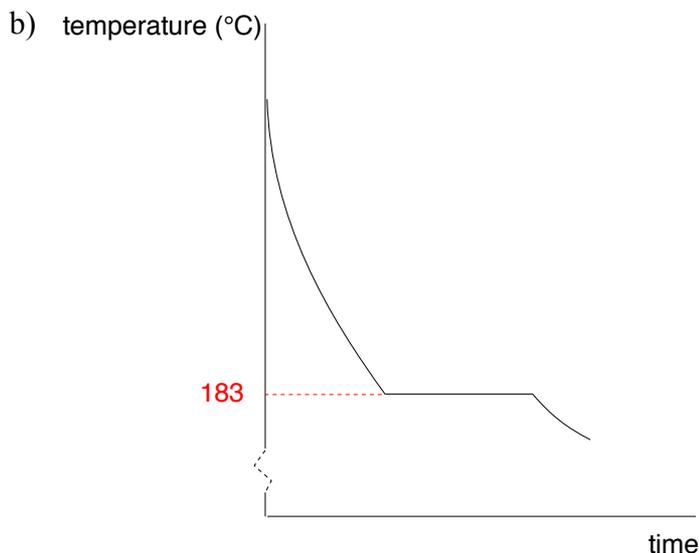


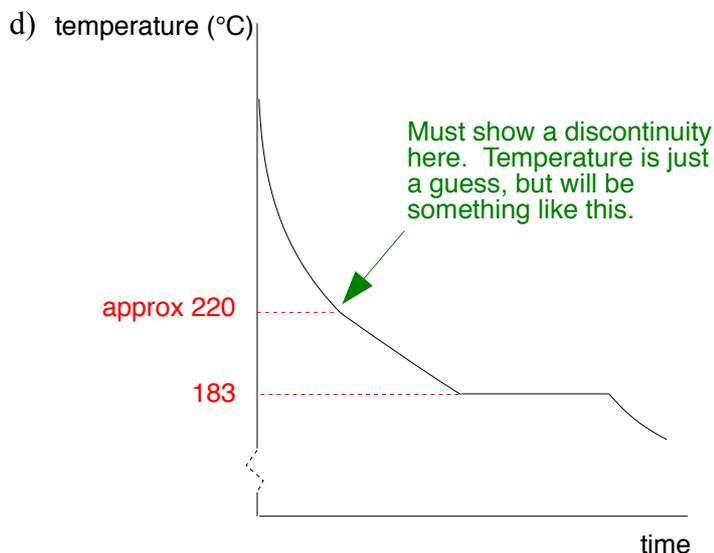
Chemguide – answers

SOLID-LIQUID PHASE DIAGRAMS - TIN AND LEAD

1. a) a: solid lead and a molten mixture of tin and lead
b: solid tin and a molten mixture of tin and lead
c: a solid mixture of tin and lead



- c) Eutectic mixture



- e) Above approximately 220°C, the molten mixture is cooling.

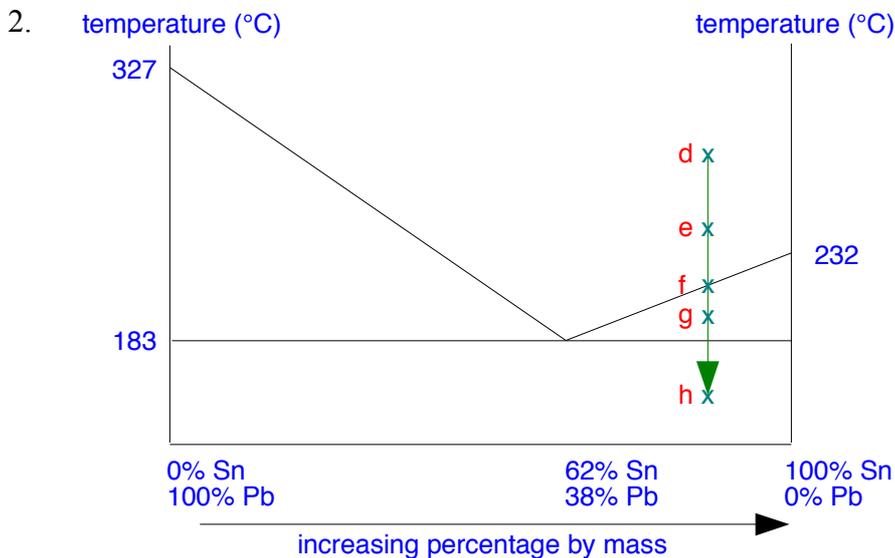
At about 220°C, some lead is beginning to freeze as a solid. Freezing releases heat, and so the rate of cooling slows. Between approximately 220°C and 183°C, more and more lead freezes, and the liquid becomes richer in tin.

At 183°C, all the remaining liquid tin and lead freeze, and the temperature remains constant until

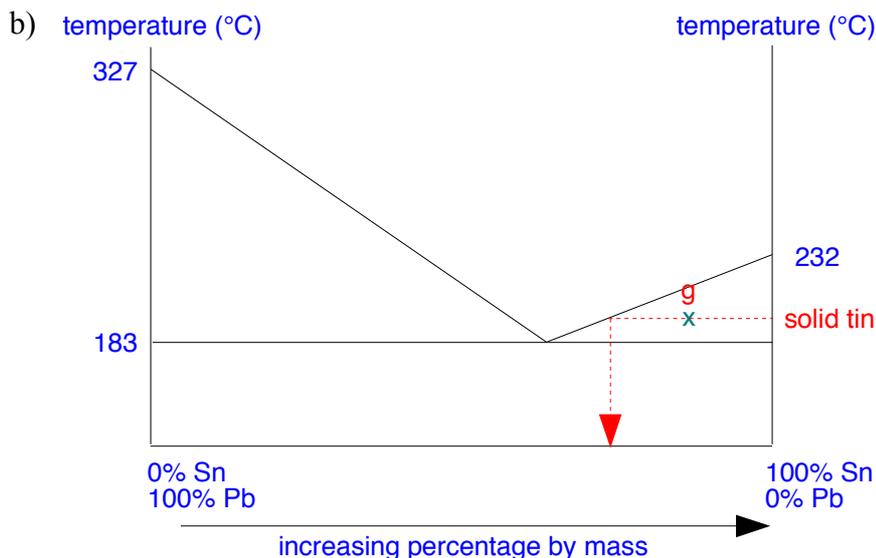
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that is complete. Heat released during the freezing process exactly compensates for the heat being lost to the surroundings.

Below 183°C, a solid mixture of tin and lead is cooling.



- a)
- d: a liquid mixture of molten tin and lead
 - e: a liquid mixture of molten tin and lead
 - f: a liquid mixture of molten tin and lead plus some solid tin beginning to form
 - g: a liquid mixture of molten tin and lead plus more solid tin than at f
 - h: a solid mixture of tin and lead



Draw a tie line through point g. It meets the 100% Sn axis, and so the mixture contains solid tin. Where it meets the other line, you can read off the composition of the molten liquid present.