Downlights are the predominant luminaire used in both residential new construction and remodeling. Higher claimed efficacy and reduced maintenance provided by compact fluorescent lamp (CFL) technology make CFL downlights a logical choice. However, of the 400 million downlights installed in homes today, most use incandescent lamps.

Specifier Report: Downlights presents photometric, electrical, and thermal performance data for selected CFL residential downlights. The report covers fixtures eligible to earn ENERGY STAR® approval under version 4.0 of the Residential Lighting Fixture specification.

CFL downlights can function as fixed luminaires, projecting light downward onto horizontal surfaces, or as wallwashers for vertical surfaces. Most downlights consist of a housing, lamp socket, CFL, ballast, and junction box for wiring. Baffles, reflectors, and lenses can enhance appearance but may affect performance.

Results

- Ballast case temperatures measured below the manufacturers’ maximum recommended values, both in open-air and when installed in test boxes.
- Luminaire light output measured in test boxes averaged 44% below maximum possible light output values.
- Calculated average system efficacies = 31.7 LPW
- Light output and system efficacy was lower for trims with black baffles and for both the Fresnel lens and the diffuse glass lens.
- System efficacy for reflector lamps, whether CFL, incandescent, or metal halide, averaged 94% compared to 52% for their A lamp, spiral, amalgam, and non-amalgam counterparts.

Sponsors

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