VISION EASE®

THE SCIENCE OF POLARIZED LENSES TECHNICAL EDUCATION

HOW POLARIZED LENSES ARE MADE

High quality polycarbonate polarized lenses offer the best protection from harmful UV light and blinding glare. It's important for anyone who sells or dispenses polarized lenses to understand how they work and to be able to explain to patients how they differ from conventional sun lenses.

To filter polarized light, we place a long chain of molecules (hydrocarbons) onto a thin film of polyvinyl acetate (PVA). The film is then heated and stretched, forcing the molecules to align end to end, or become polarized. The film is then dipped into a solution containing a conducting molecule (e.g. iodine). These conducting molecules are now aligned along a pole (polarized) creating a microscopic grid of dark parallel lines that block light waves traveling along a plane that is perpendicular to their length. These same molecules transmit waves that are parallel to their length. The alignment of the molecules on the polarizing filter results in the degree of polarization, or efficiency, of a polarized lens.

When we make polarized lenses the sheet of polarized film is then cut into film discs that are placed into the press with the polarized molecule chains oriented vertically. The film is molded into the polycarbonate lens 0.5mm below the front surface.

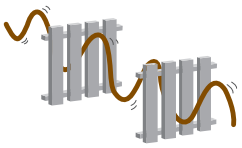
HOW POLARIZATION WORKS

As light waves travel away from their source, they vibrate in all directions equally. This is similar to the way motion waves roll down a whip. But rather than the wave traveling on a flat plane it travels in all directions. When reflected off a flat, shiny surface, the light waves become polarized and align in a side-to-side, horizontal direction. The result is blinding glare.

Light travels like motion down a whip

But in all directions not a flat plane

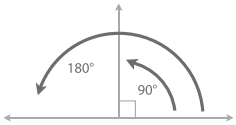
Polarized lenses are like a fence when the whip is fed between the slats of a fence. Only the up and down waves can get through. The side-to-side waves would be blocked. A polarized filter blocks reflected glare in the same way. The horizontal waves are blocked.



Only up and down waves can travel through the fence

HOW TO DEMONSTRATE POLARIZED LENSES

Polarized lenses need to be fit with the film at the correct axis in order to block horizontal glare. The axis of the polarizing filter is placed 90° to the plane of the polarized light. The 180° or horizontal axis of the lens is oriented 90° from the polarized axis.

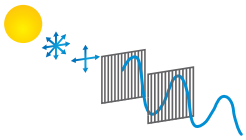


90° and 180° angles

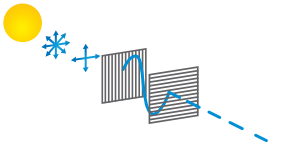
The best way to demonstrate a polarized lens is to find a reflecting surface such as a counter top or car hood. Look through a polarized lens that is turned 90° off axis and the reflected light will be visible. Then rotate the lens on axis to see that the glare is eliminated.

HOW TO CHECK A POLARIZED LENS

The best way to check the quality of polarized lenses is to place two of them, front to front, with the axes parallel. If aligned on the same axis, light will travel through the lenses. If one lens is rotated 90° off axis, no light will pass through the lenses. Higher quality polarized lenses will block out more visible light with this technique than lower quality polarized lenses.



If polarized lenses are aligned, more light will pass through



If one polarized lens is turned 90° off axis, light will be blocked

VISION EASE®

YOUR PATIENT'S VIEW WITH AND WITHOUT POLARIZED LENSES

VIEW WITHOUT POLARIZED LENSES

VIEW WITH POLARIZED LENSES

ADVANTAGES OF POLARIZED POLYCARBONATE LENSES

SAFER DRIVING VISION
Polarized polycarbonate lenses eliminate direct and reflective glare and can withstand the impact of a deployed airbag.

GREATER COMFORT OUTDOORS
Polarized polycarbonate lenses reduce the intensity of sunlight to more comfortable levels, thus helping to prevent eyestrain, fatigue and headaches caused by glare.

SUPERIOR EYE PROTECTION FOR SPORT
Polarized polycarbonate lenses are 10 times more impact resistant than other lenses.

MORE COMFORTABLE TO WEAR
Lightweight polarized polycarbonate lenses reduce pressure on the wearer's face and stay comfortably in place.

MORE COLOR OPTIONS
Gray: All-purpose, true color vision. Gray is best for the intense glare and bright sunlight encountered when driving, boating or deep-water fishing.

Brown: For improved contrast in bright conditions such as driving, golf, winter sports, and shallow water fishing.

Classic Green®: Reduces eyestrain in bright light and are great for cycling, baseball and golf.

Blue: Reduces glare and enhances visibility for outdoor activities such as tennis and golf.

OFFERING POLARIZED LENSES TO YOUR PATIENTS

1. Begin at the beginning. When you make an appointment for an eye exam tell the patient, "It is important that you bring all of your current eye wear to your exam including your prescription sunglasses." 90% of your patients don't currently wear prescription sunglasses. If they tell you that they don't have a pair say, "That's interesting, I will make sure that the doctor talks to you about the importance of protecting your eyes from the sun." This may not ensure that all patients get a protective pair of sunglasses, but it will ensure that they all think about it.
2. Demonstrate polarized lenses, using real world conditions, for everyone who walks into your store. Everyone likes to know how things work. Ask potential patients, "Have you ever seen how a polarized lens works?" Then show them using the technique described on the previous page. This technique impresses patients because they know that it's a real world example, not a trick. They can also repeat the demonstration for their friends and family with their own polarized lenses.
3. Look for dress and sunglass frames at the same time. When a patient tries on a frame that would be good for sunglasses say, "That would be a great choice for your prescription sunglasses."