

	moles	P° (180 °F)	X	K
n-Butane	1	160	0.5	1.5389
n-Pentane	1	54	0.5	0.637

P _T =	95
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$$x_1 = \frac{1-K_2}{K_1-K_2}$$

$$x_2 = 1 - x_1$$

$$y_1 = K_1 x_1$$

$$y_2 = 1 - y_1$$

Liquid composition calculations:

	ideal	non-ideal
X ₁ =	0.3868	0.4025
X ₂ =	0.6132	0.5975

Vapor composition calculations:

	ideal	non-ideal
Y ₁ =	0.6514	0.6194
Y ₂ =	0.3486	0.3806

Dew point pressure calculations:

Y ₁ =	0.50
Y ₂ =	0.50
P _T =	84.75

Composition of the liquid at dew point:

	ideal	non-ideal
X ₁ =	0.2901	0.2910
X ₂ =	0.7099	0.7090

Bubble point pressure calculations:

X ₁ =	0.50
X ₂ =	0.50
P _T =	103.9

Composition of the vapor at bubble point:

	ideal	non-ideal
Y ₁ =	0.7701	0.7059
Y ₂ =	0.2299	0.2941

n-Butane mole fraction			
X	P	Y	P
0.0000	54.0	0.0000	54.0
0.2910	84.7	0.5000	84.7
0.4025	95.0	0.6194	95.0
0.5000	103.9	0.7059	103.9
1.0000	160.0	1.0000	160.0

