Energy Efficient Lighting

ENERGY PROJECTS PLUS
towards a sustainable future

Electric lighting for the mass population was made possible around 140 years ago by the development of the Incandescent Light Bulb. The incandescent bulb remained little changed for over a century but was finally phased out from sale over 5 years ago (though some are still in use in homes).

During its final decades it was slowly replaced by more efficient halogen bulbs and Compact Fluorescent Lamps (CFLs), which in turn are being replaced by even more efficient Light Emitting Diodes (LEDs).

Incandescent bulbs produced light by heating a filament so that it glowed (and became very hot to touch) but they wasted 80% of the electricity to produce heat not light. Halogen lamps improved bulb efficiency and lifespan but still used the wasteful filament and are now also being phased out.

CFLs work much more efficiently by-passing electricity through a gas, which produces light (and a lot less heat) and they use about one fifth of the electricity needed for an incandescent bulb. LEDs pass electricity through a material called a semi-conductor, producing light even more efficiently than CFLs and are rapidly becoming the purchase of choice.

TYPES OF LIGHTING

Halogen bulbs

These bulbs are not as efficient as CFLs or LEDs, costing more to use, and are being phased out. However, you may still be using them at home and they are often found in clusters or on ceiling tracks (in kitchens for example). They are easily replaced by CFLs or LEDs.

Compact Fluorescent Lamps (CFLs)

Early CFLs often looked like thin tubes in a round or looped shape and could be slow to reach full brightness. However, modern CFLs can now look like the familiar incandescent bulb, last a lot longer than incandescent or halogen bulbs, and have overcome the early problems with light quality. They are easily purchased from supermarkets, discount stores as well as lighting suppliers and use a lot less electricity than incandescent or halogen bulbs so are much cheaper to run.

Light Emitting Diodes (LEDs)

LEDs are currently the most efficient type of bulb and can easily replace the earlier bulbs. They have a range of additional advantages over CFLs: they last longer than CFLs, the light they produce is available in a range of colours to suit the use of the space they are lighting (e.g. a workspace or one for relaxation), they are dimmable, and are more efficient again at converting the electricity used to useful light . Whilst they are slightly more expensive to buy, they will save you money over their lifetime.

Smart Bulbs

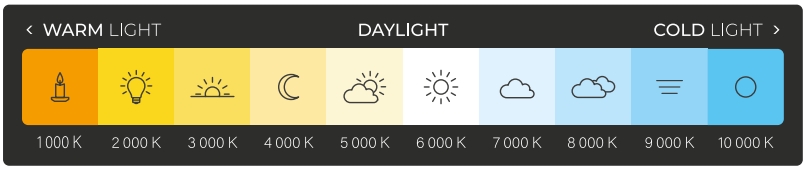
These are LEDs that can be controlled remotely through Wi-Fi or Bluetooth connected devices such as your phone, tablet or voice activated smart speaker. The facility to set timers for lights, e.g. for security reasons, can avoid lights being left on unnecessarily, though the main energy saving comes from them being LEDs instead of less efficient types of bulb.

THREE KEY THINGS YOU NEED TO KNOW WHEN REPLACING A BULB

When replacing a bulb you will need to know the colour of light wanted, the type of fitting (how it connects to the electrical socket), and the amount of light you need (brightness).

1. Colour of light

The colour, measured in Kelvin (K), is an important contributor to the quality of light and generally ranges between 1800K for “very warm white” and 7000K for “cool daylight”. Around the home “cool white” (around 4000K) may be comfortable for kitchens and utility rooms (or office space) but less attractive for lounges or bedrooms where “warm white” (around 2700K) is the more popular choice as its colour is similar to that of the old incandescent bulbs.



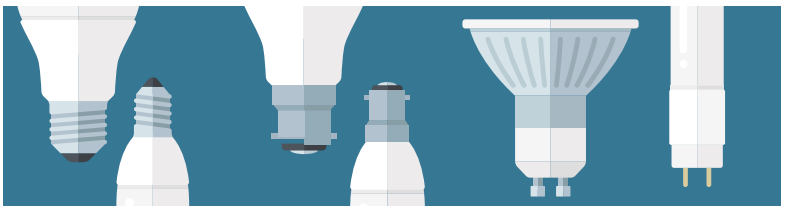
2. Brightness

We got used to buying our incandescent bulbs based on their watts (W) – a 100W bulb is brighter than a 60W bulb (and due to the heat given off by the bulbs some of our lampshades had warning notices to not exceed a certain wattage e.g. “maximum 60W”). However, with the new CFLs and LEDs using less than a fifth of the electricity previously required by incandescent bulbs the correct measure of a bulb’s brightness is its Lumens (lm). This is a standard measure of the amount of light emitted, and the higher the lumens the brighter the light.

Since watts is a measure of how much electricity the bulb uses, not how much light it gives off, there is no exact comparison between watts and lumensavailable, but the table below is a general guide:

3. Type of fitting

Bulbs can have different fittings but the most common types are: Bayonet, Edison Screw, GU10, Pin (fluorescent tubes). The best way to avoid buying the wrong type is to carefully take the old bulb with you and compare it in the shop, for example Bayonet and Edison Screw fittings can come in two sizes.



Edison Screw (large and small) | **Bayonet (large and small)** | **GU10** | **Pin (fluorescent tube)**

Watts v Lumens (approx.)			
Lumens	**450lm**	**800lm**	**1550lm**
Incandescent	40W	60W	100W
Halogen	29W	43W	72W
CFL	9W	12W	20W
LED	5W	8W	16W

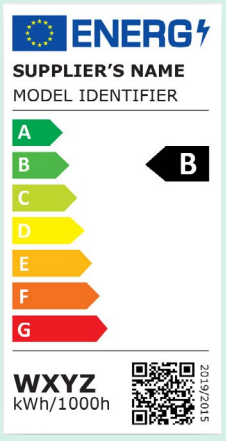
Energy labelling of electrical devices has been around for over 25 years. However, due to the increased efficiency of devices during this time it has become necessary to re-set the rating on labels to reflect that most devices are rated at the high end and few if any at the low end.

This means that the old labelling scheme for lighting (ranging from A+++ to E) will be re-set to A to G with devices rated A or higher under the old system now being rated around the E mark based on their electricity consumption.

This change came into force legally from October 1st 2021 though any products already in the market will have a couple of years before they will need re-labelling.

The new label will also now include a QR code to enable further details on the device to be received through a mobile phone. It will also show how much electricity the light will use over 1,000 hours, which will make comparison much easier.

If you are unsure which label system is being used check if there are A+, A++, and A+++ ratings. If yes, then it is the old system and anything less than A should be avoided. In the new system E and above will be the most energy efficient.



For further information call the Save Energy Advice Line:

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