

	moles	P° (100 °F)	X	K
n-Propane	1	187	0.5	1.7844
n-Butane	1	52.2	0.5	0.5624

P <sub>T</sub> =	100
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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 <sub>1</sub> =	0.3546	0.3581
X <sub>2</sub> =	0.6454	0.6419

#### Vapor composition calculations:

	ideal	non-ideal
Y <sub>1</sub> =	0.6631	0.6390
Y <sub>2</sub> =	0.3369	0.3610

#### Dew point pressure calculations:

	non-ideal	ideal
Y <sub>1</sub> =	0.50	0.50
Y <sub>2</sub> =	0.50	0.50
P <sub>T</sub> =	84.61	81.62

#### Composition of the liquid at dew point:

	ideal	non-ideal
X <sub>1</sub> =	0.2405	0.2433
X <sub>2</sub> =	0.7595	0.7567

#### Bubble point pressure calculations:

	non-ideal	ideal
X <sub>1</sub> =	0.50	0.50
X <sub>2</sub> =	0.50	0.50
P <sub>T</sub> =	120.33	119.60

#### Composition of the vapor at bubble point:

	ideal	non-ideal
Y <sub>1</sub> =	0.7770	0.7647
Y <sub>2</sub> =	0.2230	0.2353

n-Propane mole fraction			
X	P	Y	P
0.0000	52.2	0.0000	52.2
0.2433	84.6	0.5000	84.6
0.3581	100.0	0.6390	100.0
0.5000	120.3	0.7647	120.3
1.0000	187.0	1.0000	187.0

