

QUANTUM
CREATING SOLUTIONS

AR & Hard Coat Process Booklet

Crystal Clear Vision: Quantum
Innovations' Advanced Coating
Technologies for Ultimate Clarity,
Durability, and Eye Protection

The Quantum Coating Family

Infrared Guard	COLOR Green or Blue	TYPE AR	MACHINE All AR machines	PAGE 2-3
VALUE	Reflect up to 24% of rays across IR spectrum		TAGLINE Keep Cool And Carry On	

Retinal Bliss DES	COLOR Blue	TYPE Mirror	MACHINE All AR machines	PAGE 4-5
VALUE	Reflects up to 20% HEV on front and backside		TAGLINE Digital Life Without The Strain	

Sentinel Atlas	COLOR Green	TYPE AR	MACHINE FusionM or any ion assist machine	PAGE 6-7
VALUE	Up to 40% more scratch resistant		TAGLINE Made For Everyday Durability	

Sentinel UV	COLOR Green, Gold	TYPE AR	MACHINE FusionM or any ion assist machine	PAGE 8-9
VALUE	Standard AR with 10% more light transmitted		TAGLINE Let The Good Light In	

E.A.T. Hard Coat	COLOR Clear	TYPE Hard Coat	MACHINE Solids and Solvent Spin, Thermal Dip	PAGE 10-11
VALUE	Absorbs over 50% of high energy visible light		TAGLINE Vision Minus The Bad Stuff	

Natural AR	COLOR Achromatic	TYPE AR	MACHINE FusionM or all machine types	PAGE 12-13
VALUE	Reflect your self, not the lens.		TAGLINE Seeing The World Au Natural	

Sentinel Blue AR	COLOR Blue	TYPE AR	MACHINE FusionM or any ion assist machine	PAGE 14-15
VALUE	Standard AR with 10% more light transmitted		TAGLINE Look Your Best In Blue	

Night Driving	COLOR Pink	TYPE Hard Coat	MACHINE Thermal Dip	PAGE 16-17
VALUE	Filter out yellow light, reducing light glare		TAGLINE Enjoy Driving After Dark	

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reflects up to **24%** of rays across the IR spectrum

INFRARED GUARD AR



COLOR	Green or Blue
TYPE	AR
SYSTEM	All AR Machines

Keep Cool and Carry On

Presenting our groundbreaking **Infrared Guard AR**® coating – Engineered to provide exceptional anti-reflection (AR) properties while also acting as an infrared (IR) shield, this coating sets a new standard in visual clarity and eye protection. By effectively reducing lens temperature, it ensures a comfortable and strain-free viewing experience. Its super hydrophobic nature guarantees resistance to water and smudges, and reducing backside UV reflections ensuring your vision remains consistently clear. Step into a world where innovation and protection converge, redefining how you see and experience the world.

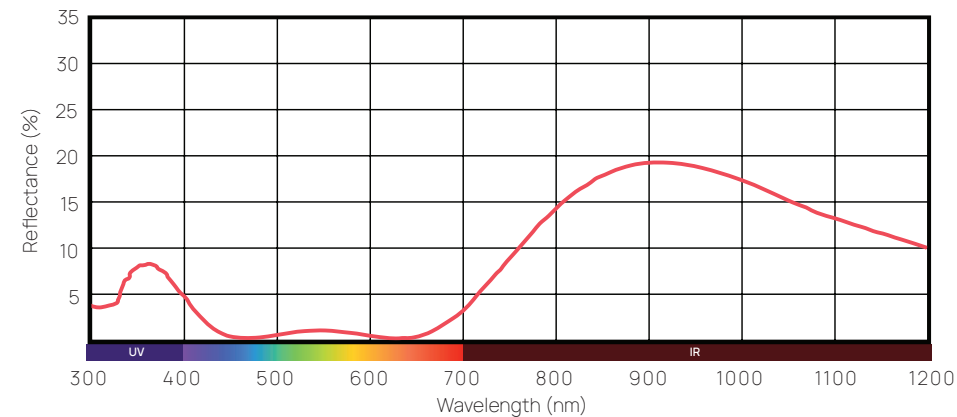
TECHNICAL DATA SPECIFICATION — GREEN

CURED COATING PROPERTIES	VALUE
Peak Reflectivity	< 1%
Peak Wavelength	550
Visible Light Transmission	~98% (w/ AR on CR39)
IR Transmission	~76% (700 nm – 1200 nm)

TECHNICAL DATA SPECIFICATION — BLUE

CURED COATING PROPERTIES	VALUE
Peak Reflectivity	< 2.5%
Peak Wavelength	400
Visible Light Transmission	~98% (w/ AR on CR39)
IR Transmission	~76% (700 nm – 1200 nm)

TOTAL REFLECTANCE, INFRARED GUARD AR



FEATURES AND BENEFITS



- Reduces the surface temperature on the eye and lens.
- Super hydro/oleophobic surface repels water and oil, making cleaning easy.
- Minimizes the risk of scratching with a protective coating.
- Promotes sharper vision and improves low light transmission.
- Easy to clean with minimal streaks and smudges.



reflects up to
20%
HEV
on front and backside

COLOR	Blue
TYPE	Mirror
SYSTEM	All AR Machines

Digital Life Without the Strain

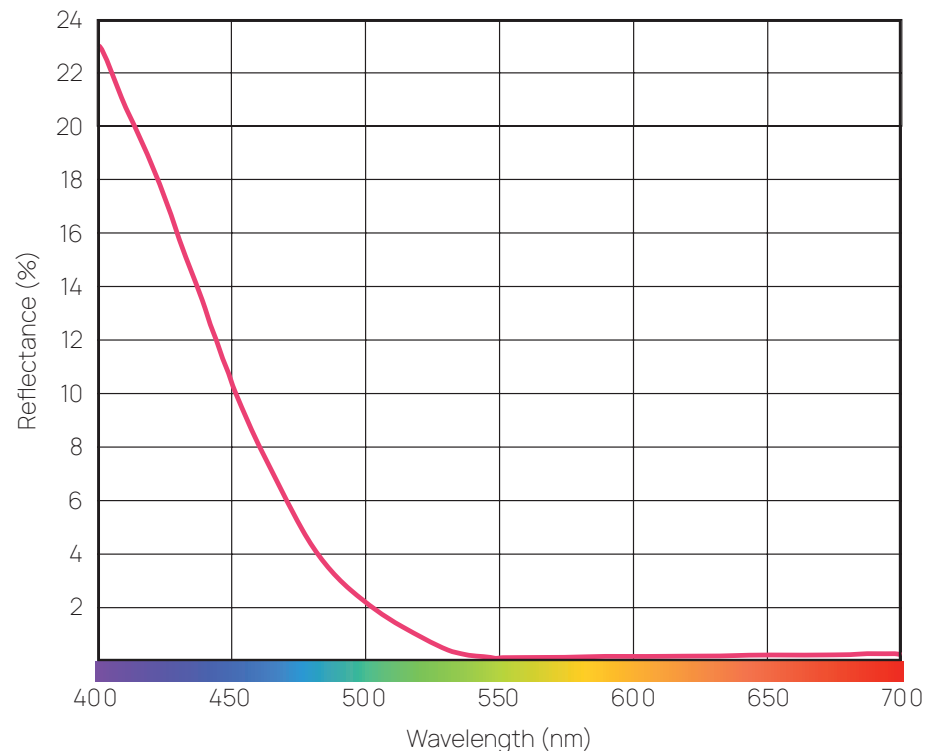
Retinal Bliss DES[®] is an AR coating that provides high energy blue light protection, preventing destructive frequencies from reaching the eye. Retinal Bliss DES[™] includes backside UV protection, blocks the irritating effects of heavy electronic use, and gives the eyes rest from daily exposure.

Over 60% of Americans suffer from Digital Eye Strain (DES), and with increasing amounts of time spent in front of screens, that percentage could increase as well. Keep ahead of the game with a coating to protect yourself from the strain!

TECHNICAL DATA SPECIFICATION — RETINAL BLISS DES

CURED COATING PROPERTIES	VALUE
Peak Reflectivity	< 23%
Peak Wavelength	400
Visible Light Transmission	~95% (DES 5-Layer on CR39)

TOTAL REFLECTANCE, RETINAL BLISS DES



FEATURES AND BENEFITS

- Super hydro/oleophobic surface** repels water and oil, making cleaning easy.
- Reduce UV reflection off lens, minimizing eye strain with **Backside UV Protection**.
- Easy to clean** with minimal streaks and smudges.
- Minimizes the risk of scratching** with a protective coating.
- Creates **less glare** while **increasing light** to the eye.



FEATURES AND BENEFITS



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Super hydro/oleophobic surface repels water and oil, making cleaning easy.
- 

Reduce UV reflection off lens, minimizing eye strain with **Backside UV Protection**.
- 

Easy to clean with minimal streaks and smudges.
- 

Super Scratch Resistant with a more compact, dense film that is especially suited to withstand the rigors of everyday use.

Made for Everyday Durability

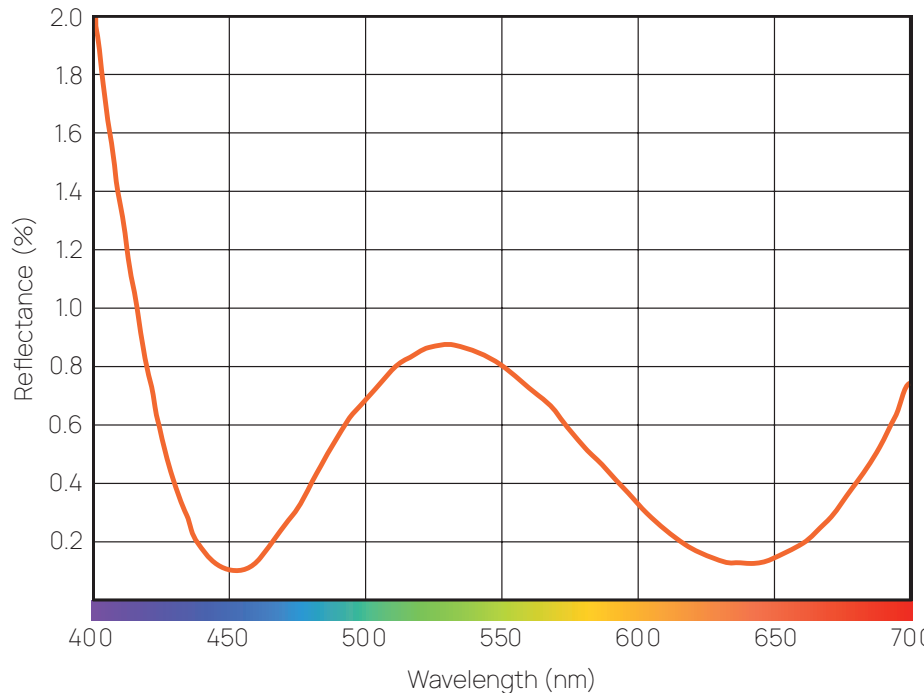
You need lenses that can resist the scratches and smudges of everyday life. **Sentinel Atlas®** is a Light Enhancing Technology (L.E.T.) that combines our adhesion technology with a compact, dense film, meaning Atlas is our most scratch-resistant anti-reflective coating with reduced backside UV reflection. Combining our signature Sentinel anti-reflective coating with our best scratch- and smudge-resistant technology makes Atlas-coated lenses ready for everyday durability.

It's also designed to enhance your visual experience in all lighting conditions. Whether you're navigating the bright lights of the city or enjoying the serene glow of nature, Atlas-coated lenses provide unparalleled clarity and protection, ensuring you see the world with precision and comfort.

TECHNICAL DATA SPECIFICATION — SENTINEL ATLAS

CURED COATING PROPERTIES	VALUE
Peak Reflectivity	< 1%
Peak Wavelength	530
Visible Light Transmission	> 98.8%

TOTAL REFLECTANCE, SENTINEL ATLAS



up to **40%** more Scratch Resistant

SENTINEL ATLAS

COLOR	Green
TYPE	AR
SYSTEM	- FusionM - Machines with ion assist

SENTINEL UV

an average of **10% more** light transmitted vs non-coated lenses



COLOR	Green, Blue, Gold
TYPE	AR
SYSTEM	- FusionM - Machines with ion assist

Let the Good Light In

Sentinel UV® stands as our premium anti-reflective coating, providing essential UV protection alongside a choice of three elegant color variations: green, blue, and gold. With our Light Enhancing Technology (L.E.T.), you not only experience superior visual comfort, sharpness, and minimized glare but also enjoy the confidence to tackle any lighting scenario, from harsh indoor lights to glaring computer screens and night driving flares.

When it comes to choosing between glasses with or without glare, the choice is effortlessly clear: opt for Light Enhancing Technology for an unparalleled visual experience.

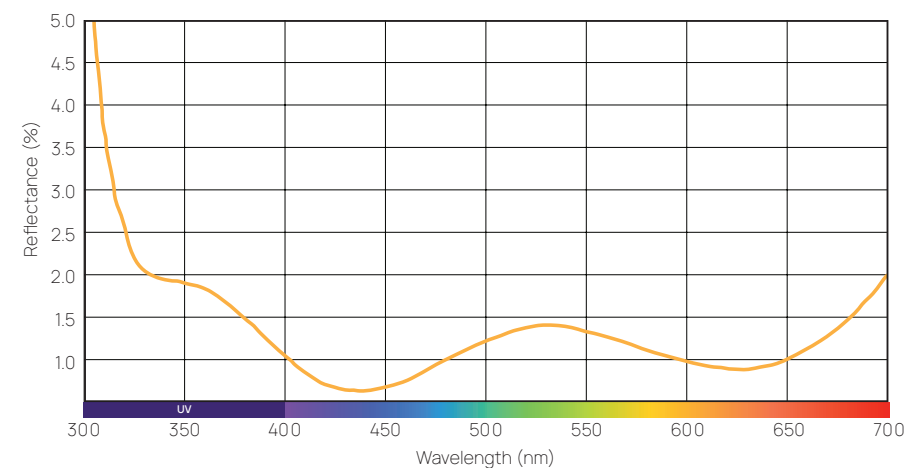
TECHNICAL DATA SPECIFICATION — GREEN

CURED COATING PROPERTIES	VALUE
Peak Reflectivity	< 1%
Peak Wavelength	530
Visible Light Transmission	> 98% (on CR39)
UV Light Transmission	> 80% (on CR39)

TECHNICAL DATA SPECIFICATION — BLUE

CURED COATING PROPERTIES	VALUE
Peak Reflectivity	< 1%
Peak Wavelength	465
Visible Light Transmission	> 98% (on CR39)
UV Light Transmission	> 80% (on CR39)

TOTAL REFLECTANCE, SENTINEL UV



FEATURES AND BENEFITS



FEATURES AND BENEFITS



Super hydro/oleophobic surface repels water and oil, making cleaning easy.



Reduce UV reflection off lens, minimizing eye strain with Backside UV Protection.



The only UVAR available in multiple colors!



Minimizes the risk of scratching with a protective coating.



Creates less glare while increasing light to the eye.

E.A.T. HARD COAT

ENERGY ABSORBING TECHNOLOGY

absorbs over
50%
of high energy visible light



COLOR	Clear
TYPE	Hard Coat
OPTIONS	<ul style="list-style-type: none"> - Solids Based UV Spin - Solvent Based UV Spin - Thermal Dip

Vision Minus the Bad Stuff

Energy Absorbing Technology (E.A.T.)® is a dip applied 1.60 or 1.50 hard coat, which filters out light between 400 and 420nm. A better blue light solution for low light situations because of patented energy absorption technology (E.A.T.) helps your patients see, feel, and perform their best, all while preserving great eye health. This coating is applied and performs very similarly to our standard clear hard coating and pairs excellently with Atlas AR.

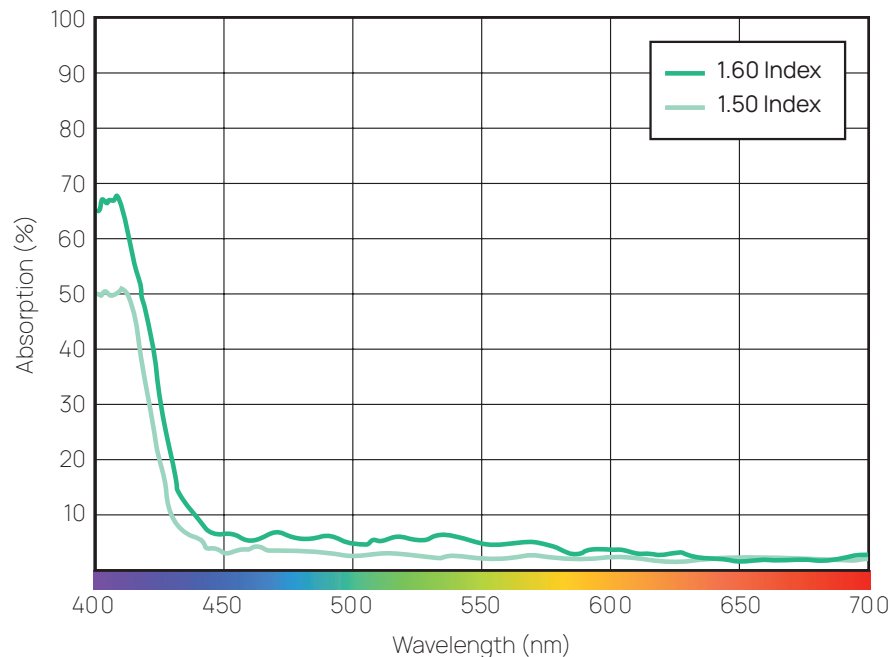
TECHNICAL DATA SPECIFICATION — 1.60 INDEX

CURED COATING PROPERTIES	VALUE
Refractive Index	1.60
Coating Thickness	2.5 - 3.5 µm
Average Absorption 400 – 420nm	~60% (w/AR coating on CR39)

TECHNICAL DATA SPECIFICATION — 1.50 INDEX

CURED COATING PROPERTIES	VALUE
Refractive Index	1.50
Coating Thickness	2.5 - 4.0 µm
Average Absorption 400 – 420nm	~50% (w/AR coating on CR39)

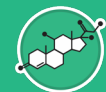
TOTAL ABSORPTION, E.A.T. HARD COAT



FEATURES AND BENEFITS



Absorb 50% high energy light waves without reflection.



Non-disruptive for normal cortisol production.



Promotes sharper vision and improves low light transmission.



Lower inventory by turning any clear lens into a blue light filter. Works with all lens types!



Available in your favorite AR colors.

A completely
CLEAR
AR coating!

NATURAL AR

COLOR	Achromatic
TYPE	AR
SYSTEM	- FusionM - All Machine Types

Seeing the World AU NATURAL

Natural AR[®] is a premium lens treatment that is highly transparent and is ideal when we do not want to change the color of the wearers lenses (for example, with photochromic, polarized lenses or different activities like graphic design and photography where the color perception is key). The result is a lens with an entirely achromatic appearance.

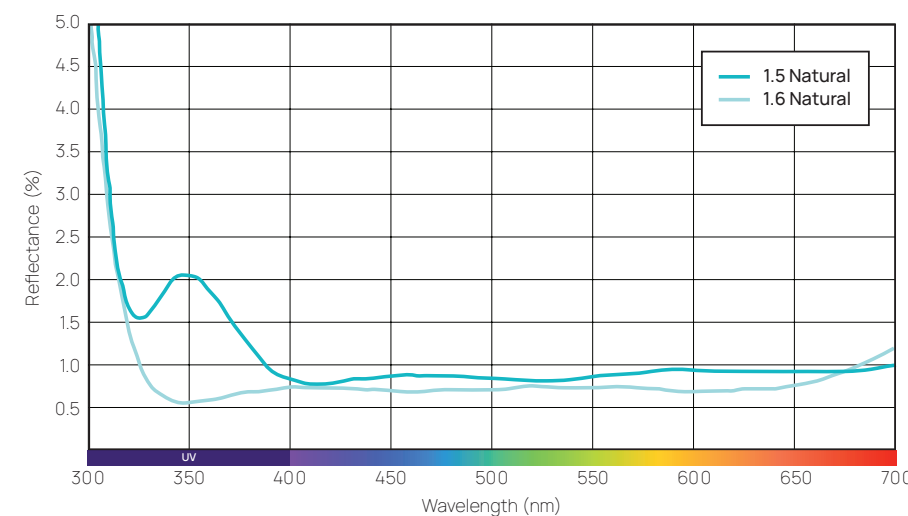
Natural is a Light Enhancing Technology that offers a more aesthetic AR lens, allowing you to see and look better while offering superior cleanability and durability.

TECHNICAL DATA SPECIFICATION — NATURAL AR

CURED COATING PROPERTIES	VALUE
Peak Reflectivity	N/A*
Peak Wavelength	N/A*
Visible Light Transmission	> 98% (on CR39)

*This coating does not reflect any specific color, giving the appearance that there is no AR applied at all. This unique achromatic effect is reflected in the chart below, showing no peak due to the flat curve of the coating.

TOTAL REFLECTANCE, NATURAL AR



FEATURES AND BENEFITS

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Super hydro/oleophobic surface repels water and oil, making cleaning easy.

Reduce UV reflection off lens, minimizing eye strain with **Backside UV Protection**.

Allows **more vibrant color** to shine through with total clarity.

Minimizes the risk of scratching with a protective coating.

Easy to clean with minimal streaks and smudges.

an average of **10% more** light transmitted vs non-coated lenses

SENTINEL BLUE AR

COLOR	Blue
TYPE	AR
SYSTEM	- FusionM - Machines with ion assist

Look Your Best In Blue

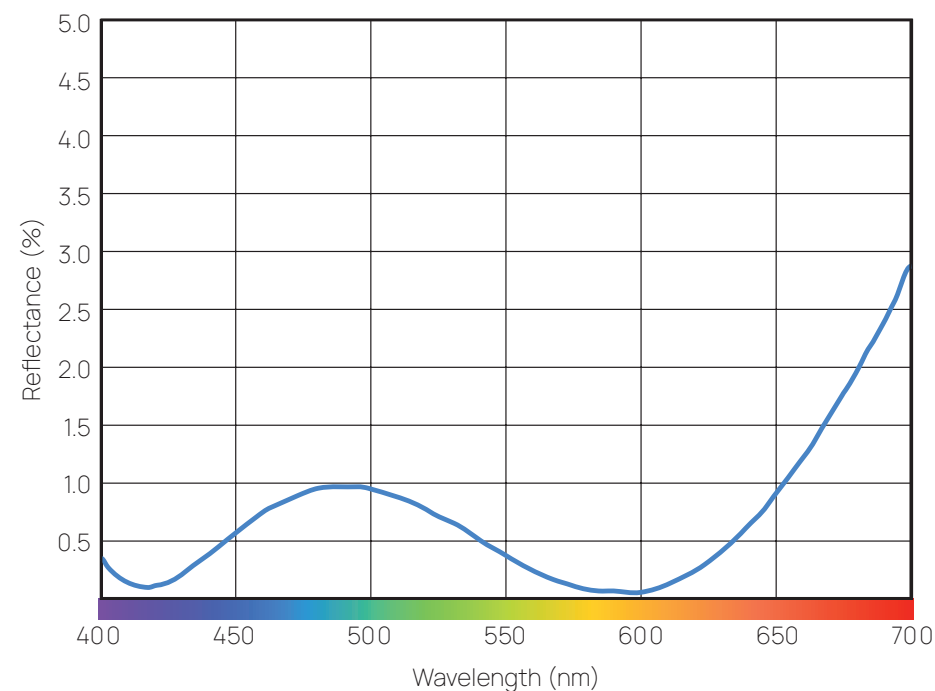
Sentinel Blue's® goes beyond mere protection with its super hydrophobic layers, rendering your lens surface exceptionally slippery and resistant to water, oil, and dirt buildup. This quality is particularly advantageous for anti-reflective coatings, where reduced glare highlights any dirt or smudges on the lenses.

Not only does this coating offer ease of cleaning and scratch resistance, but its subtle blue hue also adds a stylish touch, ensuring you not only look good but also experience lasting comfort for your eyes.

TECHNICAL DATA SPECIFICATION — SENTINEL BLUE AR

CURED COATING PROPERTIES	VALUE
Peak Reflectivity	< 0.9%
Peak Wavelength	490
Visible Light Transmission	> 98% (on CR39)

TOTAL REFLECTANCE, SENTINEL BLUE AR



FEATURES AND BENEFITS



Super hydro/oleophobic surface repels water and oil, making cleaning easy.

Reduce UV reflection off lens, minimizing eye strain with **Backside UV Protection**.

The **blue toned residual hue** reflects a pleasant, subtle blue color.

Minimizes the risk of scratching with a protective coating.

Easy to clean with minimal streaks and smudges.

Enjoy Driving After Dark

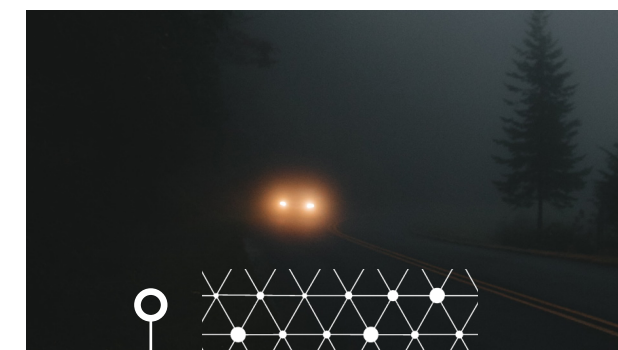
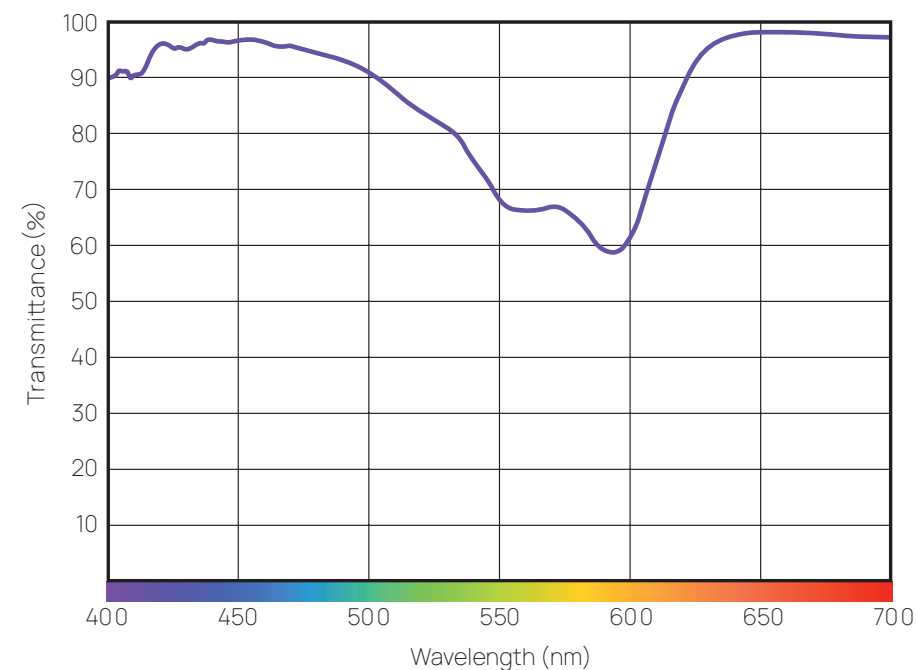
Night Driving Hard Coat filters out yellow light, reducing light glare and improving color saturation of viewed objects (particularly of the primary colors red, green, and blue). The improvement in color saturation, contrast, and rendition look rather striking, particularly at low levels of illumination.

Dip applied 1.50 hard coat filters out light between 565 and 595nm, which reduces light glare and improves color saturation of the viewed objects, particularly of the primary colors red, green, and blue. The improvement in color saturation, color contrast, and color rendition appears to be rather striking, particularly at low levels of illumination. This coating is applied and performs very similar to our standard clear hard coating and pairs excellently with Natural AR.

TECHNICAL DATA SPECIFICATION — NIGHT DRIVING 1.50

CURED COATING PROPERTIES	VALUE
Refractive Index	1.50
Coating Thickness	2.5 - 3.5 μm
Average Absorption 565 - 595nm	~40% (w/AR on CR39)

TOTAL TRANSMITTANCE, NIGHT DRIVING 1.50



FEATURES AND BENEFITS

- Reduces high intensity light flares from light sources.
- Helps reduce light sensitivity and provides eye strain protection.
- Improves color contrast and sharpens vision in low light conditions.
- Lower inventory by turning any clear lens into a night driving lens.

Absorb up to **40%** of yellow light to improve contrast

NIGHT DRIVING HARD COAT

COLOR	Pink
TYPE	Hard Coat
OPTIONS	Thermal Dip

QUANTUM

Quantum Innovations is the global independent leader in thin film technology, and we don't just stick to ophthalmic, either. From AR, mirror, and attenuation (dyes/EAT, etc.) coatings to anti-microbial, anti-fog, and super hydrophobic coatings, our loyal customers know they can count on us. It's not a question of if we can solve their problem. The question is how soon we can get to work.

Ophthalmic: In addition to anti-reflective, mirror, and blue light blocking coatings, and sputter coating equipment, we also offer a wide range of refurbished lab equipment required in an ophthalmic environment.

Medical: From anti-microbial and anti-fog coatings and metallic and dielectric mirrors for dental applications, our advanced research and development is helping improve medical applications of our innovative products.

Tech: Everyday, tech companies are creating solutions in a rapidly changing world. We're keeping pace with the world's brightest innovators, ready to meet the demands of tomorrow.

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