

The GIZ logo consists of the lowercase letters 'giz' in a bold, red, sans-serif font. The letters are contained within a white square with a red border. A red vertical bar is positioned to the right of the square, and a diagonal beam of light, composed of a dark grey outer edge and a red inner edge, extends from the bottom-left corner of the square towards the bottom-left of the slide.

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Energy Efficiency in Lighting

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Incandescent light bulbs

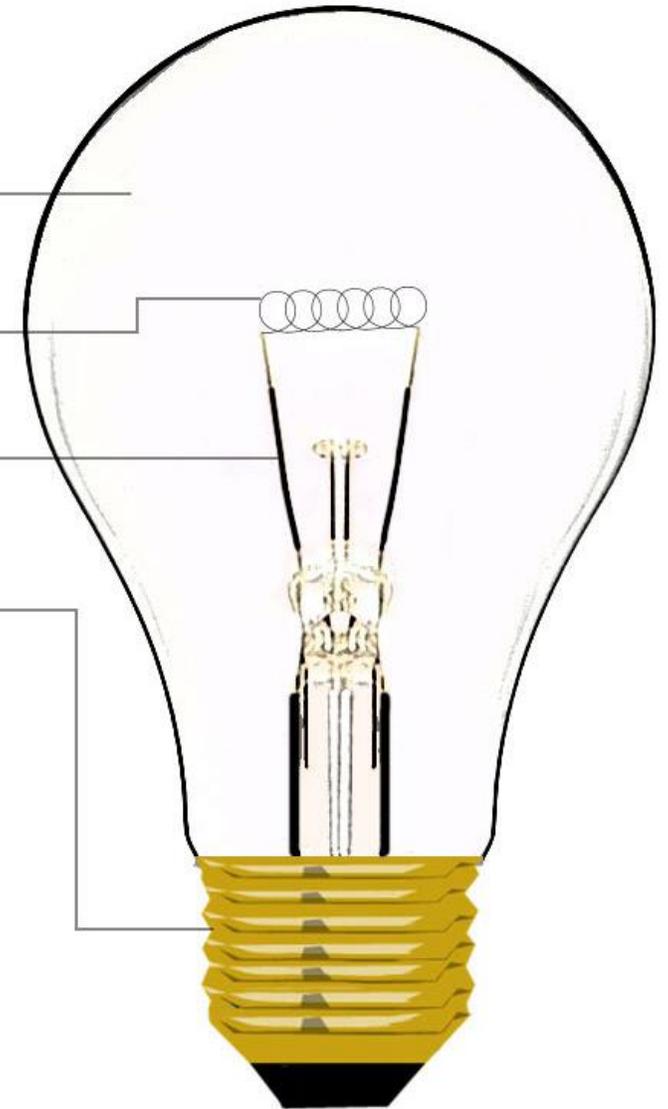
- Actually should be called “heating lamps” because only 10% of their energy intake is converted into visible light. The rest is emitted as heat. They operate with a glowing wire of metal alloy that emits light.
- Lifetime is approx. 1,000 hours.

Inert Gas within
Glass Enclosure

Tungsten Filament

Mechanical Supports

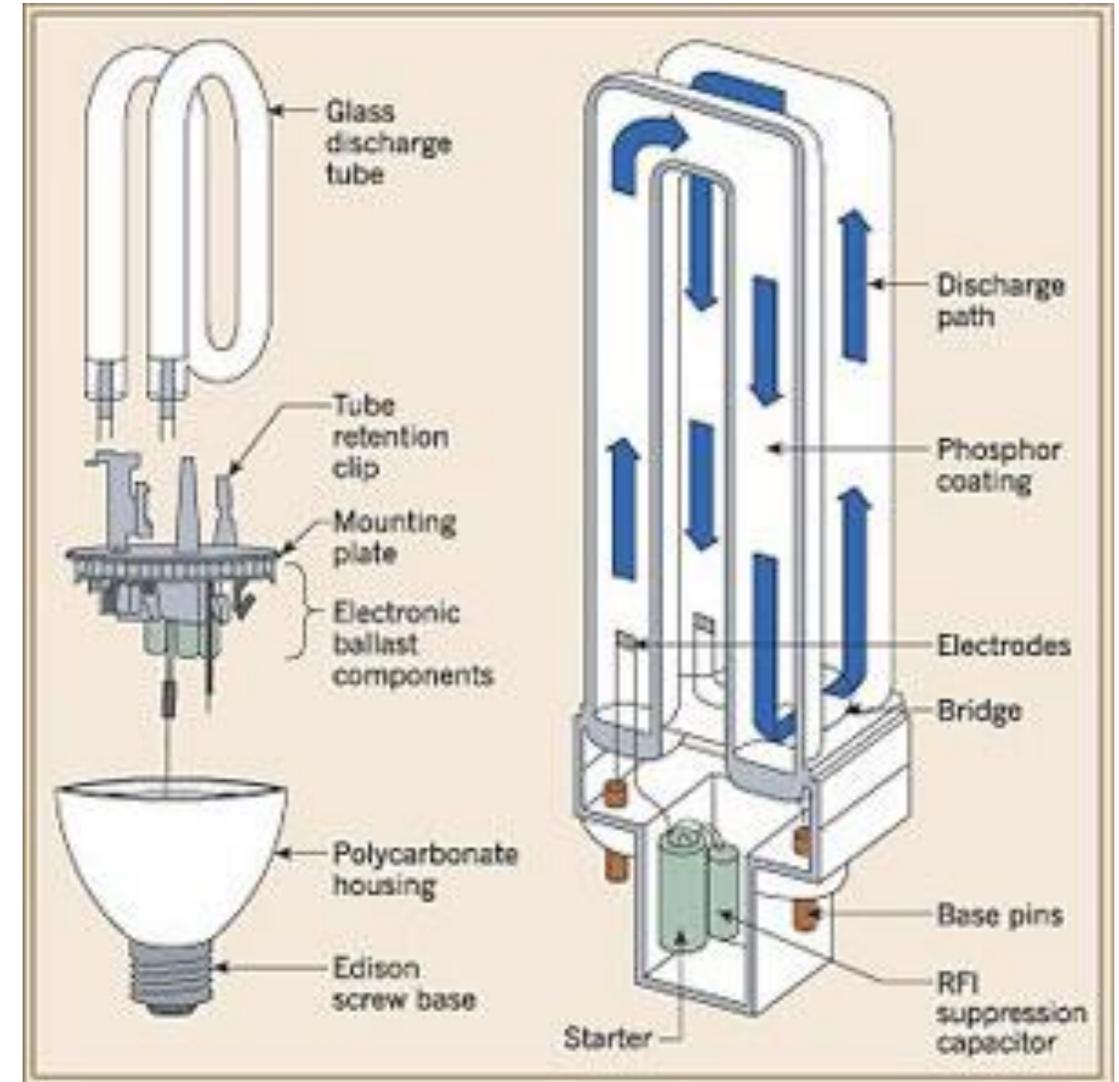
AC Contacts



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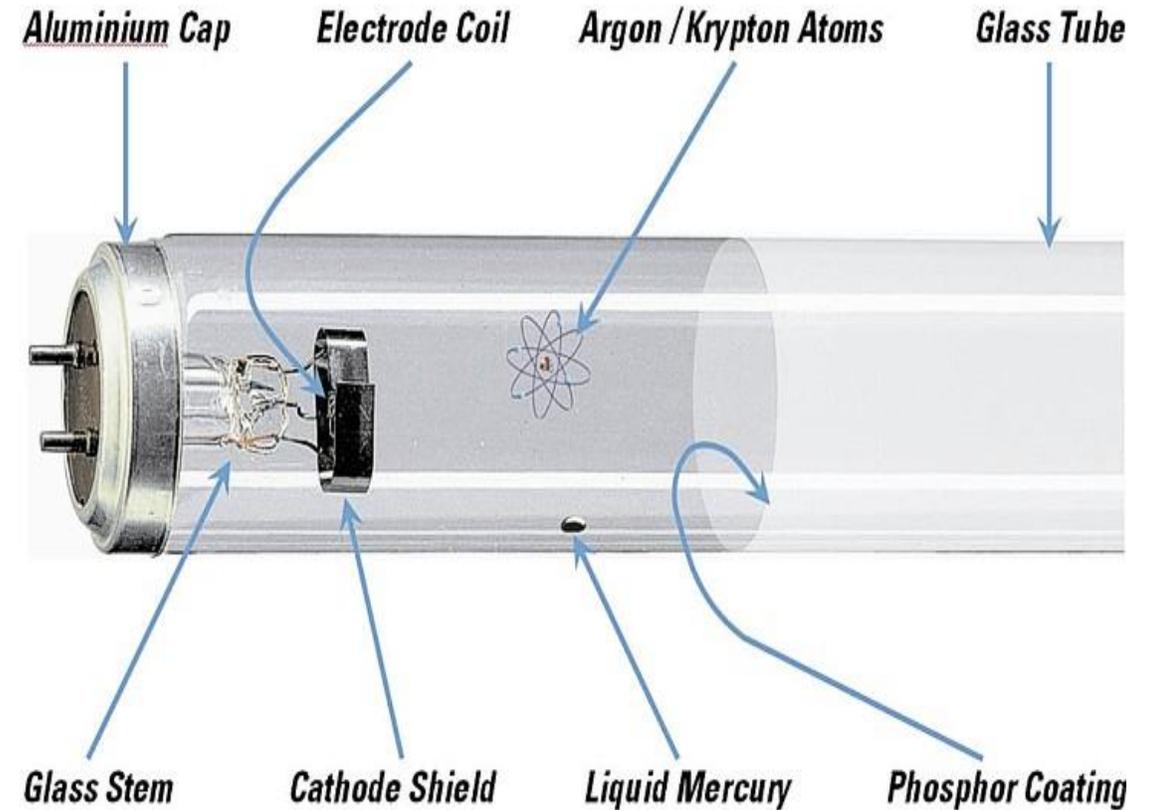
Compact Fluorescent Lamps (CFL)

- Also called "Energy Saving Bulbs".
- About 80% less energy than incandescent light bulbs.
- They operate with an electric ballast that is integrated into the lamp body.
- Due to their mercury content fluorescents should be handled and disposed off with care.
- Lifetime is between 8,000 and 10,000 hours.



Fluorescent Tubes

- Work similar to CFLs but have a tubular form
- They need one ballast per tube to initiate the gas' light emission.
 - **Mechanical ballasts** use between 7 and 9 Watts per ballast, while
 - **electronic ballasts** consume about 4 Watts and hence are more common now.
- Fluorescent tubes are measured by the diameter and their length. Most common are T12, T8 and T5.
- Lifetime is between 8,000 and 10,000 hours.



Fluorescent Tubes and Ballast

Lamp Type	Wattage	Ballast	Total Wattage	Annual operation cost ¹⁾
T12	40 W	7 W (mech)	47 W	137.24 EC\$
T8	36 W	4 W (electr)	40 W	116.80 EC\$
T5	21 W	4 W (electr)	25 W	73.00 EC\$
LED	18 W	None.	18 W	52.26 EC\$

Based on 8hr daily usage

giz Light Emitting Diodes (LED)

- These have been used for many years and are recently being-introduced in households and for commercial application.
- They use 90% less energy than incandescent lights and still up to 20% less than CFLs.
- They produce very little heat which makes them so efficient.
- They do not contain mercury.
- Suitable for large scale applications (Stadium lighting etc.)
- Lifetime is between 25,000 and 70,000 hours.



Comparative lighting chart

Cost comparison	Incandescent Light Bulbs	Compact Fluorecent Lamps (CFL)	Light Emitting Diodes (LED)
Life time in total hours (and in years @ 4 hours usage per day)	1,000 hours (0.7 years)	8,000 hours (5.5 years)	25,000 hours (17 years)
Approximate purchase cost	\$6.00	\$8.00	\$16.00
Electricity cost over the lamp's lifetime (@ 1.00 EC\$ / kWh)	\$40 (40W)	\$88.00 (11W)	\$150.00 (6W)
Average annual lamp cost, including lamp and energy cost (Year 1)	\$67.16	\$24.06	\$24.76
Year 2	\$58.40	\$16.06	\$8.70

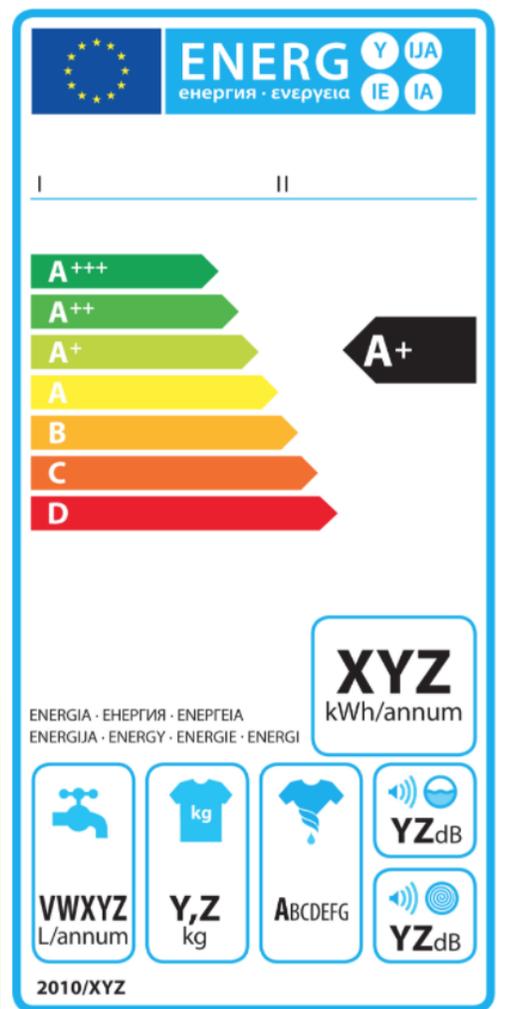
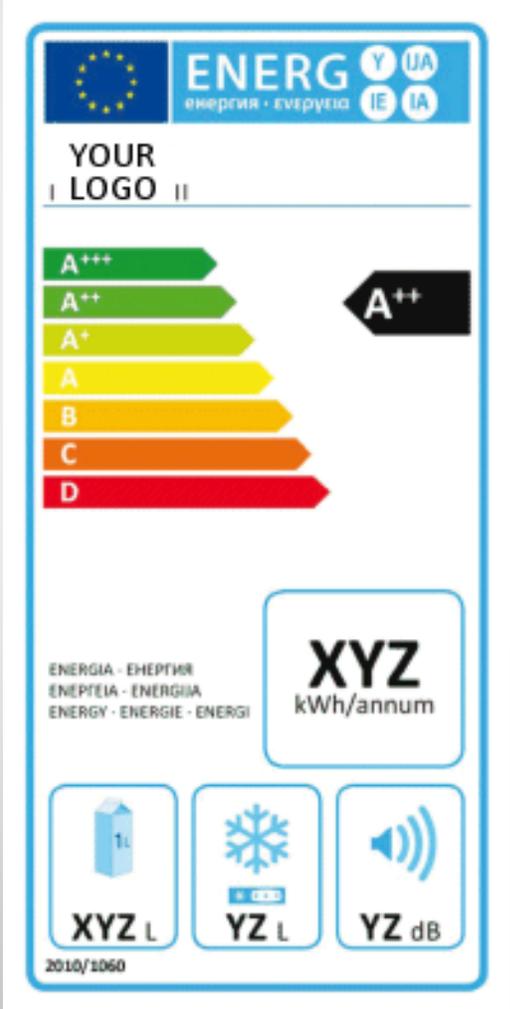


Light Bulb comparison

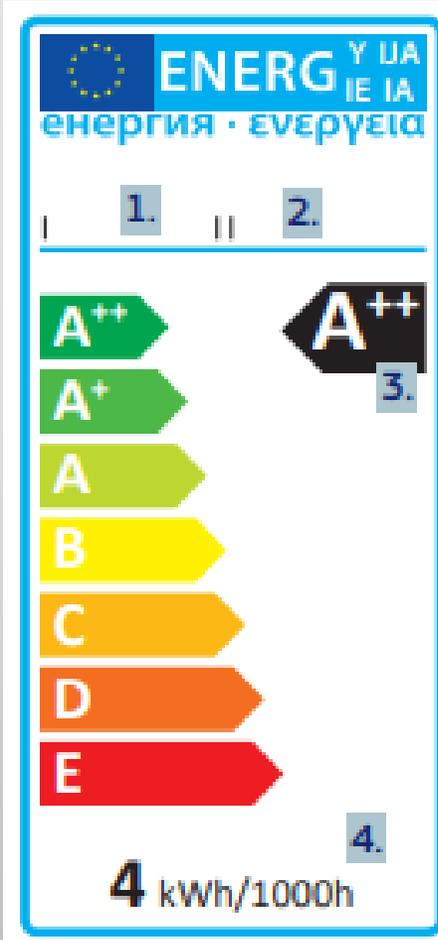
BULB TYPE	POWER RATING (WATTS)	DUTY CYCLE (HRS/DAY)	ENERGY COSUMPTION		ENERGY RATE (XCD/Kwh)	COST PER MONTH (XCD/30day)	COST PER YEAR (XCD/365day)	AVERAGE RETAIL PRICE PER BULB (XCD)
			per day (Wh)	per 30 day month (Wh)				
INCANDESCENT	45	4	180	5400	\$ 0.9136	\$ 4.93	\$ 59.20	\$ 6.00
COMPACT FLORESCENT (CFL)	11	4	44	1320	\$ 0.9136	\$ 1.21	\$ 14.47	\$ 8.00
LED	8	4	32	960	\$ 0.9136	\$ 0.88	\$ 10.53	\$ 15.00



Energy Labels



What to look for



1. The company that made or placed the lamp on the market
2. The lamp model
3. How energy efficient the lamp is
4. Energy consumption during 1 000 hours (typical energy consumption in a year)

A lamp's package also comes with lots of useful information



1. The energy label (see above)
2. Average lifetime of the lamp (1000 hours equals an average of one year of usage)
3. Colour of the light, from yellowish (2700K) to daylight (6500K)
4. How accurate the lamp is at revealing different colours (a colour rendering index of 80 is good, 100 is the best)
5. Whether it is dimmable or not (if not, a cross appears over the symbol)
6. How many times the light can be switched on and off before it burns out
7. The more lumens, the brighter the light

Some packages also mention the incandescent power equivalence (60 W). This simply compares the quantity of the lamp's light to that of an old incandescent lamp.

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What to look for

Lists key features of the appliance you're looking at and the similar models that make up the cost range below.

What you might pay to run the appliance for a year, based on its electricity use and the national average cost of energy. The cost appears on labels for all models and brands, so you can **compare** energy use just like you would price or other features.

An estimate of how much electricity the appliance uses in a year based on typical use. Multiply this by your local electricity rate on your utility bill to better judge what your actual operating cost might be.

U.S. Government

Federal law prohibits removal of this label before consumer purchase.

ENERGYGUIDE

Refrigerator-Freezer

- Automatic Defrost
- Side-Mounted Freezer
- Through-the-Door Ice

XYZ Corporation
Model ABC-L
Capacity: 23 Cubic Feet

The maker, model, and size tell you exactly what product this label describes.

Estimated Yearly Operating Cost

\$67

\$57

\$74

Cost Range of Similar Models

The cost range helps you compare the energy use of different models by showing you the range of operating costs for models with similar features.

630 kWh

Estimated Yearly Electricity Use

Your cost will depend on your utility rates and use.

- Cost range based only on models of similar capacity with automatic defrost, side-mounted freezer, and through-the-door ice.
- Estimated operating cost based on a 2007 national average electricity cost of 10.65 cents per kWh.
- For more information, visit www.ftc.gov/appliances.



If you see the ENERGY STAR logo, it means the product is better for the environment because it uses less energy than standard models.

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SPOT THE DIFFERENCE

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ENERGYGUIDE

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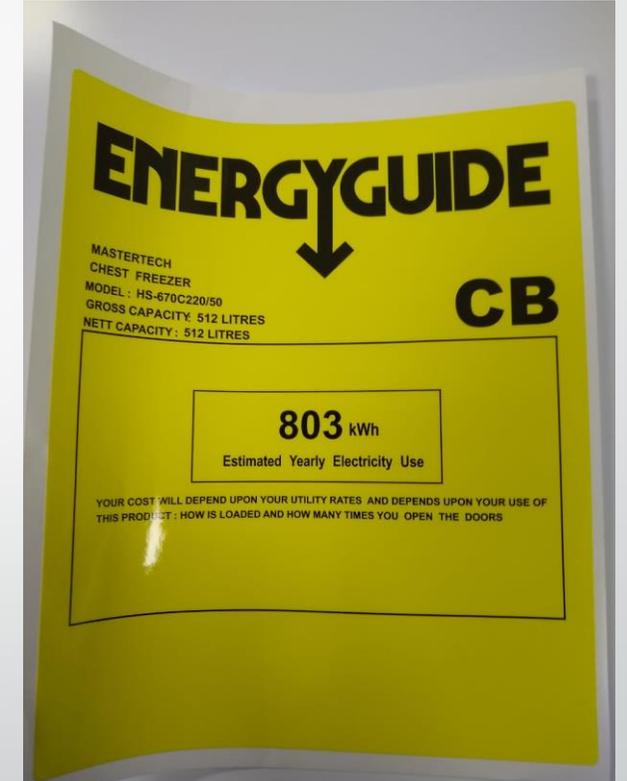
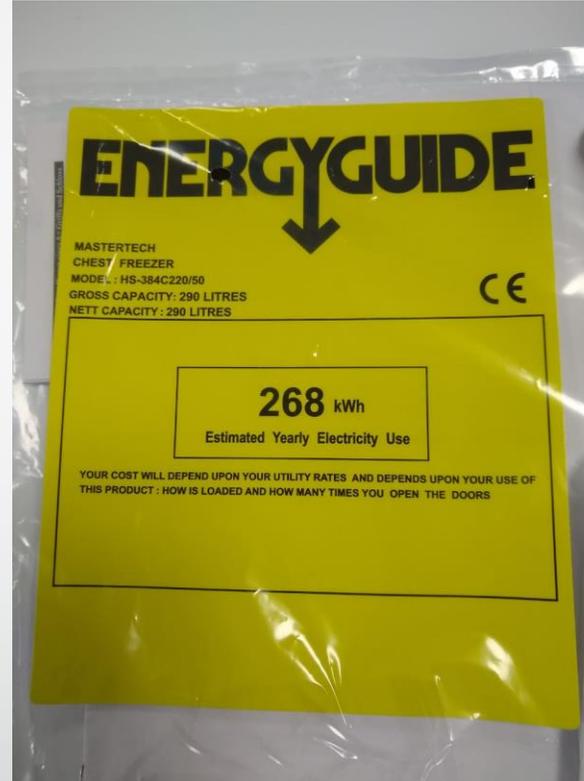
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Thank you!

Q&A

References

DOM	COM
May 23	May 23
182.7297	463.7125
0.913648	0.927425

A Consumer's Guide to Energy-Efficient Lighting-

https://ec.europa.eu/info/sites/info/files/consumer_guide_to_energy_efficient_lighting.pdf

Energy Efficiency Standards and Labels for the OECS – ILLUMINATS -

<https://www.oecs.org/ecelp-downloads/info-awareness-material>