Application of the phase rule to two component system shows that there are three state functions that must be specified in order to describe the system.It is this crystallization of both solids that produces the eutectic halt in the cooling curve.The phase diagram for a two components system represents the plot of temperature against the mole fraction of one component.For a pure liquid or melt, the rate of cooling is proportional to the temperature difference but for a solution or melt of two compounds, the cooling curve shows a change, in slope as the latent heat of crystallization of one component is released and reduce the rate of temperature decrease.In contrast to the behavior of a pure substance, the solution does not freeze completely at one temperature In order to continue to crystallize this component the temperature must continue to be lowered till the eutectic temperature whereby at this temperature, the cooling curve does level off and the solution that remains solidifies abruptly.At b1 the change off slope occurs and the temperature continues to decrease till C1 whereby at this eutectic temperature (C1) the second component begins to crystallize together with the first and the temperature remains constant until solidification is complete at d (eutectic halt).The abrupt leveling off of the cooling curve is called eutectic halt.

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