

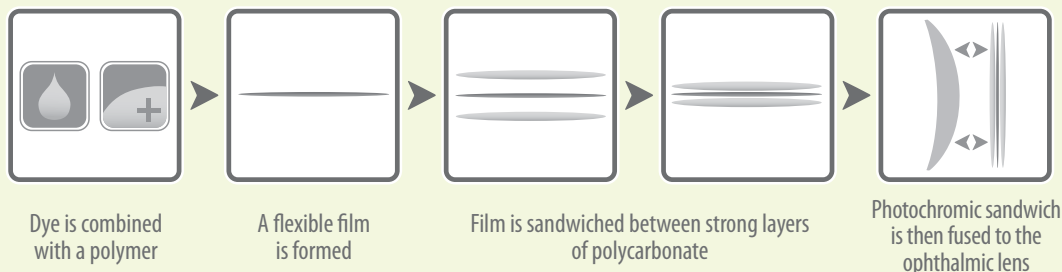
LIFERX® LIGHT-RESPONSIVE POLYCARBONATE LENSES

Technical Education

History & Technology of LifeRx Lenses

In 2005, Vision-Ease Lens introduced LifeRx light-responsive polycarbonate lenses. The photochromic dye used in LifeRx lenses has been specially formulated using a single organic molecule rather than a mix of several different colored molecules as is often the case. Utilizing a single dye provides a clear-as-liquid color when inactivated, as well as color consistency throughout activation, and fast fadeback. As a result, LifeRx lenses are as clear as a clear polycarbonate lens when fully deactivated and they don't become an unusual color during activation, fadeback, or as they age. In the manufacturing of LifeRx lenses, this special dye is combined with a polymer to form a flexible film that allows the dye to easily change its configuration when exposed to UV light. This film is then molded between strong layers of polycarbonate and fused onto an ophthalmic lens during the lens molding process.

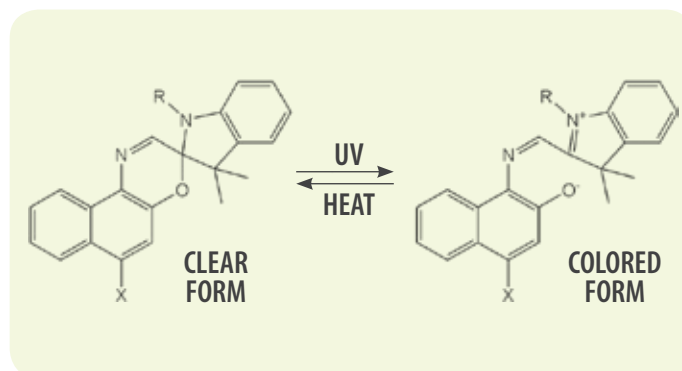
How LifeRx light-responsive polycarbonate lenses are made



The encapsulation technology featured in LifeRx light-responsive lenses have been recognized by the US patent office as novel and unique. The following patents have been issued on this technology: 7,048,997; 7,036,932; 6,814,896; 6,328,446; 5,856,860; 5,827,614; 5,757,459; 7,077,985; 6,506,538

How Photochromic Dyes Work

Photochromic dyes work by changing their chemical structure when exposed to UV light. When these special molecules are exposed to UV rays, they undergo a chemical process that causes them to change shape. The new molecular structure absorbs portions of the visible light, causing the lenses to darken. The number of molecules that change shape varies with the intensity of the UV rays. In the absence of UV light, the molecules change back to their original form. Photochromic dyes will change back to their original form faster at higher temperatures.





How to Explain Photochromic Lenses to Your Patients

WE USED TO SAY	THE FACT OF THE MATTER	WE SHOULD SAY
<p><i>"Photochromic lenses have residual color in their clear state."</i></p>	<p>This is no longer true. Unactivated LifeRx light-responsive polycarbonate lenses have light transmission of 90.4%; this is the same as a clear polycarbonate lens.*</p>	<p><i>"The newest technology photochromic lenses are crystal clear indoors. I recommend anti-reflective coating on all dress eye wear lenses to make the clarity even better."</i></p>
<p><i>"Photochromic lenses take a long time to fully deactivate."</i></p>	<p>Both activation and deactivation speeds have improved greatly. Still photochromic dyes do not deactivate as quickly as they activate. LifeRx lenses deactivate 30 to 180% faster than our competitors' latest generation of photochromic lenses.*</p>	<p><i>"New photochromic lenses activate so quickly that they are sunglass dark in seconds. They don't clear up quite as fast, but are getting better all the time. And, LifeRx lenses deactivate faster than our competitors' lenses."</i></p>
<p><i>"Photochromic lenses don't change behind a car windshield."</i></p>	<p>This statement is true; and it means that photochromic lenses are not as effective as polarized sunglasses while driving. It is also true that photochromic lenses are very convenient for almost anyone.</p>	<p><i>"Your new photochromic lenses will activate every time they are exposed to direct UV light. This means that you can leave your sunglasses in the car and still have a dark lens while walking from your car to the door of your office."</i></p>
<p><i>"Photochromic lenses don't get as dark when it's really hot outside."</i></p>	<p>This statement is true; but it doesn't reduce the convenience of photochromic lenses for most patients.</p>	<p><i>"Photochromic lenses tend to be sensitive to extreme temperatures. If you find yourself outside in very hot conditions your lenses won't perform the way that they usually do. Remember we are only talking about extreme temperatures. If you are comfortable being outside, your photochromic lenses will perform very well for you."</i></p>
<p><i>"Photochromic lenses don't eliminate glare."</i></p>	<p>This statement is true; but again it doesn't reduce the convenience of photochromic lenses for most patients.</p>	<p><i>"Nothing compares with the convenience of a photochromic lens for running errands or taking a short walk and nothing compares with a polarized lens for driving or boating. Let me show you how both lenses work. With a pair of each you will have the very best vision for each activity."</i></p>
<p><i>"Photochromic lenses wear out over time."</i></p>	<p>To an extent this is true for all spectacle lenses. In a LifeRx lens, the photochromic dye is protected behind a strong layer of polycarbonate. This makes a LifeRx lens more likely to last, even if it is abused. Still, all lenses can scratch and coatings can break down or discolor over time.</p>	<p><i>"For reasons of eye health, I recommend an annual eye exam. At the time of your next exam I will inspect all of your eyeglasses. I recommend that most eyeglasses be replaced at least every 2 years. Over the next 2 years technology will improve and fashions will change. Getting a new prescription and eye wear will help insure that you look good and see well."</i></p>

*Independent COLTS Audit 2006