



## Ophthalmic Lenses

### Polarized lenses

How do they work? Light reflected from surfaces like a flat road or smooth water is generally horizontally polarized. This horizontally polarized light is blocked by the vertically oriented polarizers in the lenses. The result: a reduction in annoying and sometimes dangerous glare. Besides boaters, people that benefit most from polarized sunglasses include skiers, golfers, bikers, and joggers, who enjoy a clearer view and elimination of glare. These sunglasses can be used for driving and in fact can reduce the glare that comes off a long, flat surface such as the hood of the car or the surface of a road. Polarized sunglasses can also be used indoors by light-sensitive people such as post-LASIK and cataract surgery patients or by those exposed to bright light through windows.

In addition, polarized lenses may also react adversely with liquid crystal displays (LCDs) found on the dashboards of some cars or in other places such as the digital screens on automatic teller (bank) machines. The problem with LCDs is that when viewed through polarized lenses from a certain angle, they can be invisible. However, for most other sports and activities, polarized sunglasses can offer great advantages. Whether you spend your time boating or waterskiing, in-line skating or mountain biking, driving or jogging, polarized sunglasses are an excellent choice.

### Anti-Reflective Coating

To improve both the vision through the lenses and the appearance of the glasses, an anti-reflective coating (also called AR coating) is applied. AR coatings are similar to the coatings found on microscopes and camera lenses. Each layer is scientifically calculated to block reflected light. The result is that you'll see a reduction in glare, annoying reflections and halos around lights. This is a great safety benefit when you're driving at night. Also, anti-reflective coating reduces both internal and external reflections on the lenses themselves, creating a nicer cosmetic appearance. Internal reflections appear as rings that make lenses look thick. External reflections mask your eyes from a clear, complete view when someone is looking at you. So with an anti-reflective coating, eyeglass lenses appear thin or non-existent, and your eyes look more natural. If you have a strong prescription, you can use the AR coating in conjunction with high-index lenses to make your glasses look and feel as thin as possible. Another benefit of the AR coating is that it comes with a built-in scratch coating.

### Polycarbonate lenses

Polycarbonate lenses are not only thinner and lighter in weight than traditional plastic eyeglass lenses, they also offer ultraviolet (UV) protection and scratch resistance. In addition, they are very impact resistant. This extra toughness makes them the lenses of choice for children's glasses, sports eyewear and safety glasses.

Benefits of polycarbonate lenses:

1. Because less of the polycarbonate lens material is needed to provide the same amount of visual correction that a traditional plastic lens offers, polycarbonate lenses are thinner and lighter in weight.
2. Polycarbonate lenses also have built-in ultraviolet protective properties. Similar to the way that sunblock prevents the sun's rays from damaging the body, UV protection shields the eyes from the same detrimental light rays.
3. The flexibility or softness of the lens material dictates that a scratch resistant coating be applied to the front and back surfaces of polycarbonate lenses. Manufacturers automatically coat them, and fabrication laboratories add a scratch resistant coating to any uncoated lens surface before sending the lens to a dispenser.
4. Polycarbonate lenses are safer than traditional lens materials because they aren't brittle. They won't usually break if they come into contact with fast-moving objects such as balls, racquets or baseballs. Regular glass and plastic eyeglass lens materials shatter upon violent contact in the same way that car safety glass does.

### Hi-Index lenses

Most eyeglass wearers are nearsighted, and a basic physical property of nearsighted lenses is that their edges are thicker than their centers. Most of today's fashionable frames are made of plastic or metal with rims thinner than the lens itself. Also very popular are rimless mountings, where the lens edges are completely exposed. In either case, the lens edges are highly visible, and thicker edges can detract from the appearance of the eyewear.

The stronger the prescription, the thicker the edges. To bend light more, stronger minus lenses require thicker edges than weaker minus lenses. It's not unusual for a nearsighted prescription to increase over time, meaning lens edges will grow increasingly thicker. This is where the new high-index lens materials come in. Chemists have created a variety of new plastic materials that bend light more than the conventional plastic used for eyeglasses. This means less lens material can be used to correct the same amount of nearsightedness. As a result of the ability to bend light more, nearsighted lenses made of high-index materials have thinner edges than the same prescription made from conventional plastic material. Thinner edges require less lens material, which reduces the overall weight of the lenses.

Lenses made of high-index plastic are lighter than the same lenses made in conventional plastic, so they're more comfortable to wear. High-index glass lenses also have thinner edges, but high-index glass is heavier than conventional glass, so there is not as much weight savings with glass as there is with plastic lenses. For conventional plastic, the ratio (or index of refraction) is 1.50. For glass, it is 1.52. Any lens material with an index higher than that of glass or plastic is considered to be high index. High-index plastic lenses are now available in a wide variety ranging from 1.53 to 1.71.

### **Transitions**

Transitions lenses automatically adjust to changing light, becoming as dark as sunglasses when necessary. They provide convenient protection from several types of glare, including the kind that can seriously diminish vision. In sunlight, mid-light or indoors, they're ideal for your everyday lenses. The UV rays from the sun are one of the greatest dangers to your vision. Research shows that long-term, unprotected exposure to UVA and UVB radiation can lead to serious eye conditions such as cataracts and macular degeneration. Transitions lenses protect your eyes by blocking 100% of these rays.

### **Hoyalux Tact Computer Lens**

These days, people are spending more time in front of their computer screens than ever before. The Hoyalux Tact was designed with these wearers in mind. The Tact is for patients who require correction in both the near and intermediate viewing zones. The Tact offers exceptionally wide intermediate and near zones with little or no peripheral distortion.