JQ.6.6.Setup

October 22, 2014

6.6 a) Calculate the range of temperatures within which the vapor-air mixture above the liquid surface in a can of n-hexane at atmospheric pressure will be flammable. Data are found in Table 4.5.

b) Calculate the range of ambient pressures within which the vapor-air mixture above the liquid surface in a can of n-hexane or n-decane will be flammable at 25C.

For part (a) we apply in a straight forward manner the Clausius Clapeyron Eqn:

$$X_i$$

$$X_i = \frac{P_i}{P_\infty} = exp[-h_{fg} M_g / R(1/T - 1/T_b)]$$

The flammability limits establish the range of flammable conditions. Find the flammability limits and solve for the temperature.

For part (b) we need to calculate the vapor pressure at 25 C and then find the total pressures that correspond to the lower and upper flammability limits.

In []: