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Electronic Ranges

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electronic ranges
Someone has said there's nothing new under the sun. Whether or not we agree with that statement, we'll all agree there are a good many changes. Changes occur so rapidly that what is "so" today, is "not so," or it's out of date tomorrow. Money spent to achieve great advancements in the realms of science and space...also has enabled us to have more efficient, sophisticated, easier to care for equipment in our homes.

The door to electronic cooking was opened during World War II with the development of radar. Although the electronic oven has been around for nearly 25 years, it is just beginning to be marketed to any extent for home use. Until recently it was far too expensive to be practical for home use.

The electronic oven is basically simple. A vacuum tube called a magnetron generates microwaves (high frequency radio waves) which actually do the cooking. When the magnetron is activated, it sends out microwaves via an electronic antenna. The waves are emitted inside the oven, pass through the food and bounce off the walls of the oven. As the waves pass through the food, they create friction by agitating the molecular structure of the food. This can be compared with what happens when you rub your hands together rapidly...heat is created. The Federal Trade Commission assigns definite wave lengths for cooking electronically so the operation of the ovens will not interfere with radio or TV reception. Currently there are two cooking frequencies assigned—915 and 2450 megamillion cycles per second.

The energy created in electronic cooking is called radiant energy. This means the food is heated without heating the air between the food and the energy source. Radiant energy cooks food completely in a shorter period of time because only the food is heated and it cooks on the interior as rapidly as it cooks on the exterior.

In a conventional range the air is heated and circulates around the exterior of the food gradually heating the surface and working it's way to the center of the food.

Because of the rapidity of cooking, foods may not be as browned as one would like them. Several manufacturers have combined the electronic oven with the convection oven to afford the homemaker the convenience of speed along with the desirability of a browning capacity.

Aside from speed, cooking electronically has several advantages. It is easy, clean, safe, and improves the flavor of foods. In almost all cases, operation of the electronic oven is a matter of preparing the food, turning a dial, throwing a switch, setting a timer, removing the product, and serving it. Spills never burn on the walls or floor of the oven or on baking utensils, so cleaning becomes a simple wipe up process. Since glass, paper, or plastic cooking utensils can be used when cooking electronically, baking dishes can be cleaned with relative ease as well.

The larger the volume being prepared in the electronic oven the longer the preparation time. This is true whether it is one mass volume item or a number of smaller volume items being prepared in the oven.

For example:
1 cupcake takes 30 seconds to bake.
4 cupcakes take 2 minutes to bake.
6 cupcakes take 3 minutes to bake.
1 12x7½x2 inch cake takes 10 minutes to bake.

In addition to the longer baking time for items of larger volume, these items must be rotated during the first few seconds or minutes to assure even baking. Some manufacturers have equipped their electronic ovens with automatic revolving racks. In other ovens this rotation process must be done manually.

The homemaker has a great deal to learn when cooking electronically. Old standard pans and casseroles may not be adaptable to electronic cooking. Her family's favorite recipes can be adapted by using the length of time and size container of a similar product (the recipe of which you find in your oven cookbook). You will obtain maximum use of your appliance if you study the instruction manual thoroughly before using the appliance and refer back to the manual constantly until you are completely familiar with preparing meals electronically.

REMEMBER TO READ YOUR INSTRUCTION GUIDE CAREFULLY. TRY ALL OF THE PROCESSES IT SUGGESTS. DON'T JUST TRY SOMETHING ONCE...KEEP TRYING IT UNTIL IT BECOMES A HABIT.

RECOMMENDED UTENSILS

- Heat resistant glass
- Ceramic
- Paper...that has a finish retarding liquid penetration
- Plastic...boilable type...melamine not recommended

DO NOT USE METAL COOKWARE OF ANY KIND AND DO NOT USE ANY UTENSIL WITH GOLD OR SILVER TRIM. METAL CHANGES THE MICROWAVE ACTIVITY AND IS NOT SATISFACTORY FOR USE IN ELECTRONIC OVENS.
Here are some diagrams of what takes place in the electronic oven and a list of terminology used with electronic cooking to assist you in learning to better understand electronic cooking.

**ELECTRONIC:**
Associated with device containing vacuum (magnetron) tube.

**MAGNETRON TUBE:**
Converts electric power to microwave energy.

**WAVE GUIDE:**
Channel through which microwaves travel from magnetron to antenna.

**ANTENNA:**
Emits microwave energy entering oven in all directions to walls, ceiling, back and bottom of oven. In some units it revolves.

**STIRRER:**
Revolving antenna which has fan blades to reflect the microwaves entering the oven, bouncing them off its walls, ceiling, back and bottom.

**CYCLE:**
Periodic pattern that starts at one point, travels prescribed course and returns to starting point. The shape of the cycle is described as a wave because it undulates (curves and flows). The length of the cycle (wave) is measured from starting point back to starting points.

**MICROWAVE:**
Generic term for very short waves. Interchangeable with "electronic."

**FREQUENCY:**
Number of cycles per second which affects wave length and is determined by design of magnetron producing microwaves.

**WAVE LENGTH:**
Length of cycle, measured from starting point to starting point. Length is shorter as number of cycles per second increases. Longer wave length penetrates deeper into food.