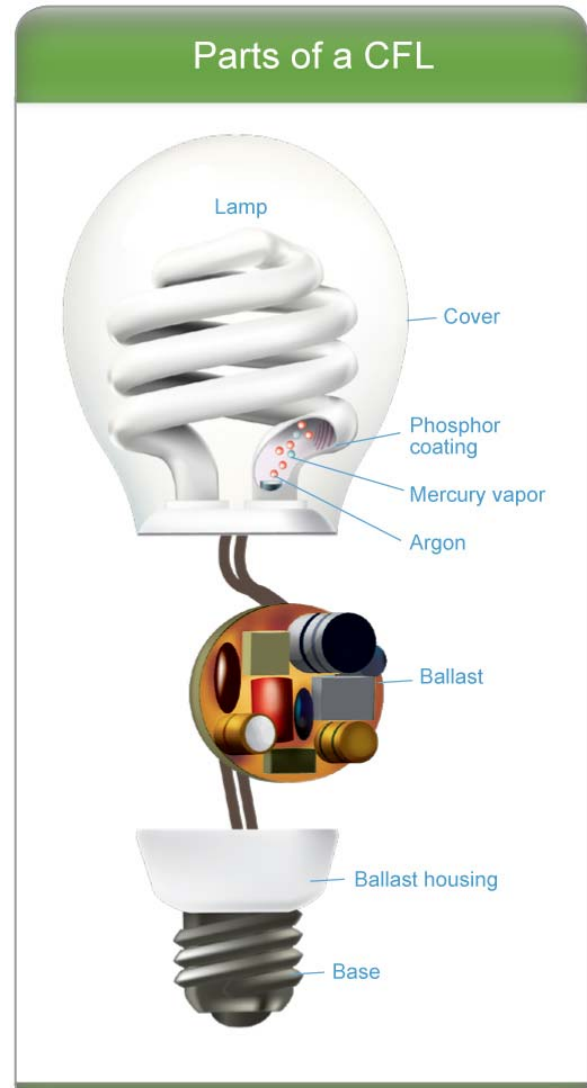


## How do CFLs work?

CFLs produce light differently than incandescent bulbs. In an incandescent, electric current runs through a wire **filament** and heats the filament until it starts to glow. In a CFL, an electric current is driven through a tube containing **argon** and a small amount of **mercury vapor**. This generates invisible **ultraviolet light** that excites a fluorescent coating (called **phosphor**) on the inside of the tube, which then emits **visible light**.

CFLs need a little more energy when they are first turned on, but once the electricity starts moving, use about 75 percent less energy than incandescent bulbs. A CFL's **ballast** helps "kick start" the CFL and then regulates the current once the electricity starts flowing.

Older CFLs used large and heavy magnetic ballasts that caused a buzzing noise in some bulbs. Most CFLs today — and all ENERGY STAR qualified CFLs — use electronic ballasts, which do not buzz or hum.



### Do the twist.

Screw in your CFL by holding the **ballast** (the white plastic part), NOT the glass tubing.



### Don't flip too fast.

You'll maximize the lifetime savings and effectiveness of your CFLs by keeping them on for 15 minutes or more at a time.



### Choose 3 for 3.

Only use bulbs labeled as three-way on three-way sockets.



### Don't dim on a non-dimmable.

Only use bulbs labeled as dimmable on dimmer switches.



### Check your controls.

Most photocells and electric timers are not designed to work with CFLs. Always check with the manufacturer of the control for compatibility and the lamp packaging to make sure the lamp is suited for this application.



### Give them air.

CFLs are sensitive to extreme temperatures, so place your CFLs in open fixtures indoors. Using them in enclosed fixtures indoors can create a hot environment that reduces the lifetime of your bulbs. Note that covered reflectors are best used in recessed cans.



## Protect them outside.

Protect bulbs from the elements by placing them inside enclosed fixtures outdoors. For colder climates, look at the packaging for optimal operating temperatures.



<b>Amalgam</b>	A mixture that puts mercury in a solid form.
<b>Argon</b>	An inert gas used in CFLs to regulate the environment inside the glass tubing so that the mercury vapor can absorb the electrical currents.
<b>vBase</b>	End of the light bulb that inserts into the lamp socket.
<b>Ballast</b>	A collection of electronic parts that regulates the electric current through a fluorescent lamp.
<b>Ballast housing</b>	The casing that covers the ballast, usually made from plastic fire-retardant material.
<b>Candelabra Base</b>	A small screw base typically used in small or decorative fixtures such as nightlights and chandeliers.
<b>Correlated Colour Temperature (CCT)</b>	A description of the "colour" of a light source measured by the Kelvin (K) temperature scale.
<b>Colour Rendering Index (CRI)</b>	Ability of the CFL to show colours compared to an incandescent. The ENERGY STAR criteria require a CRI of at least 80 for qualified CFLs. Incandescent light bulbs have a CRI of 100; commercial linear fluorescent tubes typically have a CRI around 75.
<b>Cover</b>	A plastic or glass material placed over top of a bare CFL to mimic the style and shape of incandescent light bulbs. Covered CFLs may take longer to reach full brightness.

<b>Efficacy</b>	A description of the efficiency of a light source, as measured in light produced (lumens) per unit of power consumed (watts). ENERGY STAR efficacy requirements vary with the style of CFL (bare spiral, covered reflector, etc.) and wattage, but are generally 3-4 times higher than comparable incandescent light bulbs.
<b>End-of-Life Protection</b>	Circuitry used in the ballast of a CFL that stops the flow of electricity when a CFL fails, eliminating any potential safety hazard.
<b>Filament</b>	The wire inside an incandescent light bulb that produces light.
<b>Fixture</b>	A complete lighting unit consisting of a lamp or lamps and the parts designed to distribute the light, position and protect the lamp(s), and connect the lamp(s) to the power supply.
<b>Heat/Light Output Ratio</b>	CFLs use power more efficiently than incandescent lamps, and therefore require less energy to create the same amount of light. About 90 percent of the power used by an incandescent bulb is wasted as heat, while only about 10 percent is converted to light in the visible spectrum. By more efficiently using the power they consume, CFLs are able to provide the same amount of light, while producing much less heat.
<b>Kelvin (K)</b>	In lighting, the Kelvin scale is used to describe the colour of light.
<b>Lamp</b>	In the lighting industry, "lamp" is the term for a light source. Technically, incandescent light bulbs and CFLs are both considered "lamps," and table and desk lamps are referred to as fixtures.
<b>Lumen</b>	Measure of light.
<b>Mercury</b>	Mercury is an essential element used to create light in a fluorescent bulb. Mercury can come as vapor or in a solid <a href="#">amalgam</a> form. ENERGY STAR criteria limits the amount of mercury that can be used in qualified CFLs. Many manufacturers have reduced mercury content even further — some to as low as 1 mg per bulb. For more information see <a href="#">Natural Resources Canada</a>
<b>Phosphor</b>	A powder-like mixture of elements that convert UV rays into visible light. When the UV rays hit the phosphor, they fluoresce, or glow. The phosphor mix determines the colour of the light.
<b>Photocell</b>	A light-sensing device used to control fixtures and dimmers in response to

detected light levels.

<b>Rated life</b>	A light bulb's estimated lifetime measured in hours. For all light bulbs, lifetime is determined by operating a sample of bulbs according to industry test standards. The time that half of the test sample fails is considered rated life. By definition, some lamps will fail before their rated life and some will operate beyond their rated life. The ENERGY STAR CFL criteria require additional testing to show that the sample can withstand a number of short start cycles and monitors early failures throughout testing.
<b>Special features</b>	Most CFLs are designed to operate on an on/off switch. However, some CFLs have been designed with features to perform in specialized applications, such as on dimmers or three-way fixtures. This should be clearly marked on the box of any CFL designed for that application.
<b>Ultraviolet (UV) light</b>	Light waves on the electromagnetic spectrum that are similar to the light from the sun.
<b>Visible light</b>	The light waves on the electromagnetic spectrum that can be seen with the human eye.
<b>Watts</b>	Measure of power, or energy consumed per unit of time.