



Health + Prevention Oct 16, 2017

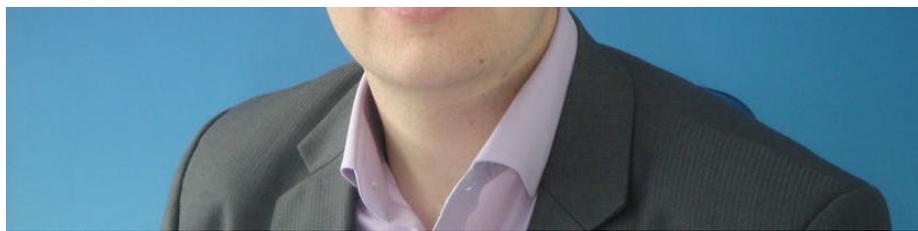
## Eyeglass lens coatings should ideally be able to do everything

BETTER VISION interviews the Product Manager for DuraVision® Platinum, the most robust ZEISS lens coating ever.

**We use our eyeglasses every day without thinking about not only what they can do optically, but also how robust they have to be to withstand all that they are subjected to. And that's the way things should be. No piece of optical equipment is continuously exposed to the same mechanical strains and environmental impacts as eyeglass lenses are. Developers at Carl Zeiss work on constantly improving the finishes and coatings available for eyeglass lenses. BETTER VISION asked René Stanke, the Product Manager for DuraVision® Platinum, what modern eyeglass lens finishes are all about.**

**BETTER VISION: When you have eyeglasses adjusted by an eye care professional, it is normally the case that relatively little attention is paid to the choice of lens finish at the end of the consultation process. We tend to rely on their recommendation. However, the finish has a critical influence on the service life of eyeglass lenses, their vision and cleaning properties. What should eyeglass wearers actually consider when choosing the coating?**





René Stanke, the Product Manager for DuraVision® Platinum

**René Stanke:** You're right. > [Eyeglass lens finishes](#) can make a difference. These days, most people buy plastic lenses. However plastic is not as hard, durable or scratch-resistant as a glass lens. As a result, I would definitely recommend a hard coating to extend the life of the lenses, and make the surface less sensitive to mechanical strains which can lead to scratches and therefore to a deterioration in vision.

A high quality anti-reflective coating is not only important to improve the look, but also to minimize distracting reflections through the lens, for example when driving at night or reading in natural and artificial light.

In addition, a good eyeglass lens should not attract dirt, dust and lint easily, and should also be easy to clean. Working together, modern eyeglass lens finishes can make the lens a robust everyday object. We can only advise all eyeglass wearers to ask their eye doctor about the precise capabilities of a lens coating.

**BETTER VISION: Carl Zeiss has now launched a new mineral finish - DuraVision® Platinum. You were involved in the development. What is special about DuraVision® Platinum? What's new?**

**René Stanke:** Based on our market research, we have optimized the entire range of coatings for ZEISS eyeglass lenses. We are mainly talking about the following four product properties:

First of all, we did a lot of work on the hardness of the lens surface. We are very proud to come up with the first plastic eyeglass lenses with an anti-reflective coating to have the same or even better hardness than comparable glass lenses. Our measurements have shown that with DuraVision® Platinum we are producing lenses that are three times harder than in the past.

Secondly, we have significantly improved the anti-reflective coating performance. Despite the anti-reflective coating, every eyeglass lens has what is known as a residual reflection, i.e., light that is reflected back by the lens and therefore does not find its way through the lens into the eye. Thus, the quality of anti-reflective coatings differs in terms of how low the residual reflection can be kept. Compared to previous lenses, we have succeeded in reducing this residual reflection by 20%.

Of course, we also wanted to maintain the outstanding, patented anti-static performance of ZEISS eyeglass lenses, so that they do not get dirty quickly and attract significantly less dust and lint. This is product feature no. 3.

The fourth is the exceptionally easy-to-clean lens surface provided by our water- and oil-repellant top coating. You can clean an eyeglass lens featuring DuraVision® Platinum coating with our ZEISS cleaning products or simply under running lukewarm water, shake off the remaining water droplets, and you will hardly need to wipe them with a microfiber cloth.

**BETTER VISION: How can these improvements be tested - particularly the improved hardness properties?**

**René Stanke:** We carry out intensive laboratory tests. For example, a diamond point is pressed into a conventional lens coating and the new comparison product. We measure the required force before the coating can no longer withstand the force and breaks. This enables us to determine and compare the hardness of individual coatings. DuraVision® Platinum achieved up to 50 percent better results in this test than previous glass finishes from ZEISS.

However, practical tests were more important to us, as a lens has to survive in day-to-day use, not in a laboratory. We assume a service life of two to three years, which we simulated in this test to demonstrate the wear resistance of our new coating. We got hold of "standard dirt" (which is also used in the vacuum cleaner industry for example), covered a cleaning cloth with it and "cleaned" eyeglass lenses with a conventional coating and with the new DuraVision® Platinum coating 600 times each at a defined pressure. The results were then analyzed in detail under the microscope. The result: the lens with DuraVision® Platinum coating showed almost no damage, while the comparison

product was very clearly scratched in this test.

**BETTER VISION: Impressive. But this isn't something you should normally do to your eyeglass lenses, is it?**

**René Stanke:** No, please don't copy our tests. Despite everything that modern eyeglass lens finishes can do, you should handle your glasses with care. Over time, a large number of tiny scratches can make a lens appear opaque when you look through it, which impairs your vision and also significantly reduces the anti-reflective coating. Do not clean your eyeglass lenses with clothing, tissues or similar items. We recommend lukewarm running water or ZEISS cleaning spray and a microfiber cleaning cloth for day-to-day cleaning. From time to time, you can use moistened cleaning cloths from ZEISS, which do not attack the coating. Another tip: Do not leave your eyeglasses in your car. The heat that can build up damages them. Don't wear your glasses in the sauna and don't rest them on the lenses. This will increase the service life of your eyeglasses.

**BETTER VISION: Absolutely, it would be a real shame if customized progressive lenses did not last as long as they should.**

**René Stanke:** Exactly. Unfortunately damage such as scratches cannot be polished out of plastic lenses and the lens cannot be given a new finish. This means that the lens is permanently damaged and a totally new one has to be made to restore full performance.

**BETTER VISION: What personally impressed you the most about the development of the DuraVision® Platinum by ZEISS?**

**René Stanke:** My highlight? There are two actually. First, the fact that we created a plastic eyeglass lens featuring the same hardness or better as a glass lens. Second, the fact that we managed to significantly improve the anti-reflective performance.

**Here's how the new DuraVision® Platinum finish is applied to ZEISS precision eyeglass lenses**

1. First, the partially-finished plastic product is worked on so that it has the optical and wearing properties required to give the wearer the best visual experience. This is succeeded by turning and milling. The plastic lens is then polished to provide optimum transparency.
2. The hard lacquer is then applied in an immersion bath, and is completely cured in a type of oven. This gives the lens a certain basic hardness and the lacquer provides an optimum link between the base lens and the anti-reflective coating.
3. The anti-reflective process with the individual anti-reflective coatings then starts in a high vacuum coating system. In total, eight ultra-thin layers are vacuum coated. Metal oxides and semi-metal oxides are alternately deposited on the hard coated glass surface.
4. During this process, high-energy ions, i.e., charged particles, are "fired" at the eyeglass lenses using a special method. These ions release their energy when they strike the surface. This compresses the individual coating layers, which increases the hardness of the overall coating. Combined with the hard lacquer, this tailored coating provides the necessary robustness for the glass coating.
5. In addition, the anti-static layer patented by ZEISS is applied, and finally the CleanCoat layer, which makes the eyeglass lens water- and oil-repellent and easy to clean.
6. After dip coating with the hard lacquer, the vacuum coating of the individual layers takes around three quarters of an hour in the coating system. But this is only the finish on the first side of the lens. The lens is turned and the second side receives the same treatment. The entire coating process must occur under dust-free, clean room conditions. If there is even the slightest contamination (like a grain of dust) on the lens, it is rejected.



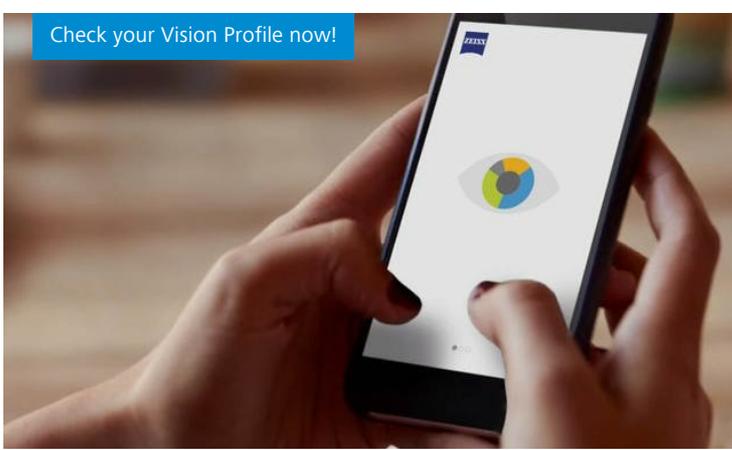
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