



Class :2nd stage

Subject: thermodynamics

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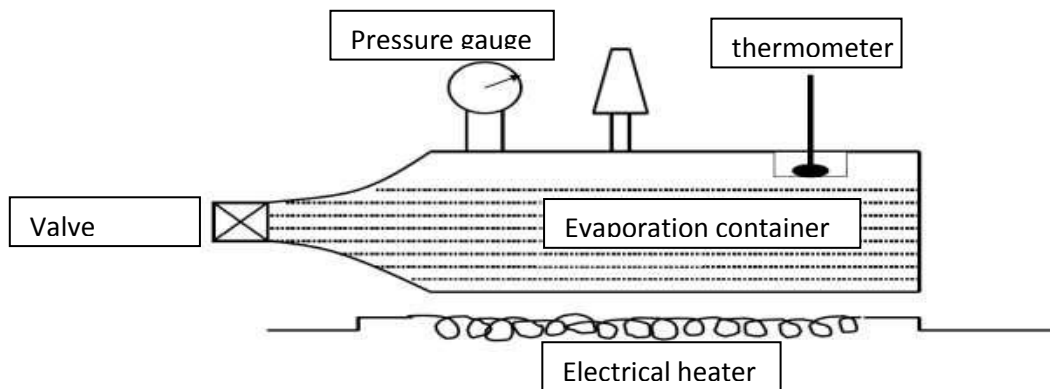


Experiment No.2:

The relation between temperature and saturated vapor pressure.

The purpose of the experiment: Draw the curve of the saturated vapor pressure with temperature.

The apparatus: evaporation container, electrical heater, pressure gage, thermometer, connecting tube, valve.



Figure(2-1): Evaporation container.



Figure(2-2): Boiler equipment.

Theory: the vapor is a state of water at gas phase can be convert it to liquid by pressed it at the critical degree for water. The solid and liquid can be evaporated at



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specific temperature and the saturated vapor pressure of substance as the pressure of vapor when it equivalent with water.

When the temperature of gas is raised at constant mass and volume so the pressure is related with temperature.

The equipment is laboratory designed to create pressure at 50bar, so the highest value allowed for pressure is 50bar at 250°C.

The container of evaporation may be cooled gradually without using cold water. The best is using thermal gloves and special eye glasses.

Procedure:

1. Close the valve of evaporation container and pressure gage.
2. Fill the container with distilled water to half.
3. Heat the evaporation equipment and notice there is no leakage of water vapor when temperature raised above 100°C.
4. Record the value of temperature and pressure after each point until it reached 250°C.
5. Stop the heating, and put record values as follows.
6. Plot the vapor pressure curve with temperature.
7. Discuss the graphic relation.

Warning

Do not open the safety valve from the position as long as them pressure inside the container above the atmospheric pressure so as not to come out hot steam quickly



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NO	P(psi)	T(sat)	Time
1			
2			
3			

Requirement:-

- 1- What is the purpose of valve safety?
- 2- Why the boiler is loaded into about two thirds of the water?
- 3- Explain all three phases that pass the water?
- 4- Draw the relationship between the saturation pressure and rate of saturation temperature that obtained from the experiment?
- 5- Draw the relationship between the saturation pressure and rate of saturation temperature that obtained from the steamtable?
- 6- Camper between the curves and remained the difference and simulation?