

Sunglass-level UV protection™ in all clear lenses.

ZEISS UVProtect™ Technology

// RESPONSIBILITY
MADE BY ZEISS

ZEISS UVProtect

Elevating the standard of care.



UV radiation poses one of the biggest dangers to eye health.

No matter what season it is, or what the weather conditions are, UV is always present. Although it is invisible, long-term UV exposure can cause serious damage to the eyes and the surrounding skin.



A UV camera reveals what is invisible to the naked eye.
UV radiation has a significant impact on the skin.
And also on our eyes.



Photograph taken with a normal camera.



Photograph taken with a UV camera, showing skin damage due to UV exposure.



Prolonged UV exposure poses serious health risks.

UV radiation is present all day, every day. Whether in winter or summer, on sunny or cloudy days, we are all constantly exposed to UV radiation.

Most of us know that UV rays can damage the skin, but long-term UV exposure can also be harmful to the eyes and the skin surrounding them.





Eye health is too important to risk.

Over time, exposure to UV rays can cause various forms of eye disease and can accelerate aging by damaging the sensitive skin around the eyes.

While sunglasses provide excellent protection, studies show that only 1 person out of 4 consistently wears sunglasses when outdoors.*

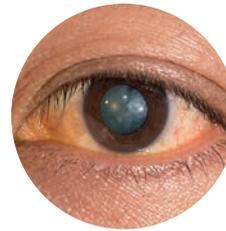
Clearly, we need another line of defense.

*Data on US population by the Vision Council of America.



Photokeratitis

Sunburn of the cornea due to excessive UV exposure.



Cataracts

Clouding of the eye's crystal-line lens, caused or worsened by UV radiation.



Photoaging and skin damage

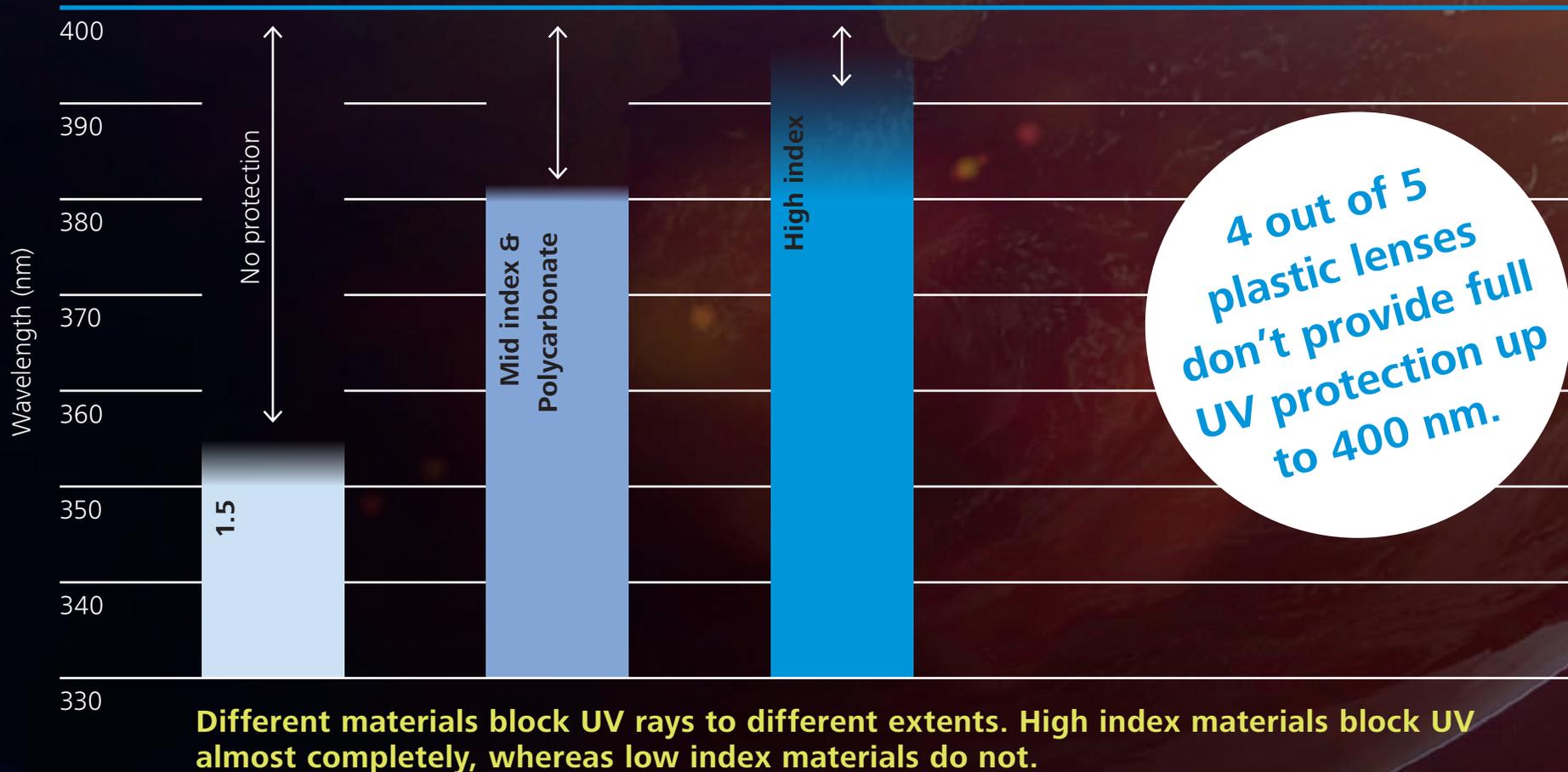
Photoaging thickens skin, stimulates sunspots and causes wrinkles & sagging of the skin.

Many lenses claim to protect eyes from UV.

Upon closer examination though, most clear lenses only block parts of the harmful UV spectrum. Based on current industry standards, even lenses that claim **100% UV protection** can miss up to **40% of the most harmful UV radiation**.

Many AR coatings also claim UV protection, but the **TRUTH IS** UV AR coatings only address the tiny fraction of indirect UV reflecting off the back of the lens.

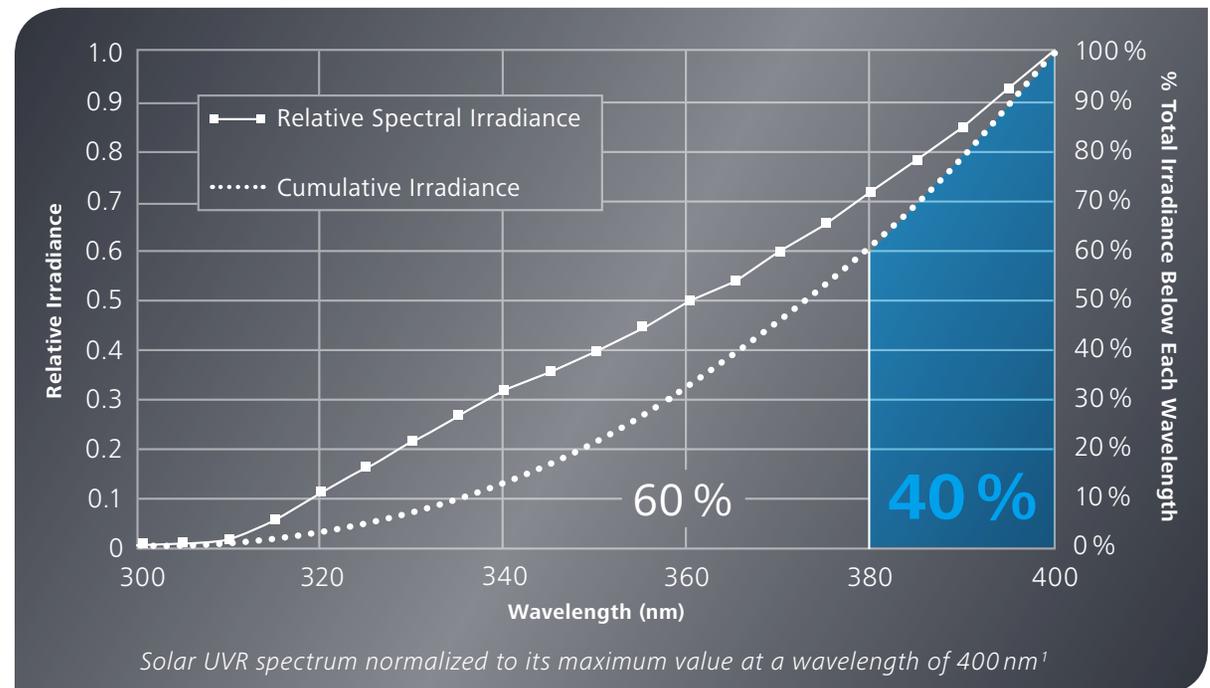
UV Protection Levels by Material



Different materials block UV rays to different extents. High index materials block UV almost completely, whereas low index materials do not.

The gap between standards and needs.

Current lenses that block UV only up to 380 nanometers or less create a significant gap in protection. The irradiance between **380 and 400 nm** is much more intense, and represents up to **40%** of the total amount of solar UV irradiance.





4 out of 5

eyeglass wearers express concern about protecting their eyes from UV radiation.*

Raising the standard for eye health.

Research shows that our current industry standard for UV protection for ophthalmic lenses, at a level of 380 nanometers, is now dated and incomplete.

The World Health Organization and numerous other health organizations have defined the **standard for UV protection as 400 nm.**

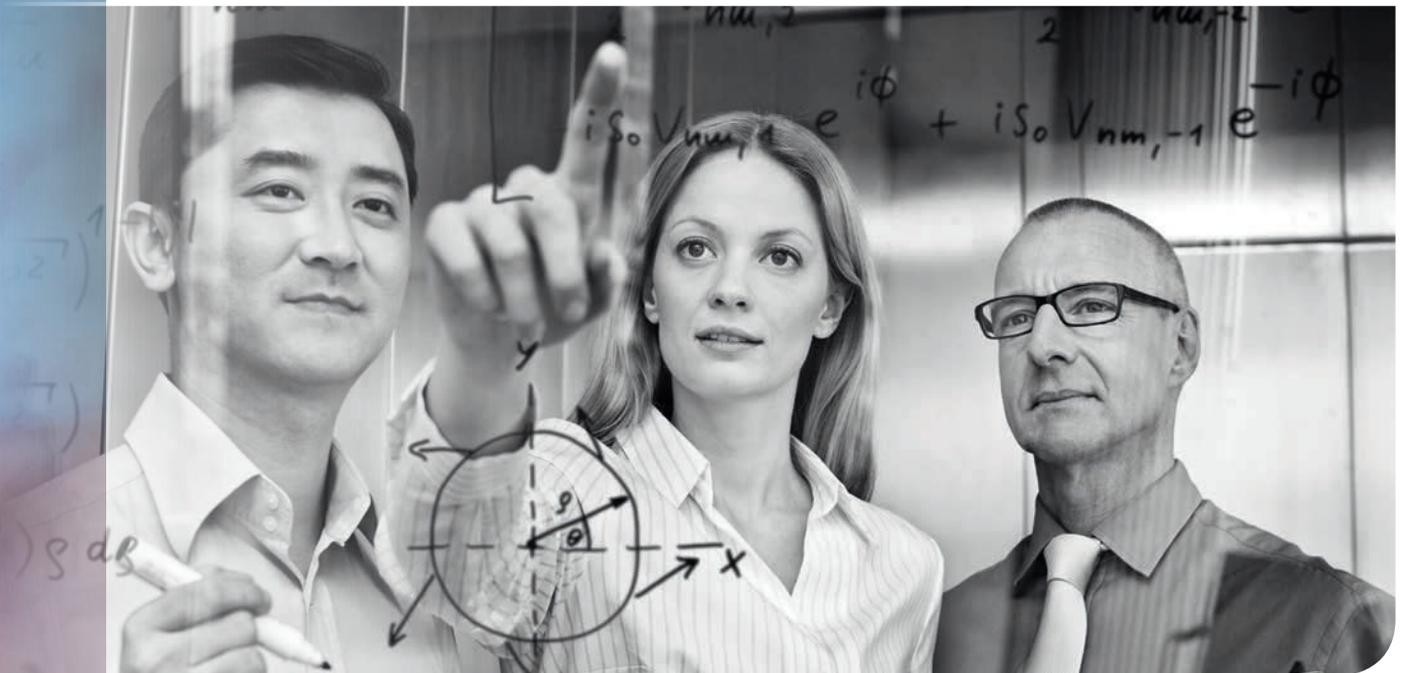
It is time for our industry to re-examine the standards that were defined over three decades ago.

* Data on file

ZEISS changes the game.

Our obsession for optical precision compelled us to tackle this gap in protection head-on. ZEISS researchers and scientists have created ZEISS UVProtect Technology to close the gap between industry standards and human biology.

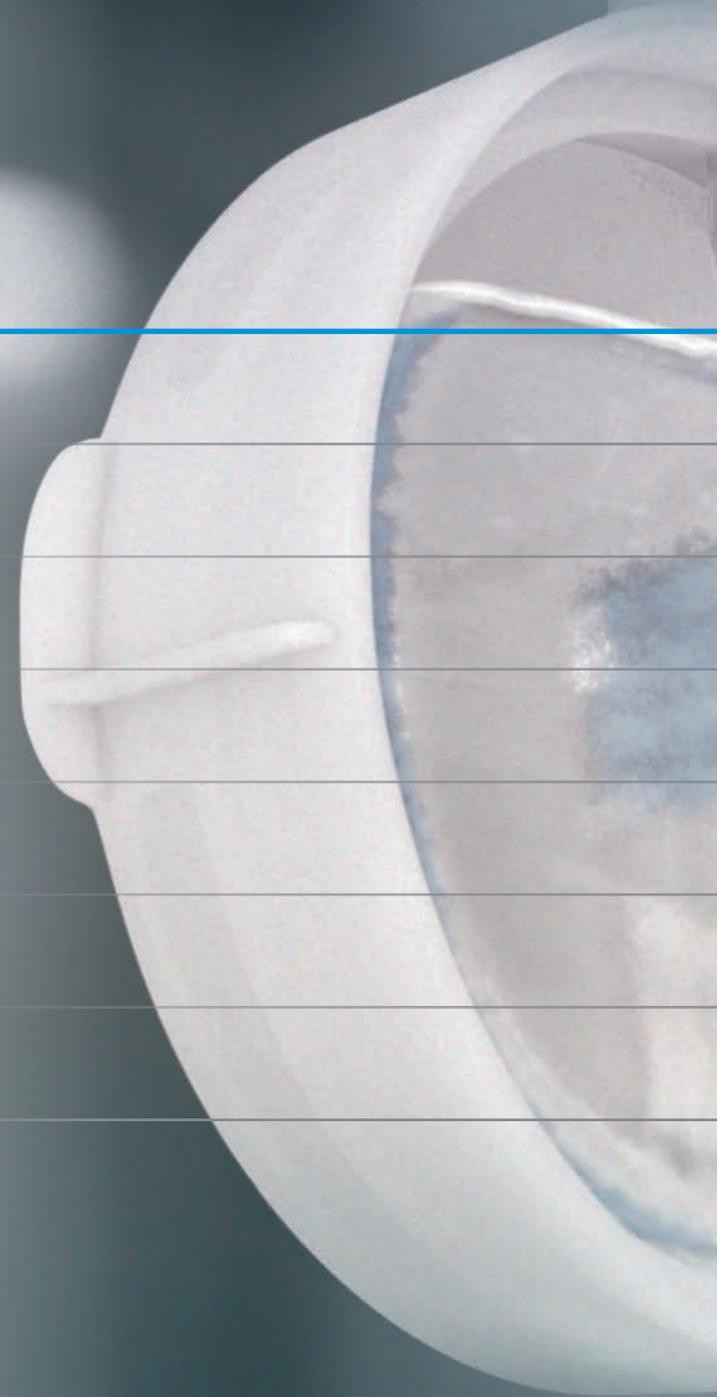
We are changing the status quo of our industry by reducing potential health implications of UV exposure and improving the standard of eye care.



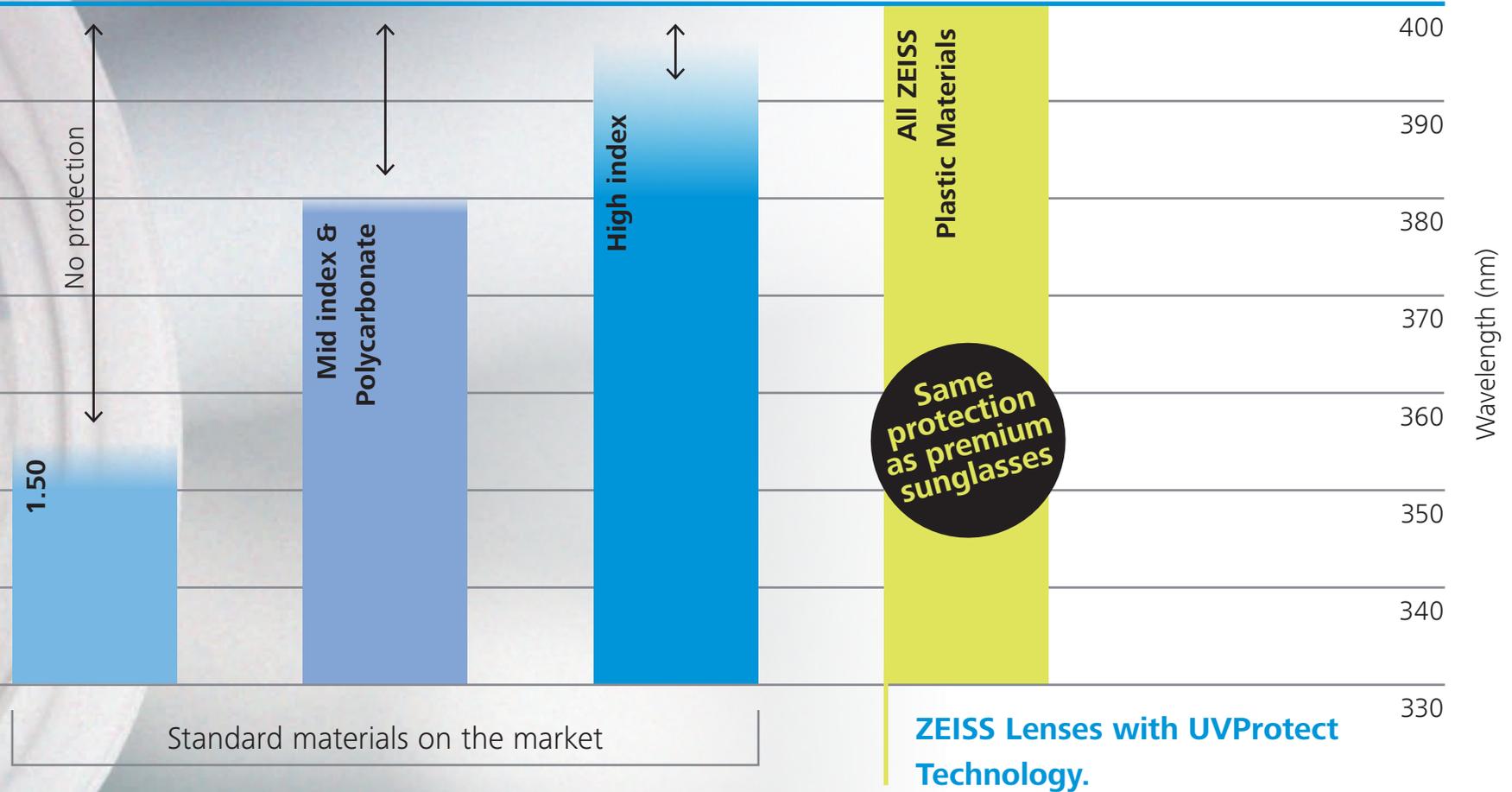
Sunglass-level UV protection in all clear lenses.

Starting today, ZEISS is creating a new standard of care by including sunglass-level UV protection in all clear ZEISS lenses.

All clear ZEISS lenses will employ new UVProtect Technology, providing protection against direct UV rays up to 400 nm as defined by leading healthcare organizations.



Level of UV protection in Plastic Materials



Protection is cast into the lens material when being molded.



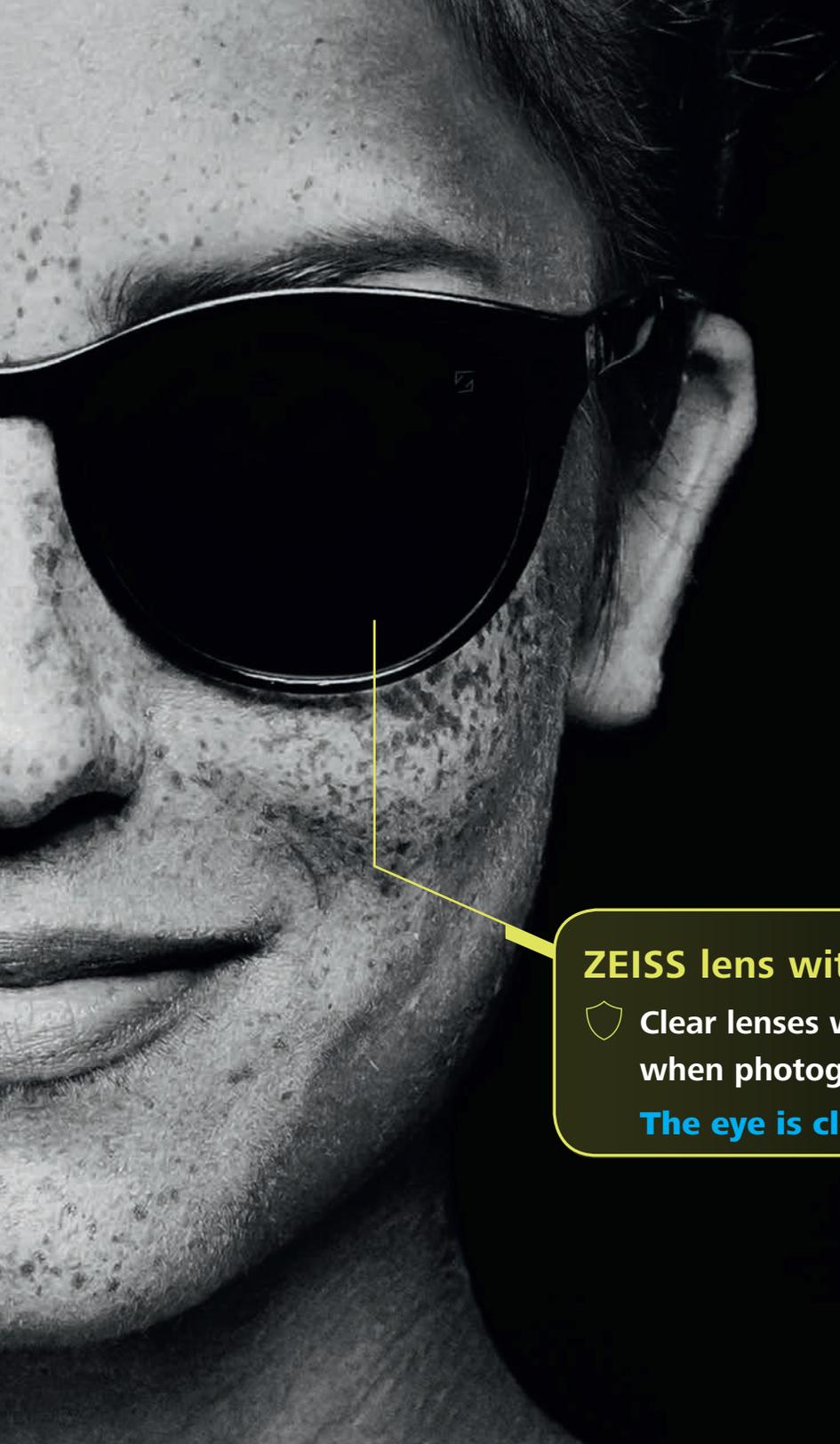
This image was taken with a UV camera. Not only do UV cameras show skin damage, they also reveal whether UV light penetrates a lens or not.

It indicates the defense the lenses offer against UV rays.

**Partial
UV
protection**

Ordinary lenses without ZEISS UVProtect Technology clearly provide incomplete protection, leaving the eye exposed to a significant amount of UV radiation.

Here, direct UV light goes through the lens.



ZEISS lens with UVProtect Technology.

 Clear lenses with ZEISS UVProtect appear as dark as sunglasses when photographed with a UV camera. UV light is totally blocked.

The eye is clearly better protected.



“But I protect my patients from UV by adding a UV anti-reflective coating.”

While a UV AR coating provides slight protection from UV, it is only from reflections off the back-surface of the lens. In fact, up to **95% of UV radiation** comes directly through the front of the lens. This means so-called back UV coatings block only a very small portion of UV rays.

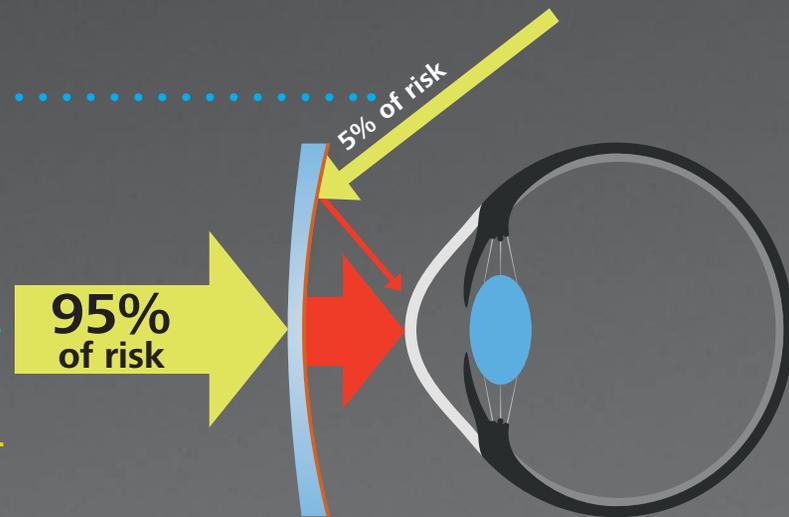
While a UV AR coating may be helpful to address back-side reflections, it does nothing to block the biggest source of UV rays that come directly through the lens.

Conventional lens coated with UV AR.

Indirect UV light that reaches the back side of the lens.

Direct UV radiation still passes through the lens and reaches the eye.

Back-surface UV AR only helps reduce INDIRECT UV light. It does nothing for direct UV light, which represents 95% of the total risk to the eye.

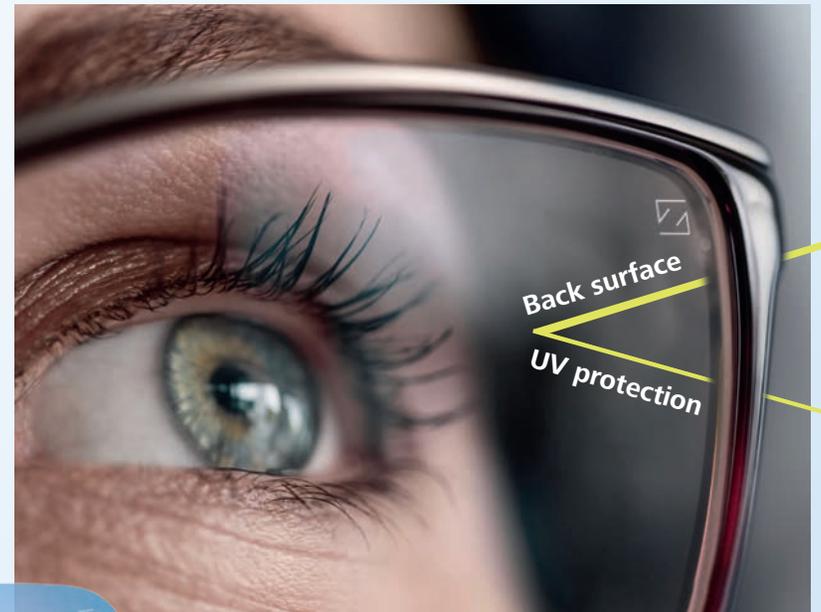


ZEISS Premium Coatings with back-surface UV protection.

The addition of an anti-reflective coating is always recommended, but the characteristics of an AR coating may slightly increase the risk of indirect UV exposure.

While most of the risk comes from direct sunlight, we recognize the need to address the slight exposure on the back of AR lenses as well. Back-surface UV protection is now included with all ZEISS DuraVision coatings.

This additional anti-reflective layer on the back of the lens reduces the indirect light reflected into the eye, complementing the direct front-side protection offered by ZEISS UVProtect.



While direct UV exposure remains our primary concern, the addition of a UV AR provides protection from indirect UV sources.

Finally, TrueUV™ protection in clear lenses.

ZEISS UVProtect is now STANDARD in all clear ZEISS lens materials – providing TrueUV protection for direct UV exposure.

This new technology allows materials to perform with the same optical characteristics they currently do but eliminates the gap in UV protection, thus providing TrueUV protection regardless of material.



ZEISS technology provides TrueUV protection.

ZEISS DuraVision AR coatings have now been enhanced to reduce the risk of indirect UV exposure. When combined with a lens featuring ZEISS UVProtect Technology, it truly provides the most complete protection from both direct and indirect UV exposure.

Whether you are providing a hard coated lens featuring ZEISS UVProtect Technology or combining this lens with a ZEISS DuraVision UV AR coating, you can be confident in knowing you are providing the TrueUV protection your patients need.

ZEISS TrueUV Solution



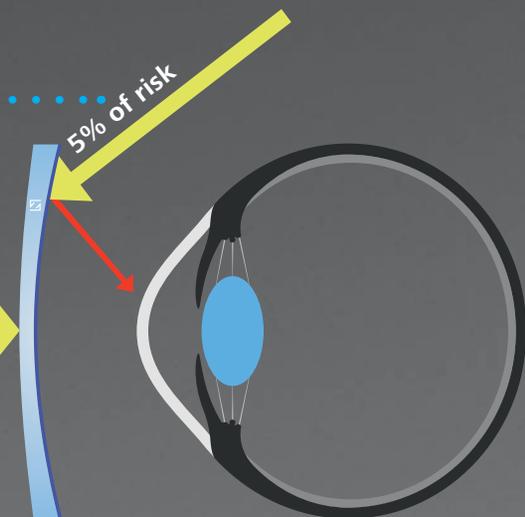
Indirect UV light that reaches the back side of the lens



Direct UV radiation is blocked, so no UV reaches the eye.

95%
of risk

5% of risk



ZEISS lenses with UVProtect completely block direct UV light from the front up to 400 nm and a specifically optimized AR coating applied on the back reduces indirect UV light reflecting from the back surface.



ZEISS is obsessed with optical precision.

The realization that the human eye, the most advanced optical system ever created, was being put at risk by a gap in protection didn't sit well with who we are as a company. Our obsession for precision drove us to find the most complete UV protection solution, ZEISS UVProtect Technology.

At ZEISS, this type of research and innovation is at the heart of who we are and what we believe in. As a foundation-owned company with no shareholders, all our profits get reinvested in optical science, research, education and social endeavors.



Sharing our innovation.

Because we believe so strongly in raising the standard of care for UV protection, we are intentionally not filing any patents for our UVProtect technology. It's just who we are.

In fact, we invite all lens manufacturers to follow our lead and provide sunglass-level UV protection in all their clear lenses.

It's time to make sunglass-level UV protection standard in all clear lenses.

Trust **ZEISS** to elevate the
standard of care for your patients.



ZEISS UVProtect. Contact your ZEISS representative
or visit www.zeiss.com/UVProtect to learn more.

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