

# Blue light eye protectors

Last month's newsletter discussed the question "Is blue light a hazard for our eyes?". This newsletter is Part 2 in the series and describes three different eye protector products for protection against blue light.

## Eclipse glasses

The sun is the primary blue light hazard we encounter each day. We normally do not look directly at the sun, but if you have the privilege of viewing a solar eclipse, then the correct eye protection to wear is solar eclipse glasses (International Standard ISO 12312-2<sup>[1]</sup>).



Although sunglasses provide protection from visible light (glare) and UV radiation, they do not provide enough protection for looking directly at the sun. Therefore, sunglasses should not be used for viewing a solar eclipse. Watching a sunset is safe without eye protection because the blue light component in visible light is scattered in the atmosphere<sup>[1]</sup>.

## Blue blockers

Blue blocker eye protectors may be used in environments with high levels of blue light, for example, by nurses in neonatal phototherapy units where babies are treated for jaundice. (Babies wear an opaque eye shield to prevent any light exposure).

Blue blocker eye protectors selectively absorb short wavelengths of visible light (blue light, up to about 520nm), preventing these wavelengths reaching the eye. This property gives the eye protector a unique orange colour. The lens colour also distorts colour perception.



## Blue light filters

There are claims that long-term exposure to blue light emitted from LED light sources and digital devices will damage people's eyes. A blue light filter is a clear coating applied to spectacle lenses that reduces the amount of short wavelength light (up to about 500nm) transmitted to the eye, typically by up to about 25%<sup>[2]</sup>.

There is, however, controversy over the use of blue light filters.

- The blue light dose from LED and digital devices is very small compared to being outside in sunlight. There is no acute risk of eye damage when using LED and digital devices under normal usage patterns<sup>[3]</sup>.
- There is evidence from animal studies that prolonged light exposure can damage the retina but researchers do not know if these results apply to humans<sup>[4]</sup>. We also don't understand the long-term exposure risk of blue light and whether blue light filters protect against macular degeneration in the general population<sup>[5]</sup>.
- We don't know the long-term side effects of blocking blue light for our night vision<sup>[3,6]</sup>, our sleep-wake cycles<sup>[3,6]</sup> or for myopia progression<sup>[6]</sup>.

One thing is certain: blue light and blue light eye protection is set to be a contentious topic for years to come.

**References:** [1] ISO 12312-2:2015 [2] PLoS ONE 12(1): e0169114. doi:10.1371/journal.pone.0169114 [3] Eye (2016) 30: 230-233  
[4] Env Health Persp (2014) 122(3):269-276 [5] Ophthalmic Physiol Opt (2017) 37: 644-654 [6] Ophthalmic Physiol Opt (2017) 37: 640-643

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