Oven

Introduction: Hot air oven is advice used for heating application such as drying and sterilizing glass wave, surgical tools, so other, this device is thermostatically controlled and electrically heated.

The parts of oven

A. Mechanical part.
B. Electric part.

A. Mechanical part:

1. The Coat (outer shield).
2. Fiber glass.
3. The chamber.
4. The shelves (mesh).

1. The coat (Outside shields)

The coat is made of aluminum or stainless steel because it is characterized by the following:

1. Resisting the mechanical shocks
2. Resisting the oxidation.
3. Rectangular solid shape to be easily placed anywhere in the laboratory.
4. The coat consists of several surfaces an isolator material prevents heat from getting outside.

2. Fiber glass: There are two types of fiber glass:

a) **Brown fiber glass:** be sometimes cheap, but it is a **dangerous** substance because it causes inflammation in the chest should be wary of dealing with.

b) **Yellow fiber glass**: Available by many and is also a serious but less dangerous than brown, because the sensitivity and must to be careful to wear gloves. The advantage of fiberglass good insulator of heat and use it in your device due to lack of access of heat from inside the device to the outside and maintain the internal temperature,[very bad conduction heat so it is suitable for heat insulation purpose].

3. The chamber: The chamber is completely made of aluminum or stainless steel because it has the following **characteristics:**

- Rectangular solid shape to suit dealing with various objects.
- It has thermally insulated from all other parts of the oven to prevent effective on them.
- It has ribs to put shelves in the wanted levels.
- It is made from materials characterized by oxidations' resisting.

4. The shelves (mesh): they are plates on which the objects are placed; the number of shelves is varying according to the number and size of objects, the oven capacity. It **characterized by:**

- They are made of aluminum which is considered as oxidation resisting material.
- When they are placed in their locations on the ribs some area is lifted to allow movement of air, some shelves contain openings to help this purpose.

B. Electric part:

1. The power supply.
2. The heater.
3. Thermostat.
4. Temperature indicator (thermometer).
5. Timer.
6. Fuses.
7. Control panel.

1. Power supply: The used supply in dry sterilized device is 220v — 50Hz the step down transformer and rectifying circuit (AC to DC convert) to run the control panel if the parameters, numeric or other departments in the modern fashion.

2. The Heater: The electric heating system is the system in which heating produce by rising of temperature caused by the passing of electric current • through a conductor having a high resistor to current flow, it is only placed in base of the instrument. The heater is an ingot of iron and carbon coated by two layer: the inner layer of china and outer layer of metal usually the same as the inner heater.

The heater element has the following characteristics:

1- High resistance
2- Electrical insulation.
3- Thermal conductivity.

There are **6 types** of heaters used in dry oven:

1- One side circular type heater.
2- One side U type heater.
3- One side wave type heater
4- One side square type heater
5- Three sides type heater.
6- Four sides type heater.

3. Thermostat : is a semiconductor made of ceramic, it characterized with having thermal resistance with a high negative temperature coefficient, this means the resistance of thermostat decrease as temperature increases and vice versa. So it is a sensor of heat connecting directly with heater and the separation of heater in certain degrees so as to obtain the temperature we need as needed and also used to protect the device.

4. Temperature indicator: Tows way are used in temperature indicator there are thermometer and thermocouple & Identified for the internal temperature.

5. Timer: There are two type of timer electrical or mechanical at range 5-60 min given period of time required for sterilization.

6. Fuse: To protect the circuit from high current, high loads, short circuits..

7. Control panel: (oven door) contains several elements and the most important about indicator power lamp usually green & indicator heater lamp usually red & contain switch on-off and timer & knob.