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16. Abstract

Manufacturers have recently introduced several types of tungsten-halogen headlamp bulbs that have been filtered to produce bluish tints. Some informal reports suggest that the differences in spectral power distribution due to the tinting enhance visual performance and reduce fatigue; others suggest that they simply provide esthetic benefits. In this study, we investigate the effect of three headlamp types (a standard tungsten-halogen lamp, a broadly filtered blue-tinted lamp, and a neodymium-filtered blue-tinted lamp) on two aspects of vision (discomfort glare judgments and the luminance threshold for target detection).

Consistent with prior studies, the results show that discomfort glare ratings increase as chromaticity moves toward the blue range. No evidence was observed that target detection is enhanced with blue headlamps for either peripherally viewed or centrally viewed targets. However, when deeply colored light sources (beyond the range of nominal white that headlamps are required to meet) were introduced into the detection task, differences in spectral sensitivity were observed in the near-periphery.

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