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# STERILISATION

## Dry heat sterilization

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# PHYSICAL METHODS

## DRY HEAT STERILISATION :

- In dry heat sterilization kill all microorganisms & bacterial spores.
- This due to oxidation of essential cell constituents.
- In dry heating at  $100^{\circ}\text{C}$  kills all vegetative bacteria in one hour but does not kill the spores.
- As per pharmacopoeia sterilization by dry heating is effective by heating at a temper. of  $160^{\circ}\text{C}$  for two hours.  
e.g. Hot Air Oven.

## HOT AIR OVEN

- It is used for pharmaceutical products & for materials.
- It is made up of stainless steel & it's a double walled chamber.



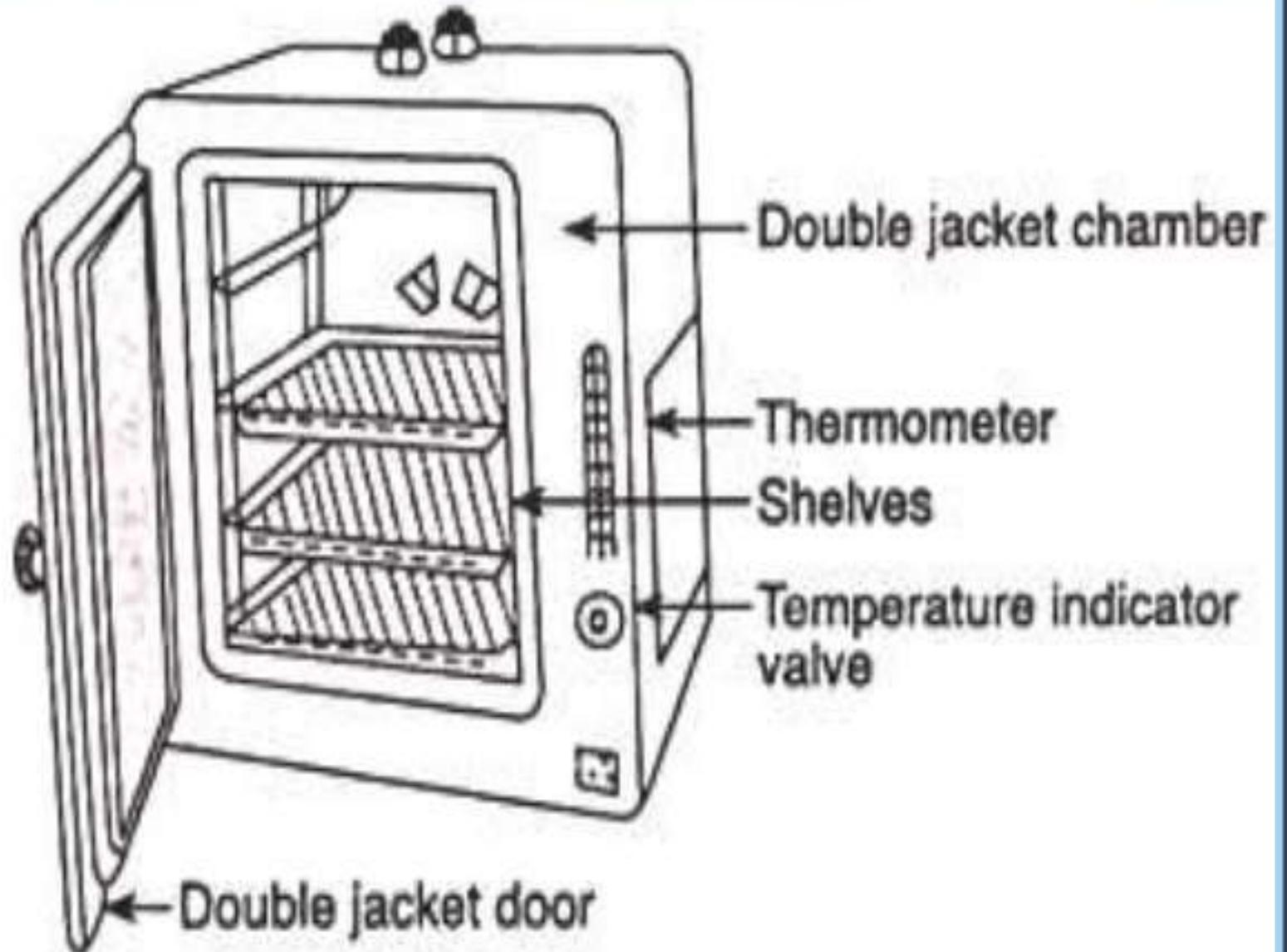
- Glass fibers or asbestos is filled between the two walls of the oven to avoid heat loss.
- The door is also double walled having asbestos gasket on its inner side.
- In oven two to three perforated shelves are fixed inside the oven to place the material for sterilization.
- In that also contains the fan for uniform circulation of hot air in the oven in order to maintain the required temperature in all shelves.
- Heating elements or coils are fitted on the bottom of the oven & it is thermostatically controlled.
- A thermometer is fitted in the oven to note down the temperature inside the oven.



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# HOT AIR OVEN





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## **PRECAUTIONS :**

- Glass materials must be wrapped with clean cloth or filter papers & containers must be plugged with non-absorbent cotton.
- The articles or substance should not be placed at the floor of the oven as it receives direct heat.
- The oven should not be overloaded.

Should be maintain sufficient space in between the articles, so that there is uniform distribution of heat.

## **Advantages of Dry heat sterilization**

- It is used for sterilization of those substances which get spoiled during moist heat sterilization. e.g. Oily materials & powders.
- This method suitable for assembled equipments such as glass syringes due to exposure to high temperature for a long time.



- It is not damaging to glass & metal equipment as moist heat.

## **Disadvantages of Dry heat sterilization**

- It is not suitable for plastic, rubber goods because those materials exposed to a very high temperature for a long time.
- This method is not suitable for surgical dressings.
- This method is not suitable for some medicaments because those medicines exposed to a very high temperature for a long time.



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## Application of Dry heat sterilization

- It is mainly used for sterilization of glass wares, such as, pestle and mortar, petridishes, flasks, pipettes, bottles, test tubes etc.
- It is used for sterilization of powders such as sulphacetamides, sulphadiazenes, kaolin, talc, zinc oxide, starch etc.
- Injections where fixed oil is used as vehicle are sterilized by the dry heat method e.g. injection of progesterone, injection of testosterone propionate, injection of oestradiol dipropionate.
- It is also used for sterilization of scalpels, scissors, spatula, blades and glass syringes.