

# Understanding Microwave Ovens

Microwave ovens are a hugely important part of every professional kitchen. As a standard microwave-only oven they can perform essential functions such as safely re-heating frozen or chilled food, which is at the heart of many menus in informal dining restaurants and pubs or in room-service for hotels.

Where they get much more versatile in when they become a combination microwave oven. The combination is the addition of convection hot air and a grill. This transforms a simple re-heating cabinet into a multi-function cooking oven. Jacket potatoes can be softened then crisped, pastry dishes can be reheated and crisped, in fact almost all of the functions of a standard oven can be performed in the combination microwave oven. The main limitation is of load capacity and the absence of steam in a standard-size microwave oven. Although it is possible to buy a combi-oven which incorporates microwave energy.

A general rule of thumb is that microwave only is for re-heating, combination microwave ovens are for reheating and primary cooking.

There is a minority view among caterers that all microwave ovens are the same, the only difference between commercial ovens and domestic ovens being the power and price. This is completely untrue. There are clear cooking, construction and food safety differences between microwave ovens designed for domestic use and those designed for the professional kitchen.

Domestic microwave ovens are often low power, which means they will take far longer to reheat, defrost or cook food than a commercial oven. While domestic ovens have a power rating from 600 watts to 900 watts, commercial microwave ovens can be up to 2000 watts. The term watts is a unit of measurement for the heating power of a microwave oven.

The device which produces the energy waves which heat food in a microwave oven is called a magnetron. Domestic microwave ovens usually just have a single magnetron while commercial microwave ovens usually have two magnetrons which are built to a higher specification, making them faster, more efficient and longer lasting.

A commercial build microwave oven is built to withstand hard use every day, while a domestic is designed to be used just a couple of times a day, which repeated use of a domestic microwave oven can lead to a loss of power with the associated food safety risks.

Microwave energy needs to be evenly spread around the oven cavity to ensure that all parts of the food inside are safely heated. Where chilled or frozen food is not thoroughly heated, harmful bacteria within the food is unlikely to be killed, risking food poisoning. Many domestic microwave ovens use simple turntables to try to distribute the microwave heat, while commercial microwave ovens have sophisticated heat mixing systems in the oven cavity.

The casing of most domestic microwave ovens is painted mild steel which will chip, corrode and cause food safety hazards. Most professional microwave oven have casings made with hard-wearing stainless steel which is easy to keep clean and will not corrode. Commercial microwave oven are likely to have far more sophisticated cooking programmes, often push-button pre-sets, so staff can reheat properly and easily every time. The oven cavity size on a commercial microwave is usually based around the gastronorm system, making it easier to accommodate industry standard sized food dishes.



Most commercial microwave ovens have a cavity space of ½ gastronorm, but they are also available in 2/3 gastronorm and full-size gastronorm.

Manufacturers group commercial microwaves into four power bands.

*Light-duty* - The oven will have a power ranging between 900 watts and 1100 watts. This is suitable for use where demands are light, such as a café, satellite kitchen or petrol filling station.

*Medium-duty* – A power rating of 1100 to 1500 watts, proportionately more robustly built than a light-duty oven and suitable for restaurants where the microwave is only in occasional use, busy cafes, pubs or leisure centres.

*Heavy-duty* – Powered from 1500 to 1900 watts and the most popular power range used in catering. Suitable for busy pubs, hotels, busy restaurants or staff catering. Built to withstand hard and heavy use.

*Extra heavy-duty* – these are usually where large quantities of food are needed to be reheated quickly rather than just individual portions. They can take up to a full gastronorm tray. While all other power bands are connected to a 13amp socket, this very heavy duty oven will need hard wiring into the mains.

While the general rule is the high the wattage the faster the food will be heated, much beyond 2000 watts and food risks being burned on the outside before it is heated on the inside.

### **Look After It!**

Microwaves oven can become quite dirty with food debris during a service and a full clean-down every day is essential to maintain food hygiene. Cleaning materials should only be those recommended by the manufacturer.

Regular safety and maintenance checks in accordance with manufacturers' instructions are vitally important with microwave ovens. Any slight drop in power output and food will begin to be incorrectly re-heated, disappointing customers and presenting a food safety hazard.

Looking after a microwave oven is not difficult and they are one of the more reliable pieces of cooking equipment in the kitchen, but not without some look-after rules. Regular and thorough cleaning is the No. 1 rule of microwave ovens. The intense heat they put into food inevitably leads to some food spatter around the oven cavity.

If this is not wiped out regularly, but left, it will bake on with the heat of the microwave energy and give an even greater cleaning problem.

Kitchen staff using a microwave oven should be trained to wipe off any spillage or spattering as soon as the food item has been taken from the microwave. At the end of shift the microwave needs a thorough wipe down with a detergent on a non-abrasive cloth, then sanitising.

Non-abrasive cloths are very important, as the internal coating on the cavity of a microwave oven is tough, but not resistant to constant scratching. If the internal cavity walls become scored or damaged, then the repair might be so expensive that it will call to question whether to repair or replace. Both questions would not arise with careful use.



The exterior casing of a commercial microwave oven is usually stainless steel, but there will also be plastic or toughened glass used in fascia panels and controls. The exterior can withstand a tougher scrub, but if the oven exterior is regular cleaned at the end of a shift there should be no need to.

Beyond regular cleaning and careful cleaning, there is little to go wrong with a commercial microwave oven. Repairs are usually caused by operator miss-handling, either rough cleaning or damage to door hinges and closures through constant slamming. A microwave oven is like any item of kitchen equipment in that the door will prematurely break down through slamming abuse. Staff should be trained to know that a positive push closes the door of a microwave oven just as effectively as a heavy slam.

It is easy to think that the simplicity of operation of a microwave oven means there is not the need for a high maintenance schedule as there might on kitchen equipment using water and gas. Professional microwave ovens are relatively low in maintenance costs, but they must never be excluded from the regular maintenance cycle. It only takes a service engineer a few minutes to check for leakage of microwaves through door seals, but it is a vital part of regular maintenance for staff safety and efficient operation.

Take care not to operate the oven with little or no food in it – this will reduce the life of the magnetron which is the component that produces the microwave energy.

## **In brief**

### **Do**

- Clean regularly, but gently
- Avoid letting food debris burn
- Have the oven regularly serviced
- Train staff on the fire hazards
- Allow for proper rear ventilation

### **Don't**

- Slam doors
- Use metal containers
- Scratch the insides
- Use abrasive cleaners
- Run the oven without food

## **How to learn more about microwave ovens**

Email [sales@justcatering.com](mailto:sales@justcatering.com)  
Web site [www.justcatering.com](http://www.justcatering.com)

Email [sales@justcooking.co.uk](mailto:sales@justcooking.co.uk)  
Web site [www.justcooking.co.uk](http://www.justcooking.co.uk)

Email [sales@justwaste.com](mailto:sales@justwaste.com)  
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