

TCP, Inc.
Compact Fluorescent Bulbs
Frequently Asked Questions (FAQs)

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GENERAL

What is a CFL?

CFL stands for compact fluorescent lamp. It is a small fluorescent light bulb that uses 75% less energy than a traditional incandescent bulb and can be screwed into a regular light socket.

Who manufactures CFLs?

TCP, Inc. is the global leader in energy efficient lighting and manufactures nearly 1.5 million energy saving CFLs every day, accounting for a majority of the CFLs sold in the United States, including n:vision at The Home Depot, Great Value at Wal-Mart and SpringLight.

For more information on TCP, visit their website www.tcpi.com.

What is a watt? What is a lumen?

A watt is the measure of power consumption, and is the common way incandescent light bulbs are identified – for example 60-watt, 75-watt and 100-watt. When purchasing a light bulb, however, what you really should look for is lumens, which is the measure of light output. When you purchase a 60-watt incandescent bulb, you are getting about 800 lumens. By selecting a 13-watt ENERGY STAR® qualified CFL instead, you can still get 800 lumens, but it requires much less power.

Can using compact fluorescent lighting really save energy and save money on my electric bill?

Yes. A single 19 watt CFL bulb burns 56 watts less than a comparable 75 watt incandescent bulb and provides the same amount of pleasing, warm white light. Over the 10,000 hour life of a CFL bulb, you would save 560 kilowatt hours. At 12 cents per kilowatt-hour, that's a \$67.20 energy cost savings per bulb. And don't forget to deduct the cost of replacing 10 to 13 incandescent bulbs, which generally last only 750 to 1,000 hours each.

Why do compact fluorescent lights cost more than incandescent bulbs?

The price of a high quality compact fluorescent light bulbs reflects technology development costs. And, each compact fluorescent light bulb has a built-in micro-sized ballast, adding to the cost. As the number of bulbs sold increases, the overall price will continue to decline.

CFLs offer great value. The extra initial price is quickly made up by energy savings. And, you would have to buy up to 10 incandescent light bulbs to last as long as one CFL. With utility rebates included, the price for one CFL on average is not much more than for one incandescent light bulb, and in some cases is less.

Can compact fluorescent light bulbs create interference with electronic equipment?

This product may cause interference with radios, cordless phones, televisions and remote controls. If interference occurs, move this product away from the device and plug into a different outlet.

GENERAL (cont.)

Do compact fluorescent light bulbs give off Ultraviolet (UV) light?

Compact fluorescent bulbs give off a minimal amount of UV light. It does not pose a hazard.

How long does it take for a compact fluorescent bulb to reach full brightness?

The start-up time for compact fluorescent lamps varies. Most electronically ballasted units start their lamps instantly. All fluorescent lamps start at a lower light output; depending on the ambient temperature, it may take anywhere from several seconds to several minutes for the lamp to come up to full brightness.

My CFL started smoking, can it start a fire?

At the end of life the electronic ballast components in some CFLs overheat and can cause smoke, which is often mistaken by consumers as a fire hazard. However, this is contained in the plastic ballast housing. The plastic used in the ballast housing is not combustible. So while there may be smoke the components do not ignite.

If a CFL fails in the proximity of very combustible materials it could result in a fire. The chances of this happening with the ordinary use of CFLs is extremely minimal.

If the bulb of an operating CFL cracks open and if the exposed cathodes come into contact with paper or other combustible in theory a fire could start. Keep in mind that as soon as the bulb cracks the cathodes will start to burn out and extinguish themselves. So the cathodes are only hot for a short time.

It is a known fact that an incandescent lamps under similar failure mechanisms have started fires. Because CFLs run so much cooler the probability is less with a CFL but, still there.

Organizations such as UL and CSA have for many years established, maintained, and periodically reviewed safety requirements for CFLs. Both require CFL products to pass many tests intended to minimize any potential hazard due to either risk of fire or shock hazard before either agency allows a CFL model to be labeled with its safety mark.

APPLICATIONS

Where should I use a compact fluorescent bulb?

Use CFLs anywhere a traditional incandescent light bulb is used. However, the most practical use for a compact fluorescent bulb is in a lamp or fixture turned on for at least three hours at a time. Hard to reach fixtures are also good candidates, since a CFL does not have to be changed as often as an incandescent bulb.

Will a compact fluorescent light fit my light fixture?

Compact fluorescent light bulbs, which include a lamp and a ballast or transformer, come in many shapes and sizes. Great strides have been made in reducing the overall size, and many CFLs are now equivalent in size or smaller than incandescent bulbs. However, it is best to measure your fixture and compare bulb sizes before purchasing a CFL.

What wattage should I buy?

When buying a compact fluorescent light bulb, choose a wattage that's about one-fourth of what you usually buy. The table below shows some typical wattage conversions for SpringLamps®:

- 40 watt incandescent = 9 watt compact fluorescent
- 60 watt incandescent = 14 watt compact fluorescent
- 75 watt incandescent = 19 watt compact fluorescent
- 100 watt incandescent = 23 watt compact fluorescent

Can I use a compact fluorescent bulb in a fully enclosed fixture?

Yes, it is safe to use CFLs that are 23 watts or below in a fully enclosed fixture.

Can my CFL's be used in a recessed can?

Each qualified ENERGY STAR® product is packaged showing the ideal locations each bulb can be used. ENERGY STAR has qualified many CFL's that can be used in recessed cans.

Can I turn my CFL's on and off frequently?

Turning a CFL on and off frequently can shorten its life. To take full advantage of the energy savings and long life of ENERGY STAR qualified CFLs, it is best to use them in light fixtures you use the most and are on for at least 15 minutes at a time. Good locations include outdoor light fixtures, indoor fixtures in the living room, family room, kitchen, bedroom, recreation room, etc. This is not to say you should leave your lights on all day if you use ENERGY STAR qualified CFLs. It is still a good habit to turn the lights off when you leave the room for an extended period of time.

You may also have heard that CFLs use a lot of energy when turning on and off. While there is a brief surge in energy use when a CFL is turned on, with today's starting technology, that surge usually lasts about a tenth of a second and consumes about as much energy as five seconds of normal operation.

(Question continued on next page.)

APPLICATIONS (cont.)

Can I turn my CFL's on and off frequently? (Continued from previous page)

So, even when turned on and off frequently, a CFL uses less energy than its incandescent equivalent. But because turning a CFL on and off more frequently can shorten its life and CFLs are more expensive than incandescent, we recommend consumers use CFLs in applications where they are on for at least fifteen minutes.

Can I use my CFL's on a timer?

While CFLs can be used with mechanical timers, electronic or digital timers may cause interference with the electronic ballast, and can adversely affect product performance. Typically, CFLs used on electronic or digital timers will fail far before their rated lifetime. Remember, ENERGY STAR qualified CFLs are required to state any incompatibility with controls on the packaging, so be sure to read and follow the manufacturer recommendations.

Can compact fluorescent light bulbs be dimmed?

There are dimmable compact fluorescent bulbs sold specifically for dimmable applications. Dimmable applications tend to have a small amount of electricity running through them even though a lamp is shut off. The lamp continually tries to turn itself on, which shortens the CFL life.

Can compact fluorescent light bulbs be used in 3-way lamps?

There are 3-way compact fluorescent bulbs sold specifically for 3-way lamps. A standard CFL can be used in a 3-way lamp, but you will only get light in the middle of the three on positions.

Can compact fluorescent light bulbs be used where it is wet or damp?

Compact fluorescent light bulbs can be installed in wet or damp locations as long as they are a covered bulb such as a flood lamp. Regular SpringLamps® may be installed in sheltered exterior locations.

What about air temperature and CFLS?

Compact fluorescent light bulbs may generally be used where the air temperature is between 20 degrees Fahrenheit and 140 degrees Fahrenheit. Above 140 degrees, there may be reduced light output and premature ballast failure. CFLs have a harder time starting below 32 degrees, reducing the brightness.

APPLICATIONS (cont.)

Can a compact fluorescent bulb be used in a dusk-to-dawn fixture?

Dusk-to-dawn photocell fixtures designed for screw-in incandescent bulbs contain a silicon chip that converts radiant energy into electrical current. The technology is generally incompatible with screw-in CFLs, shortening the life of the bulb. However, fixtures with built-in photocells that are designed to use only compact fluorescent lamps contain a delayed instant-on circuit to make them compatible with fluorescents.

What about electronic timers?

Electronic timers tend to have a small amount of electricity running through them even though a lamp is shut off. The lamp continually tries to turn itself on, which shortens the CFL life.

COLOR TEMPERATURES

Will CFLs cast a harsh greenish light like the fluorescent bulbs of the past?

No. Fluorescent light bulbs have a phosphor coating, which at one time only used one color of phosphor, green, causing the bulbs to cast a greenish light.

Today's CFLs are made with Tri-phosphors – red, green, and blue – allowing TCP to adjust the color temperature of the bulb to be as warm (red) as an incandescent bulb, or as cool (blue) as natural daylight.

Are CFLs available in different light colors?

Unlike incandescent bulbs that only come in one color, CFLs come in a variety of color temperatures. CFLs currently come in 2700K, 3100K, 3500K, 4100K, 5500K, 6500K. The most popular of these being 2700K, 3500K, and 5500K.

The 2700K is often referred to as soft white and is an ideal lifestyle light that provides a warm, full glow that is comfortable and inviting, making it a perfect energy replacement in living rooms, family rooms, recreation rooms and bedrooms.

The 3500K is often referred to as bright white and is an ideal working light and provides a radiant, crisp illumination that is an ideal light for working in the kitchen, bathroom, hobby room, basement and garage.

The 5500K is often referred to as daylight and is a bright, quality light that provides accurate color rendition and emulates natural daylight. It is great for reading and detail-oriented activities, or anywhere you want truly vibrant color and an exciting atmosphere.

ENERGY STAR®

What is ENERGY STAR?

ENERGY STAR is a joint program of the U.S. Environmental Protection Agency and the U.S. Department of Energy helping us all save money and protect the environment through energy efficient products and practices.

In 1992 the US Environmental Protection Agency (EPA) introduced ENERGY STAR as a voluntary labeling program designed to identify and promote energy-efficient products to reduce greenhouse gas emissions. Computers and monitors were the first labeled products. The ENERGY STAR label is now on over 50 product categories including major appliances, office equipment, lighting, and home electronics. EPA has also extended the label to cover new homes and commercial and industrial buildings.

The typical household spends \$1,900 a year on energy bills. With ENERGY STAR, you can save up to 30% or more than \$600 per year, with similar savings of greenhouse gas emissions, without sacrificing features, style or comfort. ENERGY STAR helps you make the energy efficient choice.

If looking for new household products, look for ones that have earned the ENERGY STAR. They meet strict energy efficiency guidelines set by the EPA and US Department of Energy. You can identify them by the blue ENERGY STAR label

How can I tell if a CFL has ENERGY STAR approval?

Each qualified CFL is sold with the ENERGY STAR logo clearly labeled on the packaging. Make sure the lamp has the label to ensure maximum energy savings.

How much do ENERGY STAR qualified CFL's cost?

CFL prices range from \$2 to \$15 (for specialty bulbs), but save you about \$30 or more per bulb in energy savings over their lifetime, more than offsetting their initial cost. We recommend replacing the light bulbs in the fixtures you use most with ENERGY STAR qualified options, whether indoor or outdoor

What is the difference between ENERGY STAR qualified fixtures and standard fixtures?

Most ENERGY STAR qualified fixtures come with pin-based compact fluorescent lamps that are tested to last at least 10,000 hours (about 7 years, on average) versus standard screw-in bulbs which last about 1,000 hours or up to 1 year. Some ENERGY STAR qualified outdoor fixtures will accept an incandescent light bulb because they save energy through a motion sensor and/or a photocell that turns the light on only when someone is present or on and off at night and in the morning. Qualified fixtures come in hundreds of popular styles, including table, floor and desk lamps and in hard-wired styles for ceilings, walls, bathroom, kitchen, dining room, and outdoors.

Replacement pin-based CFL bulbs can be found at most hardware or home improvement centers, at lighting showrooms, and on the Internet.

MERCURY

Do CFL's contain mercury?

CFLs contain a very small amount of mercury sealed within the glass tubing – an average of 5 milligrams, which is roughly equivalent to an amount that would cover the tip of a ball-point pen. No mercury is released when the bulbs are intact or in use. By comparison, older thermometers contain about 500 milligrams of mercury. It would take 100 CFLs to equal that amount.

Mercury currently is an essential component of CFLs and is what allows the bulb to be an efficient light source. Many manufacturers have taken significant steps to reduce mercury used in their fluorescent lighting products. In fact, the average amount of mercury in a CFL is anticipated to drop by the end of 2008, thanks to technology advances and a commitment from the members of the National Electrical Manufacturers Association.

What is mercury, what are the sources of mercury emissions, and what are the risks?

Mercury is an element found naturally in the environment. Mercury emissions in the air can come from both natural and man-made sources. Utility power plants (mainly coal-fired) are the primary man-made source, as mercury that naturally exists in coal is released into the air when coal is burned to make electricity.

Coal-fired power generation accounts for roughly 40% of the mercury emissions in the U.S.. The EPA is implementing policies to reduce airborne mercury emissions. Under regulations issued in 2005, coal-fired power plants will need to reduce their emissions by 70 percent by 2018.

Airborne mercury poses a very low risk of exposure. However, when mercury emissions deposit into lakes and oceans, they can transform into a highly toxic form that builds up in fish. Fish consumption is the most common pathway for human exposure to mercury. Pregnant women and young children are most vulnerable to the effects of this type of mercury exposure. However, The Food and Drug Administration (FDA) estimates that most people are not exposed to harmful levels of mercury through fish consumption.

Why do CFLs contain mercury?

Mercury is an essential ingredient for most energy efficient lighting products, including CFLs. It is the mercury that excites phosphors in a CFL, causing them to glow and give light. When electric current passes through mercury vapor, the mercury emits ultraviolet energy. When this ultraviolet energy passes through the phosphor coating, it produces light very efficiently. Because mercury is consumed during lamp operation, a certain amount is necessary to produce light and achieve long lamp life.

How much mercury does one CFL bulb contain?

The amount of mercury in the most popular and widely used CFLs is minimal, ranging between 1.5 mg and 3.5 mg. That is lower than other CFLs on the market, which generally contain approximately 5 mg, roughly the equivalent of the tip of a ballpoint pen.

(Question continued on page 8)

MERCURY (cont.)

How much mercury does one CFL bulb contain? (Continued from page 7)

By comparison, older home thermometers contain 500 milligrams of mercury and many manual thermostats contain up to 3000 milligrams. It would take between 100 and 665 CFLs to equal those amounts.

Mercury can be added to the CFL in two ways. Some manufacturers use liquid mercury, which is less expensive and more difficult to accurately dose. TCP uses amalgam, a small “pill” which is a solid state form of mercury and other elements. Amalgam is much easier and more accurate to dose. TCP is the only manufacturer using 100 percent amalgam in its CFL products.

Should I be concerned about using CFLs in my home?

CFLs are safe to use in your home. No mercury is released when the bulbs are in use and they pose no danger to you or your family when used properly.

What steps are being taken to reduce the amount of mercury in CFLs?

The mercury used in all TCP CFLs is the lowest dosage possible to maintain proper lamp function; however, we are committed to reducing mercury content whenever possible and as part of that call to action have joined the NEMA voluntary commitment program. All participating manufacturers have promised to cap the total mercury content of all CFLs under 25 watts at 5 mg. CFLs that use 25 – 40 watts are capped at 6 mg per unit.

Since CFLs contain mercury, how can they still be good for the environment?

CFLs are responsible for less mercury than standard incandescent light bulbs, and actually work to prevent mercury from entering our air, where it most affects our health. The highest source of mercury in our air comes from burning fossil fuels such as coal, the most common fuel used in the U.S. to produce electricity. A CFL uses 75% less energy than an incandescent light bulb and lasts up to 13 times longer.

70% of power plants are coal fired and thus burn fossil fuel to produce energy. These power plants will emit 10 mg of mercury to produce the electricity to run an incandescent bulb compared to only 2.4 mg of mercury to run a CFL for the same time. Coal-fired power generation accounts for roughly 40% of the mercury emissions in the U.S.

DISPOSAL

What should I do if I break a CFL?

If a CFL breaks- carefully sweep up all the fragments, wipe the area with a wet towel, and dispose of all fragments, including the used towel, in a sealed plastic bag. Follow all disposal instructions. If possible, open windows to allow the room to ventilate. Do NOT use a vacuum. Place all fragments in a sealed plastic bag and follow disposal instructions.

How do I safely dispose of a CFL when it burns out?

It is best to recycle your CFL. Recycling programs exist for mercury in older non-digital thermostats and mercury thermometers, but residential CFL recycling programs are just now appearing. To find a residential recycling program in your area, visit earth911.org or lamprecycle.org. You can also call 1-800-CLEAN-UP.

If recycling is not an option in your area, place the CFL in a sealed plastic bag and dispose the same way you would batteries, oil-based paint and motor oil at your local Household Hazardous Waste (HHW) Collection Site.

If your local HHW Collection Site cannot accept CFLs, seal the CFL in a plastic bag and place with your regular trash.