



Acriva^{UD}

ULTRA DEFINITION INTRAOCULAR LENS

Monofocal

The World of Acriva^{UD}

Premium Material

Innovative Optic Engineering

Ultra Definition

360° All Enhanced Square 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 Combination¹

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.

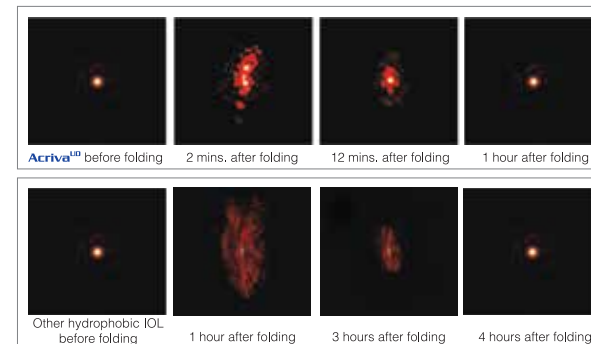


Proven Hydrophobic Surface Behavior

Acriva^{UD} has contact angle measurements similar to pure hydrophobic IOLs. An independent comparative study showed that the hydrophobic surface of Acriva^{UD} is similar to that of pure hydrophobic competitors¹.

Benefits of Hydrophobic and Hydrophilic Monomer Combination

- 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^{UD} has precise memory. Point Spread Function (PSF) shows that the optic recovers its initial shape within an hour, much more quickly than hydrophobic IOLs.

References

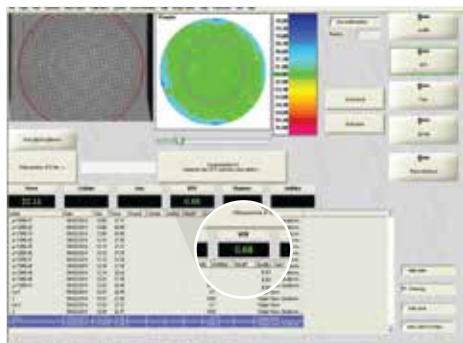
- 1- Çaykara T., Contact Angle Measurements of Intra-Ocular Lenses (IOL), Republic Of Turkey Gazi University Office Of Dean Of School Of Sciences And Letters File: B.30.2.GÜN.0.10.82.00-2431 July 14, 2009.
2- Data on file

Advanced Vision¹

2 Innovative Optic Engineering

Better Visual Quality

The MTF of every single Acryva^{UD} lens produced is checked during production to ensure that its value is above international standards. All Acryva^{UD} products demonstrate superior MTF and smooth surface topography, thanks to our innovative optic engineering.



Modular Transfer Function

MTF is a direct quantitative measurement of optic-system quality. The best result through obstacles is 0.7 at 100 lpm. International standards require the MTF results with an IOL to be above 0.43 at 100 lpm³. VSY Biotechnology has determined its own quality control acceptance limits that are far stricter than international standards.

3 Ultra Definition Optic

Advanced Vision of Aspheric Design

Ultra Definition optic design corrects spherical aberrations coming from cornea. Acryva^{UD} IOLs have a slight negative asphericity, that neutralizes part of the positive aberration of the cornea, helping the patient to maintain better depth of focus^{4,5}.



Advantage of Ultra Definition Design

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

References

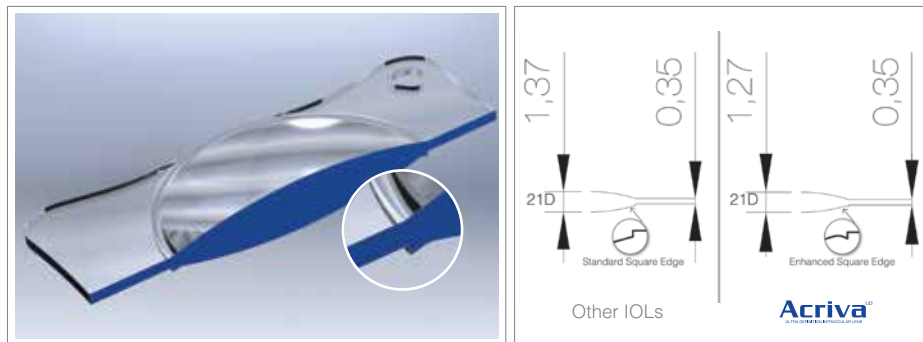
- 3- International Standard ISO 11979-2:1999 Technical Corrigendum 1 ICS 11.040.70 Ref. No. ISO 11979-2:1999/Cor.1:2003(E) Published 2003-11-01
 4- Holladay J.T., Piers PA, Korayni G, et al. A new intraocular lens design to reduce spherical aberration of pseudophakic eyes. J Refract Surg. 2002, 18 (6):683-691.
 5- Belluci R, Morselli S, Piers P. comparison of wavefront aberrations and optical quality of eyes implanted with five different intraocular lenses. J Refract Surg. 2004 Jul-Aug;20(4):297-306.

Different Platforms

4 360° All Enhanced Square Edge

Real PCO Barrier

The innovative edge design greatly reduce PCO risk by making a geometric and mechanical barrier against cell proliferation. The edge design allows for production of much thinner lenses with the same equivalent power as competitors' IOLs.



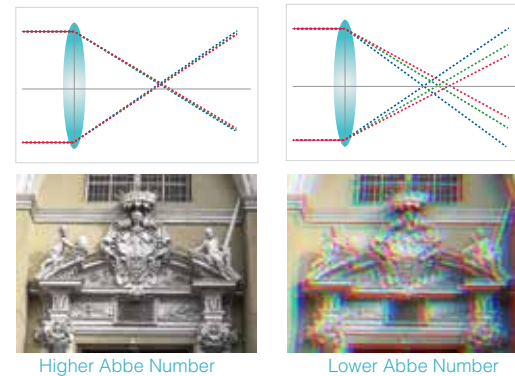
Exceptional Design

360° All Enhanced Square 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 protecting against PCO formation^{6, 7}.

5 Superior Chromatic Aberration Control

Clear Vision

The Abbe Number of Acryva^{UD} is 58, one of the highest in the IOL market, measured by an independent laboratory⁸. The entire Acryva^{UD} line is guaranteed to have Superior Chromatic Aberration Control.



The Importance of Abbe Number

Chromatic aberration is a type of distortion in optical systems, caused by different wavelengths of light to have different focal points. The higher the Abbe Number, the lower the chromatic aberration⁹.

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

Material	Hydrophobic surface, acrylic with 25% water content, UV filter
Optic Size	6.00 mm
Optic Design	Biconvex
Haptic Size	13.00 mm
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 +32.00D (0.50D increments)
Special Production	From -20.00D to -0.50D and +32.50D to +45.00D (0.50D increments)
Refractive Index Wet	20°C /35°C 1.462 / 1.462 ± 0.002
Recommended Injector & Cartridge System	Acrijet Green 2.0 (Up to 25.0D) Acrijet Green 2.2 (Up to 30.0D)

Material	Hydrophobic surface, acrylic with 25% water content, UV filter
Optic Size	6.00 mm
Optic Design	Biconvex
Haptic Size	12.50 mm
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 +32.00D (0.50D increments)
Special Production	From -20.00D to -0.50D and +32.50D to +45.00D (0.50D increments)
Refractive Index Wet	20°C /35°C 1.462 / 1.462 ± 0.002
Recommended Injector & Cartridge System	Acrijet Green 2.2 (Up to 30.0D)





UDM 611



HAF

Material	Hydrophobic surface, acrylic with 25% water content, UV filter
Optic Size	6.00 mm
Optic Design	Biconvex
Haptic Size	11.00 mm
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 +32.00D (0.50D increments)
Special Production	From -20.00D to -0.50D and +32.50D to +45.00D (0.50D increments)
Refractive Index Wet	20°C /35°C 1.462 / 1.462 ± 0.002
Recommended Injector & Cartridge System	Acrijet Green 1.8 (Up to 25.0D) Acrijet Green 2.0 (Up to 28.0D) Acrijet Green 2.2 (Up to 30.0D)



Material	Hydrophobic surface, acrylic with 25% water content, UV filter
Optic Size	6.50 mm
Optic Design	Biconvex
Haptic Size	13.75 mm
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 +32.00D (0.50D increments)
Special Production	From -20.00D to -0.50D and +32.50D to +45.00D (0.50D increments)
Refractive Index Wet	20°C /35°C 1.462 / 1.462 ± 0.002
Recommended Injector & Cartridge System	Acrijet Green



Blue Light Filtration

Optimum Filtration Range

Natural Chromophore

Ideal Concentration

Balanced Photoprotection of UVA and Violet Spectrum

Same Transmission Properties as Natural Lens

Improved Contrast Sensitivity

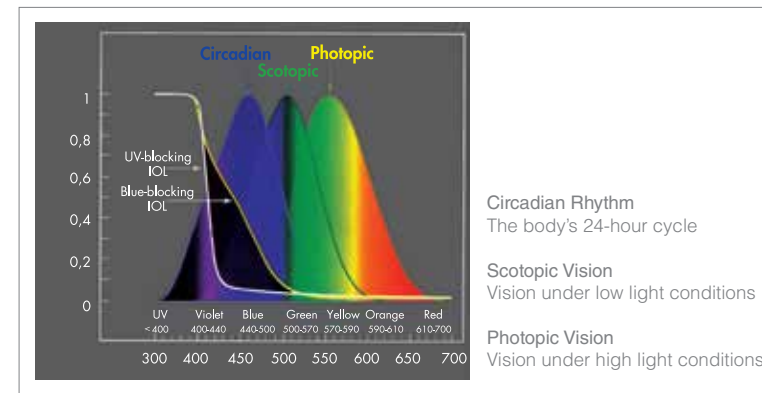
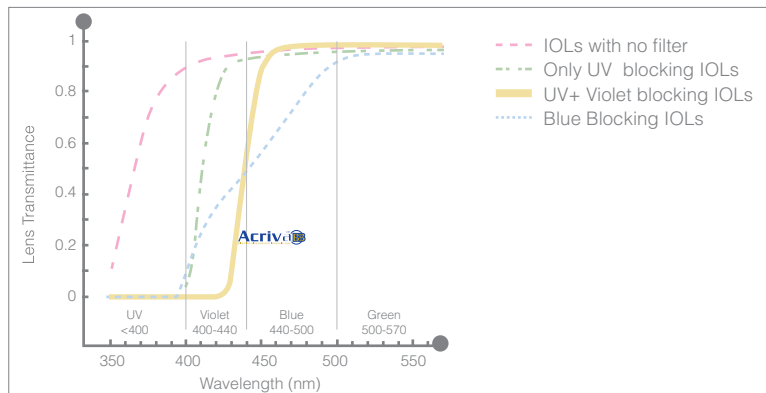
Efficient Protection¹

1 Optimum Filtration Range

Balanced Photoprotection of UVA and Violet Spectrum

Acryva^{UD} BB provides excellent photoprotection from potential damage of UVA and violet spectrum without blocking blue light. Acryva^{UD} BB ensures 95% blue light transmission at 480nm, known to be critical in controlling the circadian rhythm^{8, 9, 10, 11, 12}.

The chromophore used in Acryva^{UD} 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. Disorganization of the circadian rhythm is more common in older adults and people with insomnia¹³, depression^{14, 15}, and dementia^{16,17}. Blue-blocking IOLs, which contain synthetic dye filter up to 500 nm causes excessive filtering of blue light.

Circadian Rhythm
The body's 24-hour cycle

Scotopic Vision
Vision under low light conditions

Photopic Vision
Vision under high light conditions

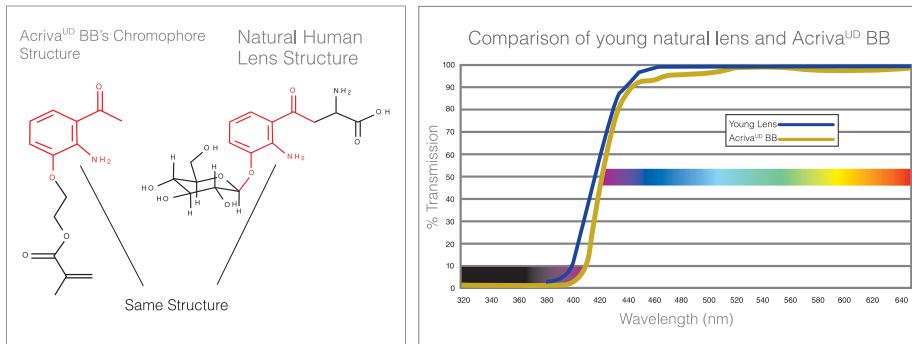
References
 8- Dacey DM, Liao HW, Peterson BB, et al. Melanopsin-expressing ganglion cells in primate retina signal colour and irradiance and project to the LGN. *Nature* 2005; 433: 749-54.
 9- Qiu X, Kumbalasisri T, Carlsan SM et al. Induction of photosensitivity by heterologous expression of melanopsin. *Nature* 2005;433:745-9
 10- Abbott A. Restless nights, listless days. *Nature* 2003. 425:896-898
 11- Foster R G. Neurobiology: bright blue times. *Nature* 2005. 433:698-699
 12- Van Gelder R N. Blue light and the circadian clock. *Br J Ophthalmol* 2004. 88:1353
 13- Haimov I, Laudon M, Zisapel N, et al Sleep disorders and melatonin rhythms in elderly people. *BMJ* 1994. 309:167
 14- Terman M, Terman J S. Light therapy for seasonal and nonseasonal depression: efficacy, protocol, safety, and side effects. *CNS Spectr* 2005. 10:647-63 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. 21:1193-1209.1209
 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. 1035:179-196.196
 17- Mainster MA. Violet and blue light blocking intraocular lenses: photoprotection versus photoreception. *British Journal of Ophthalmology*. 2006;90:784-792

Superior Clarity¹

2 Natural Chromophore

Similar Transmission Properties to Natural Lens

Acryva^{UD} BB contains 3-hydroxykynurenine, similar to the chromophore present in the human natural lens.

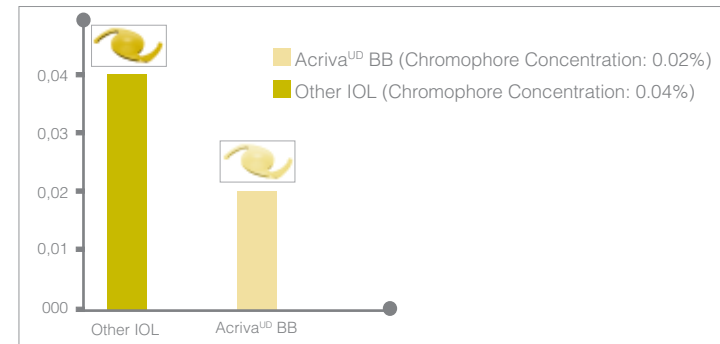


Chromophore structure of Acryva^{UD} possesses the same transmission as human natural crystalline lens with a good protection of the macula against UV-A and blue light thanks to the absorption curve that mimics the human crystalline lens, preserving natural color perception and contrast sensitivity.

3 Ideal Concentration

Improved Contrast Sensitivity

Acryva^{UD} BB's chromophore concentration is 0.02%. It has a clearer color than IOLs with higher concentrations of chromophores. Low concentration of Acryva^{UD} BB doesn't influence patient color perception.



Natural chromophore and its lower concentration provide higher contrast sensitivity under mesopic conditions.



BB UD 613



BB UDM 611



toric

BB T UDM 611

Material	Hydrophobic surface, acrylic with 25% water content, UV, violet, and blue filter
Optic Size	6.00 mm
Optic Design	Monofocal
Haptic Size	13.00 mm
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 Wet	20°C /35°C 1.462 / 1.462 ± 0.002
Recommended Injector & Cartridge System	Acrijet Green 2.0 (Up to 25.0D) Acrijet Green 2.2 (Up to 30.0D)



Material	Hydrophobic surface, acrylic with 25% water content, UV, violet, and blue filter
Optic Size	6.00 mm
Optic Design	Monofocal
Haptic Size	11.00 mm
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 Wet	20°C /35°C 1.462 / 1.462 ± 0.002
Recommended Injector & Cartridge System	Acrijet Green 1.8 (Up to 25.0D) Acrijet Green 2.0 (Up to 28.0D) Acrijet Green 2.2 (Up to 30.0D)



Material	Hydrophobic surface, acrylic with 25% water content, UV, violet, and blue filter
Optic Size	6.00 mm
Optic Design	Monofocal Toric
Haptic Size	11.00 mm
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 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 5.0D) Acrijet Green 2.0 (Up to Sph 28.0 D Cyl 5.0D) Acrijet Green 2.2 (Up to Sph 30.0 D Cyl 5.0D)



Acriva^{UD}



UD 613



UDB 625



UDM 611

Scleral Fixation



HAF

Acriva^{UD} BB



BB UD 613



BB UDM 611

Acriva^{UD} BB Toric



BB T UDM 611

