



LOOKING BEYOND THE GRAY OF SUNWEAR

How often have you wanted to go beyond gray to always deliver the best sunlenses in the best color? It's easier than you thought to make the right recommendation.

Sun lens and color choice combines personal style, both yours and your patients and, with knowledge of color and coating, getting to the right choice is easy.

IT'S STYLE AND PERFORMANCE

While most consumers are first attracted to sunglasses because of frame style, discerning sunglass wearers are just as interested in the performance features of the lenses. Thanks to recent advances in lens technology, sunlenses present a great opportunity for eyecare professionals to recommend a combination of benefits to best suit each patient's visual performance needs.

A non-technical explanation of sun lens benefits works best when presenting products to patients. Ask questions about occupation or favorite recreation and zero in on their sun lens needs. For sports, not only consider the sport, but also the conditions in which it's typically played, before prescribing a lens.

Sports enthusiasts have probably done some research and know the technical side of performance so be well versed to talk to them. Color, polarized lenses, AR and mirror coatings all have their uses in sports, but must be considered, ordered and dispensed correctly.

PERFORMANCE IS A HEALTH AND PREVENTION ISSUE

Behind the good looks of sunwear is a requirement for prevention and performance. Prevention means protection from glare, impact, ultraviolet and highenergy visible light, in addition to the lens color and its color filtering ability.





THE TABLES BELOW PROVIDE A REVIEW OF EACH AND DESCRIPTIONS FOR THE ECP AN

PREVENTION KEYS	WHAT IS IT?	WHO NEEDS IT?	PROVIDING PROTECTION
Glare Control	Glare is light that is too bright; makes you squint, turn away and prohibits clear vision. Glare can be from direct or indirect or reflected sunlight. Think overcast to sunny days, sun reflecting off the sidewalk or the snow when skiing. The most intense form is called blinding glare; intense glare off flat surfaces like wet pavement early in the morning while driving to work.	Sunglasses and glare control are critically important for all ages. In particular, seniors have various eye media changes (lens, vitreous, retina) and require good glare control to see best during the day and adapt more easily at dusk. Sunglasses during the day protect from over-bleaching the retina's rods – critical for dark adaptation at night. For teens to adults, all activities can be enhanced with the right color and transmission for sports, driving or recreation. Kids should start early using sunwear for all its potential protective properties.	Sunlenses - Just the right "darkness" is best for glare. That means that it's possible to make lenses "too dark". For example, dark gray lenses on an overcast day or for a senior with a significant cataract are examples of "too dark" lenses. Not enough light is getting through the cataract and what does is being diffused. Therefore, ask questions about intended use and try samples of gray, green and brown of at least two different densities.
PREVENTION KEYS	WHAT IS IT?	WHO NEEDS IT?	PROVIDING PROTECTION
Impact Protection	Lenses can break if hit hard enough by any variety of objects; rocks, baseballs, a bat or flying debris. In the U.S., all lens materials must meet FDA impact requirements (FDA 21CFR801.410). Some lens materials like polycarbonate provide extra impact protection, even with thin centers.	Kids always need high impact lenses to better protect them while they play. Athletes and those in some occupations put them at more risk (cyclists, ballplayers, chemists, gardeners, etc.). Counsel those at risk about the availability and performance of the most impact resistant materials	Polycarbonate lenses are up to 10 times more impact-resistant than glass or plastic lenses, making them the preferred choice for safety glasses, sports glasses, children's eyewear, and for anyone who has an active lifestyle. Polycarbonate lenses are also lighter and less expensive than lenses made of other high index lans materials
PREVENTION KEYS	WHAT IS IT?	WHO NEEDS IT?	
	Remember that ultraviolet (LIV) is all around	Whether you require an Rx (ametrone) or not	LIV light can be well managed with
	during the day and is a well-known health risk. UV radiation is accumulated during a lifetime and contributes to cataract development (UVA), premature aging of the skin on the face and around the eyes. It can cause skin cancers. UV = UVA (315-380nm), UVB (290-315nm), and UVC (<290nm). The ozone layer absorbs UVC. UVB are burning rays, and UVA are aging rays. Both UVA and UVB are the only proven, naturally occurring, causative carcinogen found in the natural environment.	(emmetrope) both need UV protection. It is estimated that 80% of lifetime exposure to UV occurs by age 18, so it's important that parents teach children how to enjoy fun in the sun safely. Teach the same prevention techniques to the non-prescription wearer. Everyone, at all ages, requires UV absorptive sunwear.	eyewear, both clear and sun. Lens materials and treatments are the agents that absorb all of the UV and protect the eye. For 100% UV absorption – use either polycarbonate or materials with indices of 1.6 high index or higher. To be sure, request a transmission chart; there should be no transmission below 380nm.
PREVENTION KEYS	WHAT IS IT?	WHO NEEDS IT?	PROVIDING PROTECTION
High Energy Visible Absorption	 High Energy Visible (HEV) light is blue light, part of the visible spectrum; radiation up to 500nm. Extended exposure to HEV blue light, like UV radiation, can cause damage to the eye and the skin around the eye. The most serious effect is its suggested connection to macular degeneration. Blue light, when accumulated over a lifetime, is of concern because the shortest wavelengths of the visible spectrum contain significant energy. Recently, it has been demonstrated that HEV light is powerful enough to injure human cells, mainly through the production of oxygen free radicals. 	Over time, exposure to the sun's harmful UV and blue light rays, without proper protection can contribute to many long term problems, including: cataracts, macular degeneration, (most common cause of vision loss in individuals over 55), premature skin aging and cancer of skin on the eyelids. The indications are that blue light can contribute to macular degeneration and it is good care to always consider sunlenses that absorb high energy visible radiation.	It's not possible in today's lenses to absorb blue light without the lenses having a colo filter like yellow, brown or orange. To reduce blue light accumulation, choose sunlenses that are formulated to absorb HEV. Polarized polycarbonate lenses can provide more blue protection than ordinar sunlenses.

D THE WAYS TO TEACH CUSTOMERS.

TELLING THE PERFORMANCE STORY

- I can help you with glare control.
- Glare is light that is just too bright or so intense when reflected off windshields or a wet pavement it gets in the way of safe vision.
- Sunglasses are essential and they are available in many colors, darknesses, in almost any prescription.
- Polarized lenses are best because they protect from ordinary bright sunlight plus blinding glare.
- Only polarized sunlenses eliminate blinding glare adding another safety factor to sunwear. They allow you to see objects, people and obstacles that might be hidden in a flash of blinding glare.
- What color have you been wearing? Let's try some colors, shades and polarized samples that can be more effective than your current sunwear.
- Reduce squinting and fatigue with the right sunwear it also helps with those whose migraines are triggered by intense sunlight. Almost everyone with headaches or migraine disease depends on sunglasses.

TELLING THE PERFORMANCE STORY

- For kids, recommend polycarbonate; it combines thinness, lightness and UV absorption with superior impact strength for almost any situation.
- Consider poly for the most impact resistant lenses; more than 10x the FDA impact requirement.
- Polycarbonate is a high index material for anyone wanting thin, light and affordable eyeglass lenses.

TELLING THE PERFORMANCE STORY

- Polarized lenses offer complete outdoor performance and 100% UV protection for both sunny and cloudy conditions, all at a great value.
- Choose Classic Green, Blue, Brown or Gray and get 100% UV protection for your eyes.

TELLING THE PERFORMANCE STORY

- HEV Gray, HEV Brown & HEV Green Polarized lenses block 100% of harmful UVA and UVB rays and provide more blue light protection than ordinary sun lenses.
- HEV Gray, HEV Brown & HEV Green Polarized Prescription sunlenses provide added protection against blue light.
- But unlike "blue blockers," HEV Gray, HEV Brown & HEV Green lenses are designed to block harmful UV light and filter out the blue light spectrum, so colors remain clear and true, so stoplights and other important visual information won't be hard to see.

THE VISION PERFORMANCE OF LENS COLOR AND TREATMENTS

The technology of sunlenses can sometimes be confusing for the consumer so clear definitions from the ECP allow better translation to patients. First, sunlenses are designed to protect from UV and glare and reduce the radiation and light that passes through them.

Transmission spectra demonstrate performance. In Figure A, the transmission curves of the four VISION EASE sunlenses are illustrated. For sunlenses, plano or Rx, they must absorb 100% of the UV, reduce transmitted light to comfortable levels and protect the eye from dust, dirt and flying debris. 100% of the UV is absorbed in all colors.

Visible Light Transmission (VLT) is the measure of visible light that passes through the lens, provides patient comfort in bright light but is also an indication of how dark the lenses appear. For example, standard plastic lenses have a VLT of about 92% (about 4% light is reflected per surface). Those lenses appear clear. Sunlenses should have a VLT of 8-18% for sunglass use (ISO 8980-3), depending on the patient's preference or medical condition. Tinted, polarized lenses all filter light in sunny conditions. Tint dyes allow lenses of any transmission depending on the amount of dye imbibed into the lens surface.

In this example (Figure A) VISION EASE SunRx Gray has a VLT of about 16%. In addition, the Gray transmission curve line is pretty flat across all the colors (from blue to red) letting through about equal amounts for each wavelength. As a result, the lens is gray in color and users see true colors without distorting them.



VISION EASE Coppertone HEV Gray, HEV Brown and HEV Green polarized lenses provide added protection against UV light which may contribute to the development of several common sunlight related eye maladies, including cataract but go beyond UV protection to guard against harmful blue light. Blue light may contribute to the development of macular degeneration, a common sunlight related eye malady.







NEUTRAL DENSITY, GRAY – If patients prefer that there is no color shift when looking through their sunlenses, gray lenses should be chosen.

IMPROVING CONTRAST, BROWN – Brown sunlenses provide an opportunity to increase contrast for higher visual performance in the sun. Brown or HEV Brown transmits less blue light (absorbs more). Since blue light produces scatter, it can make distant objects hazy. Eliminating it sharpens contrast and provides better visual discrimination. This can improve reaction time, important when driving or for the high performance athlete. Since blue light is absorbed and yellow, orange and red pass through, objects viewed through the lens will shift in color towards red-brown.

CLASSIC GREEN LENSES – The availability of Classic Green lenses brings back a popular sun lens color. This version (green transmission curve) is contrast enhancing, would be soothing when worn and can reduce eyestrain in bright sunshine.

HEV GREEN LENSES – HEV Green sunlenses offer enhanced color contrast and are great for golf, tennis, driving and other activities benefitting from vivid color definition.

GLARE-REDUCING BLUE LENSES – Blue sunlenses combine the glare-reducing benefits of polarization with a trendy blue color great for outdoors. Many wearers find blue lenses enhance visibility for tennis and golf in hazy and snowy conditions.

HAZE – Cheap sunlenses may not be completely transparent. Depending on the materials and manufacturing process used, some lenses may have internal haze that can cloud vision. Choose ophthalmic quality sunlenses for crisper vision, available in plano and Rx.

POLARIZATION – Bright light that bounces (reflects) off flat surfaces becomes polarized. Brightness also intensifies and the glare produced is blinding. Only polarized lenses eliminate blinding glare. So polarized lenses can ensure that things in your path, hidden by blinding glare, are seen; they're safer. Polarized lenses also reduce the scatter in the atmosphere outdoors so vision is typically crisper and much more comfortable than ordinary tints. Polarized sunwear works better than tints.

ANTI-REFLECTION – AR is an important part of sunwear. Dark lenses make surface reflections much more visible. A reflection of the wearer's eye, on the back lens surface can be pretty annoying. Add a back surface AR and it's virtually eliminated. Front surface AR improves vision crispness and also reduces reflections of UV from the lens front surface onto the cheeks, brow and other parts of the face reducing sunburn. Suggest AR for sunwear for the highest performance.

MIRRORS – Add a mirrored front surface to change a look, reflect intense light at high altitude or choose specific colors for looks or performance. For example, gold mirrors absorb infrared. Infrared is a component of sunlight and produces heat. Just like the face shields on a spacesuit, a lifeguard's gold-mirrored sunlenses ensure it's cooler behind their glasses; more comfortable at the beach, critical in space. At high altitude where UV and brightness is more intense, mirrors are essential.

ISO STANDARDS – ISO 8980-3 categorizes lenses into 5 categories (See figure C). All VISION EASE sunlenses fall into category 3.

TRAFFIC SIGNALS – Sunglasses are critical for driving, especially early in the day and late in the afternoon when the sun is low. Good driving requires good color recognition for red, yellow and green traffic signals. Sufficient red wavelengths are passed by each of the lenses so red lights appear red whether the driver is wearing VISION EASE SunRx Gray, Brown and Classic Green or VISION EASE Coppertone HEV Gray, HEV Brown and HEV Green lenses.

PUTTING IT ALL TOGETHER

Helping patients make the correct choice is an important part of every ECPs job; after all, there are so many good products to choose from. Sunwear is style, protection, prevention and performance. Choose the style that adds new fashion and dimension to the patient.

Be sure it meets the looks they want or works for the sports intended.

Then, protect for glare by recommending the sun lens color and density that meets prevention needs. Enhance contrast with green and brown, add soothing comfort with green, deliver true colors with gray and reduce glare with blue. Protect from everyday hazards using polycarbonate as your standard and add polarized to eliminate blinding glare.

Deliver this protection in prescription as well as plano. Non-prescription sunglasses have the same mandate to deliver style, protection and performance.

Which frame? Be sure it's large enough for good coverage of the eye and surrounding area. By choosing materials like polycarbonate, lenses are automatically thinner, lighter and durable enough for all frames including 3-piece rimless and semi-rimless.

Polycarbonate avoids the plastic lens edge flake problems sometimes seen on semi-rimless.

(ALL VISION EASE SUNLENSES FALL INTO CLASS 3)

(FIGURE C)



CONCLUSION

Today's sunlenses are loaded with technical features and experienced eyecare professionals and retailers have all the tools to explain sun lens benefits that work best for patients.

Answer any occupation or recreation need and zero in on their sun lens style. Meet all performance needs for protection from glare, impact, ultraviolet and high-energy visible radiation, in addition to lens color preferences. With all these tools in your pocket, see through the "gray", choose the best sun lens and color needed – you have it all.





SUN STYLE AND PERFORMANCE GUIDE

MATCH COLOR WITH FASHION AND FUNCTION

Consider hair color and skin tone, frame material choice, sports or recreation. Also consider all the ways to best reduce glare, provide protection from impact, UV and blue light radiation.

SOME GUIDELINES

• **Brown/Amber, Polarized:** Adds contrast, can help to minimize eyestrain.

Best for high-glare sports like skiing and boating. Excellent choice for driving; reduces the glare of scattered light from the sky, windshields, smog and haze.Greens appear greener and reds are redder.

- **Green:** Enhances contrast in low light and can reduce eye strain in bright light. A classic multi-use color for everyday wear. Great with tortoise color and demi-amber frames.
- **Gray:** A neutral color that provides truer color perception than other sunlens colors. Gray is a general-purpose color preferred by many patients.

Looks great in metal frames – match gray with the variety of frame finishes.

- **Blue:** Reduces glare and enhances visibility for outdoor activities such as tennis and golf.
- Anti-Reflective Lenses: Dark lenses make reflections much more visible, add AR to virtually eliminate them.

HEV GRAY / HEV BROWN / HEV GREEN THE PREMIUM CHOICE

They go beyond UV protection to guard against harmful high energy or blue light. Scientific studies have shown that blue light may contribute to the development of macular degeneration, a serious eye disease.



The Skin Cancer Foundation recommends this product as an effective UV filter for the eyes and surrounding skin.

BY SPORT

SNOW – Snow reflects sunlight and UV so darker lenses, UV absorption, polarization and mirrors all are recommended.

- Blue wavelengths are scattered the most and create haze, brown absorbs blue and reduces the scatter that snow and ice create.
- Brown and green will highlight the changing contours and textures of the snow surface, especially as the lighting conditions change during the day.
- Some professional racers prefer polarized lenses; it shows ice darker than snow, others prefer tints and mirrors.

WATER – Reflected glare reduces visual acuity and depth perception so polarization is an absolute must. Select colors to enhance visibility and style.

- Gray lenses are the general-purpose lenses for boaters, but fishermen benefit from contrast as well.
- Choose gray colors if the fish will be in dark or deep water; browns for streams. The color of the lens lets that color through and highlights other colors.

CYCLING – Road surface problems must be seen well before they become a hazard. Mirrors reduce reflections.

- Brown for improved contrast and a lens that is more adapted to an overcast morning as well as the full sun of the afternoon.
- Polarized to eliminate blinding glare for safety.

GOLF – Following the ball is critical so balance background with ball color. Colors that absorb blue add contrast to ball color. Polarization is a personal preference, but helps with water traps for finding the ball, something no golfer wants to be reminded of.

- Brown for comfort and a lens good for changing light conditions.
- Blue for glare-reduction.

TENNIS, SQUASH – Impact safety recommends the most impact resistant lenses be selected. Sunshine and court reflections also suggest darker lenses with 100% UV absorption.

- Seeing the yellow tennis ball against a varied background suggests colors that let the yellow through. Brown filters the blue and highlights yellow.
- Gray lenses provide great all-purpose comfort while balancing all colors equally for bright days on the court.







COLOR	SPORT/RECREATION	PERFORMANCE ATTRIBUTES	TECHNICAL ATTRIBUTES
HEV GRAY	 More contrast enhancing than other gray sun lenses For the patient that prefers gray tint but wants higher definition Day baseball games or golf Polarized, great for water sports General-purpose, true color sunlens 	 Eliminates 99.5% of reflected glare Blocks 100% of harmful UVA and UVB rays Provides added protection against blue light 10X the impact resistance of ordinary sunlenses 4X more scratch resistant than ordinary sunlenses Colors remain clear and true 	 Blocks 100% UV radiation HEV attenuation Absorbs blue wavelengths to reduce scatter and the effects of haze Gray VLT 11% Red/Green/Yellow traffic signal visibility
HEV BROWN	 General-purpose, high contrast sunlens Great for driving, golf, hunting, skiing, cycling Try it for streams or river fishing Polarized, great for water sports 	 Eliminates 97% of reflected glare Blocks 100% of harmful UVA and UVB rays Provides added protection against blue light 10X the impact resistance of ordinary sunlenses 4X more scratch resistant than ordinary sunlenses Colors remain clear and true 	 Blocks 100% UV radiation HEV attenuation Absorbs blue wavelengths to reduce scatter and the effects of haze Brown VLT 14% Red/Green/Yellow traffic signal visibility
HEV GREEN	 Provides improved contrast and comfort Can reduce eyestrain in bright light Great for cycling, baseball, golf, motorcycle Vivid color definition vs. gray and brown 	 Eliminates 99% of reflected glare Blocks 100% of harmful UVA and UVB rays 10X the impact resistance of ordinary sunlenses 4X more scratch resistant than ordinary sunlenses 	1. Block 100% UV radiation 2. VLT 8.75% 3. Red/yellow/green traffic signal visibility
CLASSIC GREEN	 Provides improved contrast and comfort Can reduce eyestrain in bright light Great for cycling, baseball, golf, motorcycle Vivid color definition vs. gray and brown 	 Eliminates 99% of reflected glare Blocks 100% of harmful UVA and UVB rays 10X the impact resistance of ordinary sunlenses 4X more scratch resistant than ordinary sunlenses 	 Block 100% UV radiation VLT 15% Red/yellow/green traffic signal visibility Blue absorption for higher contrast
BLUE	 Provides glare-reducing benefits Great for tennis, golf Polarized, great for hazy or snowy conditions 	 Eliminates 99% of reflected glare Blocks 100% of harmful UVA and UVB rays 10X the impact resistance of ordinary sunlenses 4X more scratch resistant than ordinary sunlenses 	1. Block 100% UV radiation 2. VLT 11.76% 3. Red/yellow/green traffic signal visibility
GRAY	 Neutral gray color for true color rendition Perfect for bright light Great for cycling, baseball, fishing, motorcycle An all around general purpose sunlens 	 Eliminates 99% or more of reflected light Blocks 100% of harmful UVA and UVB rays Balanced color absorption to be true to colors 10X the impact resistance of ordinary sunlenses 4X more scratch resistant than ordinary sunlenses More blue for a blue-gray color without the red 	 Blocks 100% UV radiation VLT 16% Color neutral Red/yellow/green traffic signal visibility
BROWN	 Improved contrast and comfort Perfect as an overall lens when days are a mixture of overcast glare and bright sunshine Great for cycling, driving, fishing, golf, motorcycle, skiing 	 Eliminates 99% of reflected glare Blocks 100% of harmful UVA and UVB rays 10X the impact resistance of ordinary sunlenses 4X more scratch resistant than ordinary sunlenses 	 Blocks 100% UV radiation VLT 12% Red/yellow/green traffic signal visibility Blue absorption for high contrast
MIRRORS	 Gold and Silver - Perfect for hot and bright days where surfaces reflect sun light like snow, sand, asphalt or concrete Gold mirrors make lenses cool feeling while cool looking, they absorb infrared Silver mirrors reduce UV and visible light by blocking very bright reflected light Blue mirrors for looks and to reduce blue light transmission Polycarbonate lens absorbs UV Polycarbonate lens for impact protection 	 BLUE Minimal affect on through visibility, reduces blue transmission SILVER High reflective surface properties GOLD Reflects near and far infrared 	BLUE • VLT 10% SILVER • VLT 10% GOLD • VLT 9%



©2016 VISION EASE. All Rights Reserved. SSPG1116