



Enlighten yourself about energy-efficient light bulbs!

Light bulbs have a variety of performance characteristics that you need to know to choose an appropriate light bulb for the application you have in mind. This fact sheet will help you identify these key features.

Light sources come in a variety of shapes and sizes, light outputs (brightness) and light appearances (colour temperatures).

Halogen light bulbs

Halogen light bulbs use up to at least 28 percent less energy, produce more light for the same amount of energy and last up to three times longer than traditional incandescent bulbs. They are available in a wide range of shapes and colours and can be used anywhere a traditional incandescent bulb is used and for the same purpose.



Compact fluorescent light bulbs

Compact fluorescent light bulbs (CFLs), also known as compact fluorescent lamps, have improved tremendously since they were first introduced in the 1980s. They start almost instantly, do not buzz or flicker, contain less mercury, and many are dimmable – all recent improvements. CFLs produce the same light output and warm colours as incandescent bulbs and are very energy-efficient. ENERGY STAR® qualified CFLs use up to 75 percent less energy and last up to 10 times longer than traditional incandescent light bulbs.



- Some CFLs are encased in a cover that further diffuses the light and provides a shape similar to traditional incandescent bulbs.
- A typical CFL can pay for itself in energy savings in eight months and continue to save you money every month after.

Light-emitting diode light bulbs

Light-emitting diode (LED) light bulbs are quickly evolving and are now available for most residential applications. LED bulbs offer similar light quality to traditional incandescent bulbs, last 25 times longer and use even less energy than CFLs. They start quickly, are dimmable, can operate in all weather conditions and are very durable.

The design of LED products is crucial to good performance. Choose LED bulbs that are ENERGY STAR qualified for the highest quality and energy savings.



Watts versus lumens

WATTS indicate the amount of **POWER USED** by the bulb.

LUMENS indicate the amount of **LIGHT PROVIDED** by the bulb.

A traditional 60-watt incandescent bulb provides ≈800 lumens.

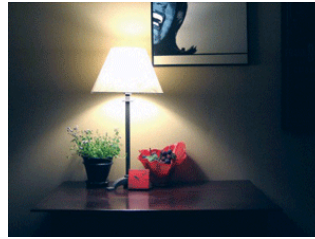
Comparisons based on wattage can be misleading because different bulbs can use very different amounts of energy (watts) to produce the same amount of light (lumens). Measuring the performance of a bulb in lumens allows direct comparisons of light quantity.



Colour

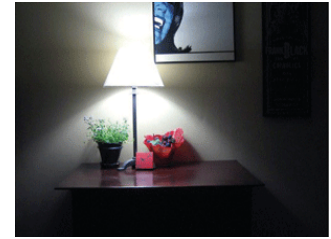
LIGHT APPEARANCE

Kelvin (K)



WARM $\leq 3000^{\circ}\text{K}$

- Produces a yellowish light
- Good for ambience lighting (living room and bedroom)



COOL $\geq 4000^{\circ}\text{K}$

- Produces a bluish colour
- Good for task lighting (kitchen and garage)

Most people prefer warm colour light sources in their home, which create a more comfortable and attractive ambience, while cooler colour light sources are often preferable in work areas for direct tasks or focus. Usually, the light appearance is noted on the packaging.

What are light bulb attributes?

Light bulb attributes are the features of a bulb that allow you to narrow your selection and ensure that you choose the one that is right for you. Usually, information on these attributes is found on the light bulb packaging. They include:

- **shape and size** – often determined by the light fixture the bulb is for (e.g. a desk lamp with a shade, a pendant, a recessed downlight or a track)
- **brightness** (light output) – the amount of light you want
Brightness is measured in lumens (lm); the higher the lumens, the brighter the light.
- **light appearance** (correlated colour temperature) – describes the mood created by the lighting (i.e. how warm or cool the space feels)
The temperature of the light source is measured in degrees Kelvin (K); the lower the number, the warmer the light source. For example, an incandescent light bulb would typically have a correlated colour temperature of about 3000°K.
- **efficiency** – the amount of power required to produce the light output; this is a key metric.
Make sure to compare the light output (lumens) with the energy used (watts) to provide the light output. The easiest way to choose an energy-efficient bulb is to look for the ENERGY STAR symbol.
- **rated life** – how long the bulb will last
Energy-efficient bulbs last a lot longer than traditional incandescent bulbs – something to consider for high-use light bulbs and for hard-to-reach light fixtures.
- **dimmiability** – determines if the light level can be adjusted
Dimmers can save electricity when they are used to lower light levels. Note that the dimmer switch must be compatible with the type of bulb.
- **suitability for cold temperature applications** – In a cold climate, outdoor bulbs must withstand temperatures much below 0°C.

Why is my choice important?

Good lighting can make a space comfortable, functional and enjoyable. It should also be both effective and efficient. Effective lighting can evoke a mood, brighten a work area or provide security, and it should be efficient to get the desired effects while using less energy.

Lighting accounts for approximately 10 percent of home electricity use. The average Canadian home has 30 light bulbs that together consume close to \$130 of electricity every year. Installing energy-efficient bulbs and fixtures throughout your home – especially if they are ENERGY STAR qualified – is one of the smartest energy efficiency investments you can make.

Indoor lighting tips

- When remodeling, look for recessed light fixtures that are rated for contact with insulation and are airtight (ICAT rated). When replacing incandescent light bulbs with recessed light fixtures, use energy-efficient light bulbs that are rated for that purpose. Otherwise, the heat buildup in a downlight could significantly shorten the life of a bulb.
- Controls such as timers and photocells save electricity by turning lights off when not in use. The most important control is the switch. A light that is off saves the most.
- Keep your curtains or shades open to take advantage of the daylight instead of turning on lights. For more privacy, use light-coloured, loose-weave curtains to allow daylight into the room. Also, decorate with lighter colors that reflect daylight.

For more information

- [Learning about LEDs](#)
- [Mercury in Compact Fluorescent Light Bulbs](#)
- [Residential Lighting](#)

Aussi disponible en français sous le titre : Faites la lumière sur les ampoules éconergétiques!

For information regarding reproduction rights, contact Natural Resources Canada at copyright.droitdauteur@nrcan-rncan.gc.ca.

© Her Majesty the Queen in Right of Canada, as represented by the Minister of Natural Resources, 2014

Cat. No. M144-253/2014E-PDF

ISBN 978-1-100-23539-4

Natural Resources Canada's Office of Energy Efficiency
Leading Canadians to Energy Efficiency at Home, at Work and on the Road

