

## Home & Environment

# Saving Energy and Money Compact Fluorescent Light Bulbs (CFLs)

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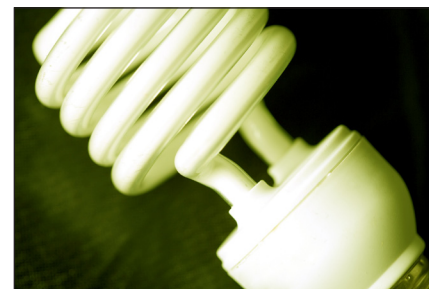
Compact fluorescent light bulbs (CFLs) are becoming increasingly popular because of their energy and money saving returns. According to the U.S. Department of Energy, a CFL lasts up to ten times longer, uses approximately one-fourth the energy, and produces 25 percent less heat while producing more light per watt than a traditional incandescent bulb. The amount of money saved using a CFL will depend upon the cost of the bulb and the rate you pay for electricity. A savings of \$30 or more in electricity costs can be expected over the lifetime of the bulb when compared to a traditional incandescent bulb.

### Purchasing CFLs

CFLs can be purchased in grocery, drug, and home improvement stores. When purchasing a CFL, take note of the packaging label. The label will indicate the equivalent incandescent bulb wattage, where the bulb can be used, and if the bulb is rated as an ENERGY STAR-qualified bulb. ENERGY STAR-qualified CFLs carry a limited warranty of at least two years for residential use. (Save CFL receipts to verify date of purchase.) The label will also state if the bulb will work on dimmable switches or three-way sockets. Most CFLs will not work with photo cells, motion sensors, and electric dimmers; if the label is not clear about compatibility, check with the manufacturer of the control.

### Types of CFLs

CFLs are available in a variety of styles, sizes, and wattages, and do not require the use of special fixtures. The most popular type of CFL is the spiral-shaped light bulb. Spiral CFLs can be used to replace most traditional bulbs in the home and are available for dimmers and three-way switches. The light from A-shaped bulbs has the look and feel of traditional incandescent light and can be used anywhere an incandescent bulb is used. Globe-shaped covered bulbs are spiral bulbs with decorative covers. They can be



Buy CFLs in multi-packs rather than single packs. Smart shopping reduces the unit price to a cost that approaches that of incandescent bulbs.

used in bathroom vanity bars, ceiling pendants, and other fixtures where the bulb is visible. Tube-shaped bulbs work well in wall sconces and other fixtures that have slender covers. Candle bulbs have a sleek shape, making them ideal for tight-fitting light fixtures. Indoor reflector bulbs provide directional light and can be used for recessed lighting in kitchens. Outdoor reflector bulbs are made for outdoor use but may not be compatible with timers, photo cells, and motion sensors

### Color

The color of CFLs is measured on a temperature scale labeled as Kelvin (K). Lighting that is more yellow will have a lower Kelvin number; whiter or bluer lighting will have a higher Kelvin number (Table 1).

**Table 1. Color in CFLs.**

Color	Kelvin (K)	Information
Warm white, soft light	2700-3000	Match the yellowish color of traditional incandescent bulbs.
Cool white, bright light	3500-4100	Work well in kitchens and work spaces.
Natural or daylight	5000-6500	Good for reading.

Source: [www.energystar.gov](http://www.energystar.gov).

### Mercury

CFLs contain a small amount of mercury sealed in the glass tubing. The amount of mercury in a CFL is roughly equal to the amount of ink on the tip of a ballpoint pen. According to the U.S. Environmental Protection Agency, the average CFL contains approximately 5 milligrams of mercury; a traditional thermometer contains between 600 milligrams (oral/rectal/baby thermometers) to 2,250 milligrams (basal temperature thermometer).

In the U.S., the major source of mercury emissions is electricity use. Over the life of a bulb, a CFL uses less electricity and results in fewer total mercury emissions than an incandescent bulb.



### Tips for Using CFLs

- ◆ When screwing in a CFL, hold it by the white plastic part known as the ballast, not by the glass tubing.
- ◆ Keep CFLs on for 15 minutes or longer to maximize lifetime savings and effectiveness.
- ◆ If a CFL is NOT labeled “dimnable” or “three-way,” do not use it in a dimmable switch or three-way socket.
- ◆ Most CFLs will not work with photo cells, motion sensors, and electric dimmers. If the label is unclear about compatibility, check with the manufacturer of the control.
- ◆ Place CFLs in open fixtures indoors. Enclosed indoor fixtures can create a hot environment that reduces bulb life.
- ◆ When using CFLs outdoors, check the packaging labels for optimal operating temperatures, and place bulbs inside enclosed fixtures to safeguard them from weather.

## Cleanup and Disposal

Because CFLs contain mercury, certain precautions should be taken during use and disposal. CFLs are made of glass, so it's important to handle them with care. If a CFL does break, have all people and animals exit the room without stepping in or walking through the breakage. Once everyone has left the room, open a window, and exit the room for at least fifteen minutes. If a central forced-air heating /air conditioning system is in use, shut it off.

For cleaning hard surfaces, use stiff paper or cardboard to scoop up glass fragments and powder, and place all items in a glass jar with metal lid or double bag the items in two sealed plastic baggies. Use sticky tape to pick up any remaining glass pieces or powder, and then use damp paper towels or disposable wet wipes to clean the area. Place sticky tape, paper towels, and wet wipes in the glass jar or plastic baggies. Vacuums and brooms should not be used to clean up broken CFLs on hard surfaces.

For cleaning carpeted areas or rugs, carefully pick up glass fragments and seal them in a glass jar with metal lid or double bag the items in two sealed plastic baggies. For any remaining glass pieces or powder, use sticky tape, and place sticky tape in glass jar or plastic baggies. If vacuuming is needed, vacuum the area, then remove the vacuum bag (or empty and wipe the canister), and place the bag (or vacuum debris) in sealed plastic baggies. For the next several times you vacuum the area, shut off central forced-air heating/air conditioning system (if in use) and open a window before you begin. Once you have finished vacuuming, keep the central forced-air heating/air conditioning system shut off and a window open for at least fifteen minutes.

Throw away any clothing or bedding materials that have come in contact with a broken CFL. Clothing and bedding should not be washed because mercury fragments may contaminate the washing machine and/or pollute wastewater. However, clothing or materials that have been exposed to mercury vapors can be washed as long as the clothing or materials have not come in contact with the broken CFL. Shoes that come in contact with a broken CFL can be wiped off with a damp paper towel or wet wipe. The paper towels or wet wipes used should be placed in a glass jar with metal lid or double bagged in two sealed plastic baggies.

All cleanup materials (including all sealed glass jars and sealed plastic baggies) should be placed outdoors in a trash receptacle or protected area to be disposed of in the next normal trash pickup time. Immediately wash your hands after disposing of the cleanup materials.

For additional information visit the ENERGY STAR website (<http://www.energystar.gov/>) or contact the Kentucky Division of Waste Management (502-564-6716) or your local solid waste coordinator. To find contact information for your county's solid waste coordinator, visit <http://www.waste.ky.gov/branches/rla/County+Solid+Waste+Coordinators.htm>.

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In 2008, Home Depot® launched a nationwide campaign offering free recycling of spent CFLs. Simply bring your spent CFL to any Home Depot location.

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ENERGY STAR is a program sponsored by the U.S. Environmental Protection Agency and U.S. Department of Energy. The program promotes products that are energy efficient. When you see the ENERGY STAR logo on a product, you know that it is an energy efficient product. The ENERGY STAR logo can be found on a wide variety of products including appliances, computers and electronics, heating and cooling equipment, lighting and fans, and even plumbing equipment. For more information about ENERGY STAR visit the website at <http://www.energystar.gov/>.



Because CFLs do contain a small amount of mercury, spent CFLs should be recycled. To find a location near you that accepts spent CFLs visit Earth911 at <http://earth911.com/> or Recycleabulb.com at <http://www.recycleabulb.com/locations/>. You can also contact your local utility company or solid waste coordinator for recycling information.

## Advantages

- CFLs save energy. According to the U.S. Department of Energy, CFLs use approximately one-fourth of the energy used by traditional incandescent bulbs.
- Saving energy is beneficial to the environment. According to ENERGY STAR, "If every American home replaced just one light with an ENERGY STAR light, we would ... prevent 9 billion pounds of greenhouse gas emissions per year, equivalent to the emissions of about 800,000 cars."
- Saving energy can save YOU money on your electric bill. ENERGY STAR states that, "If every American home replaced just one light with an ENERGY STAR light, we would save enough energy to light more than 3 million homes for a year, about \$700 million in annual energy costs."
- CFLs have a longer bulb life than incandescent bulbs if used properly. CFLs need to be changed less frequently, which is a huge advantage in those hard-to-reach fixtures.
- CFLs produce less heat than halogen or incandescent bulbs, thus they are less of a fire hazard and provide more comfortable temperatures (such as in bathroom vanity fixtures). Because CFLs produce less heat they also are cooler to the touch than incandescent bulbs.

## Disadvantages

- CFLs cost more than traditional incandescent bulbs.
- Many CFLs have an initial low light output, meaning that they have to warm up before they reach their full light potential.
- When compared to incandescent bulbs, CFLs have a poorer quality color rendition. Color rendition refers to the light quality, defined by the U.S. Department of Energy as "How colors appear when illuminated by a light source."
- Incandescent bulbs project light further than CFLs.
- CFLs contain mercury, thus they must be disposed of (recycled) properly.
- Not all CFLs can be used in a dimmable switch or three-way socket.
- CFLs may not work with photo cells, motion sensors, and electric dimmers.



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