

Aluminium reflector

Many spot and flood [lamps](#) are manufactured using a thin film of reflective aluminium deposited on the inside of the glass. Unlike [Dichroic](#) reflectors, this reflects both light and heat forwards out of the lamp.

[Search for an example of an Aluminium reflector](#)

Ballast

Part of a [fluorescent](#) lamp fitting which regulates the current flow through a fluorescent lamp.

[Search for an example for of a ballast.](#)

Base

[See cap.](#)

Black light blue

Specialist fluorescent lamp designed to emit invisible ultraviolet (UV) light.

[Search for an example of a UV lamp.](#)

Bulb

A popular term for the electric lamp, derived from the bulb-shaped glass envelope in which lamps are often enclosed.

Burning position

The burning position defines the position in which lamps should be installed and operated and are sometimes defined by code letters as follows:-

- h = vertical (base upwards)
- s = vertical (base downwards)
- p = horizontal

Banned

A Big date on the calendar was September 2009. This was the date when all non-clear (frosted, pearl, opal etc.) and 100w or more lamps where banned from manufacture or import into to the European community. This was done to save energy.

Candela

The candela (cd) is a standard measure of luminous intensity to allow direct comparison of the “brightness” of different light sources. For any physicists who may be reading this:-

“The candela is the luminous intensity, in a given direction, of a source that emits monochromatic radiation of frequency 540×10^{12} Hertz and that has a radiant intensity in that direction of $1/683$ Watt per steradian.”

Cap



Bayonet (BC/B22) cap and
Edison Screw (ES/E27) cap

The electrical connection and mechanical fixing for a lamp is often referred to either as a cap or base. Lamps use a wide variety of fittings, partly to meet the appropriate electrical and safety requirements and partly to ensure that luminaires can only accept the appropriate lamp (eg to prevent using low voltage lamps in mains fittings). Common caps for standard incandescent lamps include the ubiquitous 22mm “bayonet” fitting (otherwise known as “B22d” or “BC”) and the Edison Screw (or “ES”) fitting, named after the early pioneer in electric lamp development. To ensure compatibility between different manufacturers’ products, international standards for lamp bases have been agreed by the IEC under the IEC 60061 standard.

Also

Small bayonet cap (SBC B15)

Small Edison screw (ses e14)

E12, E10

Goliath (Giant) Edison screw (GES e40)

Miniature Edison screw (mes)

Colour Temperature

The colour temperature of a lamp is a measure of the “warmth” or “coldness” of the light that it produces. Lamps that produce a “warm” or “yellowish” light (for example the sodium lamps used for street lighting which appear orange) have a low colour temperature. Lamps producing a pure white or bluish tinged light have a higher colour temperature.

Colour temperature is measured in degrees Kelvin (K) and is defined as “the temperature of a black body having the same colour appearance as the type of lamp being considered”.

- Lamps with a colour temperature of less than 3500K are usually described as having a “warm” appearance
- Lamps with a colour temperature between 3500 and 5000K are considered to have a “cool” appearance,
- Lamps having a colour temperature over 5000K are said to have a “cold” appearance.

Typical colour temperatures are:-

- High pressure sodium lamps: 2000K to 2200K
- Tungsten filament light bulb: 2700K
- Tungsten halogen lamps: 3000K
- Fluorescent lamps: 2700K to 6500K
- Metal halide lamps: 3000K - 5600K
- Daylight: 5500 - 6500K

Colour rendering.

Colour Rendering Index (maximum =100) is a measure of how closely the lamp renders colours of objects compared to a standard source with very distorted colours will have low CRI. In general, the higher the CRI the more natural the appearance of the source and the richer colours appear. E.I. A car park light might be a low C.R.I. there is plenty of light to see a car but the quality of light isn't sufficient to see the colour of the car. A car show room on the other hand would have lights of a higher C.R.I. to show their stock at their best.

[Search here for more detailed answer.](#)

Crown Silvered



Crown silvered bulb

Also known as “Chrome cap” lamps, these are incandescent lamps with a highly reflective coating on the front of the glass. This reflects much of the light back towards the lamp fitting.

Originally designed for use in spotlight fittings with parabolic reflectors, particularly for shop window displays, these are also used in many contemporary “designer” light fittings to reduce glare and create spectacular effects where the lamp itself is visible.

Since the reflective coating also reflects heat back in to the luminaire, these lamps can cause overheating and should only be used with [luminaires](#) that have been designed to accept them.

[Search here for an example.](#)

Compact Fluorescent (CFL)



Integrated and Non-integrated compact fluorescent

Often also known as “Low Energy” bulbs, compact fluorescents use the same technology as fluorescent tubes but with the tubes “folded” into a much more compact design. The main advantages of compact fluorescents are:-

- Lower power consumption – typically 80% less than equivalent [incandescent](#) lamps.
- Longer operating life - typically 3 to 15 times longer than conventional incandescent lamps.
- Lower heat output than incandescent lamps, making them ideal for use in enclosed fittings or close to delicate lampshades.
- Note: Only a handful of compact fluorescent lamps are dimmable.

There are two distinct categories of compact fluorescents:-

- *Integrated:* The lamp includes both the fluorescent tube and the necessary control gear in one package. These are ideal for use in direct replacement for conventional incandescent lamps and are often produced with standard BC or ES fittings. [Search here for an example.](#)
- *Non-integrated:* The control gear is part of the fitting or luminaire and the lamp is just the folded tube. These used to be fitted mostly in commercial and industrial fittings but are more frequently now being used in homes as well as in exterior lighting. [Search here for an example.](#)

Spiral Lamps

These bulbs are designed as a continuous tube in a spiral shape which has similar outside shape and light casting qualities to a standard incandescent bulb. Spiral CFL bulbs are made in several sizes to fit most common fixtures.

Triple Tube Lamps

These [CFLs](#) have more tubing in a smaller area, which generates even more light in a shorter bulb. They pack high light output into a very small space and can be used in fixtures designed for incandescent [bulbs](#), such as table lamps, reading lamps, open hanging lamps, and bare bulb applications.

Standard Lamps

These are spiral lamps with a dome cover. They are designed to give the appearance of the traditional light bulb for consumers looking for the more familiar light bulb appearance. The glass diffuser provides a quality of light

similar to the 'soft-white' type of [incandescent](#) bulbs.

Globe Lamps

This shape is commonly used in bathroom vanity mirrors or open hanging lamps, and bare bulb applications. Bathroom vanities usually require multiple bulbs, which generate radiant heat. The CFL globe will reduce this heat build up while saving energy. The glass diffuser provides a soft-white light.

Flood Lamps

These lamps are designed to be ideal for recessed and track lighting fixtures. They provide diffused, soft, white light, and generate less heat than will an incandescent flood or a [halogen](#) bulb.

Candle

The screw-in torpedo-shape and the small base of this bulb are designed for smaller light fixtures throughout the house, from chandeliers to sconces. To use a smaller candelabra-based bulb in a regular socket, you can use a socket reducer.

[Search here for an example.](#)

Control Gear for fluorescent lamps



A typical
fluorescent [starter](#)

Fluorescent lamps require special circuits to start the lamp when power is applied (the starter) and then to limit the electrical current once it is running (the ballast). This is often referred to as the control gear. In conventional fluorescent fittings, the ballast is integrated into the light fitting and the starter is generally a small user-replaceable plug-in tubular component.

In “high frequency” or “electronic” fluorescent fittings, the control gear uses an electronic circuit to perform these functions. This makes the lamp faster to start, more efficient and virtually flicker free. In some compact fluorescent fittings, this circuitry is fully integrated into the lamp itself.

Certain types of electronic control gear also allow fluorescent tubes to be dimmed.

Chrome Cap

See [Crown Silvered](#)

Dichroic



Dichroic reflector lamp

Sometimes known as “cool beam” lamps, dichroic lamps have a special multi-layer coating on the reflector of the lamp.

This means that visible light is reflected forwards whilst the heat is transmitted backwards through the rear of the lamp. The word “dichroic” literally means “two coloured”.

[Search here for an example.](#)

Dimmers

Dimmers are a device to vary the brightness of a [bulb](#).

The main purpose of dimming lighting is to change the lighting effect within an area and create a desired ambiance, which is a posh way of meaning atmosphere.

- There is a small benefit in power saving. Reducing the light level to 80% will typically save about 11%.
- There is a large benefit in lamp life. At 100% light level the live average expectancy will be quoted for the type of lamp used. Decreasing the light level by 5% will typically double the life of a lamp or a light level of 50% can increase lamp life by up to 16 times. It is also worth remembering that an increase in supply voltage can have the opposite effect. A 5% increase in supply voltage can halve the life of the lamp.

Dimmer buzzing is quite normal and generally no cause for concern. This buzzing is caused by the radio frequency interference suppression components simply doing their work. Under normal conditions you should be able to hear a dimmer only up to about 1 metre away. In a quiet room or a room with very few soft furnishings a dimmer may appear to buzz louder. A dimmer having a large load will also buzz louder. If buzzing does exceed these guidelines it may be because you are trying to dim an incompatible low voltage transformer.

Most tungsten lamps can be dimmed. These include GLS, Candle Lamps, Reflectors, Architectural Tubes, Mains Voltage and Halogen.

Tungsten lamps of mains voltage halogen type e.g. 5707 can be dimmed using standard tungsten dimmers (e.g. S/N 3843). However it is important to de-rate the

dimmer's maximum rating by 50%, 60 w to 400w becomes 60 to 200 w, this means max 4 x 50w GU10).

When tungsten lamps fail, they often draw a very high fault current for a short duration. This effect can occasionally cause dimmers and or fuses to fail. Some budget lamps are more prone to cause this problem. Therefore it is recommended to use only good quality branded lamps.

Whilst it is obvious not to exceed the maximum rating of a dimmer, it is important not to forget the minimum wattage. If you drop below the minimum wattage the lamp will flicker and the dimmer may fail. (e.g. use only 25w on a 60-400w and the dimmer may not function properly).

Low Voltage Lighting using a dimmable transformer:

Low voltage lighting can be dimmed providing that a suitable transformer is used. The dimmer should be connected to the 230 v primary side of the transformer. It is very important to ensure compatibility between dimmers and transformers as there is a wide variety of transformer types. Low voltage dimmers are rated in VA. The VA rating is the same as watts.

Do not use dimmers for motors i.e. fans.

When specifying dimmers for wire wound transformers (e.g. big and heavy) transformer losses must be taken into account, (typically 20%). Therefore you must ensure that the total lamp load plus 20% does not exceed the dimmer rating, (e.g. a maximum lamp load of 165w is permitted on a 200 VA (200w) dimmer (S/N 4477).

[For more detailed information search here.](#)

Edison.

Thomas Edison 1847-1931 credited with inventing the first long life lamp

Filament

The filament is the part of an incandescent lamp that glows as an electrical current is passed through it. In very early lamps the filament was made of carbon. Most incandescent lamps now use tungsten filaments.

Fluorescent Lamps

Fluorescent lamps are a type of gas discharge lamp which generate invisible ultra-violet radiation and then use a phosphor coating on the inside of the lamp glass to convert this into visible light using a process known as “fluorescence”. By using different coating materials, fluorescent lamps can be made to generate light in a range of different colour temperatures. Typically these include Warm White, White, Cool White and Daylight versions.

The tube diameter is often expressed in eighths of an inch (e.g. T5 = 5/8” = 16 mm).

Advantages of fluorescent tubes include:-

- High energy efficiency
- Long operating life (typically over 10,000 hrs)
- Even light distribution.

Some fluorescent lamps are manufactured without the fluorescent coating and use a bluish black glass in order to deliberately emit only light in the ultra-violet (UV) spectrum. These are used for specialist applications such as banknote forgery detectors and [nightclub](#) special effects lighting.

Fluorescent lamps are generally designed to work directly from the mains (110 or 240V AC power) but require a [starter](#) and [ballast](#) or electronic gear to operate. Electronic control gear (ECG) converts mains power to a very much higher frequency and gives several advantages over conventional ballasts and starters including:-

- Greater efficiency and hence lower power consumption.
- Reduced flickering
- Faster starting

Usually manufactured in a tube shape, fluorescent lamps can also be found in circular, “U”-shaped and a variety of other specialist shapes.

Halogen

See [Tungsten Halogen](#)

High Frequency Fluorescents

See [fluorescent lamps](#).

International Electrotechnical Commission (IEC)

The International Electrotechnical Commission (<http://www.iec.ch/>) is the authoritative worldwide body responsible for developing consensus global standards in the electrotechnical field. IEC is dedicated to the harmonization and voluntary adoption of these standards, supporting the transfer of electrotechnology, assisting certification and promoting international trade.

Incandescent

Most “standard” light bulbs are incandescent lamps. These use a filament (usually tungsten wire) inside an enclosed glass bulb that glows white hot as an electrical current is passed through it. The filament is prevented from burning by either creating a vacuum inside the bulb or filling it with inert gas.

Incandescent lamps are not very efficient since most of the radiation is in the infra-red spectrum (ie heat rather than visible light). The light produced is quite “warm” with a colour temperature of around 2700°K.

Lamp

Lamp is the generic term for a light source. Light [bulbs](#), tubes, capsules and spots are all types of lamp.

L.E.D.

A light-emitting-diode lamp is a solid-state lamp that uses light-emitting diodes (LEDs) as the source of light. Since the light output of individual light-emitting diodes is small compared to incandescent and compact fluorescent lamps, multiple diodes are used together. LED lamps can be made interchangeable with other types. Most LED lamps must also include internal circuits to operate from standard AC voltage. LED lamps offer long life and high efficiency, but initial costs are higher than those of fluorescent lamps.

[For more information search here.](#)

[For an example search here.](#)

Long Life

Many different types of lamp may be manufactured in “long life” versions. The design often means using better quality components, different construction and manufacturing techniques as well as more stringent quality control. Long life is a relative term and depends very much on the technology of the lamp as shown in the table below.

Lamp technology	“Standard” life	“Long life” version
Incandescent	1000 to 2000 hours	3000 to 3500 hours
Tungsten halogen	1500 to 2000 hours	5000 to 6000 hours
Fluorescent tube	8000 to 10000 hours	15000 to 20000 hours
Compact fluorescent	3000 hours	12000 to 15000 hours

Remember stated life is an average not guaranteed life.

Low Energy

See [compact fluorescent](#).

Luminaire

Luminaire is the general term for the fitting into which a lamp is installed. This will always include a lamp holder with the electrical connection to the [lamp](#) and may also include shades, reflectors or diffusers along with decorative, protective and/or safety features.

Lumen

A Lumen is a measurement of light. In simpler terms one lumen is equal to the amount of light that 1 candle will emit on 1 square foot, 1 foot away from the flame. 1 lumen = 1 foot candle. Note [Wattage](#) is not a measurement of light.

[For more information search here.](#)

Metal halide lamps

Metal halide lamps are a type of discharge lamp that creates an electrical arc inside a high-pressure gas capsule containing various rare earth compounds. Usually used in retail, showroom and factory applications, they can create a very crisp white light with [colour temperatures](#) ranging from 3000 to 10,000°K.

[Search here for an example.](#)

Specials.

Special-NS-Non-Stock. We keep a wide range of lamps but not all that are available. So we have a special order service where we order from a variety of sources.

[Cp lighting.](#)

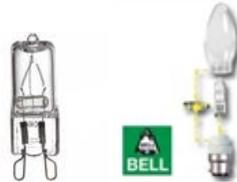
[MGC lamps](#)

[International lamps](#)

Starter

See [Control Gear for fluorescent lamps.](#)

Tungsten halogen



Halogen capsule lamp and Tungsten halogen capsule encapsulated in a glass outer bulb

Tungsten halogen lamps are similar to [incandescent](#) lamps but instead of just being filled with inert gas they also have small quantities of halogens (bromine, chlorine and iodine) or their compounds added to the filler gas and use quartz instead of glass for the lamp capsule. Benefits of tungsten halogen lamps include:-

- A slightly higher colour temperature than ordinary tungsten incandescent lamps, giving a bright, white light, ideal for shop display lighting.
- Physically much smaller than equivalent tungsten incandescent lamps.
- Longer rated life – typically 2000 to 5000 hours or more.

One disadvantage of tungsten halogen lamps is that the quartz envelope is much more sensitive to contamination than ordinary glass bulbs. The quartz capsule must not be touched with bare hands since contamination can lead to overheating and severely reduced life. Some designs get around this by encapsulating the lamp inside a glass envelope.

Watt

Named after James Watt, the inventor of the steam engine, the Watt (W) is a standard international unit of measurement of power. In the case of electric lamps, the “wattage” of the lamp defines the amount of electrical power that it consumes and also is related to the brightness of the lamp. However since different types of lamp are more or less efficient in converting electrical power into light, the Watt is not in itself a measure of brightness. For example, a 20W compact fluorescent lamp is approximately as bright as a 100W incandescent lamp yet it consumes only one fifth of the power.