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16. Abstract

This study was designed to compare the illuminated surface areas of HID and tungsten-halogen low-beam headlamps in the U.S. A sample of 20 tungsten-halogen lamps and 17 HID lamps for model year 2000 vehicles in the U.S. was examined. The illuminated surface area was determined using a modified version of an ECE method for evaluating the illuminated surface of signaling devices. The main finding is that the HID low beams generally have smaller illuminated surface areas than do the tungsten-halogen low beams. Because smaller light sources result in more discomfort glare (presumably via greater luminance), the present finding suggests that the smaller illuminated area is one reason for drivers reporting more discomfort from HID lamps. An implication is that the increased discomfort from HID lamps could be reduced by increasing their illuminated surface area.

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