



## Tools And Equipment

### **Knives**

Knives are important to understand in that they are designed for specific functions and are to be used to produce various cuts. As a personal chef, you will be cutting foods to different shapes and sizes. These different shapes and sizes produce variations in flavors and cooking times. Following is an overview of knives.

#### Chef's (French) Knife

Chef's knives are the general purpose knives in the kitchen. They come in a variety of lengths. The most popular length is 10 inches. This knife can be used for slicing, dicing, cutting and chopping. Different sections of the blade can be used for different types of cutting. Select a chef's knife that fits your hand well, is balanced, and has a good weight for you.

#### Boning Knife

This is a thin-bladed knife, approximately 6 inches in length. It has a stiff blade that is good for boning meat and poultry. Knives with a more flexible blade (and usually longer) are used for filleting fish.

#### Bread or Serrated Slicing Knife

A long thin-bladed knife with a soft serrated edge is used for slicing breads and cakes. It is also a good knife for slicing tomatoes.

#### Paring Knife

A short 4 to 6 inch knife used for peeling and trimming fruits and vegetables. It is used a lot for creating small garnishes. Each chef may prefer a different style, length, type or weight of knife for a particular task. It is up to the individual to select a knife that he or she is comfortable using. The blade should be sharp and appropriate for the task. A good knife is one that gets the job done without causing injury.

### **The Importance of Sharp Knives**

A sharp knife is actually safer because it cuts cleaner, and has less of a chance of catching or turning (creating a more professional product). Dull knives mash delicate herbs and tender vegetables which in turn will affect presentation and flavor.

There are many ways to keep your knives sharp.

- ❖ Take them to a knife sharpener and have them sharpened professionally
- ❖ Use a sharpening stone or triple-stone
- ❖ Use the ceramic or steel rods



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### Heat Sources

#### Gas Versus Electric Heat Sources

Appliances that use gas as a heat source typically will burn hotter and allow for more even heating and control when heating food.

On an electric stove, moving a pot between two different burners (set at two different temperatures) is a quick technique for controlling heat.

#### Adjusting to Convection Ovens

Convection ovens have fans that circulate the air causing increased heat to the surface of food. They tend to overbrown (or even burn) food. For greater control of dishes that will brown too quickly, cover the top of the dish with a lid or foil for a good portion of the cooking time.

#### Microwave Ovens

Microwave ovens vary only by wattage, from about 500 watts to over 1500 watts. Microwave cooking times for clients' meals will vary greatly if microwave ovens are at either end of the wattage scale. If your client is having a problem over or under cooking food, check their wattage and adjust the heating times appropriately. Another option is to teach them to use a lower or higher power setting.

### Heat Transfer

Now that you are familiar with major sources for heat, it is important to know how heat moves through food. Heat transfer refers to the process by which heat is moved from the heat source through the food. The method and speed of the heat transference help the personal chef control the cooking process. There are three distinct methods of heat transference. They can be used alone or in different combinations to produce different results. They are:

- ❖ Conduction – stove top
- ❖ Convection – oven
- ❖ Radiation – microwave/broiling

#### Conduction

Conduction is heating by touch or direct contact. As heat passes through something, it heats what it touches. As a product surface is heated, the heat is transferred to the cooler areas, causing them to increase in temperature. This continues until the source of the heat is removed, although cooking may continue for a short period. Conduction is the most important and usually primary method used to cook the inside of food. Most cooking methods depend on heat to move from the outside of the food product and work its way inward using conduction, no matter what initial method of heat was used to cook the surface.

Examples of conduction:

- ❖ A pot heating a stock inside: The burner heats the bottom of the pot and moves through the metal to heat the liquid inside.
- ❖ Heat from an oven surrounding the outside of a roast heats the surface of the roast and then heats its way toward the center.

Conduction rates vary with different containers and materials. Selecting the right material for the heat source can help control cooking.



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### Convection

There are 2 forms of convection: natural convection and mechanical convection.

Natural convection occurs when hot gases (air) or liquids rise while cooler ones sink. In any oven, kettle or deep fryer, there is a constant natural circulation of heat, to and back from the heat source.

Mechanical convection is when a physical force, such as a fan in an oven, or, stirring the food with a spoon, causing the heat to circulate.

### Radiation

Radiation is energy transferred by waves to the food surface where it is converted into heat energy. There are two types of radiation: infrared and microwave.

Infrared radiation is heat that usually is generated from overheated electric, gas or ceramic elements. These elements are heated to a red glow and give off infrared radiation waves that heat and cook the food. For example, heat lamps use infrared radiation to keep foods hot.

### Microwave radiation

This method uses microwaves to penetrate the surface of the food, exciting the water molecules in the food. This causes friction at the molecular level, which generates heat. The hot areas on the surface then use conduction to heat the food through to the center. This is the reason it is unwise to use the highest power setting to heat any food of significant size or weight. On a high setting, the water molecules turn into steam and overcook and dry out the surface. At the same time, hot spots are created while leaving the center of the dish cold and raw. Microwave food needs time to let the food conduct the heat into and through the food. Lower power settings don't make the microwaves any less intense. Instead, they space their blasts of microwaves out, giving the food time to conduct the heat