



We push the bulbs to breaking point and beyond

Life cycles

Our trials includes a rigorous lifetime test, which means that bulbs are turned on for 8,000 hours, which is the equivalent of at least eight years of use. We mount all the bulbs on a frame and switch the lamps on and off in cycles of two hours, 45 minutes on and 15 minutes off, taking note of any lamps that burn out or fade along the way. We measure light output after 750 hours and 1,500 hours, and check whether any of the bulbs are prone to dimming as they get older.

Energy use

To test these bulbs and help you make the best choice for saving the planet, we used 18,720 kilowatt hours of electricity. We've offset these emissions through a carbon neutral scheme.

WHICH? ONLINE

Visit www.which.co.uk/lowenergylightbulbs for more information. You can find out more about the products tested here and the gains to be made from low-energy bulbs. See www.which.co.uk/loginhelp if you need help logging in.



Bright ideas

Save money and the planet with low-energy light bulbs

The power to do your bit for the planet could cost you as little as £2. According to our calculations, it is estimated that if each UK household used just one energy-efficient light bulb, we could close down a power station.

And if you haven't yet switched over, the choice may soon be out of your hands. The government has announced that traditional light bulbs will start to disappear from shops from January 2008. The 150-watt light bulb will be the first to go with lower wattage bulbs, 100 and 40, following later and full phase-out expected by 2011.

Energy-saving bulbs are not only better for the environment, they're also better for your wallet. In most homes, lighting accounts for approximately 15 per cent of the electricity bill. Although low-energy bulbs can cost more in the short term, each one can reduce your bill by up to £10 a year.

The only places where low-energy bulbs may not work well are cold areas. We tested the bulbs at both 0 and -10°C and can confirm that this adversely affects the performance of most of them. It should also be noted that low-energy bulbs don't work with dimmers.

We had hoped to test low-energy bulbs last year but changes to legislation meant that all the bulbs on the market were changing – in most cases to reduce the level of mercury that they contain because it is toxic.

When new bulbs became available from July 2006, we immediately bought them and sent them for testing. Due to our long lifetime tests (see 'How we test', left), it has taken a little while to publish the results. But we are now pleased to unveil Best Buy bulbs from General Electric, Ikea and Osram. From now on, we'll test low-energy bulbs more often.

What you should look for

POWER

Seven- to nine-watt bulbs offer about the same brightness of light as a typical 40-watt incandescent bulb; 11 to 15 watts are equivalent to 60-watt bulbs, and 18 to 21 to 100-watt bulbs

SHAPES

Our Best Buys come in a variety of shapes. Opt for traditional-shaped bulbs where you can see them and stick shapes for enclosed lampshades



FITTING

Most – but not all – bulbs are available with both screw and bayonet fittings. See our table on p68

CLAIMED LIFETIME

Manufacturers claim lifetime in multiples of 1,000 hours, the equivalent of about a year's use when the bulb is on for three hours each day. Lifetime claims range from 6,000 to 15,000 hours



How much can you save?

Don't be fooled by cheap traditional bulbs, which may cost less upfront. Low-energy bulbs will end up saving you more

Incandescent bulbs are often cheaper to buy (they start at around 40p, while the average price of a low-energy bulb in our test is £3). But they work out more expensive in the long run because they use more electricity and you have to replace them more often.

Switching one 100-watt incandescent bulb for a Best Buy low-energy equivalent could save you up to £30 over five years.

If you are after a budget low-energy bulb, look no further than our Ikea Sparsam Best Buys in both bulb and tube shapes. At £2 each, they are some of the cheapest bulbs on

test and have the lowest running costs of all our Best Buys, too.

The costs in the table, below, include the price of the bulb and the electricity drawn over the bulb's life.

LOW-ENERGY BULB SAVINGS			
EQUIVALENT BULB	LOW-ENERGY BULB (£)	INCANDESCENT BULB (£)	SAVINGS OVER FIVE YEARS (£)
40 WATT	5.35	17.01	11.66
60 WATT	6.80	24.32	17.52
100 WATT	9.70	38.94	29.24

How they work

Traditional incandescent bulbs generate light by passing an electric current through a thin metal wire, which becomes hot and emits light. Unfortunately, a lot of energy is wasted as heat.

Low-energy bulbs work in the same way as fluorescent lights. An electric current passes through gas in a tube, making the tube's coating glow brightly. They are more efficient because most of the electrical energy is used to produce light.



76% General Electric Elegance T3 £3

These top-scoring Best Buy bulbs claim a lifetime of 6,000 hours, or about six years. They easily exceeded this claim, offering an impressive two years' more light than promised. They stand up well to switching on and off and don't dim over time. The bulbs are a helix or twisted-tube shape and like most bulbs on test will struggle only if you use them in cold conditions. Cheapest from Wilkinson's.

WE LIKE Unlike the other GE Best Buy bulbs, these can be used with timers.

Available Wilkinson's Wattages tested 11/20 Running costs per year £8/11 Shape Helix Bayonet fitting Yes Screw fitting Yes Use with timers Yes

WHICH? BEST BUY



73% Ikea Sparsam (Bulb) £2

These bulbs offer strong light and the same colour as an incandescent bulb, and switching on and off poses no problems. However, they are more prone to dimming over time than other Best Buys and are available with bayonet fittings only. They claim a lifetime of 6,000 hours, or about six years, but far exceeded it with their excellent lifetime performance. Exclusive to Ikea.

WORTH KNOWING The Sparsam performs well in cold conditions.

Available Ikea Wattages tested 8/12/20 Running costs per year £5/7/11 Shape Bulb Bayonet fitting Yes Screw fitting No Use with timers Yes

WHICH? BEST BUY

A Best Buy low-energy light bulb could save you up to £30 over five years



73% Osram Duluxstar £2

These tube-shaped bulbs, offering the same coloured light as incandescents, are available with both screw and bayonet fittings. They offer good light output, stand up well to being switched on and off and don't dim much over time. They have a claimed lifetime of 6,000 hours and were still going strong after our 8,000-hour milestone. Cheapest at Sainsbury's.

WE FOUND These bulbs offer the worst performance in cold conditions.

Available Robert Dyas, Sainsbury's Wattages tested 8/11/21 Running costs per year £6/7/11 Shape Tube Bayonet fitting Available only on 8- and 21-watt bulbs, not on 11 watt Screw fitting Yes Use with timers Yes

WHICH? BEST BUY



70% General Electric Mini Eco £3

These bulbs offer good light output and don't dim much over time. They match their claimed lifetime of 6,000 hours.

Two of the three wattages almost made our stringent 8,000-hour milestone. They stand up well to being switched on and off frequently, too. The bulbs are fine for use around the house but performance suffers when used in cold areas like porches or garages. Cheapest at Wilkinsons.

WE LIKE They are sold in easily recyclable paper packaging.

Available Wilkinsons Wattages tested 9/11/20
Running costs per year £7/8/11 Shape Tube Bayonet fitting Yes Screw fitting Yes Use with timers No

WHICH?
BEST BUY



70% Ikea Sparsam (Tube) £2

These bulbs offer good light output, last as long as they promise and don't dim much over time. They also stand up well to being switched on and off frequently. Like most bulbs on test, though, performance dips when used in cold places.

The eight- and 11-watt bulbs have claimed lifetimes of 6,000 hours, which they exceeded. The 20-watt bulb claims 10,000 hours and was still going strong after our stringent 8,000-hour milestone.

WORTH KNOWING This family of tube-shaped bulbs is available with bayonet fittings only.

Available Ikea Wattages tested 8/11/20 Running costs per year £5/6/18 Shape Tube Bayonet fitting Yes Screw fitting No Use with timers Yes

WHICH?
BEST BUY

Don't just bin them

How to dispose of used light bulbs

Low-energy bulbs contain around five milligrams of mercury – enough to fit on the tip of a ballpoint pen but still dangerous and banned from landfill. For this reason, used bulbs need to be recycled and are included in the WEEE (Waste Electrical and Electronic Equipment) recycling scheme. The retail price of bulbs contains an amount to cover recycling costs, and manufacturers have an obligation to set up collection or drop-off schemes to facilitate recycling them under WEEE. Contact your council for other disposal options. Ikea is the only major retailer offering recycling points in store, where it will accept all low-energy bulbs for recycling.



Contacts

B&Q

0845 609 6688
www.diy.com

General Electric

0800 169 8290
www.ge.com/uk

Homebase

0845 077 8888
www.homebase.co.uk

Ikea

0845 358 3364
www.ikea.com

Omicron

01480 869000
www.omicronuk.com

Osram

01744 812221
www.osram.co.uk

Ring

0113 276 7676
www.ring.ltd.uk

Wilko

0800 032 9329
www.wilko.co.uk

Insider information

Sandie Mattioli looks at the future of lighting

Even though low-energy light bulbs are beginning to make their mark on the lighting market, they could soon be replaced by an even more energy-efficient option.

LEDs (light-emitting diodes) produce light with minimal waste heat and are even better for the environment than low-energy bulbs.

Super-efficient LEDs are only just finding their way into the mainstream consumer market. Both Osram and Philips have plans to introduce them for the home and B&Q says it will stock LEDs before the end of this year. As soon as they are available, we'll test them.



Facts & scores

A little light reading about some of the low-energy bulbs we tested

Cold comfort

Only the Best Buy Ikea Sparsam (2) and the General Electric Elegance GLS/CDL (10) bulbs perform well in cold areas where temperatures can dip below zero.

Colour codes

All the bulbs give off the same colour light as a typical incandescent bulb, except for the Ring 428 Series (9) which give off yellow light.

To B or not to B

The Omicron T3 GLS (13) bulbs are the only ones on test with a B rating for energy efficiency. All others are rated A.

Energy savers

Homes in the West Country use more energy-saving bulbs than any other region.

BRANDS

- 1 GENERAL ELECTRIC Elegance T3
- 2 IKEA Sparsam (Bulb)
- 3 OSRAM Duluxstar
- 4 GENERAL ELECTRIC Mini Eco
- 5 IKEA Sparsam (Tube)
- 6 OSRAM Dulux Superstar Classic
- 7 WILKO Electronic
- 8 OSRAM Dulux Superstar
- 9 RING 428 Series
- 10 GENERAL ELECTRIC Elegance GLS/CDL
- 11 HOMEBASE Energy Saver
- 12 OMICRON T4 Spiral
- 13 OMICRON T3 GLS
- 14 HOMEBASE Standard Energy Saver
- 15 B&Q Energy Saving
- 16 OMICRON T3 Mini Tube

a Not the 11-watt bulb b 20-watt bulb also available

USING THE TABLE

The more stars the better.

Specification

Price The price per bulb (although some are sold as multi-packs) is the cheapest high-street price we could find; otherwise it is the price we paid for the bulbs. **Running costs**

Myth busting

We debunk the rumours and reveal the truth about low-energy bulbs

Starting up

MYTH Low-energy bulbs flicker when you first turn them on and don't give their full light output right away.

REALITY We checked light output when bulbs are first turned on and at subsequent intervals and found that only a couple of bulbs struggled.

Light output

MYTH Low-energy bulbs overstate their light output.

REALITY We measure this and compare it with what the manufacturer says on the package. All bulbs on test matched their claims.

Lifetime

MYTH Low-energy bulbs don't last as long as they claim.

REALITY Our extensive lifetime tests confirm this is still a problem for some bulbs – but by no means all. Stick with five-star-rated bulbs to ensure they last their promised lifetime.

Costs

MYTH They are very expensive.

REALITY We've found some, including big-name brands, for as little as 50p in shops. Prices are coming down but you'll have to shop around. Look for buy one get one free offers.

SWITCH AND SAVE

Looking to save money on your utility bills this winter? Interested in green energy? Why not visit Switch with Which? and see what savings you could make? Our free and independent service allows you to search specifically for green tariffs and switch energy suppliers online in just a few minutes. Visit www.switchwithwhich.co.uk or call **0800 533006** (Mon-Sun, 8am-8pm).

OUR RESEARCH

When selecting low-energy light bulbs to test, we consult manufacturers, market intelligence reports and industry experts, then check availability

on the high street and online. The bulbs that we tested bulbs include top-sellers from the most popular brands as well as models from some lesser-known brands.

SPECIFICATION				FEATURES				WHICH? TEST PERFORMANCE						SCORE %
PRICE (£)	WATTAGES TESTED	RUNNING COSTS PER YEAR (£)	SHAPE	CLAIMED LIFETIME (x 1,000 hours)	BAYONET FITTING	SCREW FITTING	SUITABLE FOR USE WITH TIMERS	START-UP	LIGHT OUTPUT RATING	SWITCHING ON/OFF	LIFETIME	DIMMING OVER TIME	COLD TEMPERATURES	
3	11/20	8/11	H	6	✓	✓	✓	★★★★	★★★★★	★★★★★	★★★★★	★★★★★	★★	76
2	8/12/20	5/7/11	B	6	✓		✓	★★★★	★★★★★	★★★★★	★★★★★	★★★★	★★★★★	73
2	8/11/21	6/7/11	T3	6	✓ ^a	✓	✓	★★★★	★★★★★	★★★★★	★★★★★	★★★★★	★	73
3	9/11/20	7/8/11	T3	6	✓	✓		★★★★★	★★★★★	★★★★★	★★★★★	★★★★★	★★	70
2	8/11/20	5/6/18	T2/T3	6/6/10	✓ ^b		✓	★★★★	★★★★★	★★★★★	★★★★★	★★★★★	★★	70
4	7/15/20	10/16/19	B	10	✓	✓ ^c	✓	★★	★★★	★★★★★	★★★★★	★★	★★	65
2	9/11/20	6/7/12	T2/T3	6	✓			★★★★	★★★★★	★★★★★	★★★★★	★★★★	★★	65
3	8/12/21	9/12/19	T2/T3	10	✓	✓	✓	★★★★	★★★★★	★★★★★	★★★★★	★★	★★	61
5	11/20	10/16	T2/T3	8	✓	✓		★★★★	★★★★★	★★★★★	★★★★	★★★★★	★★	59
3	9/20	7/12	B	6	✓	✓		★	★★★★★	★★★★★	★★★★	★★★★	★★★★★	58
5	11/20	14/24	B	10/12		✓	✓	★★	★★★★★	★★★★★	★★★★	★★★★	★★	55
4	9/11/18	11/12/16	H	10	✓	✓	✓	★★★★	★★★★★	★★★★★	★	★★★★	★★	55
4	7/11/18	8/10/21	B	8	✓	✓		★★★★	★★★★★	★★★★★	★★	★★★★	★★	53
4	11/20	10/17	T2/T3	8	✓		✓	★★★★★	★★★★★	★★★★★	★	★★★★	★★	52
4	11/20	10/16	T2/T3	8	✓			★★★★	★★★★★	★★★★★	★★★★	★	★★	51
4	7/11/18	8/11/17	T2/T3	10	✓	✓	✓	★★★★	★★★★★	★★★★★	★	★★★★	★★	49

with bayonet fitting c 20-watt bulb available with screw fitting

per year Assumes the bulb is on three hours a day and reaches its claimed lifetime. **Shape** Traditional bulb (B), stick types with two (T2) or three (T3) tubes and helix or twisted stick (H) shapes.

Test performance

Start-up The speed with which the

bulbs light up, how much power they draw, whether they reach full power right away and whether they're prone to flicker. **Light output rating** We measure light output to see if it met its claims.

Switching on/off We switched the bulbs on and off in cycles of three minutes on and five minutes off for

a total of 20,000 cycles – the equivalent of ten times a day for five years. **Lifetime** We leave the bulbs on for 8,000 hours to check their lifetime claims. This is roughly equivalent to eight years' use when the bulb is on three hours a day. **Dimming over time** We check whether light output

drops over the bulbs' lifetime.

Score

This ignores price and is based on:
 Lifetime tests **45%**
 Light output **25%**
 Construction and information **10%**
 Performance in the cold **10%**
 Start-up **10%**