

THE HOMEOWNERS' RESOURCE GUIDE TO COMPACT FLUORESCENT LIGHTS (CFLS)

Why the EPA, DOE and others are promoting the use of CFLs

CFLs use significantly less energy than traditional light bulbs (75% less). If every home in America replaced just one incandescent light bulb with an ENERGY STAR qualified CFL, we would save enough energy to light more than 3 million homes and prevent greenhouse gas emissions equivalent to that of 800,000 cars. And even though CFLs contain a small amount of mercury that could ultimately end up in the environment, that amount is significantly less than the amount of mercury created by power plant energy production.

You may have heard that the government is requiring all light bulbs to be more efficient in the next few years. [Learn more about how the Energy Independence and Security Act of 2007 will affect the sale of light bulbs.](#)

How to choose CFLs that are right for you

CFLs perform best in open fixtures that allow airflow, such as table and floor lamps, wall sconces, pendants, and outdoor fixtures.

For recessed fixtures, it is better to use a reflector CFL than a spiral CFL since the design of the reflector evenly distributes the light down to your task area.

If a light fixture is connected to a **dimmer or three-way socket fixture**, you'll need to use a special ENERGY STAR qualified CFL designed to work in these applications. Make sure to look for CFLs that specify use with dimmers or three-way fixtures.

To choose the ENERGY STAR qualified CFL with the right amount of light, find a qualified CFL that is labeled as equivalent to the incandescent bulb you are replacing. Light bulb manufacturers include this information right on the product packaging to make it easy for consumers to choose the equivalent bulb. Common terms include **"Soft White 60"** or **"60 Watt Replacement."**

LIGHT OUTPUT EQUIVALENCY

To determine which ENERGY STAR qualified light bulbs will provide the same amount of light as your current incandescent light bulbs, consult the following chart:

INCANDESCENT LIGHT BULBS WATTS	MINIMUM LIGHT OUTPUT LUMENS	COMMON ENERGY STAR QUALIFIED LIGHT BULBS WATTS
40	450	9-13
60	800	13-15
75	1,100	18-25
100	1,600	23-30
150	2,600	30-52

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Common terms include **"Soft White 60"** or **"60 Watt Replacement."**

Choose a qualified CFL that offers a shade of white light that works best for you. For example, while most CFLs provide warm or soft white light for your home, you could choose a cooler color for task lighting.

ENERGY STAR Qualified CFLs and Color

ENERGY STAR qualified CFLs can produce varying shades of white light. The shade of white light is identified by the **correlated color temperature** or CCT, which is measured in **kelvin (K)**.

Lower kelvin numbers mean the light has a warmer color, while higher Kelvin numbers mean the light has a cooler color. Example of a 2700K qualified CFL



Example of a 2700K qualified CFL

The majority of CFLs available in the market offer soft or warm white light (2700K–3000K), which is comparable to an incandescent bulb.

This color range works well in most residential settings and enhances warmer colors (red, yellow, orange) found in your home.

Qualified CFLs are also available in higher kelvin color temperature CFLs (3500K, 4100K, 5000K, 6500K) and will emit more white to bluish-white light. These products are usually identified with the terms "bright white," "natural" or "daylight."

These colors will enhance cooler colors (blue, green, violet) in your home.



Example of a 3500K qualified CFL

Bulb-Specific Tips: How to Choose

Spiral Bulbs

If these spiral-shaped light bulbs look familiar it's because they're the most popular type of Compact Fluorescent Lamp (CFL). Spiral CFLs create the same amount of light as traditional incandescent bulbs, but use less energy.

Many traditional bulbs around your home (from 60w to 150w) can be replaced with spirals. There are spirals for dimmers and three-way switches (just check the packaging). Spirals also come in a variety of colors like soft white, natural light, or daylight.

Covered A-Shaped

A-shaped bulbs combine the efficiency of the spiral bulbs, with the look and feel of the traditional incandescents. These products are great for consumers who don't like the look of the spiral bulbs but still want efficient lighting. You can use A-Line bulbs wherever you used to use traditional incandescents. Check the packaging for compatibility with dimmers and three-way fixtures.

Covered Globe

Globe-shaped bulbs are ideal for use where you can see the bulbs, like bathroom vanity bars and ceiling pendants. A globe bulb is basically a spiral bulb with a decorative cover.

Like other covered CFLs, globe bulbs need a little time to "warm up" and reach full brightness. But be patient — ENERGY STAR qualified light bulbs generate just as much light as traditional bulbs, while using less energy.

Tubed Bulbs







Some of the first ENERGY STAR qualified light bulbs were tube shaped. Basically straight versions of the spiral bulbs, tubed bulbs work well in lamps that have slender covers such as wall sconces.

Candle Bulbs

These products are ideal for use in decorative fixtures where you can see the light bulb. The sleek shape also allows you to use them in tight fitting light fixtures where a covered globe won't fit.

Indoor Reflector Bulbs

Reflector bulbs are perfect for providing directional light — think of recessed ceiling lights in kitchens or ceiling fans. Indoor reflector bulbs are much smaller than those that are designed for outdoor use. Some indoor reflector bulbs can be used with a dimmer — the packaging will tell you.

Bare Products		Covered Products			Reflector Products
Mini-Spiral or Twist	Tube or Universal	Incandescent/ A-line	Globe G25, G30, G40	Candelabra, Post or Bullet Shape	Indoor and Outdoor R20, R30, R40, PAR38
					

Outdoor Reflector Bulbs

For use outside, reflector bulbs are sealed to withstand the rain and snow. Because of this, they're usually much larger than the reflectors designed for use inside. Don't use the outdoor reflectors with timers, photocells, and motion sensors because you could shorten the life of the bulbs.

3-Way CFLs

Fixtures or lamps with three-way switches require the use of a three-way CFL. Check the packaging to make sure that the bulb is intended for this use. Installing three-way CFLs may require extra effort since they can be slightly larger than their matching incandescents, but they still use one-third as much electricity. Three-way bulbs typically come in Soft White color temperature.

Dimmable CFLs

Fixtures or lamps with dimmer switches require the use of dimmable CFLs. Not all CFLs are dimmable so check the packaging to make sure it is. Dimmable CFLs work differently than incandescent bulbs. Incandescents dim smoothly from 100% of their light output to no output and their light color changes from a bright white to a warmer yellow. Dimmable CFLs maintain light color more consistently and dim to 10%–40% of its original brightness. Dimmable bulbs typically come in Soft White color temperature.

Light Fixture-Specific Tips: Where to Use

Ceiling Fixtures

For ceiling fixtures, spiral or tubed ENERGY STAR qualified bulbs are an economical choice. Ensure your fixture allows airflow to prevent excessive heat from shortening the life or decreasing the amount of light the CFL gives off.

If your ceiling fixture is hooked up to a dimmer switch, make sure you only use dimmable bulbs or else the light bulbs won't dim and might even burn out sooner.

Pendant Fixtures

While bare bulbs can be used, most people prefer the look of covered ENERGY STAR qualified light bulbs in their pendant fixtures. Covered bulbs come in both traditional "A" or globe shapes.

If your pendant fixture is hooked up to a dimmer switch, make sure you only use dimmable bulbs or else the light bulbs won't dim and might even burn out sooner.

Ceiling Fans

For ceiling fans, you have a variety of options. Spiral bulbs can be used but most people prefer the look of covered light bulbs such as "A"-shape, candles, or small reflectors. For some ceiling fans, the size of the CFL will be important. A lot of manufacturers are developing other CFLs for use specifically in ceiling fans.

If your ceiling fan is hooked up to a dimmer switch, make sure you only use dimmable bulbs or else the light bulbs won't dim and might even burn out sooner.

Wall Sconces

Due to their smaller sizes, spiral or bullet ENERGY STAR qualified light bulbs will work well in wall sconces.

If your sconce is hooked up to a dimmer switch, make sure you only use dimmable bulbs or else the light bulbs won't dim and might even burn out sooner.

Recessed Cans

Indoor reflector light bulbs work best in recessed cans because they are specially designed to direct the light out of the fixture and to withstand the heat buildup that occurs in these fixtures.

If your recessed cans use a dimmer switch, make sure you buy reflectors that are able to dim. The packaging will tell you whether or not you can use them with a dimmer.

Outdoor Covered Fixtures

Spiral or tubed ENERGY STAR qualified light bulbs are both appropriate to use in outdoor covered fixtures where the weather can't harm them.

If you live in a cold climate check the packaging for starting temperatures to make sure the bulb will work properly.

Check with the manufacturer of electronic controls like photocells, timers and motion sensors for compatibility with CFLs.

Outdoor Exposed Fixtures

ENERGY STAR qualified Outdoor flood light bulbs are recommended for outdoor exposed fixtures. These bulbs have special cases that protect them from nature's elements.

Placing a bare spiral CFL in an open outdoor fixture exposes the tubing and electronics to the elements and is likely to result in an early failure.

If you live in a cold climate check the packaging for starting temperatures to make sure the bulb will work properly.

What precautions should I take when using CFLs in my home?

CFLs are made of glass and can break if dropped or roughly handled. Be careful when removing the bulb from its packaging, installing it, or replacing it. Always screw and unscrew the light bulb by its base (not the glass), and never forcefully twist the CFL into a light socket. If a CFL breaks in your home, follow the clean-up recommendations below. Used CFLs should be disposed of properly (see below).

What should I do with a CFL when it burns out?

EPA recommends that consumers take advantage of available local recycling options for compact fluorescent light bulbs. EPA is working with CFL manufacturers and major U.S. retailers to expand recycling and disposal options. Consumers can contact their local municipal solid waste agency directly, or go to <http://www.epa.gov/bulbrecycling> or <http://www.earth911.org> to identify local recycling options.

If your state or local environmental regulatory agency permits you to put used or broken CFLs in the garbage, seal the bulb in two plastic bags and put it into the outside trash, or other protected outside location, for the next normal trash collection. Never send a fluorescent light bulb or any other mercury-containing product to an incinerator.

If your ENERGY STAR qualified CFL product burns out before it should, look at the CFL base to find the manufacturer's name. Visit the manufacturer's web site to find the customer service contact information to inquire about a refund or replacement. Manufacturers producing ENERGY STAR qualified CFLs are required to offer at least a two-year limited warranty (covering manufacturer defects) for CFLs used at home. In the future, save your receipts to document the date of purchase.

Compact Fluorescent Light Bulbs (CFLs) and Mercury

Mercury is an essential element in the operation of fluorescent lighting; it allows the bulbs to be an efficient light source. Because CFLs contain trace amounts of mercury, it is important to educate yourself on proper use, recycling and disposal of these products.

The Facts about CFLs and Mercury

- Because CFLs use less electricity than traditional light bulbs, they reduce demand for electricity; that reduction means less mercury is emitted from power plants.
- CFLs contain a very small amount of mercury — an average of 4 milligrams in each bulb.
- No mercury is released when the bulbs are intact or in use.

Recycling and Disposing of CFLs

With compact fluorescent lamps (CFLs), mercury content needs to be taken into consideration before disposal. Mercury is an extremely hazardous waste and is a major health concern when it comes in contact with humans and animals. In humans, mercury can cause brain and kidney damage. While many companies hope to have non-mercury CFLs in the near future, right now, such lamps are not currently available.

When you are ready to recycle your used lamps:

- Be sure to carefully package them to ensure that they do not break in transport. This could release dangerous toxins.
- An easy way to prepare used lamps for recycling is to box them up in the packaging from your new lamps.
- Store your old lamps until you can locate an appropriate place to recycle them.
- To find out where you can recycle or properly dispose of light bulbs in your area, use Earth 911.

LEARN MORE (Links)

CFLs and Mercury

- [CFLs and Mercury Fact Sheet](#)
- [EPA: Mercury Information](#)

Recycling CFLs

- [Earth 911: Find a Recycling or Reuse Location](#)
- [Recycleabulb.com: Find a Recycling Location](#)
- [EPA: Mercury-Containing Light Bulb Recycling](#)

ENERGY STAR Lighting

- [CFLs](#)

How should I clean up a broken fluorescent bulb?

Because CFLs contain a small amount of mercury, EPA recommends the following clean-up and disposal guidelines:

Before Clean-up: Air Out the Room

- Have people and pets leave the room, and don't let anyone walk through the breakage area on their way out.
- Open a window and leave the room for 15 minutes or more.
- Shut off the central forced-air heating/air conditioning system, if you have one.

Clean-Up Steps for Hard Surfaces

- Carefully scoop up glass fragments and powder using stiff paper or cardboard and place them in a glass jar with metal lid (such as a canning jar) or in a sealed plastic bag.
- Use sticky tape, such as duct tape, to pick up any remaining small glass pieces and powder.
- Wipe the area clean with damp paper towels or disposable wet wipes. Place towels in the glass jar or plastic bag.
- Do not use a vacuum or broom to clean up the broken bulb on hard surfaces.

Clean-up Steps for Carpeting or Rug:

- Carefully pick up glass fragments and place them in a glass jar with metal lid (such as a canning jar) or in a sealed plastic bag.
- Use sticky tape, such as duct tape, to pick up any remaining small glass fragments and powder.

- If vacuuming is needed after all visible materials are removed, vacuum the area where the bulb was broken.
- Remove the vacuum bag (or empty and wipe the canister), and put the bag or vacuum debris in a sealed plastic bag.

Clean-up Steps for Clothing, Bedding, etc.:

- If clothing or bedding materials come in direct contact with broken glass or mercury-containing powder from inside the bulb that may stick to the fabric, the clothing or bedding should be thrown away. Do not wash such clothing or bedding because mercury fragments in the clothing may contaminate the machine and/or pollute sewage.
- You can, however, wash clothing or other materials that have been exposed to the mercury vapor from a broken CFL, such as the clothing you are wearing when you cleaned up the broken CFL, as long as that clothing has not come into direct contact with the materials from the broken bulb.
- If shoes come into direct contact with broken glass or mercury-containing powder from the bulb, wipe them off with damp paper towels or disposable wet wipes. Place the towels or wipes in a glass jar or plastic bag for disposal.

Disposal of Clean-up Materials

- Immediately place all clean-up materials outdoors in a trash container or protected area for the next normal trash pickup.
- Wash your hands after disposing of the jars or plastic bags containing clean-up materials.
- Check with your local or state government about disposal requirements in your specific area. Some states do not allow such trash disposal. Instead, they require that broken and unbroken mercury-containing bulbs be taken to a local recycling center.

Future Cleaning of Carpeting or Rug: Air Out the Room During and After Vacuuming

- The next several times you vacuum, shut off the central forced-air heating/air conditioning system and open a window before vacuuming.
- Keep the central heating/air conditioning system shut off and the window open for at least 15 minutes after vacuuming is completed.