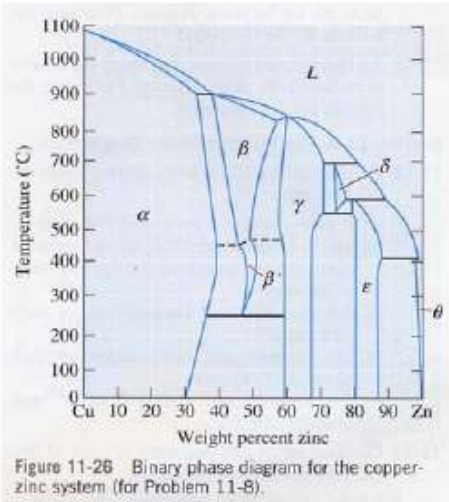


HW 7
(Due 3/3/08 Mon)

11-8

The Cu-Zn phase diagram is shown in Figure 11-26

- (a) Are any intermetallic compounds present? If so, identify them and determine whether they are stoichiometric or nonstoichiometric.
- (b) Identify the solid solutions present in the system.
- (c) Identify the three-phase reactions by writing down the temperature, the reaction in equation form, and the name of the reaction



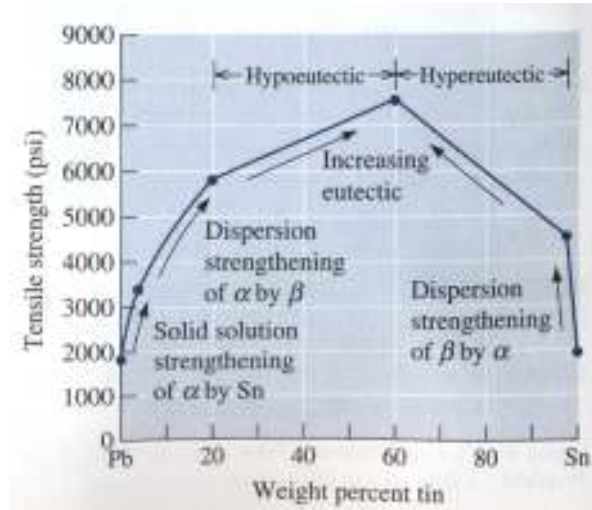
11-14

Consider a Pb-35% Sn alloy. Determine

- (a) if the alloy is hypoeutectic or hypereutectic,
- (b) the composition of the first solid to form during solidification,
- (c) the amounts and compositions of each phase at 184 °C,
- (d) the amounts of and compositions of each phase at 182 °C,
- (e) the amounts of and compositions of each microconstituent at 182 °C and
- (f) the amounts of and compositions of each phase at 25 °C.

11-16

Calculate the total % β and the % eutectic microconstituents at room temperature for the following lead-tin alloys: 10% Sn, 20% Sn, 50% Sn, 60% Sn, 80% Sn, and 95% Sn. Using Figure 11-18, plot the strength of then alloys versus the % β and the % eutectic and explain your graph.



11-18

Consider an Al-25% Si alloy. (See Figure 11-19)

Determine

- if the alloy is hypoeutectic or hypereutectic,
- the composition of the first solid to form during solidification,
- the amounts and compositions of each phase at 578°C,
- the amounts and compositions of each phase at 576°C,
- the amounts and compositions of each microconstituent at 576°C, and
- the amounts and compositions of each phase at 25°C.

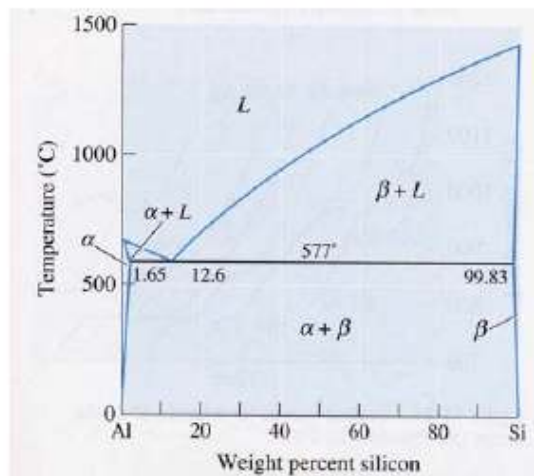


Figure 11-19 (Repeated for Problems 11-17 and 11-18) The aluminum-silicon phase diagram.