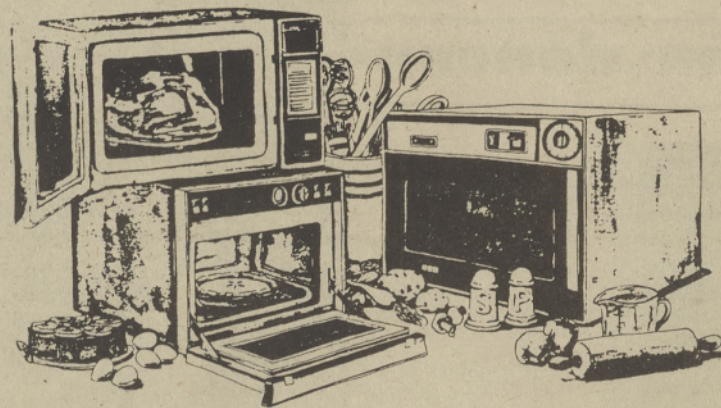


Choosing and Using

Microwave ovens have been around for nearly 30 years. The forerunners of today's ovens were cumbersome, cost nearly \$1,500, required extra wiring, and were unpopular due to consumer misunderstandings about them. Competition among manufacturers has resulted in lower costs, improvements, and

more educational materials available on the ovens.

The decision of whether to purchase one should be made with an understanding of your cooking needs. Knowledge of features and how you use the oven will help you make wise decisions about a microwave before you buy and after.



How does a microwave oven work?

Microwaves are invisible energy waves about 5" 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 electromagnetic energy through a magnetron tube.

The microwaves pass from the tube into the oven cavity. As microwaves are absorbed, they

cause water and fat molecules to move. Friction that results creates heat within the food. The process is similar to rubbing your palms together and creating heat. Heat generated from the friction of the moisture molecules is conducted through the food and cooks the food. Microwaves are distributed in the oven cavity by either a stirring blade or a revolving turntable.

Are microwave ovens safe to use?

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. 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.

Remember the following safety factors while operating a microwave oven:

- ★ Keep oven clean around the door to insure a good seal.
- ★ Operate the oven according to manufacturer's instructions - each oven is different!
- ★ Don't try to operate the oven if door-closing mechanism does not work.
- ★ Microwaves cannot escape from an oven while it is in

operation. (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.)

★ If you fear oven breakage, there is a device that you can use to check the door seal. The door should be checked every few years or if the oven is dropped or damaged in any way.

★ Allow 1 inch of space between wall and vent in the oven. If the oven is not vented right it can overheat and shut off automatically and it will stay off until the oven cools down again.

★ Do not use harsh cleansers or any oven surfaces, instead use a mild detergent and water. To clean stubborn surfaces, wet a dish cloth, place it in the oven, close the door, and turn the oven on full power. Steam will make the spot loose, so that it can be wiped away easily.

★ Foods cooked in a microwave oven are safe to eat because microwaves are not ionizing (not radioactive) and do not become radioactive.

Other microfacts to remember

- ★ Metal will shorten the life of the magnetron tube that produces the microwaves.
- ★ Glass, ceramic, dishwasher, safe woods and plastics, some plastic bags and wraps, and paper can be used as cooking utensils in a microwave oven.
- ★ Dollar savings on energy with a microwave oven depend on the foods and amounts cooked in the oven. Some foods cook more quickly and efficiently than others. Generally the cost of

operation of a microwave oven is the same or a little less than a conventional oven. Time savings is substantial.

★ Portable microwave ovens operate on a 120-volt household circuit and should have a separate 20 amp. grounded circuit for the best efficiency.

★ Prices of microwave ovens vary according to voltage, appearance, and features. Pick up consumer checklist in Extension office.

a Microwave Oven

Cooking with a microwave oven

A microwave oven is not intended to be a replacement for a regular 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 2-4 times faster than with regular cooking methods. A few foods take as long or longer to cook in a microwave.

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 the heat transferred from the food. Because of this, the foods can usually be served right in the same dish and clean-up is easy because foods won't burn on.

Factors that will affect cooking time are:

- ★ **Volume** - the more items or the larger the quantity of food, the longer the defrosting; heating or cooking time.
- ★ **Food temperature** - the colder the item the longer it takes to heat through.
- ★ **Moisture content and how compact the food** - the lower moisture and less compact foods will heat more quickly because the microwaves are able to penetrate the food at a faster rate.
- ★ **The shape of the food** - most thin, flat foods cook faster than thick, chunky foods
- ★ **Fat and sugar content** - items high in either sugar or fat will heat more quickly.
- ★ **High altitude** - in altitudes above 2,500 feet, microwave cooking times need to be extended.

Other microwave cooking factors to remember:

- ★ Foods will continue cooking after the oven has been turned off because the molecules in the food take a few seconds to quit moving. While the molecules are still moving heat is produced.
- ★ Salt will burn in a microwave oven if on top of the food.

★ Hard boiled or fried eggs, giblets, and other foods with membrane coverings may burst. Puncture first and you won't have this problem.

★ More than one food can be cooked at a time, but you will have to watch that foods don't overcook because different foods cook at different rates. Also, the

length of time it takes to cook one food will increase.

★ Browning will not occur unless foods are cooked 10 minutes or more and have some fat content. A browning dish might be used to achieve browning. The dish is heated 3-5 minutes and foods are seared by the hot dish to achieve browning.

Points to ponder when shopping for a microwave

★ **Shop with a reputable dealer.** Inquire and look at warranty. (Range from two to ten years, but very different things are covered within the warranty).

★ **Type of oven:**
Free standing - combination microwave and conventional oven.

Portable - browning element and microwave or microwave only.

★ **Wattage** - for home use they range from 400 watts to 700 watts. The higher the wattage the more efficient the oven will be.

Chicken cooking times at different wattages:

- 400 W. - 12 minutes per pound
- 600 W. - 9 minutes per pound
- 800 W. - 6 minutes per pound

★ **Amperage needed** - appliances of more than 15 amps should have their own individual circuit. Make sure your home has adequate wiring for the oven you choose.

★ **Voltage needed** - most domestic ovens operate at 110V. Make sure your home has adequate wiring for the oven you choose.

★ **Interior finish of oven** - acrylic or stainless steel. Exterior finish of oven - vinyl, wood grain vinyl, metal painted, dark or light colored.

★ **Oven light** - a separate switch (manual control) or part of the oven operation or both. Is the food easy to observe during cooking?

★ **Oven size** - usable oven dimension (interior). Exterior width, height and depth for location placement. Check for vent location (front, back, side or top) on microwave. (always

allow 2 inches clearance for venting).

★ **Method of stopping and starting oven** - compare ease in operating.

★ **Time dials** - should be marked in seconds as well as minutes for the first two or three minutes. Can they be easily read?

★ **End of cooking signal** - is there one? Is it a buzzer or bell? Can it be heard easily?

★ **Is there an automatic defrost cycle?**

★ **Kind of tray in bottom of oven** - built-in or removable? Straight edge or slight lip? Kind of material? Can it be used for a cooking utensil?

★ **Protection over metal grid on door.** Inside or outside? Inside protection makes cleaning easier.

★ **Side opening (hinges or left) or pull down door?** Location in kitchen might determine your selection.

★ **Cooking accessories** - included with appliance or is there an extra charge?

★ **Cook book** - does it include home maintenance? Does it include the kinds of foods you cook? Print easy to read?

★ **Type of additional browner available?** Is it built-in to operate as part of the oven? Is a browning skillet available? Note: The microwave oven will not broil or sear foods and the accessory browners available help to sear or broil foods.

★ **Price** - what you choose is based on all of the above items. After shopping, compare the features you desire and the prices. Then buy accordingly. Take the microwave oven consumer checklist shopping with you and compare features, price, etc. before you buy.