



Prizm™ Lens Technology

By Boyd Wilson (Training Manager of Oakley North America)

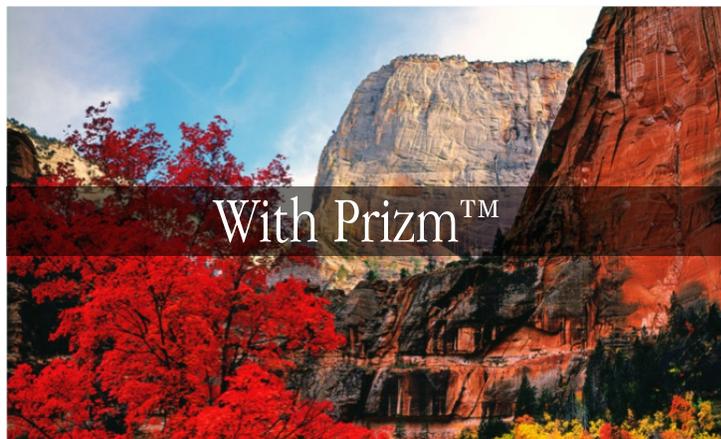
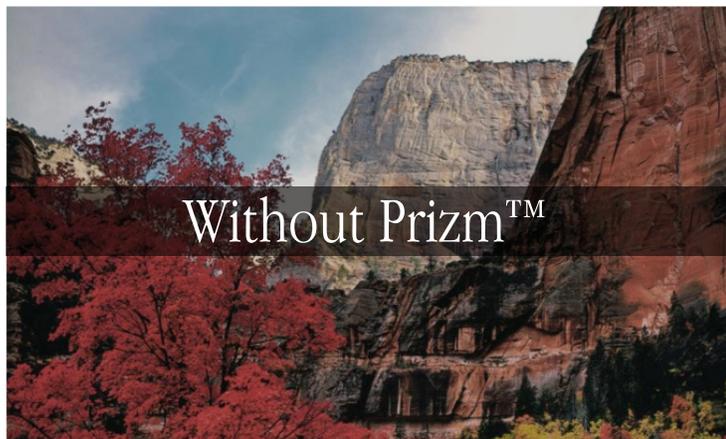
A Heritage Of Innovation

At Oakley, we build for the brave - those who defy convention, derail the idea of what is impossible and disrupt the kind of thinking that makes the rest of the world ordinary. Our authenticity comes from world-class athletes who rely on our products because they demand the best and refuse to compromise. We build the best – for the best.

Our story starts in 1975 with a mad scientist named Jim Jannard who went into business for himself. Jim started with the simple idea of making products that break the status quo and perform better. With \$300 he invented a new kind of motorcycle handgrip with a unique tread and a shape that stuck to a riders hand when it got wet due to a special material he nicknamed “Unobtainium”. This grip debuted to enormous success and the birth of the Oakley business.

Jim went back to his lab and applied his disruptive thinking to motocross goggles, creating the O Frame. From there, he started reinventing sunglasses for sports where he used innovations from his previous inventions to create “Eyeshades®,” a design that started an evolution of eyewear from a generic accessory to a vital piece of sporting equipment. Since then, decades of innovation brought new product technologies, blends of science and art that have been awarded more than 800 patents worldwide and defined the sports eyewear market to where it stands today.

This same mentality and a brand ethos that ‘everything in the world can, and will be made better’, brought about the introduction of Oakley Prizm™ lenses in 2014. 15 years in the making, Prizm™ is a revolutionary lens technology grounded in decades of research and innovation, that fine-tunes individual wavelengths of light to enhance details for an optimized viewing experience. Landscapes that would normally be washed out, dull or flat with other lenses become defined, vibrant and vivid, revealing nuances that would normally be missed by the naked eye. Prizm™ lenses are specially engineered to provide greater richness in one’s visual experience so athletes can perform better. For Oakley, Prizm isn’t simply a technology, it’s a way of life. It allows wearers to live life in a brighter, more colorful world. The benefits of this revolutionary technology help continue to push the progression of sports within the brand.



What is Oakley Prizm™?

Emphasizing colors where the eye is most sensitive to detail, Prizm lens technology helps improve performance and safety by providing ultra-precise color tuning, designed for specific environments.

By fine-tuning wavelengths of light, Prizm lenses reveal details that would typically be missed by the naked eye. Whether on the mountain, road, water, field or course, Prizm lenses allow wearers to see details more clearly, resulting in an enhanced experience.

Standard lenses are designed to protect your eyes from UV light while making everything darker, which leads to a lack of contrast and detail. In comparison, Prizm™ lenses still offer the same UV protection (using Oakley's Plutonite® lens material) while making colors appear more vivid, enhancing contrast and sharpening details. Each Prizm lens tint is fine-tuned for specific environments designed to sharpen visual perception to help you see more clearly and react faster, enhance color recognition to help you quickly spot what you need to see and optimize your ability to better see the important moving objects in your periphery.

How is Prizm™ made?

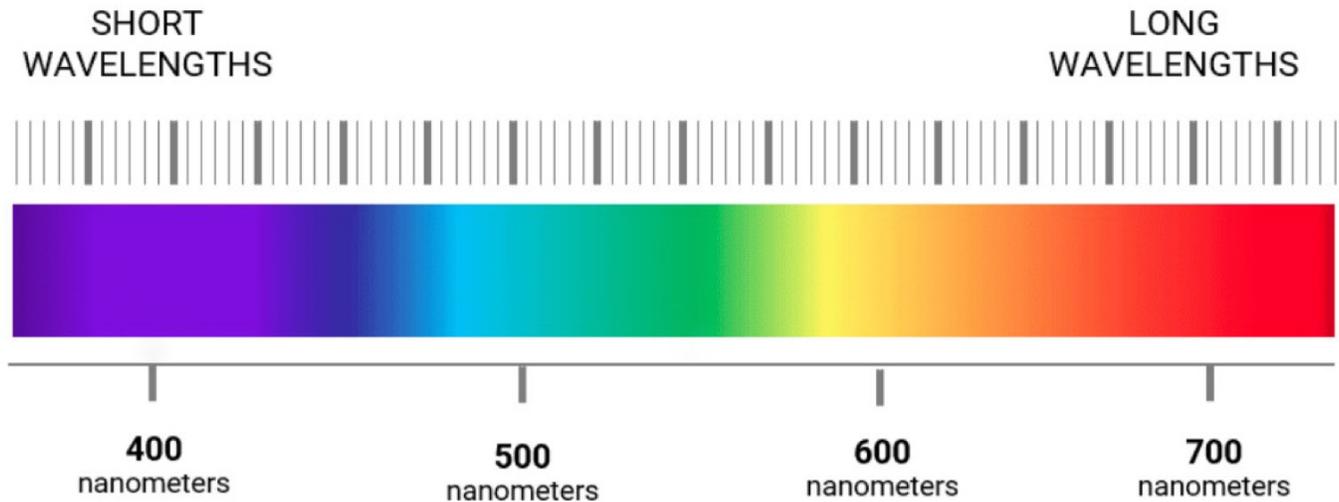
Using a proprietary mix of lens dyes, Oakley can engineer Prizm lenses that intensify the vital colors and reduce non-vital colors to create color, contrast, and detail. Each Prizm lens is tuned to enhance visual acuity for a specific environment or sport.

To identify and measure key colors for performance in each environment, the Research and Development department at Oakley collect data using a hyperspectral camera. This type of equipment measures the wavelengths of light reflecting off of surfaces in an environment. This allows our engineers to understand which wavelengths to leverage, along with our eye sensitivities, to create each lens profile.

How Does Prizm™ Work? The Science Supporting Prizm™

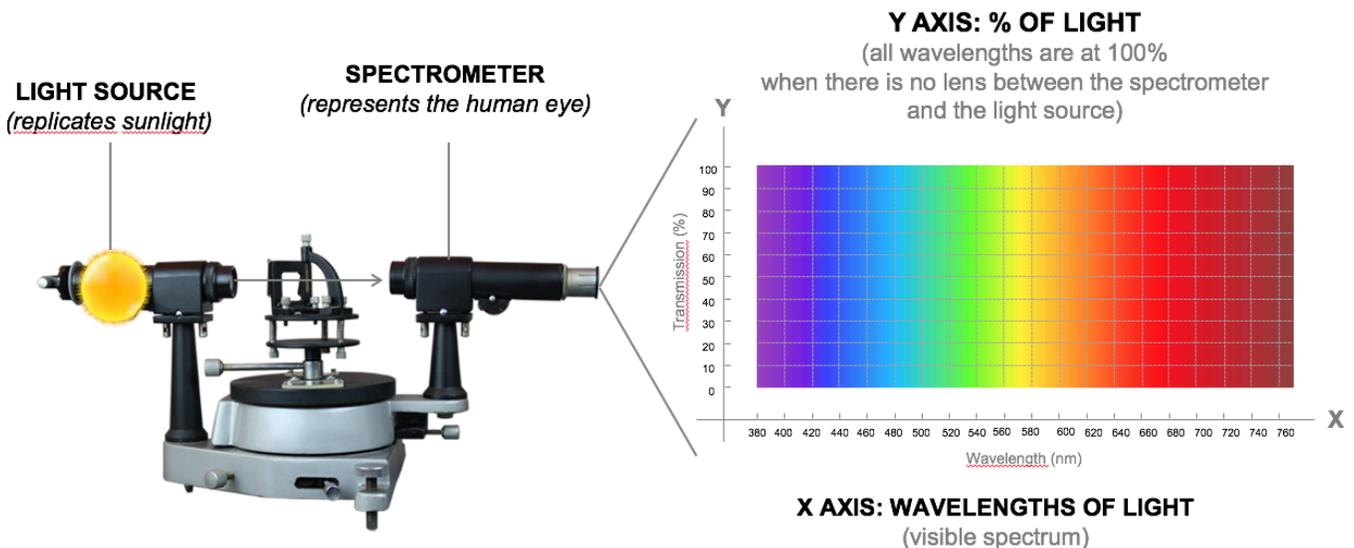
HOW OUR EYES SEE COLOR.

To understand Prizm™, we need to first understand how our eyes see color. The visible light our eyes see is made up of a spectrum of color wavelengths. Light receptors within the eye absorb these wavelengths and transmit messages to the brain to produce the colors we see. The typical human eye detects wavelengths from about 400nm to 700nm. All Oakley lenses block out Ultraviolet light beneath 400nm to protect the eyes from these harmful rays, but within the visible color spectrum, Prizm™ can tune light differently than traditional lenses.



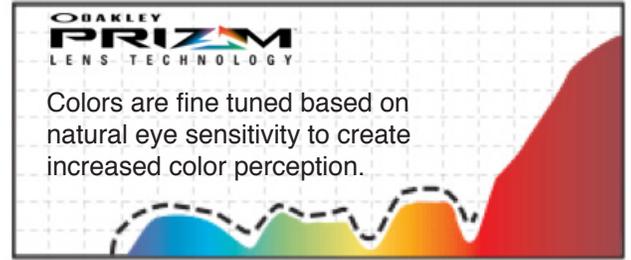
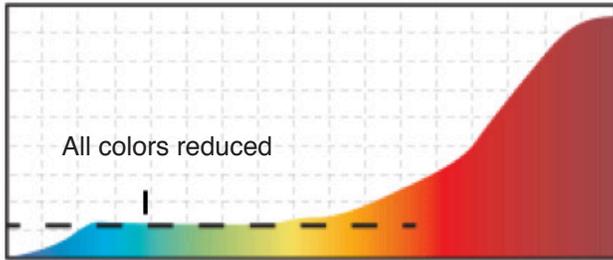
WHAT IS A SPECTROMETER?

A spectrometer is a scientific tool used for measuring wavelengths of light. With this tool, Oakley engineers can measure the amount of each individual wavelength of light passing through a sunglass lens. The test is simple, place a pair of sunglasses between the spectrometer and the light source and the equipment measures the percentage of each wavelength passing through the lens.



If a non-contrast lens is placed between the light source and the spectrometer, it shows a smooth curve, demonstrating how the lens filters light evenly across the spectrum. If a Prizm lens is placed between the light source and spectrometer, it will show light being filtered in a very different way, with sharp peaks and dips, which are intentionally designed based on two key principles. The first is our eye's natural color sensitivity - we filter out light where we're less sensitive and bring in more light where our eyes are more sensitive. This helps us separate colors, creating contrast and vividness. The second factor is the colors that are important for that environment and activity. We leverage the important colors in each environment (using the hyperspectral camera) to build contrast where we need it most, which gives us more detail and depth perception.

Standard lens vs. Oakley Prizm™ lens



Conventional sunglass lenses are like the volume knob on a stereo. They turn down all the wavelengths of sound together, with no fine tuning. Prizm allows us to have precision tuned color similar to how a stereo equalizer lets you adjust sound precisely, increasing or decreasing the bass and treble in specific parts of the spectrum. That's what Prizm™ does with light, precisely tuning each part of the spectrum with specially engineered lens tints tailored for specific sports and environments.

Prizm™ VS Polarized

Prizm™ and polarized are different technologies that address different visual issues. Polarized technology is designed to block glare. Prizm™ technology is designed to enhance color, contrast, and detail. In certain situations, cutting glare is necessary. The most commonly discussed is how cutting glare reflecting off water helps you see what's under the surface. But glare is not always an enemy and in certain situations it can even be a performance cue. Glare off a golf ball can help you track the ball in flight. Glare reflecting off the road can help you spot hazards like slick, wet or oily surfaces. Glare reflecting off the snow can indicate an icy patch. Our lens designers understand this delicate balance and the effect a polarized vs non-polarized lens will have on a specific sporting environment and develop our Prizm™ lens program accordingly. In some cases, Oakley combines both Prizm™ and Polarized to give you the benefits of both technologies. All Oakley Prizm™ fishing lenses are polarized as well as a variety of Prizm Everyday lenses which are available in polarized and non-polarized options.



No Lens



Polarized
Reduces Glare



Prizm™ Polarized
Enhances color and Reduces Glare

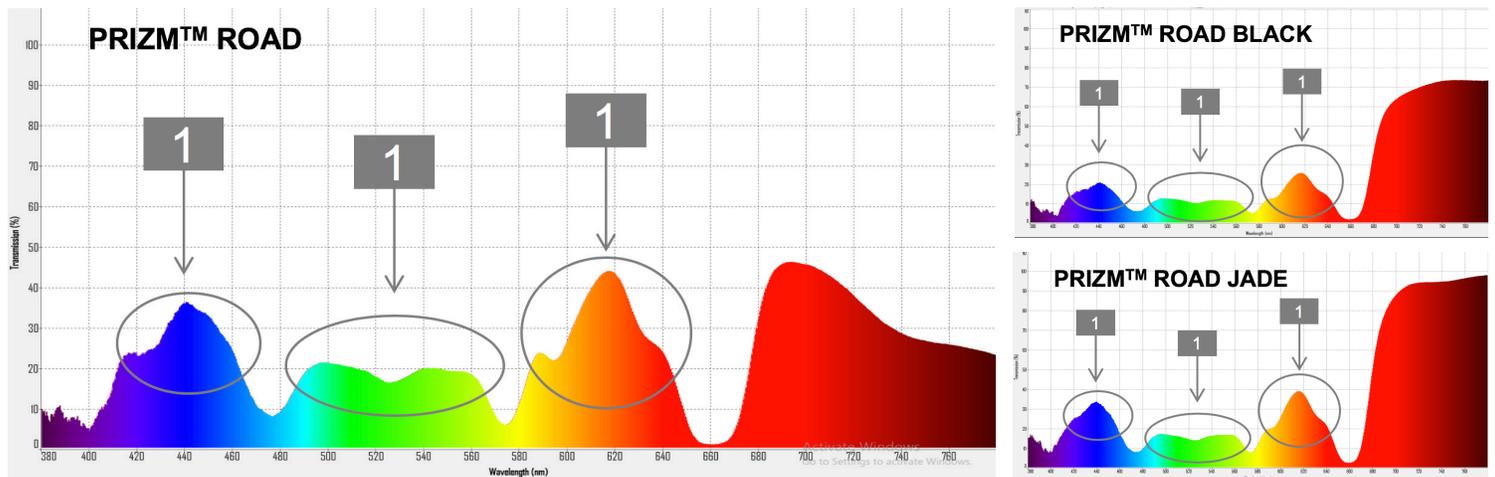
Prizm™ For Sport Environments

Oakley's passion comes to life through athletes who choose to perform in our products on the biggest stages in sports. Athletes inspire our innovation, test our products and wear them all the way to the podium. We analyze the demands of each sport to engineer lenses designed for each specific environment. Prizm Sport lenses accentuate specific nuances in sport environments to increase contrast and detail allowing athletes to see more, react faster and perform better. Our motto? If it's not good enough for the world's best, then it's not good enough.

Prizm™ Road

Endurance athletes have seen it all, and with inferior lenses, they haven't seen it well. Dirt, cracks, sealant and other hazards pop up out of nowhere and force them to make split-second decisions. When the eyes aren't giving the brain enough information, reaction time suffers. Prizm™ Road lenses help endurance athletes spot subtle changes in the texture of road surfaces and see hazards more easily so they can react faster and perform at their best.

- Increases contrast to help see subtle changes in road textures and spot hazards more easily.
- Enhances colors to make white and yellow lane lines more visible and road signs more vibrant.
- Accentuates the sky and greenery for a more pleasant riding experience.



*PLEASE NOTE ALL TRANSMISSION GRAPHS WERE TAKEN FROM LIVE SPECTROMETER READINGS USED FOR DISPLAY PURPOSES, AND NOT IN CONTROLLED LAB SETTINGS. ALL OAKLEY LENSES BLOCK UV BELOW 400NM, WHICH IS NOT REPRESENTED ACCURATELY IN THESE GRAPHS FOR THAT REASON.

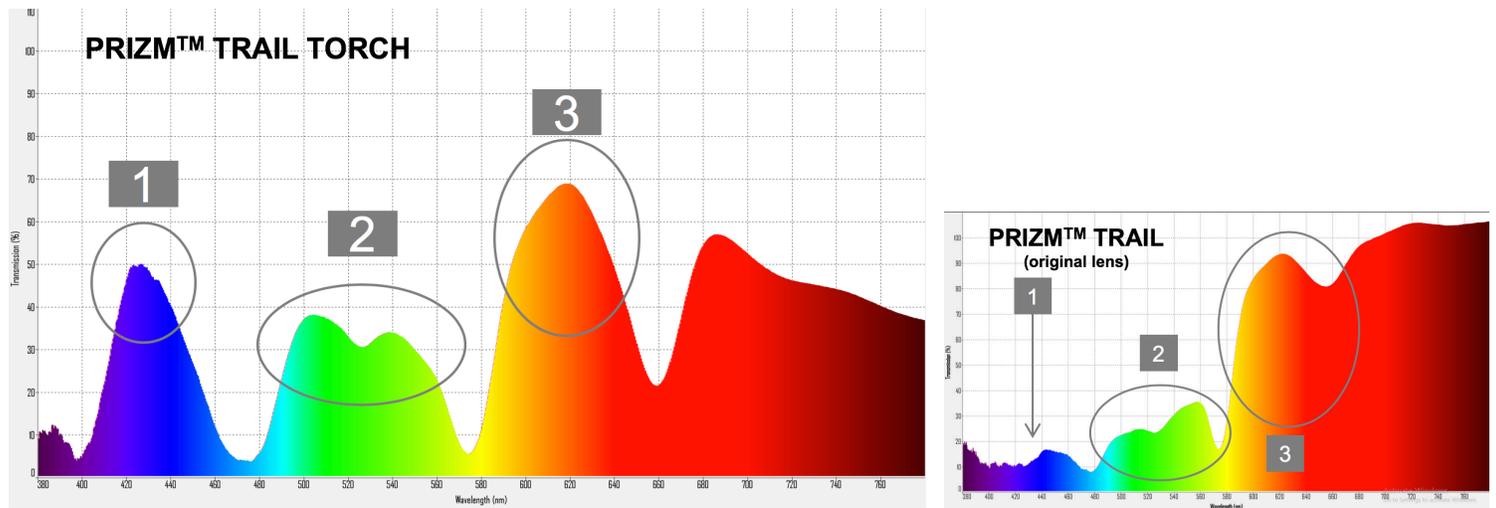
All Prizm™ Road lenses use the same base tint, so their profiles look very similar. All peaks are tuned to brighten whites and enhance yellows, greens and reds. The difference is the iridiums, which reflect light off the front of the lens. Prizm Road lenses are available in three iridium options for different aesthetics and light conditions.

1. **Prizm Road:** Peaks are balanced so you can see textures in the road surfaces that have different shades of blacks and greys.
2. **Prizm Road Black:** Black Iridium maintains balance in peaks, while making lens darker (notice entire profile is lower)
3. **Prizm Road Jade:** Jade Iridium reflects green light, making the green peak slightly lower. This makes the lens feel more purple.

Prizm™ Trail Torch

As a testament to the brand’s mantra that everything in the world can and will be made better, Oakley® has engineered an evolved Prizm™ formula for the trail environment, Prizm™ Trail Torch. After conducting extensive lab and field-testing around the world, the team has reformulated a new rose base for a versatile Prizm Trail lens with a Torch Iridium coating. Designed to enhance color vividness, increase contrast and enhance depth perception, Prizm Trail Torch was engineered to deliver meaningful performance benefits across the wide range of trail environments, including sun exposed desert trails, decomposed granite, red rock, alpine forest, light tree canopy and more.

- Identify different textures in the terrain to see obstacles more clearly.
- Enhances greens to help spot tree roots on the trail and accentuates the trail outline against vegetation.
- Performs in a wide range of light conditions to see in and out of canopy cover.



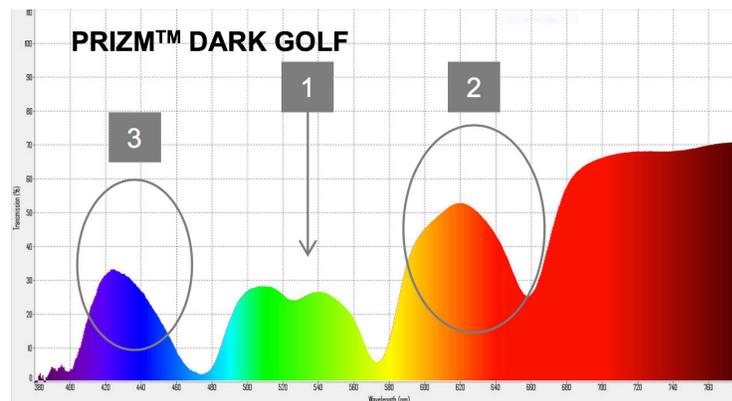
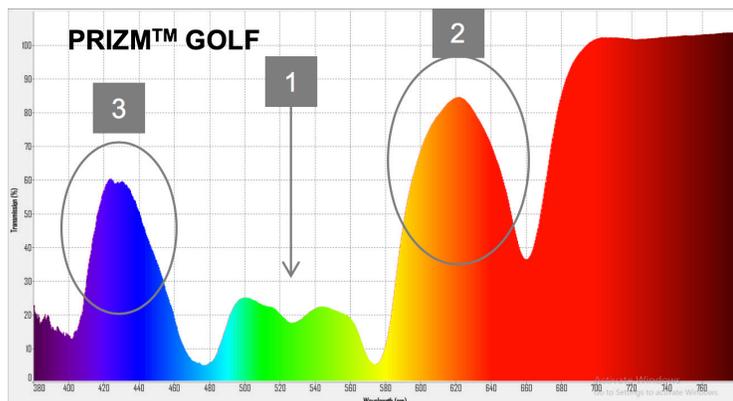
When building the spectral profile of Prizm™ Trail Torch lenses, we aim for three key features.

1. Removing blue iridium (in original lens) allows blue skies to be more vibrant, great for riding in full exposure.
2. Higher green peak improves vision with grass, bushes, and moss.
3. Maintaining enhancement of orange and brown helps separate different textures in the terrain.

Prizm™ Golf and Prizm™ Dark Golf

To play golf well, you have to do more than just read the green. You need to spot the transitions between the fairway, fringe and rough. You have to gauge distance with accuracy, and you need a good eye for grass textures. Prizm™ golf lenses help golfers with all these things and more. The separation of colors gives you more depth cues to gauge distance for wedge shots, and when you’re on the green, you can easily differentiate grass conditions and grain direction to predict ball speed.

- Improves contrast to differentiate grass conditions and textures to predict ball speed and movement.
- Increases depth perception to help gauge distance for wedge shots.
- Separates shades of green to make it easier to see transitions between the fairway, fringe and rough,
- Keeps the ball bright white to help spot and track against the grass and sky.



When building the spectral profile of Prizm™ Golf and Prizm™ Golf Dark lenses, we aim for three key features.

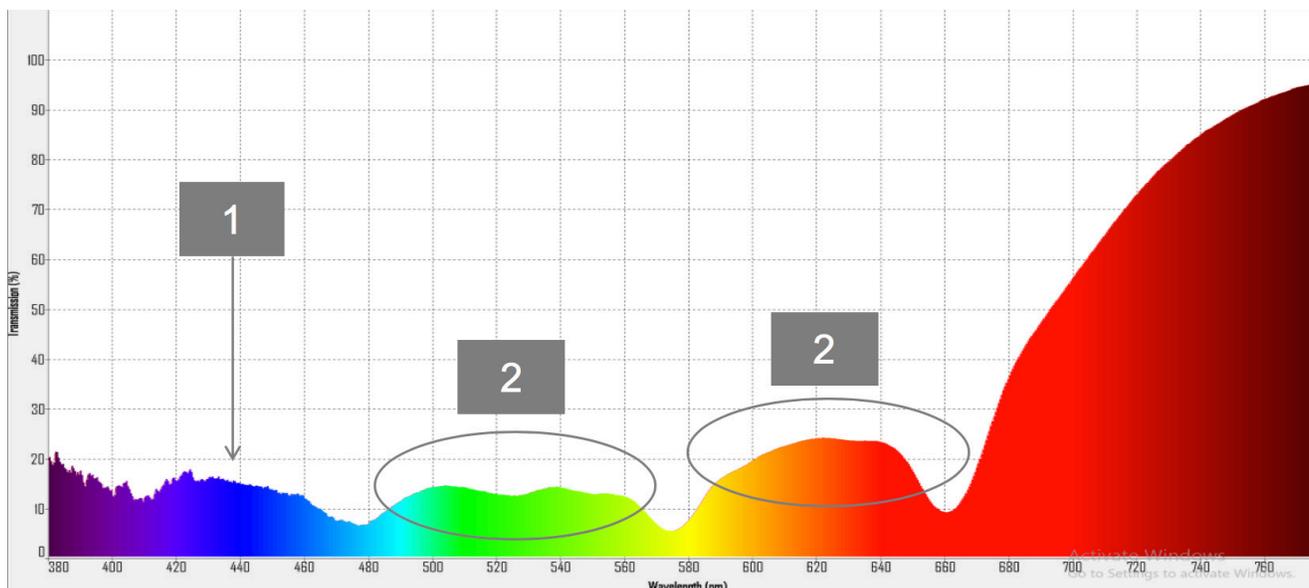
1. Tunes down greens to balance this dominant color on the course, so you can see more details.
2. Enhances browns, reds and yellows to identify texture and health of the grass.
3. Accentuates blues and keeps whites bright so you can track the ball against the sky.

Black Iridium on the Prizm Dark Golf lens makes peaks more proportionate, giving this lens a more balanced feel and more neutral aesthetic.

Prizm™ Deep Water Polarized

Prizm™ Deep Water Polarized lenses filter out the shades of blue that overwhelm your vision on open water. Improving color contrast, they boost greens and reds to give you a better view of what's going on down below, and they keep whites bright so you won't miss the flash of a fish. We made these lenses darker than the shallow water version because you won't be dealing with the shadows of canopy cover, and we enhanced them with glare-stopping polarization so you can enjoy full days of fishing, boating and sailing with comfort.

- Filters out the shades of blue that overwhelm your vision on open water.
- Enhances greens and reds to give a better view of what's going on down below.
- Brightens whites to help spot flashing fish.
- HDPolarized technology cuts through glare of the water.



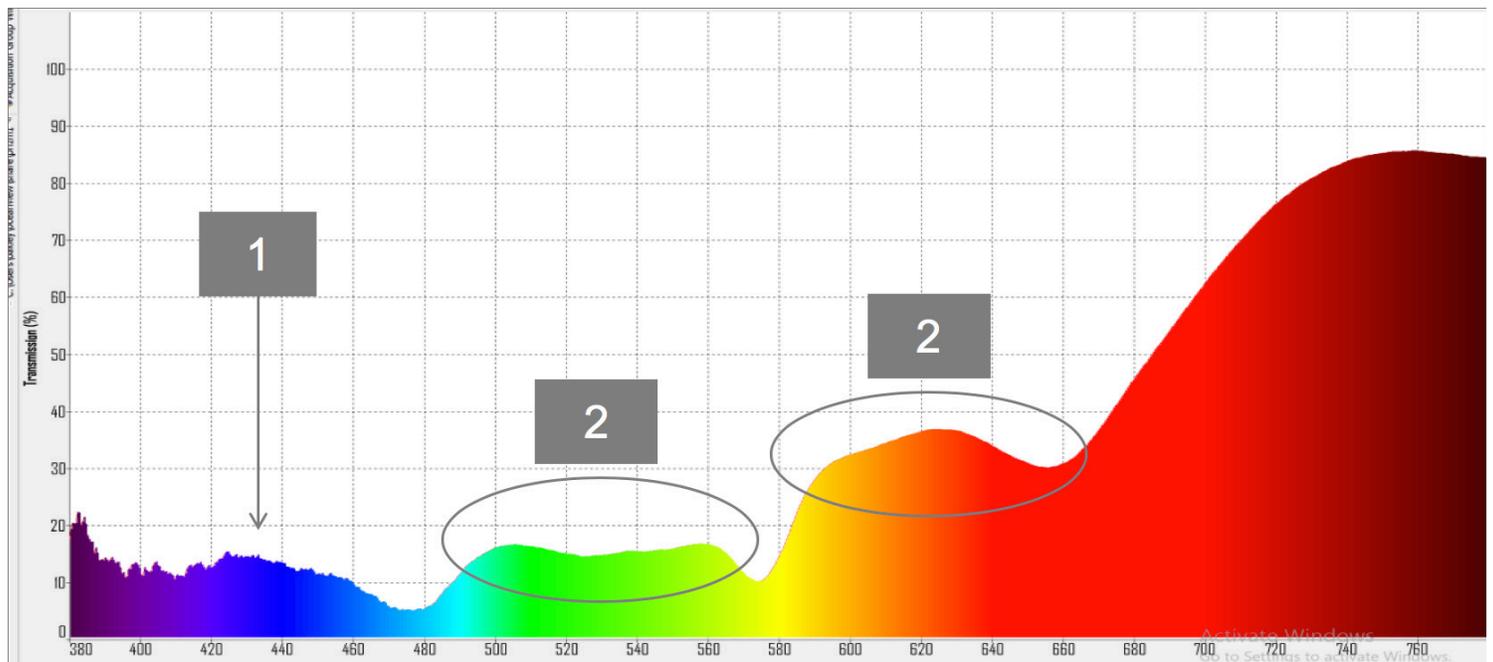
When building the spectral profile of Prizm™ Deep Water Polarized, we aim for three key features.

1. Tunes down blues so you're not overwhelmed by all the blue light reflected by water.
*This blue peak also helps keep whites bright so you can spot the flash of fish.
2. Enhances greens and reds so you can see kelp and fish under the water surface.
3. Adding Polarized to eliminate excessive glare in this environment

Prizm™ Shallow Water Polarized

While boosting the precise green and copper hues that make it easier to see hiding spots, Prizm™ Shallow Water Polarized lenses keep whites bright so you can spot the flash of fish and flies on the surface. They also help you see the shadows of fish — something that can be more useful than trying to spot the fish themselves. When you're out fishing, paddle boarding, kayaking or enjoying any activity on the water, you'll appreciate how well these lenses improve color contrast and cut glare.

- Boosts green and copper hues to see the shadows of fish in hiding spots.
- Brightens whites to help spot flashing fish and flies on surface.
- HDPolarized technology cuts through glare of the water.



When building the spectral profile of Prizm™ Shallow Water Polarized, we aim for three key features.

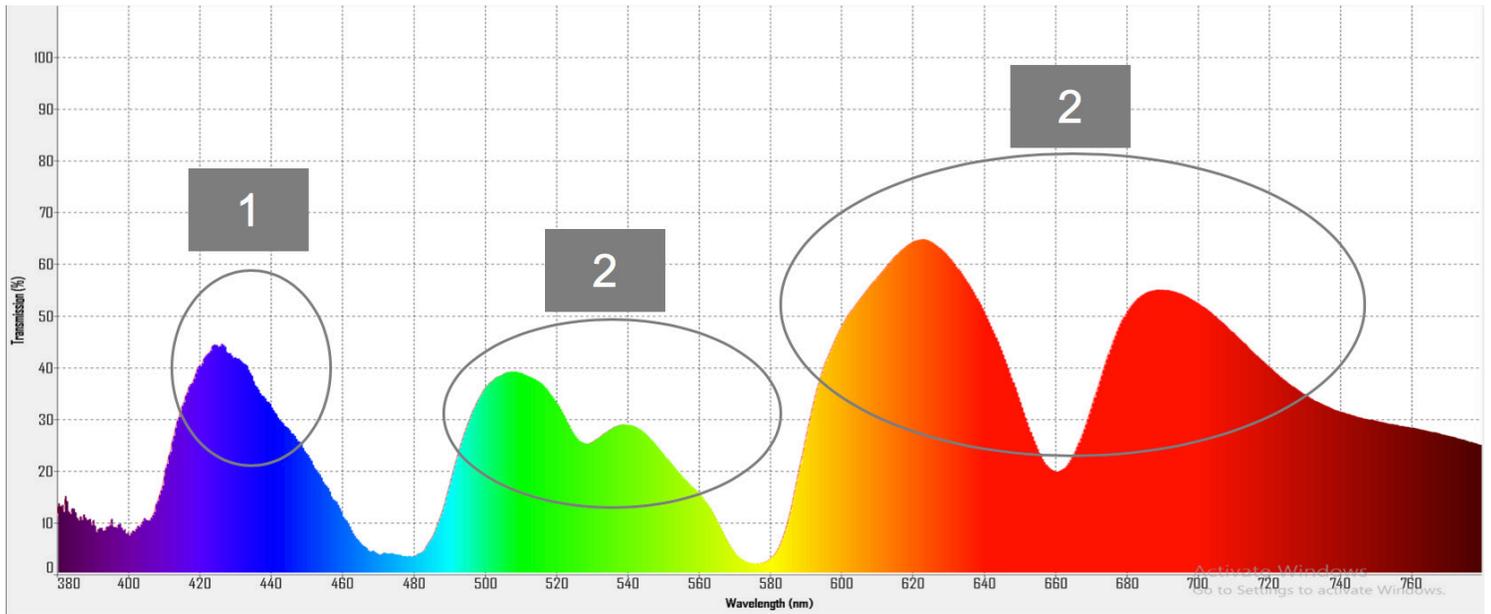
1. Tunes down blues so you're not overwhelmed by all the blue light reflected by water. This blue peak also helps keep whites bright so you can spot the flash of fish.
2. Enhances greens and browns so you can see fish habitats in the green, copper and brown tones of underwater structure.
3. Adding Polarized to eliminate excessive glare in this environment

Prizm™ Field

With conventional sunglass lenses, dull colors mean less contrast, and that makes it more difficult to track a ball in the sky or on the field. By making critical colors more vivid, Prizm™ Field lenses accentuate the background to enhance contrast. That means the ball stands out against the blue of the sky, the green of the grass and the brown of the dirt.

- Brightens whites and enhances blues to increase contrast of fly ball against blue sky.
- Increases saturation of reds and browns to track ball faster and easier against grass or dirt background.

The ball stands out more leaving the pitcher's hand, making it easier to read pitches and track the ball sooner.



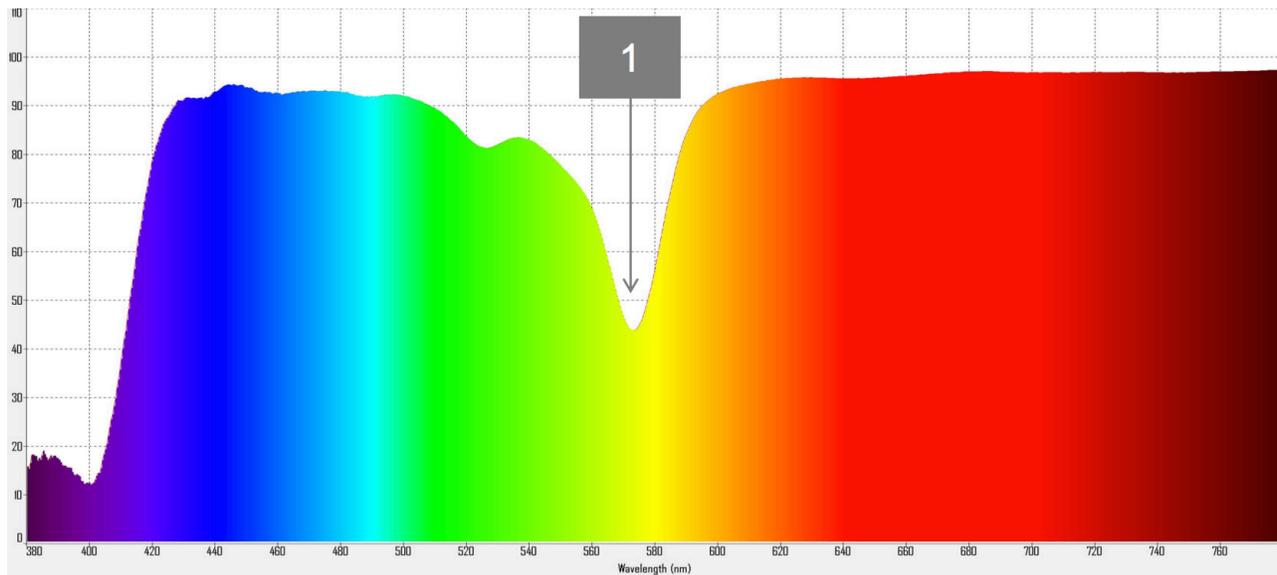
When building the spectral profile of Prizm™ Field, we aim for two key features.

1. Accentuates blues and keeps whites bright so you can see the ball well against the sky.
2. Increases saturation of grass and dirt for contrast with the ball. Increase in red also allows you to read the pitch better by enhancing the red stitching on the ball.

Prizm™ Low Light

The evolution of the standard clear lens, Prizm Low Light is a high transmission lens engineered with Prizm properties, Prizm Low Light accentuates reds and greens in low light environments, like early mornings, twilight and canopy cover and in artificial stadium lighting, so athletes can better see the challenge ahead.

- Maximizes vision in low light conditions and artificial light environments.
- Enhances reds and greens to improve contrast and detail.
- Keeps colors more true, so performance is not compromised



Since Prizm™ Low Light is such a light lens, we can only use one Prizm™ dye to create color contrast.

1. The dip is aligned strategically with our natural eye sensitivity to help create contrast in low light conditions. This dip also helps to separate greens and reds, which are prominent in many outdoor environments, and key to creating contrast and enhancing depth perception.

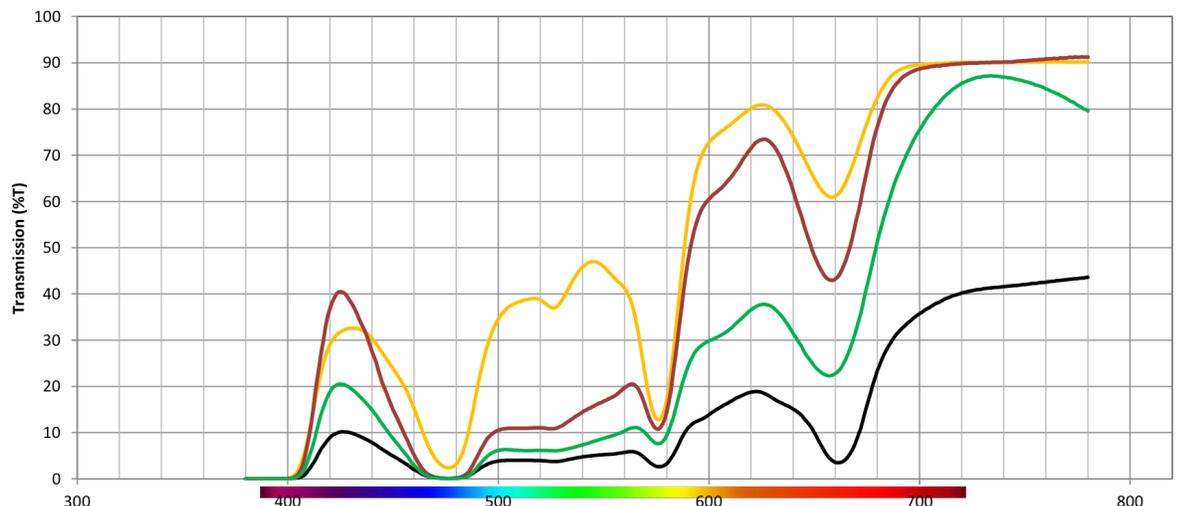
Prizm™ Snow

Prizm™ Snow technology allows athletes of all levels to see clearly, react faster and experience the mountain with confidence. Prizm™ Snow allows wearers to see contrast on the mountain in a variety of light and snow conditions, where surfaces can range from icy to powder to increases contrast in the snow for better depth perception. Each Prizm™ Snow lens performs in a wide range of light conditions, as weather or brightness changes, to identify snow contours, textures, and obstacles more clearly.

- Increases contrast in the snow for better depth perception.
- Enhances details to identify snow contours, textures, and obstacles more clearly.
- Each Prizm™ Snow lens performs in a wide range of light conditions, as weather or brightness changes.

Spectral Transmission

- Prizm Persimmon
- Prizm Rose
- Prizm Black
- Prizm Jade

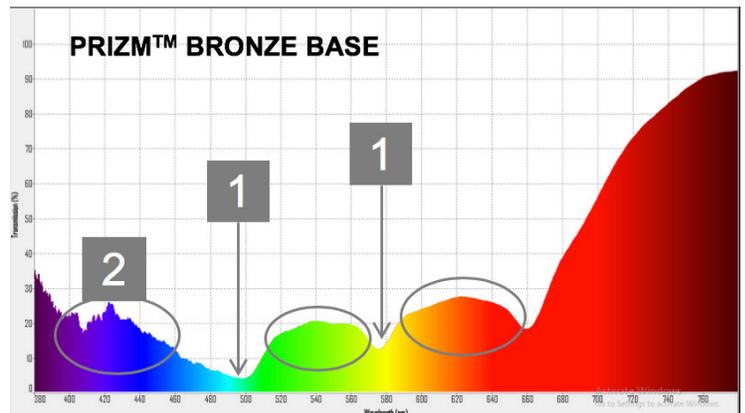
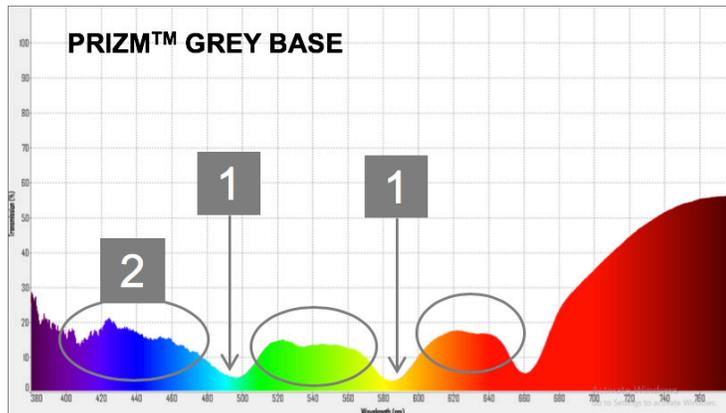


When building the spectral profile of each snow lens, our engineers acknowledge white snow reflects all colors equally. Therefore, Prizm™ Snow lenses are based on our eye sensitivities, rather than specific environment colors.

1. Accentuates the specific wavelength ranges that make it easiest for our eyes to detect very small changes in snow contrast.
2. Prizm Persimmon brings more light in this range, making the lens lighter for low light conditions.

Prizm™ for Everyday Environments

Surveys of the U.S. market show that roughly 83 percent of U.S. men and 89 percent of U.S. women wear sunglasses on a regular basis. While everyday sunglasses can be worn for a multitude of reasons including UV protection, prescription or fashion, how much consideration goes into the lens technology of a lens which isn't driven as an essential element of sport performance? Prizm™ Everyday lenses take the science of Prizm™ sport technology down to an everyday wearer experience that is engineered to enhance color vividness and increase contrast in your day to day experience. Prizm™ Everyday lenses are designed to enhance color vividness, heighten contrast, and sharpen clarity for deeper reds, a more vibrant blue sky, blooming hues of green foliage and vivid shades of yellow and orange.



When building the spectral profile of Prizm™ Everyday lenses, we use two different base tints with a contrast Grey and a contrast Bronze that filter out light where our eyes are less sensitive to color. This allows more light in where our eyes are more color perceptive to make colors appear more vibrant and vivid in a wide range of environments. The Prizm™ Grey base lens maintains the same aesthetic as previous grey or black lenses but adds the nuances of Prizm™ technology that pick up extra color when looking through the lens. The Prizm™ Bronze lens shifts the color spectrum to create the classic yellow or orange viewing aesthetic while still adding elements of color separation. This color separation gives our environment an additional pop when looking at the key colors most sensitive to the human eye.

A Closure On Prizm™ Lenses

Oakley, from the beginning, has been rooted in breaking boundaries. We began the journey as the pioneers of sport performance eyewear, then progressed to improving sport performance optics. We took sunglasses from a generic accessory with lenses that simply blocked the sun, to what you wear on your eyes now. A vital piece of the equipment solution for the majority of elite sports.



Prizm™ Lens Technology



Prizm™ lenses are designed for the consumer. The market has evolved. No longer do sunglass lenses only offer protection from UV and the elements. From elevating a consumer's performance in sport, to increasing the enjoyment of everyday weekend adventures, Prizm lens technology allows the human eye to read colors beyond its natural capabilities. With ordinary sunglass lenses, the world looks dull and flat. By emphasizing colors where the eye is most sensitive to detail, Prizm™ lens technology improves performance and safety by enhancing vision without the compromises of conventional lens tints. Grounded in decades of research innovation, these fine-tuned individual colors create enhance details for an optimized viewing experience. Be it on the road, trail, water, snow or green, what a wearer chooses to see through their sunglass lenses will be more vivid and more vibrant to reveal nuances that would normally be missed by the naked eye.

See the world.
See it in Prizm.™