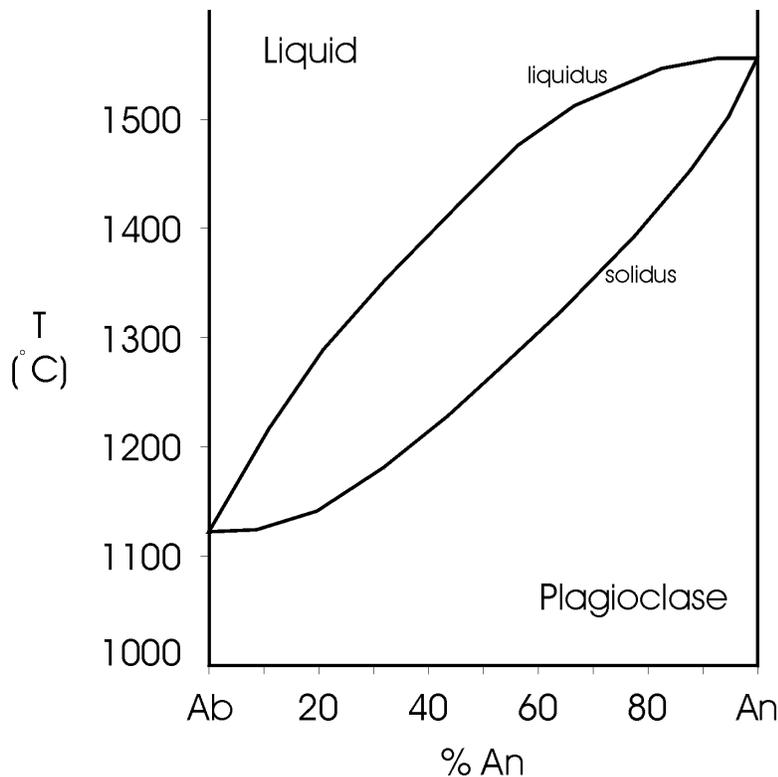


Plagioclase Phase Diagram

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Use the diagram at left to answer the following. (It is slightly different from the one in your text.)

Consider a melt that has composition $Ab_{60}An_{40}$.

1. If the melt cools, at what temperature will the first crystals form?

about 1390

2. What will be the composition of those first crystals?

$An_{76}Ab_{23}$

3. At what temperature will the ratio

of crystals:melt be 1:1?

around 1300

Suppose, at the time the ratio of crystals to melt is 1:1, the crystals settle to the bottom of the magma chamber and no longer react with the melt. After this, the remaining melt crystallizes in the normal way, with crystals and melt staying in equilibrium.

4. What will be the composition of the final drop of melt?

close to pure albite, perhaps $Ab_{96}An_4$

5. What will be the composition of the last plagioclase to crystallize?

about $Ab_{77}An_{23}$