

NEED TO KNOW

It's worth choosing your washing machine carefully. The best machines get your clothes much cleaner, much more quickly. But they vary in how well they spin and rinse, and how much of a racket they make.

ENERGY EFFICIENCY
All washing machines have an energy label which carries three ratings – AAB, say.

The first rating is for overall energy efficiency, the second for how well it cleans, and the third for how well it spin dries. The highest rating is A; the lowest is G.

All three are provided by the manufacturer and, in the past, we've found energy labels to be inaccurate. We measure cleaning and spin drying ourselves, and look at how much energy it takes to run each machine. Running costs vary from around £21 to £41 a year.

FEATURES

There's a whole host of programs and features on most modern washing machines.

Different models have different features but not all are worth looking out for.

For example, reduced-ironing programs don't make much difference to the state of your clothes. And a fancy-looking display panel isn't always a good thing.

On the other hand, features such as time delay and child locks can be really useful.

Washing detergents

The big brand names trump supermarket own brands.

We've tested the leading powders and tablets on 15 stains – from fats such as butter, to proteins such as egg yolk, and vegetable stains such as blueberry. And we checked how they affect clothes' colour and whiteness, too.

The samples, right, show how two bio powders dealt with a lipstick stain.



Original stain



Best: Ariel



Poor: Asda

REDUCED IRONING

These programs cut down creasing less than you'd think.

This Siemens has the most effective one we tried but, like the Bosch Best Buys (3 and 6), all it does is reduce the spin speed.

Dyson's (1) program is slightly less effective – probably because it's so good at throwing the clothes around.



2 Siemens

DISPLAY PANELS

Electronic displays are increasingly popular, but they vary in what they do. Some, as on this Bosch, just give basic information, such as when your wash will be ready. Others, like the Dyson's (1), are an integral part of the programming. Dyson has done away with the traditional dials – you program the CRO2 using only buttons.

2 Siemens WXL 146A 65%

**Best for the quietest wash
£500 from Comet**

This is the only washing machine that clocked in at under 70dB, more than 10dB quieter than the noisiest machines. Decibels aren't measured on a linear scale – a reduction of just three decibels dramatically reduces the noise level so 10dB is a big difference.

As well as being one of the quietest spinners, it's one of only a few machines that gets good marks for spin drying clothes.

Your clothes won't be coming out of the wash completely

sodden, and they shouldn't be too crumpled either: the reduced-ironing option gives fewer creases than the other new Best Buys. However, it's not a miracle cure, and the tidy-minded will still want to run an iron over their clothes.

This machine washes well, though it's let down slightly by average cleaning on quick wash. And it doesn't cost the earth to run – energy and water use is fairly low. Along with the cheaper of the Boschs (3), the Miele (5) and the LG (7), it's a good cleaner that gets top marks for running costs.

QUICK WASH

Different manufacturers have rather different ideas about how quick a 'quick' wash should be.

At one end of the scale are models like this Bosch, which do the job in well under an hour. At the other end, there are models like the LGs (7 and 20), which take more than twice as long.

Surprisingly, the machines that wash most effectively on the quick program tend to be quite fast – models like this Bosch and the Dyson (1).

Biological powder

The big-name brands' biggest lead over supermarkets is in biological powders. In our tests, they knocked spots off the own brands at removing stains.

Ariel has the edge over Persil because it gives the fabled 'whitest whites'. Most bio powders boost the whiteness of the clothes, and clothes washed in the

higher-rated powders should stay brighter looking for longer.

Ecover's score is poor because it has no optical brighteners, the chemicals that make clothes look whiter.



POWDERS

	Stain removal			Fading		Score (%)
	Fat	Protein	Vegetable	White	Colour	
1 Ariel	○	★	★	★	○	72
2 Persil Biological	○	★	★	☆	○	69
3 Surf Sunshine Biological	○	☆	○	★	○	65
4 Bold 2 in 1	○	○	☆	○	○	57
5 Tesco Automatic Bio Powder	●	○	○	☆	○	50
6 Asda Biological Performance	●	○	○	★	○	48
7 Waitrose Ultima Biological Powder	●	○	○	○	○	44
8 Ecover Bio Powder	●	☆	☆	●	☆	43
9 Co-op Ultra Biological Powder	●	○	○	○	○	42

KEY

★ ☆ ○ ● ●
Best Worst
■ Best Buy

SCORE

For detergents, this ignores price and is based on:
Stain removal 60%
White fading 20%
Colour fading 20%

FILTER ACCESS

Washing machines have filters, which need cleaning regularly, to catch the fluff from your wash.

Filters tend to be positioned close to the ground, but this Miele's is high enough to let you catch any mess that spills out of it.



3 Bosch

3 Bosch WFO 2466 64%

Easiest to program
£279 from Sainsbury's

If you get annoyed by too many fussy buttons and hundreds of options you'll never use, this is the machine for you.

It's the easiest machine to program. There's one dial for selecting the wash program, another to let you select your own spin speed, and just a handful of buttons for extra options. A small display shows the time remaining until the end of your wash, and there's a series of lights to show whether

your laundry is at the wash, rinse or spin stage.

There's a special option for clothes that aren't really dirty but need freshening up. However, it isn't really different from setting any machine to the rinse and spin part of the cycle.

With a price tag of £279 and low running costs, it's difficult to fault this model on value for money. It gives a great wash across the board, including one of the most effective quick washes. The only drawback is that it's on the noisy side.



5 Miele

5 Miele W2203 63%

Good all-rounder
£609 from Sainsbury's

This Miele gives a great wash and has some design features that make it a bit different.

It's the only washing machine with a metal rather than a plastic door, which gives it a really solid, well-built feel (and Miele is one of the most reliable brands).

Its filter is easy to clean, too. Washing machines' filters are usually so close to the floor that it's difficult to fit anything underneath to catch all the flotsam and jetsam when you

clean it. By contrast, this Miele leaves enough space to fit a container underneath, so it's easier to avoid messy spills.

Cleaning of cottons and delicate clothes is good, though the quality of the quick wash is disappointingly average.

The only other thing to be aware of is the relatively small 5kg drum – for £609, you'd expect more space. That said, it's an issue only if you have a large family and a lot of washing to do.



Non-biological powder

Non-bio detergents are best for people who have eczema and dermatitis.

They don't contain enzymes, the 'biological' part of ordinary detergents, which break down food stains, especially protein stains such as cocoa. But the Ariel, Persil and Fairy non-bios are still almost as good as the best bio powders.

They do struggle with proteins, but not with vegetable stains, such as wine, which they tackle with bleaching agents.

POWDERS

	Stain removal			Fading		Score (%)
	Fat	Protein	Vegetable	White	Colour	
1 Ariel Non-Bio	★	○	★	☆	○	67
2 Persil Non-Biological	○	☆	★	★	○	66
3 Fairy Non-Biological	○	○	★	☆	○	62
4 Tesco Automatic Non Bio Powder	●	●	○	☆	○	44
5 Waitrose Ultima Non-Biological	●	●	○	☆	○	40
6 Co-op Ultra Non-Biological	●	●	○	★	○	39
7 Asda Non-Biological Sensitive and Gentle	●	●	○	○	○	39
8 Surcare Sensitive	●	●	●	☆	☆	33

KEY



SCORE

For detergents, this ignores price and is based on:

Stain removal	60%
White fading	20%
Colour fading	20%

Tumble driers

If you want a tumble drier to go with your washing machine, the best condenser model we've found is the Miele T4652C (£800). If you're on a budget, try the Zanussi-Electrolux TC 7102X (£215).

The best vented drier is Miele's T4123 (£500); a cheaper option is the Bosch WTA4107 (£250).

For more on these and other Best Buys, go to www.which.co.uk/tumbledriers.

Alternatively, see p36 for our latest test of washer-driers.



TIME DELAY

Ten of the machines we tested let you delay when the wash cycle starts.

This is useful if you have cheaper electricity at night or if you want to time the washing to finish as you get home from work.

This Bosch, the Siemens (2) and the LGs (7 and 20) let you delay the start by up to 19 hours; others can be programmed even further ahead. The Dyson (1), Hotpoint (4), Zanussi (11) and AEG (13) can delay the wash by 23 or 24 hours.

The Indesit (12) and Zanussi (19) let you delay the start of your wash by up to eight and 12 hours respectively.

WHICH? EXTRA

You can find more about washing machines – and see the test results for models we've tested previously which are still available – at www.which.co.uk/washingmachines.

BEST BUY



6 Bosch

CHILD LOCKS

This Bosch and the Dyson (1) both have child locks to stop kids from changing the program once the selected cycle has started.

The Dyson's child lock can also be used when the machine isn't on, to keep the outer door locked.

To activate the locks, you press and hold the buttons for other functions.

6 Bosch WFX 2867 63%

**Good for handy features
£399 from Sainsbury's**

This is the more expensive of the two Bosch Best Buys. You're paying for a higher spin speed, a fancy display, less noise, and the odd extra feature. The first two aren't really worth the extra money, but lots of us will appreciate the other two.

The flashier programming system loses the spin speed dial in favour of an LCD display. You select the spin speed and some other features using a button. The screen displays information about the wash cycle and how long

you've got before the wash is complete. It's a little bit more fiddly than the other Bosch (3).

The relatively quiet running is worth paying extra for, though, and the features are good. It's the only Best Buy with a childproof lock, which stops pesky kids changing the program.

There's also a little 'frothing sink' symbol, which lights up if you've put in too much detergent – this can reduce the effectiveness of your wash, because the foam stops the clothes moving around. If it happens, the machine runs an extra rinse cycle automatically.

Biological tablets



Tablets are usually seen as the easy choice because there's no messing about with measuring scoops. But our tests show that popping a couple of tablets in with the wash gives worse results than a biological powder.

Tablets are pretty hopeless at removing fatty stains. So oil, grease and make-up will leave their mark.

We haven't named any Best Buys because none of the tablets was that much better than the others.

TABLETS

	Stain removal			Fading		Score (%)
	Fat	Protein	Vegetable	White	Colour	
1 Waitrose Ultima Bio	●	☆	★	☆	○	59
2 Persil Biological	●	★	☆	○	○	56
3 Asda Biological Performance	●	☆	☆	☆	○	53
4 Surf Sunshine Biological	●	☆	○	○	○	53
5 Tesco Bio	●	☆	○	○	○	52
6 Ecover Bio Tablets	●	○	☆	●	☆	41



7 LG

SPIN SPEED

At 1,600rpm, this LG has the highest spin speed in our tests (the rest range from 1,200 to 1,400).

All our Best Buys let you lower the spin speed to avoid fabrics such as wool going out of shape.



9 Tricity Bendix

7 LG WM 16220FD 63%

Best for a big wash £600 from Comet and Currys

If you're the sort of person who gets down to your last pair of undies before facing the laundry, this LG is for you. It takes up to a whopping 7.5kg of clothes.

It also has the fastest spin speed in our test (1,600rpm) and it's one of only a few models that score well for spin drying.

The downside of the large capacity and fast spinning is that it's on the noisy side. It struggles slightly with rinsing, too.

Cleaning quality is great on the standard cotton wash, if a

little slow (more than an hour longer than the Dyson). The results for other programs are variable. For example, it's only average at cleaning delicate fabrics. On the other hand, its quick wash gives better results than most – though, again, it's slow, taking nearly twice as long as other machines.

LG isn't a common make so it hasn't appeared in our reliability survey – until we know how often LG machines need repairing, we can't make this one a Best Buy. But, if you're not in a hurry, it's certainly an effective cleaner.

9 Tricity Bendix 62%

Good value for money £293 from Sainsbury's

The best washing machines tend to be the more expensive – along with the first Bosch (3), this is one of only two Best Buys which cost less than £300.

It's a simple, basic machine – there's no extra rinse, easy iron or hand wash program – but it cleans well. And not all of us want loads of programs. Here, you can just twist a dial to get things started.

Anyone looking for the very best value should stick with the Bosch. It's more efficient and its quick wash is much better

(the Tricity Bendix is almost an hour slower but still cleans less effectively). Its rinsing is more effective, too. You won't see detergent on your wash with the Tricity Bendix but even invisible amounts cause skin irritation for some people.

The only exception is if you want a reasonably priced machine that isn't too noisy – this model is quieter than the Bosch.

Tricity Bendix is a reliable brand so this machine shouldn't need many visits from the repairman.



Colour powder



If your wardrobe is packed full with a rainbow of colourful fabrics – or, for that matter, you're a card-carrying black-clad Goth – use a powder specifically for coloured clothes.

These don't have bleaching agents, which

break down the coloured dyes in the fabric. Leaving them out protects colours but makes the powders poor at tackling vegetable stains, such as tea, wine and tomato ketchup.

Most of them leave out optical brighteners. These

are designed to make white clothes look whiter, but they make coloured clothes fade.

Ariel Colour is the only colour powder on test which has optical brighteners. That makes it a good choice for clothes

that are a mixture of white and coloured fabric – the colours will be less bright but the white won't dull.

Our Best Buy is Persil because it's excellent at coping with protein stains, such as bolognese sauce and baby food.

POWDERS

	Stain removal			Fading		Score
	Fat	Protein	Vegetable	White	Colour	
1 Persil Colour Care	○	★	●	●	★	60
2 Ariel Colour	☆	☆	●	○	☆	55
3 Waitrose Ultima Colour	●	○	●	●	★	47
4 Tesco Automatic Colour	●	○	●	●	★	46
5 Co-op Ultra Colour	●	○	●	●	★	46
6 Asda Biological Colour Powder	●	○	●	●	★	45

KEY

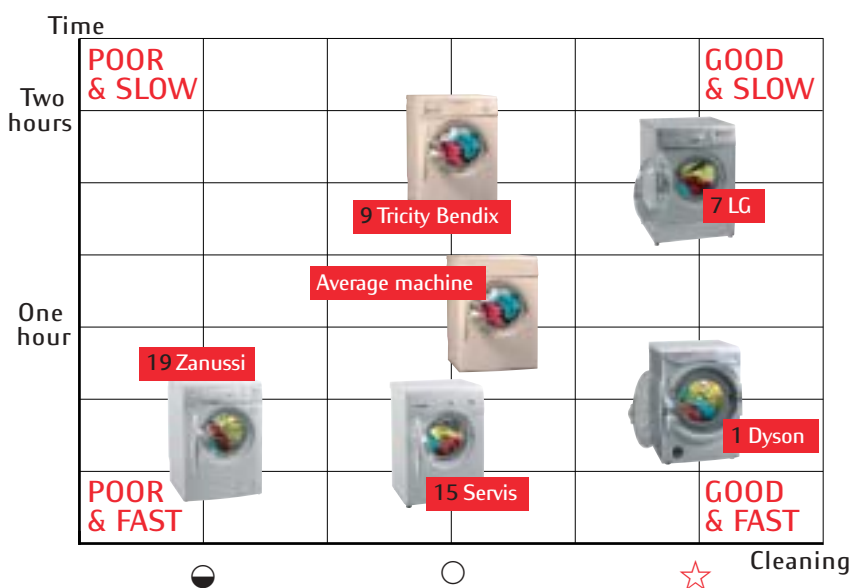
★	☆	○	●	●
Best				Worst
■	Best Buy			

SCORE

For colour detergents, this ignores price and is based on:

Stain removal	60%
White fading	10%
Colour fading	30%

Quick wash: time vs speed



You don't have to wait around for ages to get a good wash – unless you buy the wrong machine. Quick programs don't wash as well as normal programs, but you still get pretty good results from a model like the Dyson (1). However, others – like the Zanussi (19) – rush the job and give poor results.

SCORE

This ignores price and is based on:	
Cleaning	40%
Running cost	30%
Convenience	20%
Spin drying	10%

WASHING MACHINES

We tested popular models from leading manufacturers.

Specification

Price Lowest on high street.

Efficiency

Energy label The maker's rating for energy efficiency, cleaning and spin drying on 60°C wash. **Running cost** Water and electricity costs, assuming machine's run full.

Washing quality

Cotton The standard 40°C wash. **Delicates** The standard wash for materials such as silk. **Quick** The quick option for cottons.

Spin and rinse

Spin dry How dry the load was after the final spin. **Rinse** How well the machine rinses away detergent.

KEY

★	☆	○	●	●
Best				Worst
■	Best Buy			

Washing machines

MODEL

- 1 Dyson CRO2 Flowcheck
- 2 Siemens WXL 146A
- 3 Bosch WFO 2466
- 4 Hotpoint Aquarius+ WF645
- 5 Miele W2203
- 6 Bosch WFX 2867
- 7 LG WM 16220FD
- 8 Hotpoint Aquarius WF430
- 9 Tricity Bendix AW1260
- 10 Hoover HNF 2137
- 11 Zanussi ZWF1430
- 12 Indesit WIL 133
- 13 AEG L62600
- 14 Whirlpool AWO 3561
- 15 Servis M6003W
- 16 Servis M6030W
- 17 Candy CN146
- 18 Hoover HNL 3146
- 19 Zanussi ZWF1220W
- 20 LG WM14225FD

You can rely on our Best Buys

DETERGENTS

We tested the best-selling detergents. We omitted Sainsbury's and Daz, and Ariel biological tablets, because the formulations changed during our tests.

Stain removal

Fat Removal of butter, meat grease, motor oil, make-up and lipstick.

Protein Removal of bolognese, cocoa, chocolate ice cream, egg yolk and baby food.

Vegetable Removal of coffee, ketchup, blueberry, tea and wine.

Fading

White How much washing powders increase whiteness after ten washes.

Colour How little colour fades after 25 washes.



There are substantial differences between brands in how often their washing machines need repairing. For the most reliable brands, as few as 5 per cent of machines up to six years old need repairing. For some of the worst brands, over 30 per cent need you to wait in for the repairman.

The two Hotpoints in our test (4 and 8) clean well, but Hotpoint has a history of unreliable washing machines. That's why they're not Best Buys.

For the fuller picture, this table shows what you told us in our last annual survey (see May, p12).



In October 2003, we sent questionnaires to 30,000 Which? readers. This table is based on 6,349 replies for washing machines up to six years old. On average, 81 per cent haven't needed repairing.

Specification			Efficiency		Washing quality			Washing time			Spin and rinse		Convenience		Score
Price (£)	Capacity (kg)	wxhxd (cm)	Energy label	Running cost	Cotton	Delicates	Quick	Cotton	Delicates	Quick	Spin dry	Rinse	Use	Noise	(%)
800	7	60x85x70	AAA	●	★	☆	☆	1h 21m	1h 28m	39m	○	●	☆	●	66
500	6	60x86x59	AAB	★	☆	☆	○	2h 9m	1h 20m	54m	☆	○	☆	○	65
279	6	60x86x59	AAB	★	☆	☆	☆	2h 10m	1h 19m	51m	○	○	☆	●	64
480	6	60x85x59	AAB	●	☆	☆	☆	1h 48m	1h 6m	58m	☆	○	☆	○	64
609	5	59x85x59	AAB	★	☆	☆	○	1h 56m	1h 16m	1h 1m	○	○	☆	○	63
399	6	60x86x59	AAB	☆	○	☆	○	2h 10m	1h 19m	52m	○	○	☆	○	63
600	7.5	60x85x62	AAA	★	☆	○	☆	2h 25m	1h 29m	1h 57m	☆	●	☆	●	63
370	6	60x85x59	AAB	●	☆	☆	☆	1h 39m	1h 4m	55m	○	●	○	●	62
293	6	60x85x60	AAB	☆	☆	☆	○	1h 58m	1h 17m	1h 43m	○	●	☆	○	62
350	7.5	60x85x63	AAB	★	☆	☆	○	2h 27m	1h 28m	45m	○	●	○	●	59
380	5.5	60x85x62	AAB	☆	☆	☆	○	1h 52m	1h 16m	1h 4m	○	○	☆	●	59
250	5	60x84x56	AAB	●	☆	☆	☆	1h 46m	52m	54m	○	○	☆	●	58
420	5	60x85x61	AAB	●	○	☆	○	1h 55m	1h 18m	1h 3m	○	○	☆	●	57
300	6	60x84x60	AAB	★	○	○	○	2h 15m	1h 24m	1h 4m	○	○	☆	●	56
220	5	60x85x56	AAB	★	○	○	○	1h 55m	1h 34m	31m	○	●	○	○	55
255	5	60x85x56	AAB	★	○	○	○	2h 2m	1h 35m	42m	○	○	○	●	53
245	6	60x85x57	AAA	★	○	○	○	2h 32m	1h 15m	1h 9m	○	●	○	○	52
300	6	60x85x58	AAA	★	○	○	○	2h 33m	1h 25m	1h 7m	○	●	○	●	52
314	5	60x85x60	AAB	●	☆	○	●	2h 29m	1h 17m	33m	○	☆	☆	○	50
550	7.5	60x85x65	AAA	★	○	○	○	2h 21m	1h 24m	1h 55m	☆	●	☆	●	48