 611



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BB T UDM 611

Material	Hydrophobic surface, acrylic with 25% water content, blue filter
Optic Size	6.00mm
Optic Design	Monofocal
Haptic Size	13.00mm
Haptic Design	Modified C
Haptic Angle	0°
Recommended Ac. A Constant	118.0
Recommended Op. A Constant	Srk-T:118.4 - Srk-II:118.6
Diopter Power Range	From -20.00D to +45.00D (0.50D increments)
Refractive Index Dry	20°C /35°C 1.509 / 1.509 ± 0.002
Refractive Index Wet	20°C /35°C 1.462 / 1.462 ± 0.002
Recommended Injector & Cartridge System	Acrijet Green 2.0 (Up to 25.0 D) Acrijet Green 2.2 (Up to 30.0 D)



Material	Hydrophobic surface, acrylic with 25% water content, blue filter
Optic Size	6.00mm
Optic Design	Monofocal
Haptic Size	11.00mm
Haptic Design	Plate Haptic
Haptic Angle	0°
Recommended Ac. A Constant	118.0
Recommended Op. A Constant	Srk-T:118.7 - Srk-II:119.0
Diopter Power Range	From -20.00D to +45.00D (0.50D increments)
Refractive Index Dry	20°C /35°C 1.509 / 1.509 ± 0.002
Refractive Index Wet	20°C /35°C 1.462 / 1.462 ± 0.002
Recommended Injector & Cartridge System	Acrijet Green 1.8 (Up to 25.0 D) Acrijet Green 2.0 (Up to 28.0 D) Acrijet Green 2.2 (Up to 30.0 D)



Material	Hydrophobic surface, acrylic with 25% water content, blue filter
Optic Size	6.00mm
Optic Design	Monofocal Toric
Haptic Size	11.00mm
Haptic Design	Plate Haptic
Haptic Angle	0°
Recommended Ac. A Constant	118.0
Recommended Op. A Constant	Srk-T:118.6 - Srk-II:118.9
Diopter Power Range	Spheric: From 0.00D to +32.00D (0.50D increments) Cylindric: From +1.00D to +10.00D (0.50D increments)
Refractive Index Dry	20°C /35°C 1.509 / 1.509 ± 0.002
Refractive Index Wet	20°C /35°C 1.462 / 1.462 ± 0.002
Recommended Injector & Cartridge System	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)



Acriva<sup>UD</sup>



UD 613



UDB 625



UDM 611

Scleral Fixation



HAF

Acriva<sup>UD</sup> BB



BB UD 613



BB UDM 611

Acriva<sup>UD</sup> BB Toric



BB T UDM 611

