

Staying power

Why you needn't pay more than £2.57 for a pack of four AA batteries, and how going green can be up to 100 times cheaper

The average UK home has 29 battery-powered gadgets and Britain uses 700 million batteries a year. Most dead batteries end up in the tip but, under European laws coming in in 2008, they will have to be collected and recycled alongside newspapers and bottles. Rechargeables make up a fraction of the batteries we use, but sales are up 25 per cent since 2005.

We've tested 36 batteries in the most popular sizes and types, and rated them on how long they last in different situations. If you want good-value performance, we found seven Best Buy disposables – five in the AA size and two AAAs. We also have three Best Buy rechargeables.

Morrisons Extra Long Life and Asda Long Life are the cheapest AA and AAA batteries to run on a pence per hour basis, but neither lasts as long as our Best Buys, so you'll have to change them more often.

Recharge to save money

Rechargeables are more expensive than disposables but can save you money in the long run, particularly for gadgets that use a lot of power, such as digital cameras and portable CD players.

Once you've paid for a charger, AA rechargeables work out at less than 1 per

cent of the cost of disposables (about 0.06p an hour versus 11p an hour).

When buying rechargeables, check the claimed capacity (expressed in milliamp hours or mAh) – which predicts how long the batteries will last between charges. It's worth spending extra to get the largest capacity so you won't have to charge them so often. Make sure you buy an intelligent charger – this stops working when the batteries are fully charged.

We strongly recommend that you don't use rechargeables for smoke alarms, remote controls, torches, cycle lamps or certain toys. This is because you would have to keep recharging them too often and because they tend to die suddenly rather than fade away. This is annoying and could be dangerous in the case of smoke alarms. Some toys say 'do not use rechargeable batteries' because if there was a short circuit, the battery would get very hot and could cause a fire.

Disposing of old batteries

At least 22,000 tonnes of household batteries will go into UK landfill sites this year. Although disposable alkaline and zinc batteries and nickel metal hydride rechargeables are not hazardous, there's a pressing need to cut the volume of waste. Only a few local authorities collect batteries – call your council or enter your postcode on www.recyclenow.com.

It is estimated that we recycle less than 2 per cent of disposable batteries and around 5 per cent of rechargeables. Under the European Battery Directive, by 2012 we will have to recycle 25 per cent of household batteries (150 million). This rises to 45 per cent (nearly 300 million) by 2016.

Mercury batteries (used in some hearing aids and watches) and nickel cadmium rechargeables are classed as toxic waste, so don't throw them away. They'll be banned under the new directive. In the meantime, check www.rebat.com for collection points and manufacturers that accept rechargeables back by post.



Why test these battery types?

We test the most popular sizes of battery. In this country, 60-70 per cent of the market is AA-size batteries either disposal or rechargeable. AAA-size batteries make up 20 per cent. We simulate the performance of disposals in uses from a torch (medium drain) to a camera with screen lit (very high drain), testing nine of 36 models. We run disposable batteries in medium- and high-drain uses for an hour a day. In very high-drain uses we run them for half an hour every six hours to mimic normal use. We perform only one test on rechargeables, as they perform more predictably.

At least 22,000 tonnes of batteries will go into landfill this year

MODEL	SPEC		PERFORMANCE	
	PRICE FOR FOUR (£)	CAPACITY (mAh)	BATTERY LIFE	COST PER HOUR (p) ^a
RECHARGEABLES				
1 DURACELL	9.99	2,650	★★★★★	0.06
2 GP	14.99	2,700	★★★★★	0.09
3 PHILIPS Multilife	16.00	2,600	★★★★★	0.10
4 ENERGIZER	14.99	2,500	★★★★	0.10
5 JESSOPS	12.99	2,500	★★★★	0.08
6 SANYO	11.99	2,500	★★★★	0.08
7 UNIROSS	8.99	2,500	★★★★	0.06
8 BOOTS	9.99	2,200	★★★	0.09
9 MAPLINS	9.99	2,000	★★★	0.09

^a For single battery

USING THE TABLE

We tested the most popular types of rechargeable battery from the main manufacturers. The more stars the better.

Specification

Price For Best Buys we give the cheapest widely available high-street price. Online prices are shown in *italics*.

Capacity For single battery.

Performance

We don't give a total test score for the models as we're assessing on a single rating.

Battery life ★★★★★ more than 8hr ★★★★★ up to 8hr ★★★★★ up to 7hr 30min

Cost per hour Assumes battery lasts for 500 charges.

Thrifty tips

■ **BUY MULTI-PACKS** Unused disposable batteries last five years with very little energy loss. In contrast, rechargeables that are left around unused have a much shorter life span.

■ **DON'T MIX AND MATCH** New batteries will try to recharge the part-used ones, making them heat up and leak. For the same reason don't mix different brands.

■ **KEEP THEM COOL** Heat and humidity shorten shelf life. But you needn't refrigerate them.

■ **SHOP AROUND** Prices will vary.



1 RECHARGEABLE AA

Duracell £9.99

This Duracell is a new product and the price here is the manufacturer's guide. At this price, it's the best-value choice we tested.

WE LIKE Great life span between charges.

WHICH?
BEST BUY

Cheapest store Argos, Office Depot, Staples, Superdrug



2 RECHARGEABLE AA

GP £14.99

The GP rechargeable is also tricky to track down but it's a contender to the Duracell if you can find it.

WORTH KNOWING Hard to find on the high street but available online.

Available Online

WHICH?
BEST BUY



10 DISPOSABLE AA ALKALINE

96% Duracell Plus £2.75

Joint best on test – a great choice if you want a long life span.

WORTH KNOWING The price of a four-pack varies by more than £1.

Cheapest store Asda

WHICH?
BEST BUY



11 DISPOSABLE AA ALKALINE

96% Tesco Hi-tech Extra Long Life £2.57

Tesco's Hi-tech is a good alternative to the Duracell Plus and is slightly cheaper.

WE LIKE Cheapest Best Buy.

Cheapest store Tesco only

WHICH?
BEST BUY



13 DISPOSABLE AA ALKALINE

92% Energizer Ultra + £2.64

The Energizer Ultra + is a great choice for use in all except the most power-hungry devices such as digital cameras.

WORTH KNOWING Only the Tesco own brand is cheaper.

Cheapest stores: Asda, Morrisons, Wilkinsons

WHICH?
BEST BUY



14 DISPOSABLE AA ALKALINE

92% Varta High Energy £2.99

With the exception of very high-drain uses, such as in digital cameras, the Varta High Energy performs very well.

WORTH KNOWING Hard to find on the high street but available online.

Available: Online

WHICH?
BEST BUY



28 DISPOSABLE AAA ALKALINE

92% Energizer Ultra + £2.65

Like its AA brother, the AAA Energizer Ultra + is a good all-rounder but gets only three stars for power-hungry devices like digital cameras.

WE LIKE Excellent value for money.

Cheapest stores Asda, Morrisons, Wilkinsons

WHICH?
BEST BUY



3 RECHARGEABLE AA

Philips Multilife £16

The Philips Multilife is a good alternative to the Duracell but it's tricky to track down. It's worth considering if you can find it for a better price.

WE FOUND Good but expensive.

Available Online

WHICH?
BEST BUY



12 DISPOSABLE AA ALKALINE

93% Duracell Ultra M3 £3.45

The Duracell Ultra M3 is the best for using with very high-drain gadgets.

WE LIKE Good for digital cameras.

Cheapest stores Asda, Morrisons, Wilkinsons

WHICH?
BEST BUY



27 DISPOSABLE AAA ALKALINE

96% Energizer Ultimate £3.49

The Energizer Ultimate is the best of the AAAs and is a good choice for all uses. But be warned that it is also one of the priciest.

WE LIKE Strong all-around performance.

Cheapest store Argos

WHICH?
BEST BUY

The Duracell Ultra M3 is a good choice for using in digital cameras

Battery types explained

So you thought all batteries were the same? Think again

Alkaline disposables are good for torches, cycle lights, smoke alarms, portable music players and toys.

Lithium disposables can deliver high currents and recover quickly between uses. This makes them particularly good for automatic cameras

with built-in flash. We haven't tested them as they make up less than 8.3 per cent of the total batteries market.

Rechargeables are often used in laptops and mobile phones.

Nickel cadmium (NiCd) rechargeables will be phased out under the European Battery

Directive which is due to come into force in 2008.

Nickel metal hydride (NiMH) rechargeable batteries are greener and more reliable than the NiCds they replace.

Zinc chloride disposables are suited to low-drain uses, like wall clocks or remote controls.

MODEL	SPEC	WHICH? TEST PERFORMANCE						SCORE %
	PRICE FOR FOUR (£)	MEDIUM DRAIN		HIGH DRAIN		VERY HIGH DRAIN		
		LIFE	COST PER HOUR (p) ^a	LIFE	COST PER HOUR (p) ^a	LIFE	COST PER HOUR (p) ^a	
DISPOSABLE AA ALKALINE								
10 DURACELL Plus	2.75	★★★★★	4	★★★★★	12	★★★★	47	96
11 TESCO Hi-tech Extra Long Life	2.57	★★★★★	4	★★★★★	11	★★★★	46	96
12 DURACELL Ultra M3	3.45	★★★★★	5	★★★★	15	★★★★★	39	93
13 ENERGIZER Ultra +	2.64	★★★★★	4	★★★★★	11	★★★	49	92
14 VARTA High Energy	2.99	★★★★★	4	★★★★★	12	★★★	59	92
15 ENERGIZER Ultimate	2.99	★★★★	4	★★★★★	12	★★★★	53	87
16 MORRISONS Extra Long Life	1.79	★★★★	3	★★★★★	8	★★★★	27	87
17 PANASONIC Xtreme Power	2.49	★★★★	4	★★★★★	11	★★★★	38	87
18 SAINSBURY'S Extra Long Life	2.57	★★★★	4	★★★★	11	★★★★	44	80
19 TESCO Everyday Long Life	1.75	★★★★	3	★★★★	8	★★★	34	76
20 ASDA Long Life	1.75	★★★★	3	★★★	9	★★★★	27	73
21 PHILIPS Extreme Life	3.50	★★★	5	★★★★	15	★★★★	63	71
22 GP Ultra Alkalines	2.99	★★★	5	★★★★	13	★★★	61	67
23 SUPERDRUG Longer Life	2.99	★★★	5	★★★★	14	★★★	64	67
24 BOOTS Extra Long Life	2.99	★★★	5	★★★	16	★★★★	44	64
25 WILKINSONS Powerplus	1.75	★★★	3	★★★★	8	★★	45	63
26 SANYO Alkaline	2.79	★★★	4	★★★	13	★★★	55	60
DISPOSABLE AAA ALKALINE								
27 ENERGIZER Ultimate	3.49	★★★★★	10	★★★★★	33	★★★★	171	96
28 ENERGIZER Ultra +	2.65	★★★★★	8	★★★★★	25	★★★	131	92
29 DURACELL Ultra M3	3.45	★★★★	11	★★★★	34	★★★★★	143	84
30 TESCO Hi-tech Extra Long Life	2.57	★★★★	8	★★★★	26	★★★★★	105	84
31 ASDA Long Life	1.75	★★★★★	5	★★★	23	★★★	86	78
32 BOOTS Extra Long Life	2.99	★★★★	10	★★★	39	★★★★★	124	77
33 DURACELL Plus	2.75	★★★★	9	★★★★	27	★★★	137	76
34 VARTA High Energy	2.99	★★★★	10	★★★	32	★★★★	145	73
35 PHILIPS Powerlife	2.49	★★★★	8	★★★	27	★★	151	65
36 SAINSBURY'S Extra Long Life	2.57	★★★	9	★★	36	★★★	127	53

^a For one battery

USING THE TABLE

We tested models from leading brands. The more stars the better.

Specification

Price For Best Buys we give the cheapest widely available high-street price. Online prices are in *italics*.

Test performance

We calculated a battery's performance on how well it

did in powering a range of devices which take up different amounts of power. We gave the high-drain test most weight because it's the toughest test.

Disposable AA alkaline Battery life ratings correspond to the following:

Medium drain (radio or small torch)

★★★★★ around 18hr
★★★★ around 17hr
★★★ around 16 hr

High drain (personal CD player)

★★★★★ around 6hr
★★★★ around 5hr 30min
★★★ around 5hr

Very high drain (digital camera with the screen lit)

★★★★★ more than 2hr
★★★★ around 1 hr 30 min
★★★ around 1hr 15 min
★★ around 1hr

Disposable AAA alkaline

Battery life ratings correspond to the following:

Medium drain (radio or small torch)

★★★★★ around 8hr 30min
★★★★ up to 8hr
★★★ around 7hr

High drain (personal CD player)

★★★★★ up to 3hr
★★★★ around 2hr 30min
★★★ around 2hr
★★ around 1 hr 45min

Very high drain (a digital camera with the display screen lit)

★★★★★ around 40 min
★★★★ more than 30 min
★★★ around 30min
★★ around 25min

Score

This ignores price and is based on:

High drain **45%**
Medium drain **35%**
Very high drain **20%**