

# EYEZEN+ LENSES ARE A MORE COMPLETE VISION SOLUTION THAN TRADITIONAL SINGLE VISION LENSES.



# EYEZEN™ + LENSES SCIENTIFIC OVERVIEW

- Harmful Blue Light (415-455nm) can be considered a risk factor for age-related macular degeneration. *Eyezen+* lenses reduce exposure to Harmful Blue Light by at least **20%\***.
- Digital eye strain has caused visual discomfort in **65%** of Americans. *Eyezen+* lenses defend against digital eye strain.

| Features & Benefits                    | Standard Single Vision | <i>Eyezen+</i> Lenses |
|--|------------------------|-----------------------|
| Distance Vision Correction             | ✓                      | ✓                     |
| Digitally Surfaced                     |                        | ✓                     |
| Defends Against Digital Eye Strain     |                        | ✓                     |
| Reduces Exposure to Harmful Blue Light |                        | ✓                     |

**!** The needs of your patients are changing in this digital age. Recommend *Eyezen+* lenses to all your single vision patients today.



\**Eyezen+* Lenses block at least 20% of Harmful Blue Light, which is the high energy waves found between 415-455 (blue-violet light).



Sources:

The Vision Council 2016 Digital Eye Strain Report, *Eyes Overexposed: The Digital Dilemma*

Barrau C, Kudla A, Tessieres M., Points De Vue, International Review of Ophthalmic Optics 2016: *Eye Protect System Lenses*



# HARMFUL BLUE LIGHT



## There are a growing number of sources of Harmful Blue Light

With experimental data indicating that blue-violet light acts as an inducer of oxidative stress on the retina, the demand for blue-violet light protection against retinal pathologies is clear. It is equally clear that when designing ophthalmic lenses, it is imperative that they filter Harmful Blue Light (blue-violet) while also ensuring that the beneficial blue light (blue-turquoise) reaches the retina during the day.

## Harmful Blue Light decreases retinal cell's self-defense systems

Researchers have confirmed that blue-violet light results in increased oxidation in retinal pigment epithelium (RPE) cells. This decreases the cell's self-defense systems, making them inadequate to compensate for the increase of oxidative effects.

## When the retinal cell's self-defenses are diminished it becomes a fertile ground for highly toxic reactions

In the presence of oxygen, high energy photons can react with photosensitive compounds to produce photochemical reactions. These reactions are highly toxic and cause protein oxidation. This creates a fertile ground for oxidative stress in an environment that is already sensitive to that type of stress.

## Blue-Violet light, also known as Harmful Blue light is known to be a contributing factor to AMD

Harmful Blue Light can be considered a risk factor for age-related macular degeneration (AMD). AMD is associated with chronic inflammation and oxidative stress. In developed countries, AMD is the leading cause of irreversible visual impairment, with 17.8 million cases in the US alone.

Source: Barrau C, Kudla A, Tessieres M., Points De Vue, International Review of Ophthalmic Optics 2016: *Eye Protect System Lenses* Arnault E, Barrau C, Nanteau C, Gondouin P, Bigot K, et al. (2013). *Phototoxic Action Spectrum on a Retinal Pigment Epithelium Model of Age-Related Macular Degeneration Exposed to Sunlight Normalized Conditions*. PLoS ONE 8(8): e71398. doi:10.1371/journal.pone.0071398 (August 23,2013). Identified Harmful Blue Light through in vitro experiment on swine retinal cells, where the most toxic wavelengths are high energy visible light falling between 415-455nm on the light spectrum (blue-violet light).

# DIGITAL EYE STRAIN



## Digital Eye Strain is defined as the physical eye discomfort felt after two or more hours in front of a digital screen

A combination of factors including the proximity at which we view digital screens, the frequency and length of time of this use, and physical responses to screen habits, have conspired to cause visual discomfort in 65% of Americans.

## Digital Eye Strain originates from the over exertion of the ciliary eye muscles

When focusing on close objects, the eyes accommodate to try and create the clearest possible image. The eye accommodates by flexing the ciliary muscle which changes the curvature of the crystalline lens. Digital eye strain comes from this prolonged contraction or “flexing” of the ciliary eye muscles.

## Adults under 30 experience the highest rates of digital eye strain symptoms (73%) compared with other age groups

Adults in their 20s are the ultimate device multi-taskers — these individuals are constantly switching back and forth between different technologies. It has been noted that 75 percent of people who use two or more devices simultaneously report experiencing symptoms of digital eye strain more than people who use just one device at a time.

Source: The Vision Council 2016 Digital Eye Strain Report, *Eyes Overexposed: The Digital Dilemma*. A 2016 double-blind Home-Use Test conducted by the University of Arkansas with 121 participants, including 40 single vision eyeglass wearers, revealed that 3 out of 4 prescription eyeglass wearers preferred *Eyezen* lenses to their own eyeglasses and also revealed that 8 out of 10 prescription eyeglass wearers preferred *Eyezen* lenses to their own eyeglasses when using digital devices.

## Eyeglass wearers prefer lenses with the Eyezen™ design to their traditional single vision lenses

In a 2016 Essilor sponsored double-blind Home-Use Test, single vision wearers preferred lenses with the *Eyezen* design for everyday wear over their standard single vision lenses.

Also, 80% of prescription eyeglass wearers preferred lenses with the *Eyezen* design over their traditional single vision lenses when using digital devices.

*Eyezen* lenses are a more complete vision solution to modern vision problems than traditional single vision lenses.