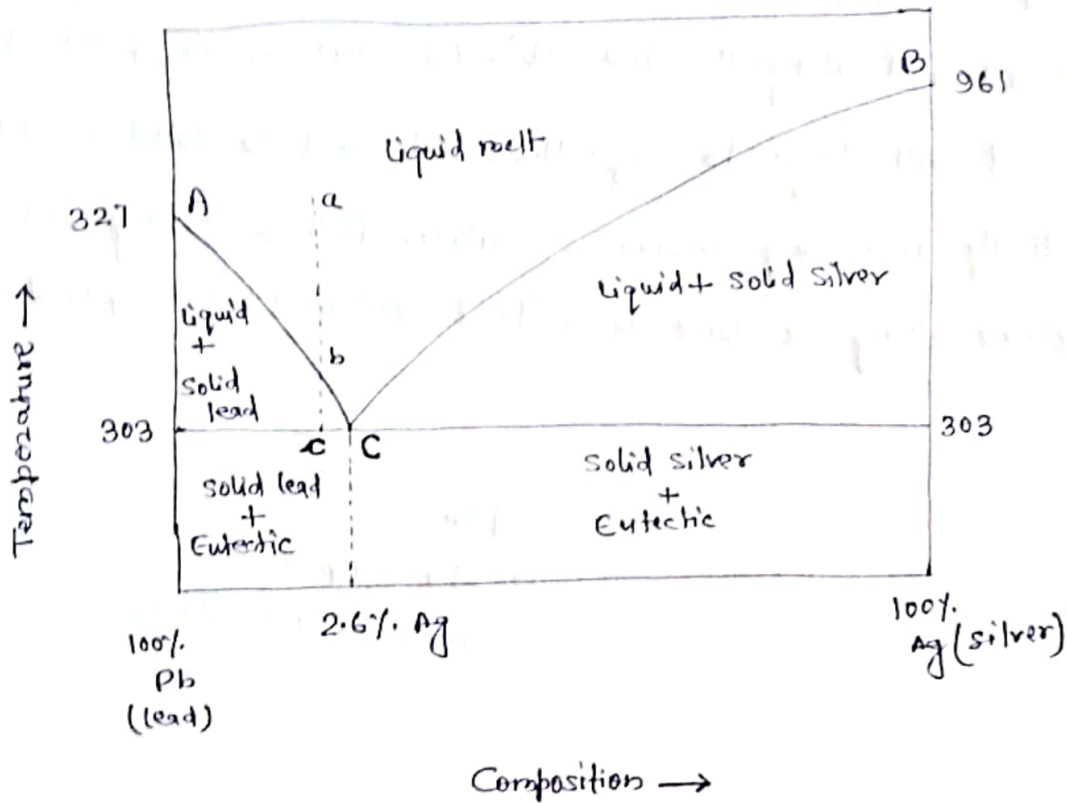


\* Lead - Silver System :-

These metals are completely miscible in liquid state and do not give rise to any compound formation.

Pure lead melts at  $327^{\circ}\text{C}$  and the addition of silver lowers its melting point along AC (shown in figure).



AC is the freezing point curve of lead containing varying amount of silver. Pure silver melts at  $961^{\circ}\text{C}$  and the addition of lead lowers its melting point along BC. BC is the freezing point curve of silver. Along AC, solid lead and solution coexist along BC. Solid silver and solution coexist. The system, at constant pressure, is monovariant along AC as well as along BC.

Point 'c' is the eutectic point where the three phases, solid lead, solid silver and their liquid solution coexist. It is an invariant point.

The temperature of this point is  $303^{\circ}\text{C}$ .

The phase diagram of lead-silver system has a special significance in connection with the desilverisation of lead. The argentiferous lead consisting of a very small % of silver is first heated to a temperature well above its melting point so that the system consists only of the liquid phase represented, say, by the point 'a'. It is then allowed to cool. The temperature of the melt will fall along the line 'ab'. As soon as the point 'b' is reached, lead will begin to crystallise out and the solution will contain relatively increasing amount of silver. Further cooling will shift the system along the line bc. Lead continues to separate out.

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