

# Choosing and Using Your Microwave Oven



**M**icrowave ovens have been around for nearly 30 years. The forerunners of today's models were cumbersome, cost nearly \$1,500, required extra wiring, and were unpopular due to consumer misunderstanding about the electronic age of cooking. Competition among manufacturers has resulted in lower costs, many improvements, and increased educational information.

The decision of whether to purchase one should be made with an understanding of your cooking needs and expectations. Knowledge of selection features and how you will use it will allow you to make wise decisions about this appliance before you buy, and in its use after you purchase.

### Microwave Cooking—What is it?

Conventional cooking depends on thermal conduction—direct application of heat or heated air to the food surface—penetrating inward. In micro-

wave cooking, food is heated by absorbing microwave energy.

### How does it work?

Microwaves are invisible energy waves about 5 inches long with the thickness of a pencil. They are similar to radio waves but vibrate much faster. In a microwave cooking appliance, electricity is converted into electro-magnetic energy through a magnetron tube.

The microwaves pass from the magnetron tube into the oven cavity. Microwaves are reflected by metals (oven walls and metal utensils); they pass through most glass, paper, air, and some plastics, and are absorbed by liquids, moisture, and fat in foods. As microwaves are absorbed, they cause moisture and fat molecules to agitate. Friction that results creates heat within the food. The process is similar to rubbing your palms together swiftly and creating friction and heat.

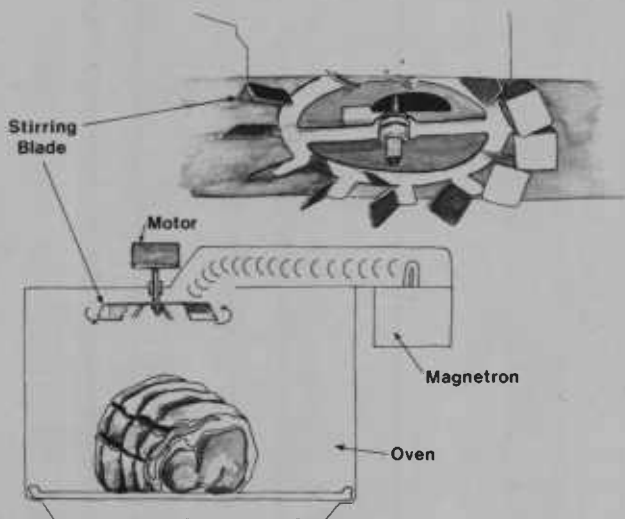
In cooking, heat generated from the friction of the moisture molecules is conducted through the

food. Penetration depth depends on the frequency of the microwaves. Quick penetration of microwave energy into the outer layers of food makes microwave cooking fast. This holds true for the three uses of microwave ovens: defrosting, heating, or cooking.

Microwaves are distributed in the oven cavity by either a stirring blade or a revolving turntable system. The reason some ovens rotate the food while others use the fan blade is due to the manufacturer's theory about the "most effective" way to distribute microwaves for uniform heating.

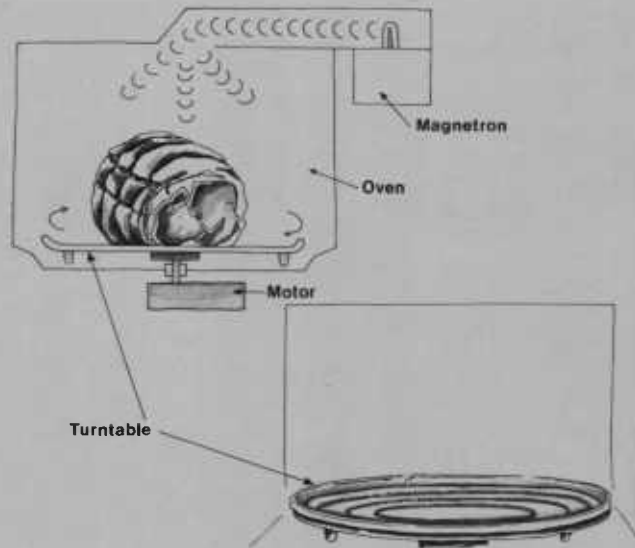
### Stirring blade system

The motorized stirring blade is located at the top wall of the oven cavity. Microwaves from the magnetron tube enter the oven through the wave guide. They are stirred by the blade for uniform distribution within the oven. The stirring blade thus provides for uniform heating of food by creating a constantly changing wave pattern within the oven cavity.



### Revolving turntable system

In this system, a motorized turntable is located on the bottom of the oven cavity. Waves enter the oven through the guide and foods turn to pass through their path; thus food is heated and cooked uniformly. Interior dimensions of the oven with a turntable should be carefully evaluated. Since the turntable is round in a rectangular oven, some capacity is lost. The turntable must be able to rotate freely when the oven is in use; oblong pans may prevent turntable and/or pan from rotating for even cooking.



## Are Microwave Cooking Appliances Safe?

All energy sources have a potential for harm if not properly used. Microwave is no exception, but there are many safety devices built-in to preclude mishaps. The concern for safety starts with the word "radiation."

There are two types of radiation: non-ionizing and ionizing. Non-ionizing radiation are microwaves, infrared rays, radio, and light waves. Non-ionizing radiation will cause temperature changes but rays are not cumulative. This means the effect of microwaves on a substance will cause it to become hot but not radioactive.

X-rays and Gamma rays are examples of ionizing radiation. These can cause chemical changes in cellular structure because effects are cumulative.

Microwave ovens are among the most scrutinized products on the market today, and the consumer can be assured that only safe and reliable pieces of equipment are available.

Manufacturers must answer to several regulatory groups, including the Bureau of Radiological Health (BRH) and the Federal Communications Commission (FCC).

BRH is under the jurisdiction of the Department of Health, Education, and Welfare, Public Health Service, and Food and Drug Administration. BRH is charged with the responsibility of policing and enforcing regulations concerning the emission of radiation from all microwave ovens.

Before a microwave oven is sold, it is tested by the FCC to insure against emission of radio frequency that could interfere with other types of communications.

In addition, federal regulations require that all microwave ovens have two independent interlocks.

This is to insure a backup system, providing safe operation should one interlock fail. They are to shut off the flow of microwaves before the oven door is opened.

Underwriters' Laboratories require manufacturers to meet electrical safety specifications.

**Can microwaves get out of the oven when it is operating? Or, if the door is opened, can microwaves bounce out?**

The perforated screen on the door of all microwave appliances is scientifically designed to prevent microwave leakage. If the door is opened immediately following an ON cycle, there is no chance of microwaves bouncing around and out the door after the cycle is finished. The microwaves can be compared to a light bulb. When the light switch is turned off, there is no light from the bulb. When the cooking cycle is ended, no microwaves are present.

**Can pacemakers be affected by microwave ovens?**

The pacemaker is a device implanted in a person to aid heart action. It is sensitive so there is the possibility of interference between a pacemaker and the external electrical fields in the environment. Such interference has been reported from electric mixers, various small home appliances, radar, radio broadcast transmitters, elevators, automobiles, and microwave ovens. To reduce interference, pacemakers are now designed with electrical filters or shields. As an additional safety precaution, pacemakers are designed to automatically assume a fixed rate of electromagnetic energy when exposed to any rate of interference. These precautions, in conjunction with federal safety standards for microwave ovens, assure little danger to the pacemaker wearer in the vicinity of an operating microwave oven. If you have questions concerning a particular case, consult a coronary specialist.

**How can an oven be checked for leakage?**

If you fear oven leakage, test the oven with a small fluorescent light tube (about 6" long with a power rating of 6 watts—any size will work, but the smaller one is convenient to use). Hold the tube one-half to three-fourths of an inch away from and parallel to the door edge. If the tube glows when the oven is in operation, the door should have a more thorough evaluation at a service center where repairs can be made.

All authorized microwave service centers are required to have a leakage testing device that is federally approved. In some areas, testing service is provided by the local health department. Most service centers will check your oven at their center as a courtesy; if they are called to your home to perform a test, they often do so for the price of a

service call. Check to see if this service is available locally. This should be done if you have any reason to believe your door may be emitting radiation.

The chief cause for leakage is damage to the oven door. Damage can occur if the unit is dropped in shipping, during installation, or in the home. Therefore, ovens should be checked upon purchase or delivery and installation. Check the oven if you have moved—in case it suffered a severe jolt during the moving process. Once a unit is in the home, door damage occurs most frequently in ovens that have drop-down doors. Don't use the door as a countertop; don't set heavy items on it, or lean on it. The likelihood of damage is lower in side-swing doors. However, bumping a side-swing door may strain the hinges. If this happens, you may want to have the oven checked for safety.

If an oven is safe at installation time and is properly cared for in use, leakage is nearly nonexistent.

**Are there specific precautions when operating an oven?**

Yes. Do not attempt to operate your oven with objects caught in the door; a door that does not close properly; or a damaged door, hinge, latch, or sealing surface. General hints for maintenance are:

- Follow the owner's manual.
- Allow at least one inch of space at the appliance's vent. In a confined space, the oven may overheat and shut off automatically. If this happens, a cool-down time period of several minutes is required before the oven can be turned on again. Inadequate venting space over the oven could cause wall paneling or wallpaper to buckle, since the vented air escaping the oven cavity is moist and hot.
- Examine the oven for shipping or moving damage.
- Never tamper with the oven's safety switches.
- Frequently clean the oven cavity, door, and seals with water and a mild detergent. *Do not use abrasives on these surfaces.* To clean stubborn spots inside the oven, wet a dishcloth and place it on the spot. Turn microwave on high, or full power, for one minute; the spot will steam loose and can be easily wiped off.
- Check oven for leakage every few years.

**If the oven did leak radiation, would I feel it?**

Yes. Microwaves cause temperature to rise. The body's sensory nerves feel the warmth in the same way they sense a hot object. You would feel the heat and move away. Strict federal standards regulate the amount of leakage to a level of 10,000 times below the level that will cause harm to humans.

### Is the food safe to eat?

Yes. Microwave radiation is non-ionizing. Foods cooked in a microwave oven experience a temperature change but cannot become radioactive.

### Will Cooking be the Same as in a Regular Oven?

As a primary cooking source, the microwave appliance can be used to completely cook many foods. And as a complementary source, it can be used with other heat sources such as a range top, oven, or broiler. Foods may be started or finished in the microwave.

A microwave oven is not intended to be a replacement for a traditional kitchen range. Though called "an oven," it is not just an oven since it can also be used to heat foods that are usually prepared on top of a range. It is an appliance used for convenient and fast cooking of foods even from the frozen state. Speed of cooking is the major difference in microwave cooking and is also its main advantage over other cooking methods. Many foods cook two to four times faster than with conventional cooking methods. A cube of butter melts in 30 seconds, four average potatoes bake in about 15 minutes, and a half-dozen rolls at room temperature warm in less than a minute. A few foods, however, take as long or longer to cook in the microwave than conventional ovens or on a range unit. Pasta products, cooked puddings, hot cereals, and simmered meats are a few examples.

Manufacturers furnish use and care manuals and some provide rather complete cookbooks. These should be followed as you become acquainted with the appliance. With practice, you will learn to judge doneness just as you do with a conventional range.

In microwave cooking, the oven remains cool during the cooking operation and cooking utensils generally stay cool because the microwaves pass through the utensils. The heat felt on a baking utensil comes from heat transferred from the food. Because of this, foods most generally can be served right in the baking dish. Clean-up of messy baking dishes and the oven interior is easily taken care of because foods don't "burn on."

A primary disadvantage relates to cooking speed. Close attention must be given to cooking, timing, turning, and allowing for carry-over cooking of foods. Another disadvantage is that microwave cooking does not provide a crisp crust or browned exterior when food is in the oven less than 10 minutes.

### What does carry-over cooking mean?

When foods come out of the microwave, they will continue to cook for a period of time. The

vibrating molecules take a while to slow down, and as long as they are creating friction, heat is being produced. Carryover cooking time depends on the type of food and the length of time it was cooked. Foods that are high in fat, such as meats and casseroles, have the longest carry-over cooking. This can be equal to about half of the cooking time. For example, if you cooked a 5 pound roast for 20 minutes, carry-over cooking would take place for half the cooking time—about 10 minutes. For smaller items, less time is needed. Approximate times are:

- 1 to 3 minutes for small items low in fat—peas, corn, spinach, fish fillets
- 5 minutes for larger items—potatoes, squash, sauces
- 10 minutes for small casseroles and meats
- 15 minutes or more for large items—turkeys and roasts

ALWAYS allow for carry-over cooking before adding any more cooking time or the end product may be over-done. Food should be removed from the oven and allowed to rest; it will continue to cook without any more energy being applied. This means you may be advised to cook meats for a specified time and when you check the item, it may not appear done. Remove the meat from the oven, cover it, and wait about half of the specified cooking time. At that time, if you desire more doneness, place the meat back in the microwave for a few minutes.

### What Factors Affect Cooking Time?

**Volume.** The more items or the larger the quantity of food, the longer the defrosting, heating, or cooking time. When heating items, the increase is in relation to the increase in volume. For example, one cup of water heats in 1 to 1½ minutes and two cups in 2 to 3 minutes. When cooking, the increase in time per volume varies with the food. For soup and sandwiches, which cook fairly quickly, the increase in time is proportional to the increases in volume.

**Food temperature.** The colder the item the longer it takes to heat through. Frozen foods generally take about 2½ times longer to heat than refrigerated foods. Room temperature foods, such as canned items, take about one-third less time than refrigerated items. Many recipes base cooking time on foods at room temperature.

**Moisture content or density.** Low moisture, light, porous foods such as breads and pastries heat more quickly than higher moisture foods or compact foods of the same weight. High moisture foods include vegetables, soups, stews, casseroles.

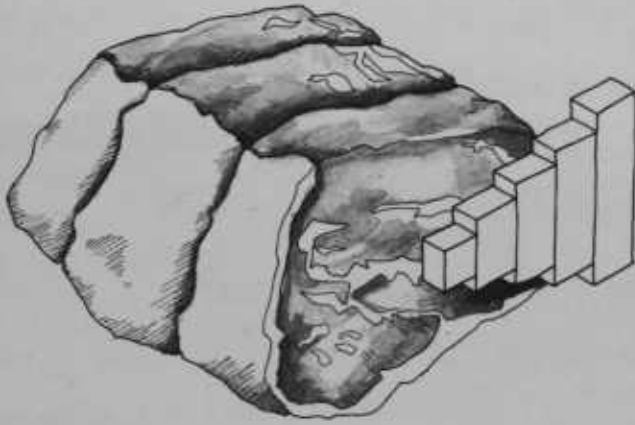
## Microwave Ovens—A Consumer Checklist

<i>Item Compared</i>	Brand/model 1	Brand/model 2	Brand/model 3	My needs/preference
1. Brand or model Dealer/Salesperson .....				
2. Price For basic oven .....				
Extras: cart, dishes, delivery, cookbook, classes .....				
3. Size (HWD) & space required Interior .....				
Exterior .....				
Direction door opens .....				
Venting space & direction .....				
4. Weight .....				
5. Power Wattage required .....				
Is cooking speed variable? .....				
Is separate circuit required? .....				
6. Options available Interior light .....				
Browning unit .....				
Probe/thermometer .....				
Cooking instructions on face .....				
Cycle programming capability .....				
Carousel/stirrer fan .....				
7. Timer Minimum and maximum settings .....				
Audible signal .....				
8. Finish Exterior .....				
Interior .....				
9. Service Warranty terms/coverage .....				
Cost .....				
Where available? .....				
10. Personal reaction, my impressions				
11. Additional				

Completing this checklist will help you do comparative shopping for a microwave oven. Use it to decide whether to purchase or not, and which model best fits your needs. The checklist is intended to present an orderly method for making comparisons.

1. *Brand/Model—Store/Salesperson.* As you look at a brand or model, consider your needs regarding possible financing by a particular merchant, proximity to a service center, reputation of store, and knowledge of salesperson about the product.
2. *Price* will vary greatly. Some dealers offer “free” inducements to buy, such as cookware, seal-bag appliances, classes, etc. Keep these offers in mind as you shop. You might ask: “What is *really* included in the price?” Can you understand and use the manual that comes with this model? What appears to be finger-tip ease by the salesperson may need further explanation in your own home!
3. *Dimensions* include the space available inside the oven cavity, and the space required for use and storage of the appliance. Will frequently-used pan sizes fit in the cavity? Where will the appliance be used? Do you have counter space or space for a separate cart or storage stand for the oven? Remember to include the space required for the door opening—up, down, or sideways. Will you need extra counter space nearby to set foods for stirring and other preparation? Where will the steam vent? Can this model be built-in? Will you want to build it in now or at a later date?
4. If you are looking for a “portable” model, keep in mind that *weight* varies from about 50 pounds to more than 100 pounds.
5. When considering *power required*, most microwaves operate on 110 volts, but most manufacturers recommend that microwave ovens have their own 15-amp circuit. Does your home have adequate wiring? What wattage output is available? This will affect cooking speed of various models.
6. *Options available* vary from model to model. Before you buy, consider which specific features you need and which best fit your needs. The following are commonly available:
  - Interior light—how easy is it to change the bulb? Is it a standard size?
  - Browning unit—a heating element attached to the upper surface of the oven for browning microwaved foods. In some models it will not operate concurrently with microwave power.
  - Temperature probe—a thermometer, one end of which attaches to the oven cavity, the other inserts in the food being cooked. A probe may allow you to set timing control by desired internal temperature of the food when cooked.
- Oven floor design is important, as foods boil rapidly and may boil over. Some models have a removable glass tray for catching spillovers; others have smooth bottom surface for ease of cleaning.
- Cooking references on the face of the oven help the cook save time in checking a recipe when food is prepared. Some models have little if any reference visible, others have quite an extensive index of times and oven settings.
- Cycle programming may permit automatic thawing or allow you to program foods from “thaw” directly into the cooking phase.
- A turntable or a stirring fan are each intended to provide uniform distribution of the microwaves. Either will require manual turning of foods.
7. *Timers* come in various types: touch, digital, and dial with breakdowns in minutes and/or seconds. It is important that the first few minutes be broken into seconds since many foods require less than a minute of on time before further attention would be needed. Some are easier to read than others, and some are much more easily heard. End cycle signals include chimes, buzzers, or bells with intermittent or continuous sound. Listen to the signal and consider the distance it needs to be heard over other household sounds.
8. *Finishes* give an oven style and class, but they also affect cleaning ease. As you look at the oven, remember the other appliances with which it will appear. Many variations of exterior decorator finishes are available. Interior finishes vary from shiny metal to acrylic covered surfaces.
9. A *warranty* states conditions of agreement. Note any conditions that would void the warranty of the model. Coverage for labor, parts, and magnetron tube vary with manufacturer. Are repairs made in-home or do you have to deliver the oven to a service center? How accessible is service? What would be the cost of replacing a magnetron tube?
10. Often it is good to jot down your immediate reaction. Sometimes this can work positively or negatively for you. We make many purchases with our eyes, yet learning more about an appliance may tell us our eyes were deceiving us if a purchase is made on sight alone.
11. Be sure to list any additional comments you have. This check sheet should help you make a consumer decision about the purchase of a microwave oven that will exactly fit your personal and family needs.

*Prepared by Janice M. Weber  
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**Shape and composition of food.** The greatest amount of microwave penetration takes place within three-fourths inch (1.9 cm) of the food surface; therefore, most thin, flat foods cook faster than chunky foods. Heating is most uniform in flat—not more than 1½ inches (3.8 cm) thick—doughnut shaped foods. Stirring midway through the heating process, heating the last one-third of the cooking time on a lower power setting, and using a final standing time to allow carry-over cooking, promotes more even heating among items that are not flat and/or doughnut-shaped. The hotter the food and more dense the item, the longer it will hold heat and continue to cook after removal from the oven.

**Fat and sugar content.** Items high in either sugar or fat will heat more quickly than items low in these ingredients. A sugary sweet roll will heat faster than a hard dinner roll.

**High altitude.** In high altitude regions above 2,500 feet, microwave cooking time needs to be extended beyond the time recommended at sea level. The amount of additional time is not easily determined since performance differs between various types of microwave ovens. Oven load, type and shape of food, and quality of products will affect microwave heating time differences between sea level and high altitude cooking.

#### **Can I cook everything in a microwave that I would in my conventional oven?**

Though many foods can be satisfactorily cooked in the microwave, some differences need to be noted.

Microwave cooking will not shorten the time needed to cook less tender cuts of meat as for stews or pot roasts. Legumes, such as navy beans, split peas, pinto beans, etc., need time for slow cooking to rehydrate and tenderize. On models with variable cooking power, they could be cooked with the LOW setting.

Hard-boiled or fried eggs, giblets, and other foods with membrane coverings may burst. Rapid cooking combined with the hot fat or water pressure builds up inside until they pop. To prevent this, it is advised that several small holes be made in the membrane.

Canning cannot be done in a microwave because jars must be submerged in water or surrounded by steam for even heating. Also, low acid foods must be processed at temperatures above the boiling point of water. Low acid home canned foods (meat, vegetables, seafood, poultry) should be boiled 10 to 20 minutes before eating as an extra margin of safety. This length of time is not reduced in a microwave. The microwave can be used to blanch vegetables for freezing and drying if desired. Deep fat frying cannot be done in the microwave.

Frozen TV dinners may be cooked in their original shallow metal containers; however, uneven cooking may result. Before cooking, the top aluminum foil must be removed from the container. Return the dinner tray to the carton and place in the oven cavity for the specified cooking time.

#### **Can I cook or heat more than one food at a time?**

Yes, but you will have to watch carefully because foods heat at different rates. Usually the more porous the product, the quicker it heats. Meats take the longest to heat because of its density. It is recommended to start with the largest item, like meat, and cook it first. While it is “carry-over-cooking” you can prepare vegetables and gravy. When heating leftovers, place dense and large items to the outside of the plate with smaller items in the center.

#### **Do foods brown in a microwave appliance?**

Regardless of how it is prepared, food seems to lose eye appeal without a familiar brown appearance. Browning will not occur unless the foods require 8 to 10 minutes or more of cooking time and the exterior has some fat content. Fats, when heated, can reach 350° F to 400° F (176.7° to 204.4° C) and some browning will occur. Foods such as roasts or fowl that require more than 15 minutes cooking time brown naturally in the microwave oven. However, steaks, chops, etc., which microwave in only a fraction of the time required for conventional cooking will not brown. Some ovens have browning units making browning possible.

For those with browning units, an infrared element is located in the upper part of the oven cavity. Foods may be browned during a cycle of microwave and conventional energy or browned after they are microwaved. A separate timer is used if the browning occurs after cooking. A browning unit eliminates one of the chief advantages of a

microwave appliance—its coolness. This means paper, plastic, and china that are not heat resistant cannot be used. The amount of heat created is such that only heat resistant cookware can be used. Use glass bakeware recommended for this purpose by the manufacturers.

A browning dish might be used to achieve brownness with some microwaved foods. These are specially designed ceramic dishes containing a ferrite (iron composition) material. The dish is heated 3 to 5 minutes. Food is placed on the heated dish and cooked in the microwave appliance cavity, first on one side and then the other. Browning occurs from searing the food on the hot dish; cooking of the food is done with microwaves. The browning dish should not be used in a conventional oven because of its composition; foods would become very hot and burn. *These dishes are designed for use specifically in the microwave unit and should be used only as directed.*

### What Utensils are Used in Microwave Cooking?

Except for the browning dish, no special dishes need be purchased for normal microwave cooking. Any glass or ceramic utensil without metal or metallic trim is acceptable. Plastic roasting or seal bags can be used but be sure to cut a small hole for steam to escape or the bag could burst as steam builds pressure. Follow the directions for the type of food being cooked. Dishwasher safe plastics, wood, wicker, and paper also make suitable containers for microwave cookery. Not recommended are melamine, metal pots and pans, dishes with metal trim, and soft foam plastics. Aluminum foil should be used only for shielding small areas you do not wish to overcook. The plastic bags used in produce departments of grocery stores are not recommended due to their low melting point.

*If a browning unit is used, only heat resistant bakeware is acceptable.*

### Does a Microwave Oven Use Less Energy?

Advertisers tell us that microwave cooking can result in energy savings of up to 80 percent of the energy required for cooking the same food in a conventional way. This sounds great as we appliance shop with energy efficiency in mind. Savings are possible, but only if certain foods are cooked in specified amounts.

Industry testing showed that when cooking for a family of four, the overall energy savings would be 14 percent, comparing microwave usage with conventional range preparation of the same menus. This 14 percent savings assumes that foods normally cooked on surface units continue to be done in this way and that a microwave unit is substituted for a conventional oven with satisfactory results.

When promotional testing, it is possible to select foods that bias the results in favor of either microwave cooking or conventional ranges, depending on what the advertiser wishes to promote.

Generally, surface unit cooking is quite efficient, so the greatest savings would be realized when heating small portions, such as an individual cup of coffee or hot chocolate, in a microwave unit rather than heating about two cups of water on the surface unit. Another obvious saving is the elimination of oven pre-heating.

### On settings such as bake and defrost, is less power used?

Yes. On most models the oven cycles either on and off or the power varies from low to high, meaning less energy consumption.

Defrosting in a microwave is done by alternating cooking and standing time either manually or automatically. During the standing time, the heat from the thawed outside area moves toward the frozen interior. Food defrosts throughout without overcooking the outer surfaces. Thawing may be followed by heating to serving temperature in the microwave or by cooking foods with another method.







**When a microwave operates on 600 watts, is this the amount of power used?**

The manner in which microwaves are rated electrically may be confusing to prospective buyers. While most ovens are rated on the basis of electrical input as registered by an electric meter, some are not.

The actual (meter-indicated) electrical input to countertop ovens may fall between 1,300 and 1,650 watts when the oven is used at full power. That does not mean that all of those watts are converted to heat. A few of the watts are consumed by the oven light, fan motor or turntable, timer, and the remainder by the electrical components that generate the microwaves. With a microwave oven drawing 1,500 watts, the average energy converted will be about 600 watts of cooking power. In most advertisements, the smaller wattage figure is the one shown—this is the output wattage of the appliance. This is an important factor in the selection and use of a microwave. There is a wide variation in the wattage ratings of the different ovens. Lower wattage output as found on lower priced, smaller units will mean slower cooking time, and is important for developing a sense of timing in microwave cooking. To determine wattage, look on the nameplate of the appliance. As with other electrical appliances, the microwave oven is susceptible to power fluctuations within the home. At peak electrical usage times, foods will require longer to cook.

**Will I need extra wiring for a microwave appliance?**

Portable units operate on a standard 120-volt household circuit and should have a separate 20

amp grounded circuit. Larger combination units need the same installation considerations as conventional ranges—240 volts.

Of the several combination ovens available, many still operate on a 120-volt line. In these low voltage models, microwave energy and electrical energy cycle on and off to cook the foods. Some combination units may combine both microwave with either gas or electricity to cook foods. These are larger combination models and require 240-volt wiring and a permanent hook-up. For the best "combination" of browning and speed, the 240-volt models are the most satisfactory.

**Why Do Microwave Ovens Vary in Price?**

Prices for microwave appliances vary according to capacity wattage, appearance, and features.

Many standard countertop ovens cook at one power setting—ON. Power settings will vary the rate at which heating occurs. For reheating or heating most foods, one power setting is adequate. This means you should consider how you will use the oven before investing in an expensive unit with variable power features you won't use. If you plan to defrost and cook the same foods, a lower, sustained cooking time is desirable. This can be achieved by turning the oven off and letting carry-over-cooking occur. It can also be achieved by using a slower, interrupted, or pulsating cycle. These methods of power distribution are used by different manufacturers in the "defrost" cycle. A few models have a probe that senses the temperature of foods being cooked and automatically turns the power off when a selected temperature is reached.

## **Are There Other Use and Care Instructions?**

Because dishes stay cool with microwave cooking, grease spatters do not bake on. When cooking meats, for example, spatters do occur as in conventional cooking, but because the dish and oven walls stay cool, spatters stay in a semi-liquid state and are easily cleaned off. The same is true of pie fillings that run over; the sugary syrup doesn't burn on, but stays in the liquid form—much easier to wipe off.

Each manufacturer of microwave units has a cookbook and a use and care manual for their particular unit. Because each unit is different in operation, their instructions should be followed. If the manufacturers' directions are followed, the average user should obtain years of service-free enjoyment from their unit.

## **How Will I Know Which One to Buy?**

First, you need to know what you want. The checklist inserted in this circular can help you do comparative shopping. You may want to remove it and use it to compare several ovens.

Oven models come in countertop, built-in, and in combination with conventional oven cooking. Consider the space available for this appliance. Do you have counter space to store and use a

countertop oven? This includes not only the surface the oven will occupy but its height. Will it fit between the countertop and overhanging wall cabinets?

Space needs also include area for the door to swing, adequate room for venting, and available counter space near the oven for removing foods or to place items while you check for doneness.

Though often termed "portable" the oven weighs from 40 to over 100 pounds. Portability is most easily achieved if the oven is on a cart, allowing it to be wheeled to a place convenient for its use. Does your cooking area allow space for the cart to be used and stored when not in use? Do you want to use it in a recreational vehicle or take it to a weekend cabin? If so, portability is an important consideration.

Several models have kits available that allow the oven to be built into a wall. Regular countertop models do not convert to wall ovens by merely placing the oven in a wall cavity. The model you are considering should have the space requirements that fit your kitchen, your needs now and the needs you foresee for your family in the future.

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