


Rx-able Eyewear for the Great Outdoors

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Essilor Stylistic

A woman with dark hair, wearing dark sunglasses and a dark leather motorcycle jacket over a light-colored hoodie, is riding a motorcycle. She is looking forward and slightly to the right. The background is a bright blue sky with some clouds. A prominent rainbow lens flare is visible on the left side of the image, partially overlapping the woman's jacket. The motorcycle's handlebars and a side mirror are visible in the foreground.

With the optical industry ever-changing, it can be hard to keep up with all the products available for our consumers, especially coming into the warmer months in Australia. In this article, Nicole Grasso refreshes and enriches your knowledge on lenses for outdoor use so you can make the best recommendations to your patients.

SUN TINTS

Sun tints can be an easy discussion to engage in if the customer knows what they want. Even if they don't know what they're missing out on, it doesn't take much to introduce the concept of enhancing their vision for outdoor activities with a tailored solution.

But how do we know what lens coatings and coloured filters will optimise a patient's vision?

We could consider the colours in the visible light spectrum and see how they have an influence over sunglass tints and protection from ultraviolet (UV) light. When selecting a grey solid tint, all UV radiation is absorbed up until 350nm. Grey absorbs all colours on the spectrum equally, and so does not distort their appearance. This makes a grey tint ideal for someone who finds it important to maintain the integrity of natural colours in the environment, such as an outdoor photographer.

A green sunglass tint will absorb all UV radiation up until 365nm, slightly more than a solid grey lens. A green sunglass lens will also absorb more of the red end of the colour spectrum than the middle colours. This will have some effect on the relative appearance of colours. Reds, oranges, and browns will appear to be washed out and duller than yellows and greens.

A brown sunglass tint transmits more of the red end of the spectrum than the violet end. Like the green sunglass tint, it absorbs around 360nm of UV radiation. Colours from the violet end of the spectrum – green, blue, and violet – will appear to be duller in comparison to reds and browns.

In summary, the colour of the tint that you select is going to favour those colours close to it on the spectrum and absorb more of the colours further away from it.

SPORTS TINTS

When considering specific outdoor sports tints, it is important to remember that different tints can have various benefits. However, there isn't a specific 'best' tint for everyone, as personal preferences and individual needs can vary. Here are a few things to keep in mind:

- Grey or smoke-coloured lenses provide a neutral colour balance. This can maintain accurate colour perception while reducing brightness, making them a versatile choice.
- Copper or brown tints enhance contrast and depth perception. This can be beneficial in low-light conditions or when used for an activity such as golf with dense foliage around. These tints tend to enhance the visibility of the ball against the green background. They can also help cyclists distinguish road irregularities and potholes.

- Rose-coloured tints can improve contrast and can be useful in low-light or overcast conditions. They can also enhance visibility in shaded areas or under trees.
- Orange or yellow tints are known to enhance depth perception and increase visual clarity in low light or fog. They can be helpful for people spending time outdoors at dusk or early in the morning.

Ultimately, the best sunglass tint for enhancing outdoor sports vision is going to depend on the conditions they will be worn in, personal preference, and specific needs of the customer.



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PHOTOCHROMIC LENSES

Photochromic lenses contain unique molecules that react when exposed to UV light. When exposed to UV rays, these molecules undergo a chemical reaction that causes lenses to darken. When UV light is reduced or removed, the lenses gradually return to a clear state.

Photochromic lenses can adapt to changing light conditions within minutes. However, the speed of adaption varies depending on the specific lens technology and temperature. In colder temperatures, the molecules slow down and take longer to react.

Photochromic lenses offer protection against harmful UV rays from the sun as they shield the eyes from both UVA and UVB rays. This protection is beneficial in reducing the risk of eye conditions caused by long-term exposure to UV radiation.

The ideal target market for photochromic prescription lenses varies, however some key demographics and characteristics include people who frequently engage in outdoor activities, such as hiking, cycling,

skiing, or golfing; professionals with variable lighting environments; and individuals with light sensitivity.

There are a variety of photochromic tints available, allowing patients to customise their eyewear. While the most common tint is grey, companies like Younger Optics have an extensive range of colours available including brown, graphite green, amber, emerald, sapphire, and amethyst.

The biggest downside to photochromic lenses has always been their inability to fully darken in the car due to UV protection on the windscreen, which generally filters out 98% of harmful UV rays. While that's great news for our skin, it's not so effective for protecting the eyes against glare.

Transitions XTRActive new generation is one of the only photochromic lenses to achieve a category 3 level darkness, and it can respond to visible light as well as UV light. This eliminates the issue of a photochromic lens not responding in the car. The lenses change to three different colours and lighten and darken to suit the conditions, using a combination of polarising and photochromic technology. It's a great choice for people who spend a lot of time driving.

The lightest Transitions Drivewear colour is olive green, which assists in low-light and overcast situations. The olive-green tint, in combination with lens polarisation, provides higher contrast. The copper colour removes excess light and enhances traffic signal recognition by emphasising reds and greens. In bright sunlight, the lens transforms to dark brown and blocks 88% of bright light, allowing just 12% of light to pass through the lens.

POLARISING LENSES

Polarised lenses are a fantastic option for people who enjoy spending time outside. Light becomes plane polarised when reflected at an angle off a surface, creating blinding glare. Polarising filters combat this by absorbing the light that is vibrating in the horizontal plane and transmitting light vibrating in the vertical plane.

Polarising filters in ophthalmic sunglasses enhance contrast and depth. An ideal recommendation for anyone around water, they take away blinding glare on top of the water's surface, allowing the wearer to see in detail beneath the surface.

Polarising is also best for people doing daytime driving as the polarising filter cuts through reflected glare from asphalt, allowing the driver to notice potholes and abrasions sooner. However, polarising lenses should never be dispensed to pilots as the polarising filter will stop them from noticing the reflected light off other planes in the sky.

Polarised light is constantly incorporated in modern day technology. LCD screens use polarising filters to create black 'light', this can become an issue when wearing polarised sunglasses, as the combination of the two polarised planes will black out the screen, resulting in the wearer not being able to view the screen. Technology is always developing so this is not as prominent of an issue as it once was, but customers need to be aware that this may happen when viewing digital screens at train stations and when using other digital instruments.

MIRROR COATING

Mirror-coated sunglasses significantly reduce glare. A mirror coating reflects intense light away from the eyes, preventing excessive brightness from reaching your vision. By reducing glare, mirror-coated sunglasses enhance visual comfort. This makes them ideal for outdoor activities such as a day at the beach, sports or driving.

It's worth noting that mirror-coated sunglasses may have slightly reduced visible light transmission compared with non-mirror-coated lenses. So, if your patient requires a high level of clarity in

low light, they might be better without the mirrored lens. However, for bright outdoor environments and overall eye protection with a unique look, mirrored lenses might be the solution they are looking for.

While mirror-coated lenses offer many benefits, there are a few disadvantages to be aware of:

- The mirror coating is typically applied to the outer surface of the lens, which means it can be more susceptible to scratches and damage,
- The reflective nature of the mirror coating can make smudges and coatings more apparent. This can mean they need to be cleaned more frequently,
- Care needs to be taken while cleaning, so patients should be cautioned against using abrasive materials that may damage the mirror coating.
- There are limited prescription options. Typically, mirror lenses are available in a 1.5 and 1.59 index, restricting suitability for many optical prescriptions.

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Nicole Grasso is a trainer at the Australasian College of Optical Dispensing and has worked in the optical industry since 2015. A qualified optical dispenser (Certificate IV in 2017), she completed her Certificate IV in Training and Assessing in 2021.

Reference

Wilson, D., Daras, S., Practical Optical Dispensing (Third Edition), 2014.

Photochromic and Polarised Lens Options

Zeiss AdaptiveSun

Zeiss AdaptiveSun are sunglass lenses designed to automatically adjust their colour intensity depending on UV exposure due to photochromic properties in the lens material. From dark to darker, Zeiss AdaptiveSun provides full UV protection and convenience. Zeiss AdaptiveSun is available in grey, brown or pioneer, either with a full or gradient tint and polarised.

Contact: Zeiss Account Manager

PhotoFusion X by Zeiss

Zeiss PhotoFusion X is an all-in-one photochromic solution. The lens material uses faster dye compounds and a speed-optimised carrier matrix. Zeiss PhotoFusion X lenses darken up to 60% faster than the previous generation of Zeiss PhotoFusion and have up to 2.5 times faster fade-back indoors.¹ Offering unique blue light protection that is embedded in the lens material, and the Zeiss promise of full UV protection both outside and indoors.

Contact: Zeiss Account Manager

References

Analysis by Technology and Innovation, Carl Zeiss Vision GmbH, DE 2021 in accordance with ISO 8980-3. Based on the average speed (%T/min) of activation from clear state to 30%T at 23°C in grey 1.60 index and polycarbonate in HC only form.



Zeiss AdaptiveSun



PhotoFusion X by Zeiss