

## Can CFLs be used in any light fixture?

For fixtures with dimmer switches or three-way sockets you'll need a special CFL that is rated for use in these applications. Check the packaging to ensure you select the right type of CFL. Before using CFLs in fixtures with electronic controls, check with the manufacturer of your photocell, motion sensor, or timer.

## Do CFLs contain mercury?

CFLs contain a very small amount of mercury sealed within the glass tubing – an average of 4 milligrams or less – about the amount that would cover the tip of a ballpoint pen. By comparison, older thermometers contain about 500 milligrams of mercury. Mercury is an essential part of CFLs; it allows the bulb to be an efficient light source. No mercury is released when the bulbs are intact (not broken) or in use.

Most mercury vapor inside fluorescent light bulbs becomes bound to the inside of the light bulb as it is used. EPA estimates that the rest of the mercury within a CFL – about 11 percent – is released into air or water when it is sent to a landfill, if the light bulb is broken. More information can be found at [www.energystar.gov/mercury](http://www.energystar.gov/mercury).

## How can I safely dispose of CFLs?

It is currently legal for CFLs to be disposed in household trash; however the Missouri Department of Natural Resources recommends the bulbs be sealed in a zipper-type plastic bag before being disposed. Many local home improvement stores accept used CFLs for recycling.

## What if I accidentally break a CFL?

Your primary hazard in dealing with a CFL is the potential for cuts from broken glass. Make sure you ventilate the area by opening a window or door. Pick up the large pieces and utilize the sticky side of duct tape, packing tape, or masking tape to pick up fine particles. Dispose of all pieces in a zipper-type bag.

# ILLUMINATING FACTS ABOUT CFLs

Using energy efficiently helps hold down utility bills today and protects the environment for tomorrow. When considering energy efficiency improvements for your home, compact fluorescent light bulbs (CFLs) are a good place to start.



For more information about broken CFLs and recycling, visit the  
**Missouri Department of  
Natural Resources** Web site at  
[www.dnr.mo.gov/env](http://www.dnr.mo.gov/env)

For details about energy efficiency rebate programs offered by Empire District, visit  
[www.empiredistrict.com](http://www.empiredistrict.com)  
and select **Smart Energy Solutions**.

### SERVICES YOU COUNT ON

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## What are the benefits of CFLs?

- CFLs use up to 75 percent less energy.
- CFLs last up to ten times longer.
- For every incandescent bulb replaced, \$30 in energy costs can be saved over the life of the bulb.
- If every home in America replaced one light bulb with a CFL, enough energy would be saved to light three million homes for one year.

The diagram illustrates the internal components of a compact fluorescent lamp (CFL). The top part shows the lamp's exterior, which is a white, spiral-shaped tube. The bottom part shows a cross-section of the lamp's base, revealing the internal ballast and ballast housing. The components are labeled as follows:

- Lamp**: The entire device, including the spiral tube and base.
- Cover**: The outer protective layer of the spiral tube.
- Phosphor coating**: The layer of phosphor material inside the spiral tube that converts UV light into visible light.
- Mercury vapor**: The gas inside the spiral tube that, when excited, emits UV light.
- Argon**: The gas inside the spiral tube that helps in the initial starting of the lamp.
- Ballast**: The electronic component that regulates the current flowing through the lamp.
- Ballast housing**: The protective enclosure for the ballast.
- Base**: The screw-in base of the lamp.

## 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. Unfortunately, 90 percent of the energy used to generate that light is wasted as heat. 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. CFLs are most effective when placed in the most used locations and when left on for 15 minutes or more at a time.

## What wattage will I need?

Use the following chart to determine which CFL bulb will provide the same light output as an incandescent light bulb.

<b>Incandescent Bulbs</b> (watts)	<b>Minimum Light Output</b> (lumens)	<b>ENERGY STAR® qualified CFLs</b> (watts)
40	450	9 to 13
60	800	13 to 15
75	1,100	18 to 25
100	1,600	23 to 30
150	2,600	30 to 52

## How does the color of the light compare?




























CFL's have varying color options. Light color is measured on the Kelvin scale (K). In the table below, the lower numbers mean the light appears yellowish and higher numbers mean the light is more white or blue.

Warm White, Soft White	Cool White, Bright White	Natural or Daylight
<i>Standard color of incandescent bulbs</i>	<i>Good for kitchens and work spaces</i>	<i>Good for reading</i>
2700K 3000K	3500K 4100K	5000K 6500K

## Do CFLs come in different shapes?

CFLs are now available in globes, candles, interior reflectors, and exterior reflectors. The chart below, courtesy of ENERGY STAR®, pictures some of the current options.

## HOW TO CHOOSE THE RIGHT ENERGY STAR® QUALIFIED BULBS

							
	SPIRAL	COVERED A-SHAPE	GLOBE	TUBED	CANDLE	INDOOR REFLECTOR	OUTDOOR REFLECTOR
 TABLE LAMPS							
 PENDANT FIXTURES							
 CEILING FIXTURES							
 CEILING FANS							
 WALL SCONCES							
 RECESSED CANS							
 TRACK LIGHTING							
 OUTDOOR COVERED							
 OUTDOOR FLOOD							

## AVOID EARLY BURNOUT

- Only bulbs marked "dimmable" or "three-way" will work on dimmers or three-way switches.
- Most photocells and timers are not designed to work with CFLs.
- For recessed cans only choose bulbs marked "Indoor Reflector" or "For Indoor Use."

Learn more at [energystar.gov](http://energystar.gov)

