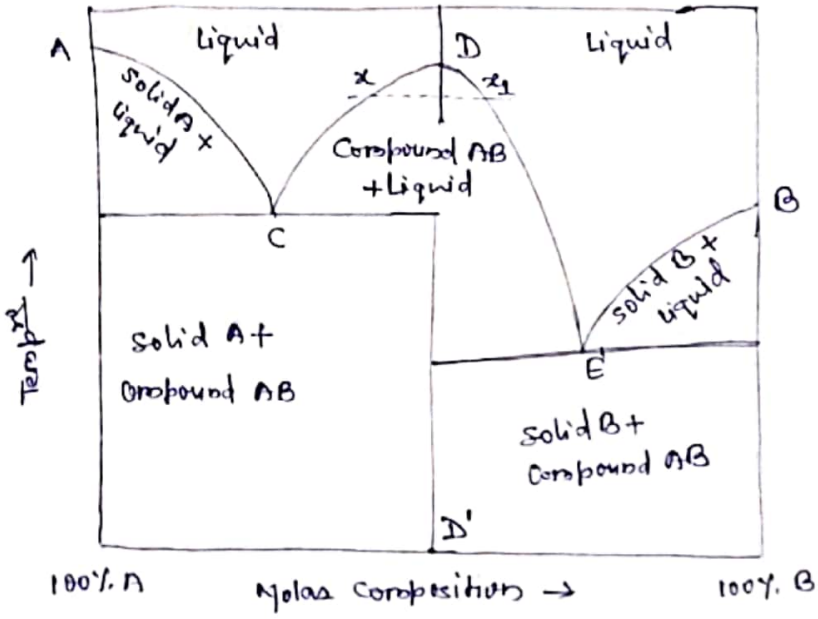
* Formation of Compounds with Congruent melting points :-

A Compound which melts sharply at a constant temperature into a liquid of the same composition as its solid, is said to possess a Congruent melting point.

Let 'A' and 'B' be the two components and AB a stable solid Compound formed by their chemical combination. In this system, there are three different solid phases, namely A, B and the Compound AB. Accordingly, there will be three fusion or freezing point curves AC, BE and CDE. While along AC, the solid 'A' is in equilibrium with the liquid phase, along the central portion CDE. The solid compound AB is in equilibrium with the liquid phase at different temperature. The maximum point 'D' of the curve is the Congruent melting point of the compound because, the solid and the liquid phase now have the same composition.



At this temperature, the two component system has become a one-component system because both solid and liquid phase contain only the compound AB. Therefore, a/c to the phase rule, D is a non-variant point. This represents a definite temperature just like the melting points A & B of the pure components. The congruent melting point D of compound AB has been shown to lie above the melting points of the pure components A and B. But it is not necessarily so always. There are different types of system known in which the congruent melting point of the compound formed lies above, below or in-between the melting point of the pure components.

There are two eutectic points in such a system as represented by C and E in the figure. At C, the solids A and AB are in equilibrium with the liquid phase while at E, the solids B and AB are in equilibrium with the liquid phase.

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