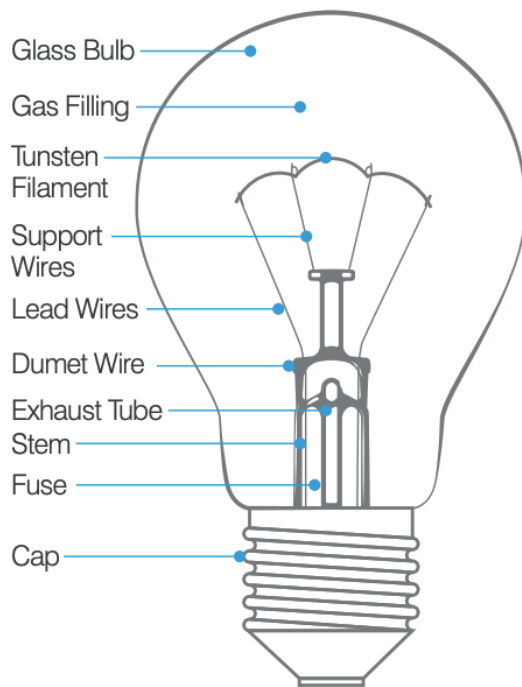


Incandescent Lamps (Light bulbs)



How it works

Incandescent Lamps are commonly referred to as 'Light bulbs'. Light bulbs have a very simple structure. At the base, they have two metal contacts, which connect to an electrical circuit. The metal contacts are attached to two stiff wires, which are attached to a thin metal filament. The filament sits in the middle of the bulb, held up by a glass mount. The wires and the filament are housed in a glass bulb, which is filled with an inert gas, such as argon. When the bulb is connected to a power supply, an electric current flows from one contact to the other, through the wires and the filament. The filament is made of a long, incredibly thin length of tungsten metal. In a typical 60-watt bulb, the tungsten filament is about 2 meters long but only 0.25mm thick. The tungsten is arranged in a double coil in order to fit it all in a small space. In a 60-watt bulb, the coil is less than 25mm long.

Type

As incandescent lamps have been in the market for over a century and originated as the main light source for domestic dwellings, many different types and sizes are available. See below. The most common shape would be the 'GLS' or 'General Service Lamp' which would typically be found in pendants, standard lamps or table lamps. The next most popular lamp is the 'candle' shape which as the name suggests, effectively replaced the candle wall fixtures of the 19th century.

However, there are many other types such as 'Globe', 'Reflector', 'Tubular' etc. Reflector lamps (either blown bulb or PAR) are similar to GLS lamps but have a bulb with an internal reflector coating. Replacements should normally be of the same type as originally used unless it is desired to change the beam intensity and width. Crown-silvered lamps are intended to be used in conjunction with a metal reflector as part of the luminaire.

With the pressure to reduce energy consumption, the last 5 years has seen the consumer shift across from purchasing incandescent lamps to their replacement, Compact Fluorescent Lamps.

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Size

Incandescent lamps tend to be measured in terms of their power output or wattage. Over the years, the GLS lamp has reduced in size from 65mm diameter to 60mm to its current 50mm. Many of these shapes have a designation consisting of one or more letters followed by one or more numbers. The letters represent the shape of the bulb, numbers represent the maximum diameter, in millimeters e.g. A55 or in eighths of an inch or PAR16 (i.e. 2”).

Lamp Base

As Incandescent lamps have been in the market for over 150 years, there are numerous bases available to suit every application.

Efficacy

Incandescent lamps offer a low efficacy as the majority of energy consumed is converted into heat. A typical range would be 8-14 lm/w. The following table details the typical efficacies of the most common incandescent lamps.

Lamp Type	Wattage							
	25		40		60		100	
	Efficiency (lm/W)	Energy Rating	Efficiency (lm/W)	Energy Rating	Efficiency (lm/W)	Energy Rating	Efficiency (lm/W)	Energy Rating
GLS Clear / Frosted	9.2	E	10.4	E	11.8	E	13.4	E
GLS White	8.0	E	9.0	E	10.3	E	11.7	E
GLS Clear / Frosted 2500 hours	-	-	7.5	E	9.0	E	10.8	E
Candles & Sphericals Clear / Frosted	8.4	E	10.0	E	11.0	E	-	-
Candles & Sphericals White	7.2	E	9.0	E	10.0	E	-	-
Fireglow	-	-	-	-	3.3	E	-	-
Daylight	-	-	5.0	E	5.0	E	-	-

Energy Rating

Even though they produce a high quality light, Incandescent lamps are the least efficient light sources. Typical energy ratings for incandescent lamps would be 'E' i.e. not very efficient. Under the ErP Directive, between 2009 and 2018, the majority of traditional incandescent lamps for general lighting purposes will cease to be sold in the UK.

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