



19MET201 Engineering Thermodynamics

Unit-II Properties of Pure substance

T-s Diagram

The T-s diagram for a substance is shown in Fig. The curve from A to F is a typical isobar representing a series of reversible isobaric processes in which solid is transformed finally into vapor. Thus,

AB - isobaric heating of solid to its melting point;

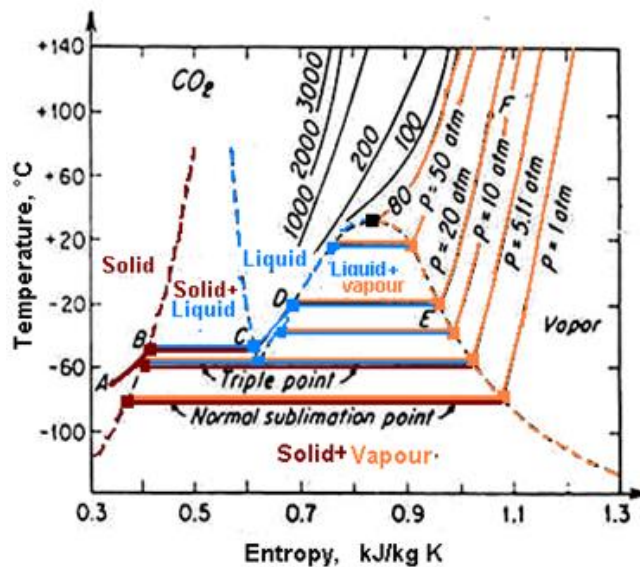
BC - isobaric isothermal melting;

CD - isobaric heating of liquid to its boiling point;

DE - isobaric isothermal vaporization;

EF - isobaric heating of vapor (superheating).

The area under the line BC represents the heat of fusion at the particular temperature, and the area under the line DE represents the heat of vaporization. Similarly, the heat of sublimation is represented by the area under any sublimation line. It is obvious from the diagram that heat of vaporization decreases as the temperature rises and becomes zero at the critical point and also that the heat of sublimation is equal to the sum of heat of fusion and the heat of vaporization at the triple point.





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h-s Diagram

An enthalpy–entropy chart, also known as the H–S chart or Mollier diagram, plots the total heat against entropy, describing the enthalpy of a thermodynamic system. On the diagram, lines of constant pressure, constant temperature and volume are plotted, so in a two-phase region, the lines of constant pressure and temperature coincide. Thus, coordinates on the diagram represent entropy and heat.

Typical Mollier Enthalpy - Entropy Diagram

