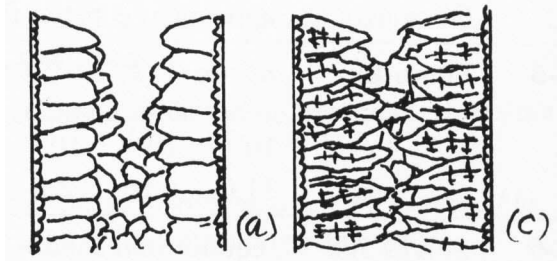


Solutions of ME 355 Home Work No. 6

1. 7A-1



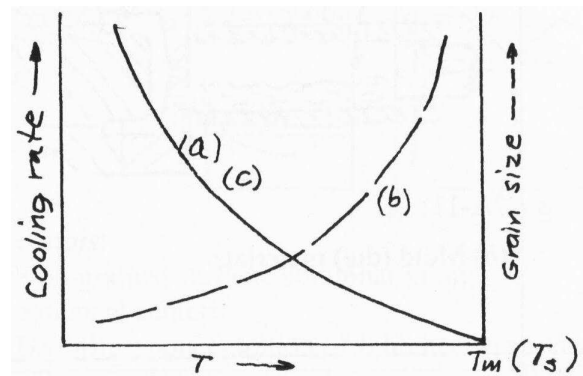
(b) Eutectic compositions and pure metals. (d) Solid solutions

2. 7A-2

(a) The temperature of the melt --- temperature of liquidus.

(b) $(T_{\text{melt}} - T_L) / T_L$ (homologous temperature)

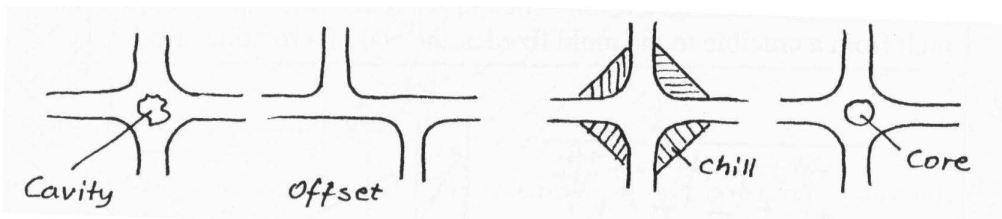
3. 7A-6



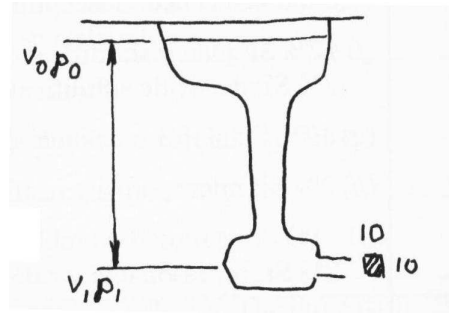
Essentials:

(a) and (c) may be the same curve. If T_m is shown, (a) goes to zero at T_m , (b) does not touch the line.

4. 7B-11



(a)



(b) Use Eq. (7-4) (p211). Since we are pouring under atmospheric pressure and since we are assuming no losses, $p_0 = p_1 = \text{atmospheric pressure}$

$$p_0 + (\rho v_0^2 / 2) + \rho g h_0 = p_1 + (\rho v_1^2 / 2) + \rho g h_1$$

$$1atm + 0 + 0.2g = 1atm + (\rho v_1^2 / 2) + 0$$

$$v = [2 \times 0.2 \times 9.8]^{0.5} = 1.98 \text{ m/s}$$

The cross section $A_1 = (0.01)(0.01) = 0.0001 \text{ m}^2$

Gives a flow rate, $A_1 v_1 = (0.0001)(1.98) = 0.000198 \text{ m}^3/\text{s} = 198 \text{ cm}^3/\text{s}$