

Graphical method of capillary-tube selection

13-7 Graphical method of capillary-tube selection Graphs² to facilitate the selection of capillary tubes are based on data by Hopkins³ and revised with data by Whitesel.^{7,8} The first graph (Fig. 13-7) presents the refrigerant flow rate as a function of

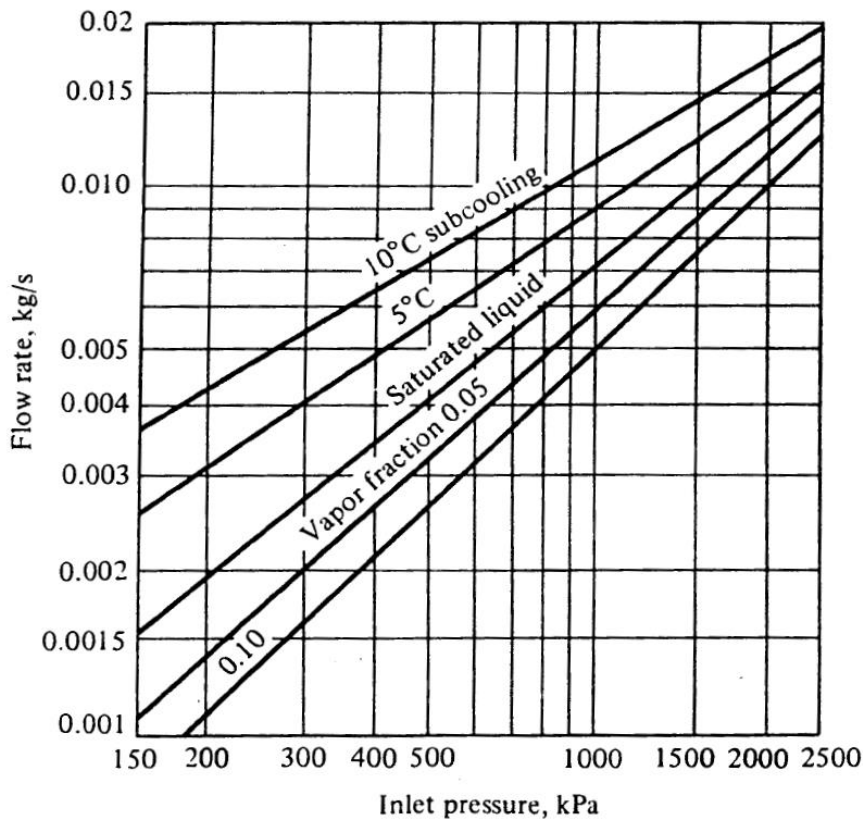


Figure 13-7 Flow rate of refrigerant 12 or 22 through a capillary tube 1.63 mm in diameter and 2.03 m long under choked-flow conditions.

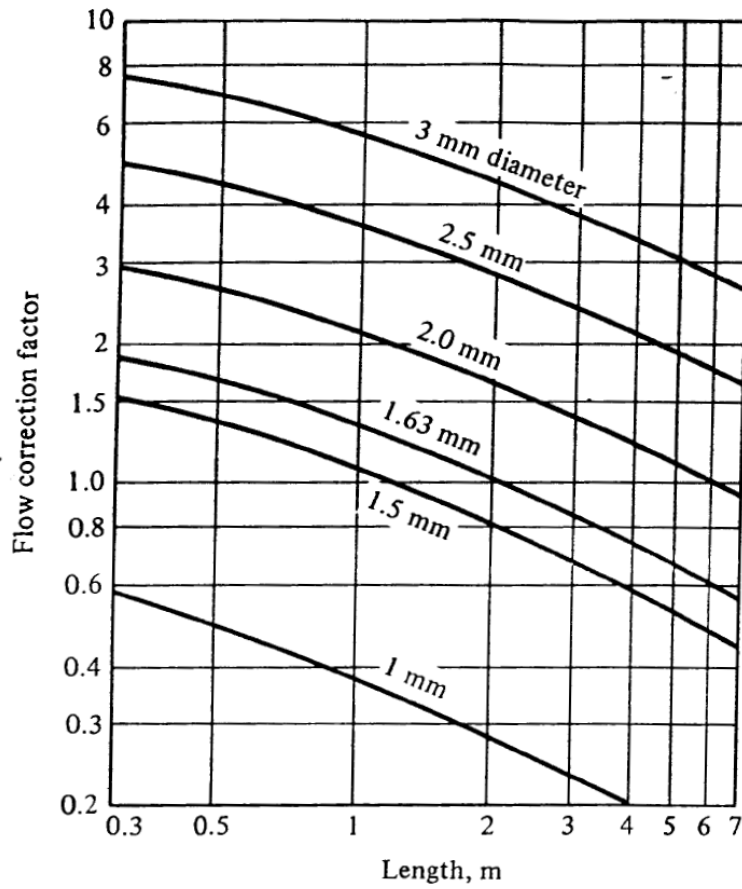


Figure 13-8 Correction factors to be applied to Fig. 13-7 for other diameters and lengths of capillary tubes.

Procedure for solving the Capillary Tubes Problems using Graphical Method

Example: A capillary tube is to be selected to throttle 0.011 kg/sec of refrigerant R – 12 at condensing pressure of 960 kPa and a temperature of 35 C to an evaporator at -20 C. select the bore and length of the capillary tube.

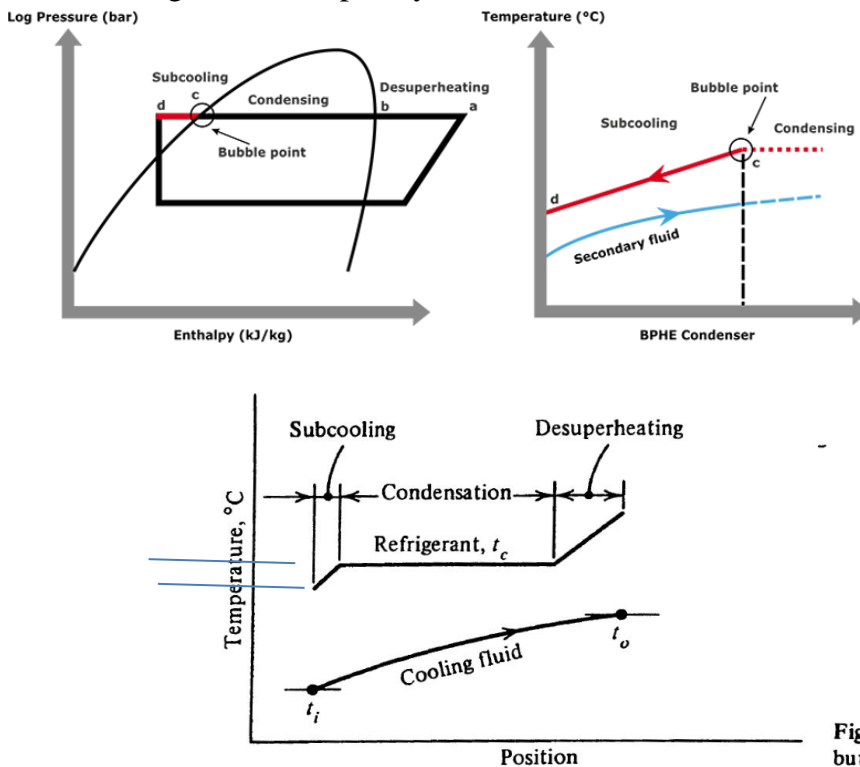


Figure 12-14 Temperature distributions in a condenser.

From table R – 12, table of the thermophysical properties

At P=960 kPa we can find out T=40 C but T_{entering}=35 C

Subcooling = 40-35=5 C

From figure 13.7 at P=960 kPa and 5 C subcooling

From Fig. 13.7; mass flow rate=0.0088 kg/s

Correction factor = actual flow rate/figure flow rate = 0.011/0.0088 = **1.25**

Now, figure 13.8;

Diameter [mm]	Length [m]
1.5	0.7
1.63	1.2
2	4