

Technical Bulletin

Life Rating of LEDs

Defining Life

The generally accepted standard for defining the life of an LED is based upon its useful life. In order to state useful life, the level of acceptable lumen depreciation must be decided. No exact amount has been adopted by the industry to date, but the general consensus is 70% of initial light output for general illumination and 50% of initial light output for most decorative applications.

Environmental Conditions

Lumen depreciation can be influenced by environmental conditions. An ambient of room temperature is considered typical for purposes of establishing life ratings. Higher ambient temperatures will accelerate lumen depreciation and decrease life. The maximum recommended ambient is typically stated to be 50C. LEDs operating at higher temperatures for sustained periods may be subject to accelerated lumen depreciation.

Die Considerations

Using high quality LED dies is of critical importance in designing a finished quality product. Tokistar offers a wide range of LED fixtures, and one die size does not fit all. Dies used in Tokistar products come from such reliable sources as NICHIA®, CREE® and LUMILEDS®. The brand of die selected by our engineering staff is based upon the virtues of each die as they relate to the demands of each unique product and application.

Other Considerations

Proper thermal management, use of the best encapsulant materials, package design, circuitry design and other construction considerations play a major role in the quality of the finished product. Even the best die will fail prematurely if it is not employed properly. Equal consideration is given to each of these aspects in our product designs.

Ratings

White LEDs

Under typical conditions, LED lifetime is in the range of 40,000-50,000 hours based on lumen depreciation to 70% of initial light output.

Single Colored LEDs/Red & Amber

Under typical conditions, LED lifetime is in the range of 80,000-100,000 hours based on lumen depreciation to 50% of initial light output.

Single Colored LEDs/Other than Red & Amber

Under typical conditions, LED lifetime is in the range of 40,000-50,000 hours based on lumen depreciation to 50% of initial light output.

Tri-Color LEDs

Under typical conditions, LED lifetime is in the range of 40,000-50,000 hours based on lumen depreciation to 50% of initial light output.

Notes

- Ratings are based upon test results provided by LED manufacturers.
- Since LED technology is constantly evolving and improving, full-life testing of LEDs is not practical due to long expected life times. Test data would be obsolete by the time life testing was completed.
- Typical conditions for Tri-Color LEDs is based upon each color having a duty cycle of 50%. If all three LEDs are on at full brightness for sustained periods of time, this may result in a significant increase in lumen depreciation and decrease in life.



TOKISTAR® LIGHTING INC.

1561 N. Gemini Place • Anaheim, CA 92801

Tel: 714.772.7005 • Fax: 714.772.7014 • Toll free in U.S.A.: 877.340.7633
E-mail: info@tokistar.com • Web site: www.tokistar.com