



# HOT STUFF

Microwaves can now do anything an oven can – but choose carefully to avoid burnt lasagne or soggy cakes

No longer just for warming up ready meals or cooking baked potatoes, the latest microwaves include built-in grills to brown your food. Some can even use hot-air convection to bake and roast your food like a conventional oven.

But our tests show that the differences between the best and worst models are stark. If you opt for a poor performer, you could be lumbered with a microwave that makes a mess of your defrosting, leaves your chicken pasty white, or won't even safely heat a ready meal without ruining it in the process.

BEST  
ON  
TEST

## 1 Panasonic NN-A754WBBPQ

64%

£150 from Comet and Miller Brothers

COMBINATION MICROWAVE, GRILL AND  
CONVECTION OVEN

The Panasonic, pictured, is a good all-rounder and less expensive than some combination models. It heats meals well, raising the temperature swiftly and evenly to a safe level without drying out or overcooking. Unlike some machines, it continues to heat effectively even with continuous use. Its ready-meal button was one of the most effective we tested, and the auto-defrost button worked well – thawing out a block of mince without starting to cook it. We were also impressed by the baked potato and roast chicken functions. The one disappointment was the grill, which distributes heat unevenly.

### ROASTING AND BAKING

Thanks to their browning ability, microwaves with grills can cook things that a basic microwave couldn't cope with – such as baked items that need browning. Combination microwave ovens combine microwave and grill heating with convection hot air (as used in a conventional oven). This means they can tackle cakes, pies, bread and joints of meat. And they can cook some foods, such as roast chickens, in far less time than a normal oven.

### HOT TO THE TOUCH

Microwaves with grills or convection heating can get hot on the outside. The top panels of the LG (7) and Samsung (6), for example, heated up to over 75°C. And the doors on the Sharp (2) and LG (4) reached more than 60°C. This Best Buy Panasonic (1) remained cooler.

Make sure there's enough ventilation around the oven and keep it out of children's reach.



### POWER OUTPUT

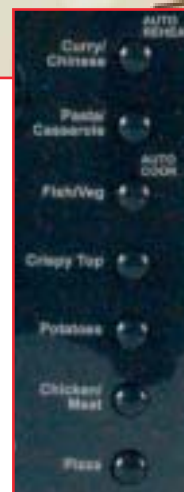
The power output (800 watts, for example) and power rating category (A to E) indicate how quickly food is cooked. Most microwaves (including all those on test) are now E-rated (the highest level), yet their output varies from 800 to 1,000 watts, and all heat at different speeds. It's a good idea to pick a machine with adjustable power levels (see table on p42). Those with several levels, such as the Panasonic (1), make it easier to avoid overcooking.

Our tests also give important information about whether the microwave heats evenly and to a temperature high enough to kill bacteria without ruining the food. See the 'Ready meal' column in the table for our ratings.



### AUTOMATIC BUTTONS

More functions don't necessarily mean a better oven. Some ovens have a plethora of buttons that set the power and time for different tasks. Defrost, ready-meal, roast chicken, baked potato and rice programs are fairly common, and some machines even have buttons for cooking pizza and popcorn and reheating curries. The buttons on this Panasonic (1) work well – we were particularly impressed with its roast chicken and baked potato programs, for example – but often you're better off setting the oven manually. More useful is a memory button. For a task you often carry out (warming soup, say), you can enter the power and cooking time into the memory. It will then repeat this operation whenever you press 'memory'.



### DROP IN PERFORMANCE

Once the oven's been running for several minutes, it can become less effective at heating. If you're heating a series of dishes, this could result in undercooked food – or a complicated guessing game as you try to adjust the power level or cooking time to compensate. The table on p42 shows which models suffer in this way (see 'Hot oven' column).

# NEED TO KNOW

## BASIC

Basic, or solo, microwaves cook food but don't brown it so they're best for heating ready meals, reheating food, or cooking simple foods such as jacket potatoes or vegetables. You can also use them to defrost food quickly rather than having to leave it out for hours.

## GRILL

Microwaves with grills are handy for browning meals such as lasagne or shepherd's pie. Unlike a solo model, a decent grill microwave can be used for tricky tasks such as roasting a chicken or baking a cake. All those in our test cooked and baked reasonably well. You can use the grill on its own to cook sausages, say, but it's usually less effective than a normal grill so you might be better off relying on the grill solely for browning.

## COMBINATION

Combination models have grills and also use the convection of hot air to cook. They use different combinations of microwave, grill and hot air to cook different foods. A good combination microwave could replace your main oven, though it doesn't have the capacity of a conventional cooker.



The Sanyo (9) thawed unevenly, cooking the edges of the mince

# DEFROSTING

We used frozen blocks of mince to test each microwave's ability to defrost food. Ideally, the microwave would thaw the meat thoroughly without creating hotspots where it starts to cook. To score a ○, the mince must be kept between -2°C and +20°C, though a good defroster keeps temperatures under 7°C.

We used the automatic defrost button where there was one. If this didn't work well, we tried to defrost manually – following the manufacturers' guidelines and using trial and error to find the optimum defrost time.

The best defroster was the LG (7). It thawed evenly without raising any of the mince above 7°C. The Sanyo (9) defrosted poorly: some parts of the mince were heated to more than 50°C, enough to start cooking it.

# 11 Sharp R-209(W) 62%

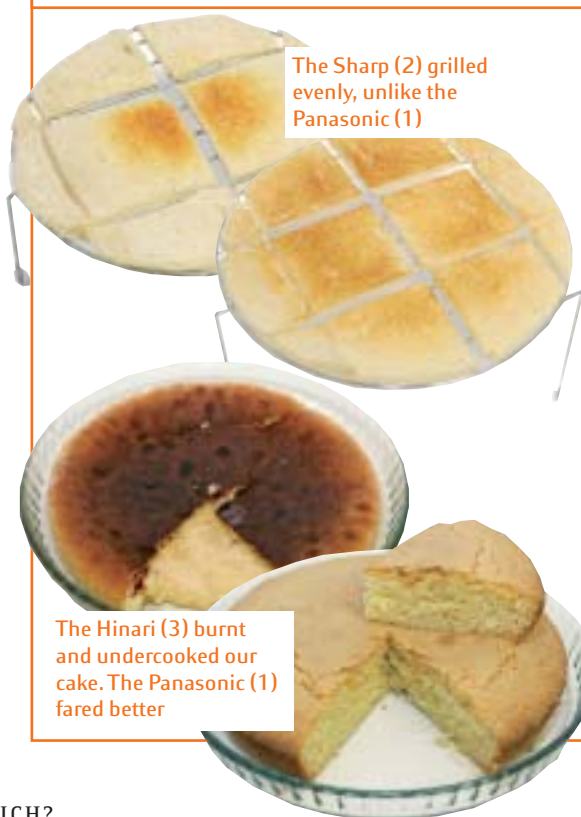
£45 from Comet, John Lewis and Miller Brothers

## BASIC MICROWAVE

This doesn't incorporate a grill or convection heating and is short on fancy features, but it's a good choice if you want a microwave that carries out basic functions well. In our tests, it safely and evenly reheated a series of ready meals without ruining them – even after 15 minutes' continuous use. There are no preset cooking buttons (for rice or potatoes, say) but the five different power levels mean it's easy to adjust heating temperatures. There's no auto-defrost button either, but you can thaw food reasonably well manually.



# GRILLING, BAKING AND ROASTING



The Sharp (2) grilled evenly, unlike the Panasonic (1)

The Hinari (3) burnt and undercooked our cake. The Panasonic (1) fared better

## GRILLING

Microwave grills don't always heat as evenly as a conventional oven grill. To check, we covered the turntable in bread and grilled it. Good and bad examples are shown left.

## BAKING

To check how well the ovens baked, we cooked sponge cakes in all grill and combination models. We used the manufacturers' recipes where provided or a tried and tested recipe of our own if not. A cake rated as ★ was well risen, slightly domed with a thin, evenly browned crust, a light

texture inside, and only very small air pockets. The automatic 'cake' setting on the oven rated worst for baking – the Hinari (3) – left the cake extremely undercooked. And when we tried to cook a cake manually instead, the top was burnt and the middle undercooked.

## ROASTING

We roasted chickens, using automatic buttons and manufacturers' advice where available. To score a ★ the chicken had to be properly cooked (no pink bits), with soft flesh, clear juices, and crispy, evenly browned skin.



BEST  
BUY2 Sharp  
COMBINATION

## 2 Sharp R-95STM

### 62%

£250 from Currys

COMBINATION MICROWAVE, GRILL AND  
CONVECTION OVEN

This is the largest (and most expensive) microwave on test so consider it only if you've got the room and the cash. It works well all round and has a better grill than the Panasonic (1), browning foods more evenly. It cooks ready meals well, though there's a slight drop in performance after 15 minutes' continuous use.

The ready-meal automatic button tended to overcook things but the auto-defrost button works well and the roast chicken button gave a decent result in just over half an hour. It had a reasonable stab at cooking roast potatoes and a sponge cake, too, though it wasn't as impressive as the Panasonic (1). It's one of five microwaves on test with a rice cooking button and it excelled here, producing nicely cooked, fluffy basmati rice in 13 minutes.



A roast chicken as it should look, below, and the pasty offering from the LG (7) above



### DON'T BUY

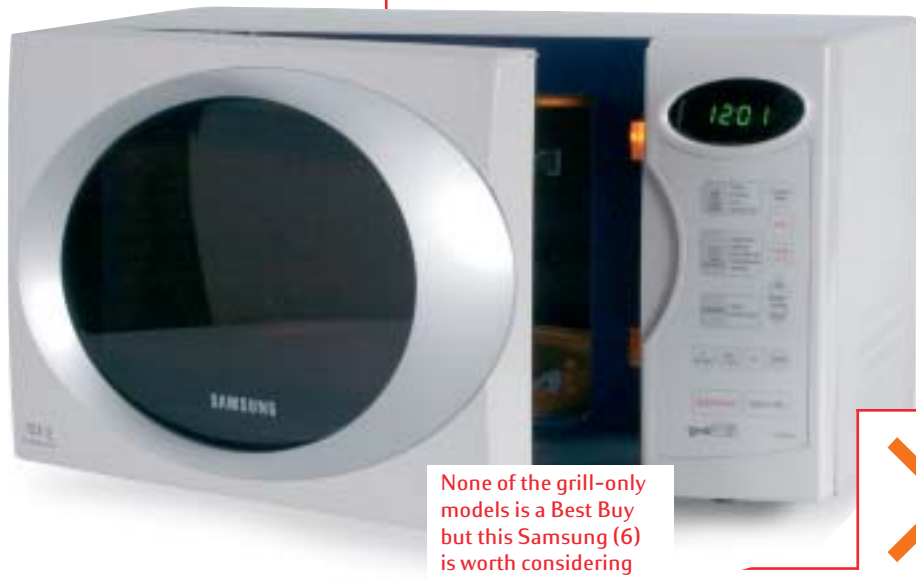
We advise against buying the two microwaves with the poorest test scores (see table, p42). Although neither is dangerous, they have major drawbacks. **The Sharp (10)** grill model didn't manage to defrost our mince properly, and it grilled food unevenly. At just £35, the basic **Daewoo (14)** is cheap – but it's a bargain you might come to regret. We found it couldn't cook a ready meal to a safe temperature without drying it out in the process, and it didn't defrost well.

### Other choices

We were disappointed with all the grill microwaves we tested, and found only one worth buying – though even this has drawbacks and doesn't count as a Best Buy.

The Samsung (6), £80 from Comet, was the best grill-only model on test and turns out a decent roast chicken in 35 minutes. When we used it to bake a sponge cake, the results were impressive, too. But it didn't fare as well on some more basic tasks. When used continuously for 15 minutes, its performance drops to such an extent that your food would be under-heated (unless you adjusted the cooking time).

There were also problems with the preset programs: the automatic ready-meal button underestimates the time needed to heat a meal to a safe temperature, and the auto-defrost setting left our block of mince partly frozen. If you do buy this model, you're better off setting times and power levels manually.



None of the grill-only models is a Best Buy but this Samsung (6) is worth considering

# READY MEALS



A meal cooked in the Daewoo (14) is dried out by the time it gets to a safe temperature

Our tests measure how quickly, evenly and safely each microwave can heat a ready meal (we use a synthetic substitute akin to lasagne). The results show how well it tackles the basic job of heating food.

We cook the substance to 70°C (high enough to kill off bacteria in food), then check how evenly it's heated – looking for cold spots that could harbour germs. We also

measure the weight lost during cooking: this is a good indication of whether some areas of the food have been overcooked and dried out.

We then run the oven for 15 minutes with a dummy load of water before repeating the test. This is to check if the oven's performance drops as the oven becomes hotter. A poor result here could mean an undercooked meal for the last family member to be served.

The table below shows results for cooking ready meals in a cold oven (see 'Ready meal' column) and a hot oven (see 'Hot oven' column). All the combination models heat well when cold, but differ when hot. The Panasonic (1) shows virtually no drop in performance, whereas the Baumatic (5) becomes far less effective as it heats up.

# COOKING TIPS

● Stir liquid foods part way through cooking for even heating.

● The 'standing time' in microwave recipes is important as it lets the heat keep spreading.

● You don't always need butter in microwave cooking but if you want a buttery flavour, add a small amount after cooking: the flavour is absorbed during standing time.

● Microwave cooking emphasises the flavour of salt and other seasonings, so you'll need to use less.

● When converting a recipe for a microwave, reduce the liquid by a quarter.

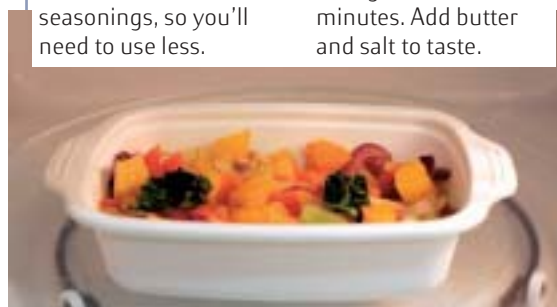
## AND FINALLY...

Some more unusual microwave recipes.

● **Hard 'boiled' eggs** Crack an egg into a bowl and cook on medium power for 45 to 90 seconds.

● **Roast nuts** Cook peanuts, cashew nuts or almonds on high for 90 seconds.

● **Popcorn** Place popping corn in a glass dish with a lid and cook on high for three minutes. Add butter and salt to taste.



## Microwave ovens

|                           | Specification |            |           |              |                 | Features |       |      |            |          |         |       |
|---------------------------|---------------|------------|-----------|--------------|-----------------|----------|-------|------|------------|----------|---------|-------|
|                           | Price (£)     | hwxwd (cm) | Power (W) | Power levels | Plate size (cm) | Memory   | Delay | Lock | Ready meal | Hot oven | Defrost | Grill |
| <b>COMBINATION</b>        |               |            |           |              |                 |          |       |      |            |          |         |       |
| 1 Panasonic NN-A754WBBPQ  | 150           | 30x51x48   | 1,000     | 6            | 34              | ✓        | ✓     | ✓    | ☆          | ☆        | ○       | ●     |
| 2 Sharp R-95STM           | 250           | 37x55x53   | 900       | 5            | 36              |          | ✓     |      | ☆          | ○        | ☆       | ★     |
| 3 Hinari MX780CEG         | 90            | 29x46x45   | 800       | 10           | 27              | ✓        |       | ✓    | ☆          | ☆        | ●       | ☆     |
| 4 LG MC-7643DS            | 90            | 31x51x48   | 900       | 5            | 31              |          |       | ✓    | ☆          | ●        | ●       | ○     |
| 5 Baumatic BTM25SS        | 240           | 31x51x40   | 850       | 11           | 32              | ✓        |       | ✓    | ☆          | ●        | ●       | ●     |
| <b>GRILL</b>              |               |            |           |              |                 |          |       |      |            |          |         |       |
| 6 Samsung CE283GN         | 80            | 27x49x37   | 850       | 6            | 29              | ✓        |       | ✓    | ○          | ●        | ○       | ○     |
| 7 LG MH-5843ALT           | 80            | 28x46x32   | 800       | 5            | 25              |          |       | ✓    | ●          | ●        | ☆       | ●     |
| 8 Hinari MX752GMSSE       | 50            | 29x46x35   | 800       | 5            | 27              | ✓        |       | ✓    | ○          | ○        | ●       | ●     |
| 9 Sanyo EM-G2565S         | 50            | 29x46x36   | 800       | 5            | 27              | ✓        | ✓     | ✓    | ○          | ●        | ●       | ●     |
| 10 Sharp R-654(SL)M       | 74            | 28x45x38   | 800       | 5            | 27              |          | ✓     |      | ●          | ●        | ●       | ●     |
| <b>BASIC</b>              |               |            |           |              |                 |          |       |      |            |          |         |       |
| 11 Sharp R-209(W)         | 45            | 28x46x36   | 800       | 5            | 29              |          |       |      | ○          | ○        | ☆       |       |
| 12 Panasonic NN-E252WBBPQ | 60            | 28x45x31   | 800       | 5            | 27              |          |       | ✓    | ○          | ○        | ○       |       |
| 13 Sanyo EM-S1565S        | 55            | 29x46x36   | 800       | 10           | 27              |          |       | ✓    | ☆          | ○        | ●       |       |
| 14 Daewoo KOR-68CD7       | 35            | 28x47x35   | 800       | 7            | 28              |          |       | ✓    | ●          | ●        | ●       |       |

## MICROWAVE Q&A

Microwaves have been around for decades but many people are still wary of them. We get to grips with your queries.

### Q. How do microwave ovens work?

**A.** A microwave oven generates high-frequency radio waves. Their energy is absorbed by water, fats and sugars in food – making molecules vibrate more quickly, creating heat. Waves at this frequency aren't absorbed by most plastics, glass or ceramics so virtually all the energy goes into heating the food.

### Q. Are they safe?

**A.** In short, yes. There are strict requirements to ensure microwave energy doesn't leak, and we've never found

any leakage problems in our tests. There's a slight danger that damage to the oven could cause leakage around the door, but all doors are fitted with micro-switches to stop them working if the door doesn't fit.

### Q. How do microwaves affect nutrients?

**A.** Most reports indicate that foods cooked in microwaves are at least as nutritious as food cooked more conventionally. Microwave cooking tends to be quick and uses little water, so it helps retain water-soluble vitamins and minerals (such as vitamin C). And, because there's less

oxidation, vitamins A and E are also more likely to be retained.

### Q. What cooking containers are best?

**A.** Heatproof glass or Pyrex are ideal. You can use plastics labelled as microwave-safe. Don't use containers from frozen or chilled food (such as margarine tubs) as their low melting temperatures may leave contaminants in the food. Even plastic takeaway containers may not withstand the high temperatures of



Surprisingly, you can sometimes use metal in a microwave



Use round, shallow dishes to heat food evenly and quickly

microwave cooking. The packaging for microwaveable meals is designed for use at high temperatures but might not survive frequent reheating. Paper plates and paper towels are OK, and pottery, ceramics and earthenware are suitable as long as they're not porous. Shallow dishes are useful for heating, thanks to their large surface

area, and circular containers help food to cook evenly.

### Q. Can I put metal in a microwave?

**A.** If you're careful, you can use foil to shield parts of food that would otherwise overcook, such as the legs of poultry. There's a danger of sparking if foil gets too close to the sides but, used cautiously (following the manufacturers' guidelines), it can be a useful technique.

| Performance |      |               |             |             |             | Score |
|-------------|------|---------------|-------------|-------------|-------------|-------|
| Roast       | Bake | Potato button | Meal button | Rice button | Ease of use | (%)   |
| ★           | ☆    | ☆             | ☆           |             | ○           | 64    |
| ☆           | ○    | ○             | ○           | ★           | ○           | 62    |
| ★           | ●    |               |             |             | ○           | 52    |
| ☆           | ○    | ☆             |             | ★           | ○           | 48    |
| ○           | ●    |               |             | ○           | ○           | 44    |
| ☆           | ☆    |               | ●           |             | ○           | 52    |
| ○           | ○    | ○             | ●           | ○           | ○           | 43    |
| ☆           | ○    | ○             |             | ○           | ○           | 41    |
| ○           | ☆    |               |             |             | ○           | 38    |
| ☆           | ○    |               | ●           |             | ○           | 26    |
|             |      | ○             | ●           |             | ☆           | 62    |
|             |      | ●             |             |             | ○           | 52    |
|             |      |               |             |             | ☆           | 52    |
|             |      |               |             |             | ○           | 30    |

### TABLE NOTES

We tested 14 microwaves from the manufacturers with the largest share of the market.

### Specification

**Price** What you can expect to pay on the high street by shopping around. **Power** All ovens have a stated power output, which corresponds to instructions on food packs. Higher levels make it easier to overcook food. **Power levels** Different levels let you adapt how quickly food is cooked, making it easier to avoid overcooking.

### Features

**Memory** You can program the oven with instructions for common tasks.

**Delay** This lets you set the microwave to start cooking later. **Lock** This lets you prevent unsupervised use.

### Performance

**Ready meal** A good rating means the meal reached a safe, even temperature without overcooking, when cooked in a cold oven. **Hot oven** This shows how well the oven cooked a ready meal in an oven that was already hot. A low rating means you'll get poor results if you use the oven continuously. **Defrost** See 'Defrosting', p40. **Grill, Roast, Bake** Ratings for even grilling, ability to roast a chicken and bake a cake. See 'Grilling, baking and roasting', p40. **Potato button, Meal button, Rice button** We tested these automatic buttons

where present to see how well the preset programs worked. **Ease of use** This includes ease of using controls and buttons, loading and unloading, using the grill, readability of display, ease of cleaning, and clarity/completeness of instructions.

### SCORE

This ignores price and is based on:

|   |     |
|---|-----|
| Cooking/heating performance             | 40% |
| Ease of use                             | 25% |
| Defrosting                              | 20% |
| Grilling/roasting/baking (where tested) | 15% |

### KEY

★ ☆ ○ ● ●  
 Best Worst  
 ■ Best Buy  
 ■ Don't Buy