Transitions® Lenses and Blue Light

TECHNICAL NOTES FOR EYECARE PROFESSIONALS
WHAT IS HARMFUL BLUE LIGHT?

Blue light (also known as High Energy Visible Light) is at the far end of the visible spectrum, close to ultraviolet light, with wavelengths of between 380-460 nanometers. Harmful blue light is centered around 435nm.¹

Long term exposure to harmful blue light has been linked to increased risk of developing age-related macular degeneration (AMD) which is the leading cause of vision loss in adults over the age of 50.¹,²
COMMON SOURCES OF HARMFUL BLUE LIGHT

The amount of harmful blue light a person is exposed to varies based on several factors, including light source and viewing direction (Table 1).

Sunlight is by far the strongest source of blue light at least 100 times greater than artificial sources (Fig. 2).

<table>
<thead>
<tr>
<th>VIEWING DIRECTION</th>
<th>SUN</th>
<th>PLASMA TV</th>
<th>SMART PHONE</th>
<th>LCD MONITOR</th>
<th>CRT MONITOR</th>
<th>OVERHEAD FLUORESCENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indirect</td>
<td>3.71</td>
<td>.035</td>
<td>.007</td>
<td>.013</td>
<td>.025</td>
<td>.089</td>
</tr>
<tr>
<td>6 ft. facing</td>
<td>1 ft. facing</td>
<td>2 ft. facing</td>
<td>2 ft. facing</td>
<td>6 ft. facing</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 1
Harmful blue light integrated irradiance values (w/m2) of common artificial light sources against solar diffused light (Transitions Optical internal measurements)
Fig. 2
Irradiance spectra of common artificial light sources (top) and direct and indirect sunlight (bottom) (Transitions Optical internal measurements)
TRANSITIONS® ADAPTIVE LENSES

All Transitions lenses help protect against harmful blue light everywhere you need it.

Transitions® Signature® VII lenses block at least 20% of the harmful blue light indoors, which is up to 2 times more than standard clear lenses,* and they block over 85% outdoors.³

* Transitions lenses block 20% to 36% of harmful blue light indoors excluding CR607 Transitions Signature VII products which block 14% to 19%. The 2 times comparison refers to typical clear 1.50 and polycarbonate hard-coated lenses.
Transitions® XTRAActive lenses help provide more protection than Transitions® Signature VII lenses – they provide even more protection against blue light everywhere you need it by blocking at least 34% of the harmful blue light indoors, which is up to 3 times more than a standard clear lens,** and 88% to 95% of harmful blue light outdoors.3

** Transitions XTRAActive lenses and Transitions Vantage lenses block 34% to 36% of harmful blue light indoors excluding CR39. Transitions XTRAActive products which block 27% to 31%. The 3 times comparison refers to typical clear 1.50 and polycarbonate hard-coated lenses.
Transitions® Vantage® lenses reduce exposure to harmful blue light, blocking at least 34%** indoors and over 85% outdoors.³

** Transitions® XTRActive® lenses and Transitions Vantage lenses block 34% to 36% of harmful blue light indoors excluding CR607 Transitions XTRActive products which block 27% to 31%. The 3 times comparison refers to typical clear 1.50 and polycarbonate hard-coated lenses.
Fig. 3
Overlay of un-activated and activated spectra of Transitions® Signature™ grey and brown lenses (top) and Transitions® XTRActive™ grey and brown lenses (bottom).

*Transitions Lenses and Blue Light Technical Notes*
Transitions® Signature® VII lenses filter a similar amount of harmful blue light indoors compared to many blue-filtering AR coatings and offer extra protection where you need it the most: outdoors in the sun. Transitions® XTRActive® lenses provide additional protection indoors compared to many blue-filtering AR solutions. Transitions lenses are compatible with many AR coatings that filter harmful blue light. When used together, these products may provide complementary benefits.
REFERENCES


3 Calculated using a weighted hazard function between 380-460nm