

S.2 NOTES

PRESSURE COOKING

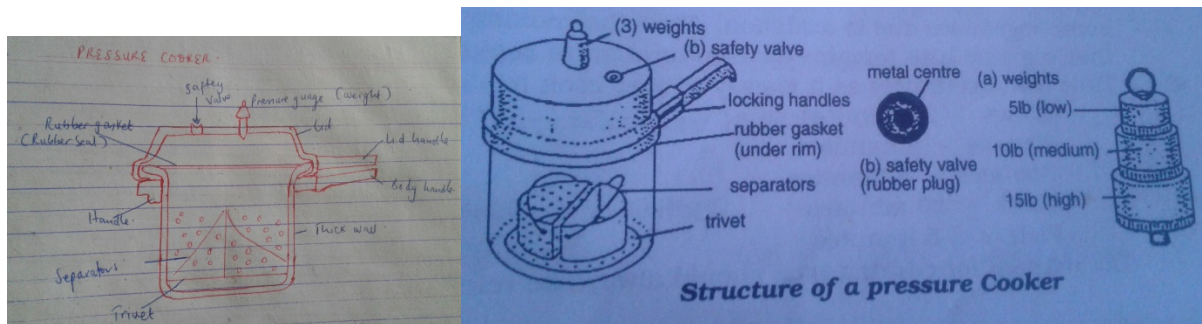
Principle

The boiling point of water is 100°C at normal atmospheric pressure, but the temperature at which water boils can be altered by changing the pressure

When the pressure cooker is in operation, the lid is locked on. When the water inside the pan boils, it fills with steam which cannot escape, so pressure builds up inside. The boiling point is increased beyond the normal due to the pressure and also the steam is forced through the food, cooking it very quickly. Cooking time is reduced by about half for every 10°C that the water is raised above 100°C . Therefore, a pressure steamer (cooker) will reduce cooking time to about one quarter of that needed using an atmospheric steamer.

The equipment used for this purpose is a **pressure cooker**, which is a common equipment in every household these days.

The pressure cooker



The pressure cooker is a large saucepan made of heavy-gauge aluminum. It has:

- Lid**; a special tightly fitting, locking lid with a **rubber gasket** or **ring** which makes an airtight seal. The cover has **central vent** which must be kept clear at all times to allow excess steam to escape.
- Safety valve** on the lid, consisting of a rubber plug with a metal centre. If the pressure inside the cooker builds up because the central vent is blocked, the metal centre of the safety plug pops out, releasing the steam.
- Valve weights**; in most pressure cookers the pressure is controlled by weights i.e 5lb weight is used for dishes containing a raising agent and for bottling fruit, 10lb for preserves and 15 lb for most pressure cooking. Other pressure cookers have indicator dial showing when each pressure has been reached.

- d. **Trivet;** a perforated metal tray which is used to keep some foods like joints, chicken out of the water so that they are steamed rather than boiled. It basically separates food from the cooking liquid.
- e. **Basket or separator;** many pressure cookers are equipped with a light metal basket or perforated separator so that different items can be cooked at the same time.
- f. **Pressure release button.** This *button* is used to control the amount of pressure you desire when you are using the pressure cooker. It also helps you release excess pressure after cooking.

NB. Automatic pressure cookers are now available. These can be set for the required time, and when that time is reached, they release the pressure automatically so that the food is not overcooked.

Points to remember when using a pressure cooker

- Do not fill the pressure-cooker more than two thirds with solid foods and no more half full with liquids to ensure that sufficient steam build up inside the cooker.
- Lock the lid in position and heat the cooker without the pressure gauge or weights in position. This makes sure that there is no blockage in the vent pipe and also ensures that all the air in the cooker is expelled. Any air left in the cooker will affect the cooking temperature and may cause oxidation of vegetables causing loss of nutrients and colour.
- Once the pressure has been built, heat should be reduced and time noted. A hissing sound indicates that pressure has been reached.
- Cook for specific time according to the food being cooked.
- When cooking time is completed, turn off the heat and allow the pressure to fall by leaving the cooker at room temperature.
- Follow the manufacturer's instructions on how to use the pressure cooker and tell the cooking pressure for various foods.
- After use wash the cooker very thoroughly especially the rim, gasket and steam valve. If any particles of food remain on these, the cooker may not function properly.

Advantages of pressure cooking

- Pressure-cooking saves time and fuel and thus a very economical method of cooking.
- Retention of nutrients is maximum in pressure cooking due to using less water and speed of cooking process
- By using the separate containers, more than one food (a complete meal) can be cooked at the same time
- Tough cuts of meat (cheap) can be cooked quickly and tenderized in the pressure cooker

Disadvantages of pressure cooking

- Unless cooking is timed precisely, food will be overcooked.
- Food cannot be tested to see if it is done without reducing pressure and opening the cooker.
- As foods cannot be stirred, there is a possibility of food sticking to the base of the cooker.
- If proper precautions are not taken as described, it can be dangerous as it can burst.

Suitable foods

- Stews
- Meat joints
- Puddings
- Soups
- Stocks
- Jam making
- Fruit bottling

DRY HEAT METHOD

Dry methods of cooking are those that do not employ the use of steam and moisture. They utilize hot air or hot fat.

They include;

- Grilling or broiling
- Roasting
- Baking
- Barbecuing
- Frying
- Microwave cooking

BAKING

It is cooking of food in hot air in a closed oven. The food is cooked by heat radiated from the metal lining of the oven and by convection currents set up in the hot air. The food to be cooked is kept in a pre-heated oven, where it is surrounded by hot air in the closed oven, thus getting cooked by the dry direct heat. Usually the oven is heated to a particular temperature according to the food which is to be baked and this temperature is maintained throughout the cooking procedure. The foods generally prepared by this method are cakes, biscuits, pies, pastries, pudding, vegetables and potatoes etc.

Points to be considered for good results/ Rules for baking

- i.** Place the oven racks in the positions required before lighting the oven.
- ii.** Pre-heat oven fifteen minutes before food is put in.
- iii.** Using the thermostat, the temperature of the oven should be maintained throughout.

- iv. Oven should be closed properly and should not be opened too frequently as the air from the outer atmosphere gets in and disturbs the temperature.
- v. When the food becomes lightly browned, the temperature must be reduced to cook the inside without hardening the surface too much.
- vi. Food should be baked till firm and light brown in color.
- vii. Ovens must not be overfilled; air needs to circulate.
- viii. Some foods may dry-out; cover with foil.

Methods of baking

1. **Dry baking-** when baking, steam arises from the water content of food. This steam combines with the dry heat of the oven to cook food. Examples of foods; cakes, pastry, baked jacket potatoes.
2. **Baking with increased humidity;** when baking certain foods such as bread, the oven humidity is increased by placing a bowl of water or injecting steam into the oven, thus increasing the water content of food and improving heating quality.
3. **Baking with heat modification/Bain-marie' baking;** This involves placing food in a container with water, such as baked custards, this modifies the heat so that the food cooks more slowly, does not overheat and lessens the possibility of the mixture overcooking.

Advantages of baking

- The food cooked by baking is easy to digest.
- Baked foods add variety to our meals.
- A number of dishes can be cooked at the same time and hence economical
- Requires little attention
- Baking ovens have effective manual or automatic temperature controls

Disadvantages of baking

- It is a slow method of cooking and takes a longer time.
- Specific equipment i.e an oven is needed to use this method and its cost may be high.
- It requires skills to use the oven
- Food may dry out if heat is not well regulated.
- **Food cook at different time, yet opening the oven may cause the sponge cakes to collapse**

Suitable foods

- Meat
- Fish
- Vegetables
- Breads cakes
- Biscuits
- Puddings
- Pastries
- Pies

ROASTING

This is a dry heat method of cooking by means of radiant heat. It is now days done in the oven which is a combination of convection and radiation. Traditionally it used to mean cooking over radiant heat such as meat cooked on a spit over open fire. Certain foods like chicken, joints of good quality meats, are roasted with occasional basting (addition of little fat) so as to prevent the surface from drying and add to flavour.

Types of roasting

- **Searing method;** Here the meat is put into a very hot oven (230-240⁰c) for the first 20 minutes to sear the outside and develop the flavour and extractives. This helps to form a brown crust on the surface. The heat is then reduced to complete the cooking. This method is only suitable for tender joints of meat like the topside of beef.
- **Spit roasting;** here meat is rotated on a spit over or near a fire. As the food slowly rotates, it is cooked by radiant heat from the side of the oven. It may resemble slow grilling as it involves cooking by radiated heat on a spit over a fierce glowing fire. Spit roasting produces a distinct quality of colour, flavour and texture. The meat is prevented from drying out by the constant rotation of the spit which allows meat to baste itself with hot fat which oozes from the surface.
- **Pot roasting;** this is a traditional technique which involves roasting meat on a bed of root vegetables in a covered pan. This method retains all the flavours. The meat cooks in a steamy atmosphere produced by the vegetables as they release some liquids which help to speed up the cooking time. After cooking the lid is removed to allow the meats to brown. The liquid left is used as a base for the sauce.
- **Oven roasting;** This refers to cooking food in uncovered dish in the oven without any water. Fat is either produced during cooking or added for example vegetables to the food. The circulating convected air and radiated heat from the side of the oven are largely responsible for cooking the food.

Principles or guidelines for roasting

1. Only prime tender cuts of meat are suitable for roasting
2. Meat should be at room temperatures before roasting i.e meats should be thawed before roasting.
3. Foods should be basted regularly during cooking to prevent drying out.
4. Avoid piercing foods when roasting as the juices can be lost
5. Place foods with the fat side up and poultry with the breast side down to ease the process of basting.
6. Joints should be tied up and trussed to retain their shape.
7. The pan juices from the roasts should be used to make an accompanying gravy.
8. The roasting oven should be very clean to prevent any effect on the flavors

9. Ensure that temperatures are maintained to avoid toughen of the meals.

Advantages of roasting

- Compared to baking, it is a quicker method of cooking.
- A variety of foodstuffs can be prepared by roasting.
- It requires less or no fat.
- Flavour is improved.
- It reduces the moisture content of food and improves keeping quality.

Disadvantages of roasting

- It's an expensive method since it takes only quality tender cuts.
- The foodstuffs being roasted require constant attention.
- Losses of nutrients during roasting.

Suitable foods

- Beef
- Pork
- Veal
- Poultry