

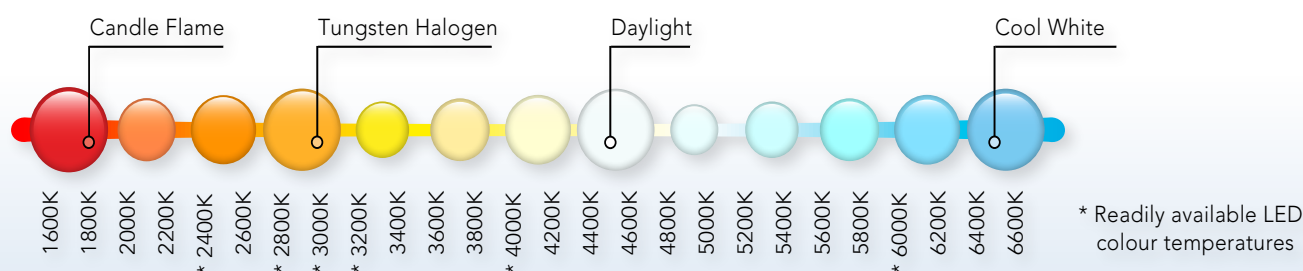
LIGHT QUALITY FROM LED SOURCES

It is estimated that lighting installations account for more than 19% of the world's total electricity consumption. The Department of Energy and Climate Change (DECC) believes that a quarter of potential energy savings will be made in private dwellings by 2030. With the switch to more energy efficient lighting solutions, LED technology is becoming increasingly popular. ECA members, lighting designers and electrical contractors are in an excellent position to benefit from the specification and installation of this lighting technology.

This ECA Factsheet takes a brief look into potential quality issues associated with LED lighting including lighting control/dimming pitfalls that should be avoided.

New LED light sources provide more choice than the perceived "blue" light colour!!!

Colour temperature is measured in kelvins. For example a naked candle flame is approximately 1800 kelvins, tungsten halogen approximately 3000 kelvins, daylight 4500 kelvins and metal halide 6500 kelvins. With LED light sources, you can have all of these variations and more as often colour choice is down to the consumer's discretion.

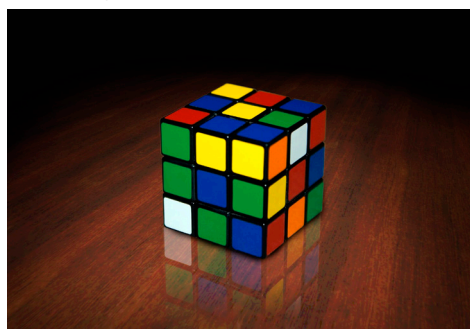


Once you have settled on your light colour for your installation, the next important parameter for consideration is light quality; the actual quality and pureness of the light being emitted from the light source. Often when light is reflected on an object, you may find an element of distortion. The true likeness of the product can be distorted by LEDs with a negative effect on your installation.

Light quality can be measured in CRI (colour render index). The higher the figure up to 100 the better!! As a guide it is better to aim for products with a higher colour render index figure such as CRI85. Some LED products can achieve up to CRI95.

Light sources with a lower CRI can distort objects and reduce the quality and feel of the lighting installation.

LED Light source colour 3000K CRI95



High CRI light at 3000K

LED Light source colour 3000K CRI70



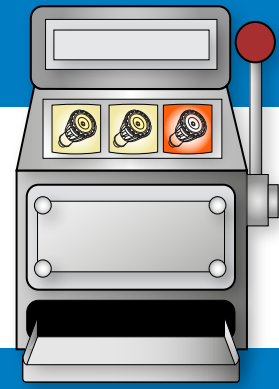
Low CRI light at 3000K

◀ The CRI Difference ▶

A simple test for the CRI can be conducted by reflecting an LED light source against a red object/item. Compare a lighting product with lower CRI against a product of the same colour temperature but with a higher CRI and see the results for yourself.

Don't leave dimming to chance!!!

Whilst selecting a suitable colour temperature for your lighting installation and ensuring light quality by checking a product's CRI, it is equally important to ensure your lighting control and dimming compatibility. Dimming solutions should be flawless regardless of light sources and should be designed and tested during the early stage of any project.



3 Golden Rules to help control LED light sources:

1. Get your manufacturers **TALKING!!**

Introduce the lighting control company to the lighting manufacturer and discuss your project's lighting installation requirements. In some cases an early lighting mock-up trial may help to overcome problems at a later stage of the project.

2. **Observe** minimum circuit loads

Always ensure lighting circuit loads are within the minimum and maximum circuit rating for the lighting control system. This is essential in order to achieve 100% dimming function. Ensure you check manufacturer's instructions prior to starting the lighting installation.

3. **Future proof** your installation

Consider the viability and appropriateness of your lighting installation. Make sure once you have left site, the maintenance or upgrade can be made easily. Sometimes complex dimming protocols are adopted leaving the end user in difficulty should an issue arise or they wish to upgrade. Traditional mains dimming with a retrofit solution is the best way forward. Simplicity is key.

Frequently asked questions on LED lighting products

Q1. Why are LEDs always blue or are other colours available?

A. As mentioned earlier in the Factsheet, LED light sources come in a variety of colour temperatures, ranging from warm white (as warm as a candle flame) to a very cool white colour (resembling blue). There is plenty of choice on the market.

Q2. Can LED products be dimmed and work with dimming systems/dimmers?

A. Absolutely!! On the provision that you, the installer, have carried out the necessary research!!! Always liaise with both the lighting manufacturer and dimming control company. It is worth conducting compatibility tests beforehand.

Q3. Are LED products compliant with Part L of the Building Regulations?

A. All lighting products comply with 2010 Part L, as long as they provide 400 lamp lumens minimum and have an efficacy of 45 lamp lumens per circuit-watt for domestic applications and 55 lamp lumens per circuit-watt for commercial use.

Q4. What standards are LED products made to?

A. There are no European or British product standards for manufacturers to adhere to; there are only voluntary standards at this time.

Q5. What is the expected life span of a LED light source?

A. Like any product LED light sources are only as good as their weakest component. Chip manufacturers advertise 50,000 hours. This should be noted as the life expectancy for the LED chip itself and not the complete light source. It is always important to take on board the manufacturer's guarantee in years rather than estimated life span in hours. Beware of complicated guarantee schemes which require pre-registration.

FOR FURTHER INFORMATION CONTACT: Technical Department, Electrical Contractors' Association
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