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## Questions & Answers - LED Lighting

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- I have just replaced my existing bulbs with energy saving bulbs. Why should I now install LED bulbs?
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### What are LED bulbs?

LED lamps use semi-conductor technology to generate light. They contain electronic components and Lighting Emitting Diodes. They are robust, long lasting, non-toxic, contain no glass and are highly energy efficient. They are the most flexible and versatile form of lighting and can be made to replace other types of bulb in existing fittings.

### What sort of light do LEDs emit?

The light from LED bulbs for normal use comes in three basic colours, warm, neutral and cool to simulate existing lighting. (This is measured in units called Kelvins or just K. Typically 2,700-3,000K for warm, 3,500-4,500K for neutral and 4,500-10,000K for cold).

The Colouring Rendering Index (CRI or Ra) is a measure of how close a lamp is to natural daylight. It ranges from 0 to 100 where 100 is best. Highest quality LEDs have a CRI over 90.

### How long will the LED bulbs last?

LED lamps last between 25,000 hours and 50,000 hours. This will depend on how they are used and the quality of the product.

### I have just replaced my existing bulbs with energy saving bulbs. Why should I now install LED bulbs?

LED lamps are more energy efficient than CFL/fluorescent and filament lighting. The table below provides a rough guide to the current performance of LED lamps which are typically 30-50% more efficient than CFLs and up to 800% more efficient than filament lamps.

LED - Watts	CFL- Watts	Halogen- Watts	Incandescent - Watts	Approx light output (Lumens)
4	5-6	25	25	210lm
5	7-9	30	30	280lm
7	9-13	35-40	40	380-450lm
9/10	13-15	45-50	60	500-800lm
12	18-23	60	75	1100lm

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15	25-30	70	100	1500lm
25	30-52		150	2600lm

- Almost instant turn on to full brightness.
- Robust using plastics and semiconductors, no glass
- Non toxic, no mercury
- Long lasting – typically 30,000 to 50,000 hrs. CFLs last 10,000 to 12,000 hours. Incandescent bulbs last 1500 to 4000 hrs. Degradation is almost linear over time. CFLs degrade significantly early on, do not like to be switched on and off.
- Dimmable using existing dimmers. CFLs do not dim well
- Colour options available – warm, natural, cool
- Multiple switching on and off. Do not significantly degrade with on and off switching

### **Can I get LED lamps for a 12V circuit?**

LED lamps are available for both mains and 12V circuits. LED lamps are made with semi-conductor technology which is most suitable for lower voltage circuits.

### **Can I simply take out the old bulb and replace with the new LED one?**

You should ensure that the LED bulb has the correct base fitting and the bulb will fit into the existing housing. Some LED bulbs are larger than the bulbs they are replacing.

Users should test samples of MR16/GU10 replacement spotlights in their intended fixtures before purchasing large quantities, if possible. Some LED lamps vary in diameter, neck size and pin length compared to typical halogen MR16 size bulbs.

### **Can LED lamps be dimmed and can they be used with my existing dimmer?**

The LED lamps marked as dimmable will work well with the majority of dimmers used for incandescent lighting. Importantly check that the power rating of the dimmer is sufficient for the number of lamps on the circuit.

### **What do I do with my old bulbs?**

Energy saving light bulbs and fluorescent light tubes contain small amounts of mercury and they need to be safely disposed of. Unbroken used bulbs can be taken back to the retailer if the owner is a member of the Distributor Takeback Scheme. Otherwise, many local waste disposal sites now have the facilities to safely collect and dispose of old bulbs. However, this advice is not printed on the packaging that low-energy bulbs are sold in.

### **I broke my energy saving bulb/tube while I was changing it – what do I do to dispose of it?**

Put it in a sealed plastic bag and take it to your local tip to dispose of. Do not use a vacuum cleaner to clear up the mess.

### **When will I have to replace my LED light bulbs?**

It depends on how much they are used and the future improvements in the technology. For Normal domestic use an LED lamp will last approximately 15 years. It may be prudent to replace these bulbs with more advanced samples in coming years as prices drop and LED technology advances.

### **What transformer do I need for the 12V rated LED lamps?**

The transformer power rating given in watts or VA must be equal to or above the sum of the wattage rating of all the lamps on the circuit.

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## Can I replace fluorescent tubes with LED versions?

LED replacement tubes provide up to 70% energy saving with instant start, no flicker and no buzzing. They are environmentally friendly, non-toxic lead and mercury free. Simple, safe retrofit in existing luminaires - magnetic ballasts may be optionally removed or bypassed for better performance. Electronic ballasts require removal or bypass. They have solid construction with plastic lens, aluminium and plastic body with high shock and vibration resistance leading to increased reliability. They are also radiation friendly with no significant ultraviolet, infrared or radio radiation. No glass tube to shatter, no mercury so safer for food industry applications. 3 year warranty and long life reduces maintenance costs. Ideal for remote and locations with difficult access. Available in cool, natural and warm colours.

## What LED floodlight do I require?

LED floodlights for outdoor illumination can be provided with or without infrared sensors. They are highly efficient. The table below can be used to select an LED floodlight by comparing with its halogen equivalent.

Rated power	Halogen Equivalent	Typical Light Output Lm
10W	50W	600-700lm
30W	150W	1800-2300lm
50W	250W	3000-3500lm