



Microwave Cooking *for the* College Bound Student

Many students arrive at college every year with a microwave oven in tow. These handy appliances are often used in a dormitory room or small apartment by relatively inexperienced college cooks. Understanding the basic principles of microwave cooking will go a long way to ensure food is cooked properly and safely.

Cooking Safely in the Microwave

Microwave cooking continues to grow in popularity. Yet, concerns have surfaced about the safety of cooking meat and poultry products with this appliance as well as the use of cookware and plastic wrap in the ovens.

Certain traits, unique to microwave cooking, affect how completely a food is cooked. "Cold spots" can occur in food because microwaves enter the oven in an erratic pattern and are absorbed inconsistently by the food.

To thoroughly kill bacteria that may be present in food, consumers can take simple, yet effective, steps to ensure even cooking with the microwave oven.

First, some basic information to help you understand how a microwave oven works.

Microwave Technology

Microwaves are waves of electrical and magnetic energy moving together through space; thus, microwaves are a form of "electromagnetic" radiation. Their energy level is similar to the low energy radio frequency waves used in broadcasting - not to be confused with the more powerful and energetic x-rays.

Microwaves emitted into the cavity of the oven bounce back and forth until they are absorbed by the food. As quickly as the food absorbs the energy from the microwaves it is changed to heat.

Contrary to what people may believe, foods cook from the "outside in" by a process called heat conduction. Because of the speed of microwaves, cooking is more energy-efficient

and food is more nutritious than conventional oven cookery affords.

Utensils, Wraps, and Cookware

Containers and products approved only for microwave usage should be allowed in these appliances. Glass, plastic, paper, and ceramic are best suited for microwave cookery. Wax paper, microwave-safe plastic wrap and oven cooking bags are also good choices. If using wrap do not allow the material to come in contact with the food.

Do not use metal pans or aluminum foil; cold storage containers such as whipped topping bowls, margarine tubs and cottage cheese cartons; paper goods (towels, papers, and plates unless plain and white); newspapers or brown grocery bags; or thin plastic wrap.

Trays and containers provided with microwave convenience products and those with special crisping or browning devices are intended for one-time use only. Follow package directions closely.

If in doubt about the best products and containers to use in your particular microwave refer to the owner's manual. The manuals also explain how to test containers to determine whether or not they can be used in the microwave.

Cooking

In a large building like a dorm or apartments, other electrical equipment such as hair dryers, toaster ovens, stereos and personal computers can compete for current and reduce the electrical wattage of a microwave. A "community oven" may receive frequent usage requiring food to be cooked longer. Consult the owner's manual to determine the wattage of your microwave oven before you begin any cooking. Then, read the package instructions and adjust cooking times accordingly. Regardless, always check the food for doneness before eating.

Cold spots, areas of uneven cooking, are the

greatest safety concern in microwave cooking. Different components of microwaved foods absorb waves differently leaving some areas undercooked. If present, bacteria can thrive in these warm, moist environments. Gastro-intestinal illness can occur ranging from minor stomach discomfort to vomiting and diarrhea. Food items should be uniformly arranged in a dish covered with microwave-safe plastic wrap or a glass lid, making sure the plastic is vented and does not touch the food. A small amount of liquid may need to be added. Covering food helps the steam kill bacteria and ensure uniform heating. Throughout the cooking process stir the food and turn the dish several times (especially, soups, stews and casseroles).

To verify safe food temperatures use a temperature probe or meat thermometer. Check meat and poultry products in several places, avoiding fat and bone. Red meat should cook to an internal temperature of 160° F; poultry, to 180° F. Juices should run clear; meat should no longer be pink inside; eggs and egg dishes are firm; fish flakes with a fork. Leftovers should be reheated to a minimum of 165° F.

Never partially cook food. Defrosting is actually "low-level" cooking; consequently, foods should be fully cooked immediately after thawing. When combining microwave cooking with roasting, broiling or grilling, transfer microwaved foods to conventional heat immediately to complete the cooking process.

Discard any food left in the oven for two or more hours after cooking.

Observe the recipe's standing time. This extra time is necessary to complete the cooking process because the food continues to cook after the oven has been turned off.

Other Tips for Microwave Oven Use

- ☛ Read the manufacturer's instruction manual thoroughly before operating the oven.
- ☛ Do not operate an oven if the door is damaged or does not close firmly.
- ☛ Do not stand against an oven for long periods of time while in operation.
- ☛ Do not operate an oven that continues to function with the door open.
- ☛ Clean the inside and outer edges of the cavity and the door with water and a mild detergent after each use. A paste from baking soda and water makes a mild abrasive. Lemon juice and water will help absorb odors. Do not use steel wool or scouring pads.

Apple Crisp ~ 8 Servings

5 cups apples, peeled and sliced
or canned apple slices
¾ cup oatmeal
1 cup flour
¾ cup brown sugar
½ tsp. salt
1 tsp. cinnamon
½ cup butter or margarine

1. Place apple slices in a 2 quart casserole dish.
2. Combine dry ingredients.
3. Cut shortening until mixture is crumbly.
4. Sprinkle topping evenly over sliced apples.
5. Place in microwave oven 15 minutes, turning ¼ turn often.

Nutrition Analysis Per Serving: 279 Calories, 41 g carbohydrates, 3 g protein, 12 g fat, 273 mg sodium.

Chili Con Carne ~ 4-6 Servings

1 pound ground beef
⅛ tsp. black pepper
½ cup chopped onion
⅛ tsp. garlic powder
1½ tbsp. flour
16 oz. can kidney beans, drained
½ tsp. chili powder
1½ cup tomato puree
1½ tsp. salt
1 cup water

1. Combine beef and onion in a 2 quart baking dish. Cover with waxed paper.
2. Cook in microwave oven 5 minutes at HIGH, or until meat is no longer pink; stir several times.
3. Remove excess fat ingredients.
4. Stir flour and seasonings into meat mixture, then remaining ingredients.
5. Cook uncovered in microwave oven 16-18 minutes at ROAST; stir occasionally.

Nutrition Analysis Per Serving (4 servings): 485 Calories, 31 g carbohydrates, 42 g protein, 22 g fat, 1645 mg sodium.

**By Sandra Bastin, Ph.D., R.D., L.D.
Extension Specialist in Food and Nutrition**