



LED HEAT SINKING

LED heat sinking refers to the process of removing heat from the LED light source to prevent overheating and to maintain optimal operating conditions. Heat is generated during LED operation and must be dissipated to prevent damage to the LED and to ensure its consistent performance.

Heat impacts lumen depreciation in LED lighting because the increased heat causes the LED chips to become less efficient over time. The higher the temperature of the LED chips, the more quickly the light output (or "lumens") will degrade. This degradation can be accelerated by other factors, such as dust, dirt, and humidity. The lumen depreciation due to heat can be minimized by ensuring the LED chips are properly cooled and protected from dust, dirt, and humidity. Additionally, it is important to select LED lighting fixtures that are designed to withstand higher temperatures, as this will help to reduce lumen depreciation.

Heat sinking is typically accomplished using a heat sink, which is a passive component that is designed to dissipate heat away from the LED and into the surrounding environment. A heat sink may be integrated into the LED package or attached to the LED as a separate component. The heat sink may have fins or other features that increase its surface area and improve its ability to dissipate heat.

In addition to heat sinks, other cooling methods, such as fans or liquid cooling systems, may be used to manage heat in LED lighting applications. Proper thermal management is essential to extend the life of an LED and to maintain its consistent performance over time.

LED lifetime is rated in terms of the number of operating hours (or "L-Rating") at which the LED reaches a certain % of its initial light output. This is typically measured on LED bulbs and LED fixtures and is expressed in hours. The higher the rating, the longer the LED is expected to last before it needs to be replaced. Generally, most LED bulbs and fixtures have a rated lifetime of 50,000 to 100,000 hours.