

Nano Hard Coatings & Photochromic Lenses 🧐🕶️

In recent years, HCoating has developed a series of nano-technology hard coatings (HD, ST, TD, SC). These use special nanoparticles invisible to the naked eye. It's truly a world-first in the eyewear coating field—unprecedented and unmatched to this day.

The known benefits are impressive: uniform liquid, stable low viscosity, constant spray height, self-defoaming, shorter UV curing time, and reduced rainbow effects.

However, a phenomenon emerged with these products: photochromic lenses turn yellow. 🤔

Initially, we thought it was due to over-exposure to UV during the hardening process. But after deep investigation, the conclusion is that the nanoparticles in the hard coatings must have physical contact with the photochromic powder in the lens for energy transfer to occur, causing the yellowing.

Principally speaking, these nanoparticles have an energy conversion effect. The "shorter UV curing time" proves this. Normally, only high-energy UV light can change the molecular structure of the photochromic powder to alter its color. With the help of nanoparticles, even low-energy visible light can make the powder appear yellow. The most common photochromic color is gray; why does it turn yellow instead? That's left for physicists to explain and summarize. 🤔

Photochromic lenses fall into two categories: Base-Changing (powder infused into the lens material) and Film-Changing (powder dissolved in the coating liquid). Base-Changing lenses generally should not use nano hard coatings because the liquid is sprayed directly onto the lens. Film-Changing lenses are fine, as the photochromic film is on the convex side and the hardening film is on the concave side—they don't touch or interfere with each other. 🙌