LEAPFROG LIGHTING

Light quality of LED lamps

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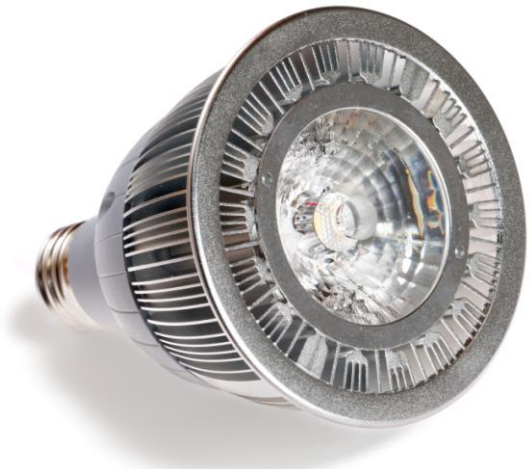
What constitutes high quality LED light?



PAR30 Dimmable High Output Spotlight

- Even light distribution

A high quality LED lamp is able to evenly distribute the bright, highly concentrated light—with a flux 200x that of halogen—within a very limited emitting area. The challenge is not only in redistributing the point light, but in ensuring it is uniform in order to create an even light (acceptable light curve).

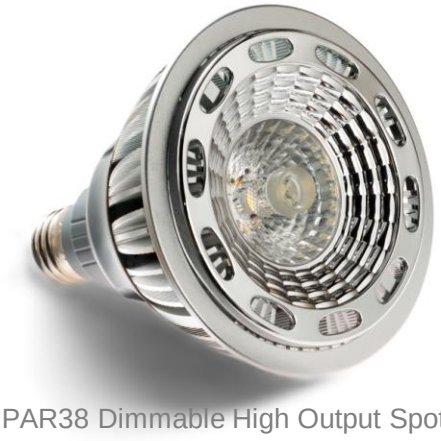
- Anti-glare technology

A high quality LED lamp both maximizes the emitting area of luminaries and uniformly redistributes the ultra bright points of LEDs to remove glare. The challenge is in removing glare without lowering the lamp's performance in other areas.

- Gentle roll-off at edges

A high quality LED lamp produces a gentle roll-off at the edges that fades out gradually instead of stopping suddenly. The challenge is in redistributing the light while minimizing light loss.

Why most lamps fail to produce high quality LED light



PAR38 Dimmable High Output Spotlight

To produce a high quality LED light, the lamp must be designed in a way that can redistribute the ultra bright points of LEDs. The aim of redistribution is to maximize the emitting area and to provide a uniform brightness. Most manufacturer's don't pay adequate attention to the design of the lens. Without careful lens design, the product performance drops considerably (loss in lumens, lumen output, energy efficiency).

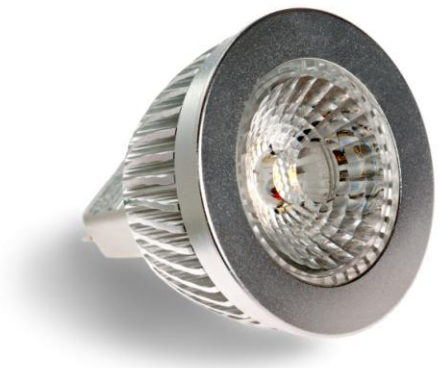
- ## Diffuser

Many manufacturers use diffusers to reduce the intense points in LEDs. However, this results in a lack of control over the spread of light, leading to a less accurate distribution (poor internal reflection) and lower efficiency. It also reduces the amount of light output.

- ## Reflectors

Direct imaging of light sources can be avoided and luminaire cutoff angle can be controlled with the use of reflector scales and multi-facet features. However, the light intensity is still high because the emitting area of the lens is smaller than a reflector.

The Leapfrog Lighting difference



MR16 Dimmable High Output Spotlight

Leapfrog Lighting bulbs use *intelligent lens design*, integrating lens redistribution technology and reflectors. This solution distributes the light evenly over 100x the area of the original light source, which enhances the anti-glare effects without reducing the amount of emitted light.

This allows Leapfrog Lighting bulbs to achieve a high efficiency and better light distribution than anything else on the market today.

The solution is in the design

Leapfrog Lighting bulbs take the light from the very high intensity of the LED source and through a patented, integrated lens-reflector design redistribute that light to a pleasing, soft-edged image reminiscent of well-loved, but inefficient, halogen bulbs.