

## What are Important Factors for Selecting LED Headlights?

### 4 Key Factors in LED Headlight Selection

- 1 Uniformity
- 2 No color change over the depth of field/working distance range
- 3 Easy control of brightness
- 4 Beam directional options (true coaxial and close coaxial/slightly off-axis options)

### Why is uniformity important?



SurgiTel® LED  
(multi-lens optics)



Other LED #1  
(reflector optics)



Other LED #2  
(single lens optics)



\*If the beam is not uniform, the contrast images will be distorted.

\*The center bright spot may hurt your eyes.

## Why is no color change over the working distance range important?

If the color of beam changes over the working distance range, users cannot recognize the true color of objects.

## Why is control of brightness important?

The optimum brightness varies according to the user's age and nature of objects. So user should easily control the brightness to achieve the maximum visual acuity.

## Why is beam direction important?

True coaxial illumination is not optimum for most procedures because the true coaxial beam will create strong glares (back reflections), but some procedures such as endodontic procedures may require the true coaxial illumination. So, an ideal headlight should have two mounting options; true coaxial mounting and close coaxial (slightly off-axis) mounting. Most headlights are either true coaxial or close coaxial. But SurgiTel offers two options.



*Close, off-axis mounting*



*True, coaxial mounting*

## Are LED Lights Safe for our Eyes?

**Answer:** Properly designed LED lights are safe for our vision, but improperly designed LED lights, like any other poorly constructed instrument (such as inexpensive loupes) will hurt our eyes.

It is well known that UV and the blue spectrum of lights are harmful to our vision. So when we use curing lights, it is required to use orange filters to protect our eyes from the blue light. All curing lights use the blue spectrum. This includes a variety of light sources such as halogen light, xenon light or LED light.



There are three styles of LED headlights available today. They are **neutral** LED, **cool** LED and **extreme cool** LED (strong blue enhanced LED). The blue spectrum of the **neutral** LED lights is similar to the green spectrum and the blue spectrum of **cool** LED is slightly stronger than the green spectrum, but the blue spectrum of extreme **cool** LED is much stronger than the green spectrum. The use of “elevated” blue spectrum and **extreme cool** LED for long durations may be harmful to eyes. Also “elevated” blue/**extreme cool** LED lights distort colors. SurgiTel offers **neutral** and **cool** LED lights.

The uniform beam without color dispersion generated by “achromatic multi-lens optics” is the safest because there are neither bright spots nor color separation. The beam generated by reflector optics a bright center, but there is no strong blue spectrum separated. The most dangerous beam is a beam formed using single-lens optics because strong blue spectrum is visible to the eyes.

\*For more information click [here](#).



**Extreme Cool** LED  
(strong blue enhanced)



**Neutral** LED



**Cool** LED

# LED Headlight selection Guide

## Headlight Options?



Micro LED (off-axis mounting)



Micro LED (coaxial mounting)



H.I. Mini LED: Brightest Option



Standard Clip Light Adapter



Dove Tail Light Adapter

### Micro LED vs. High Intensity (H.I.) Mini LED

Types	Micro LED	H.I. Mini LED
Brightness @ 14"	4,500 ft. cd.	7,000 ft. cd.
Beam diameter @ 16"	100mm	80mm
Lens diameter	14mm	19mm
Weight of LED options	4.0g	7.2g
Battery charge life	8 hours	8 hours
Charge time	2-3 hours	2-3 hours
Flip-up orange filter	available	available

