

Table 5

Twelve-component mixture (Example 3)

Feed stream data			
Component		Feed moles/hr	Equilibrium constant, K
number	Name		
1	Nitrogen	1,201	2.874
2	Carbon dioxide	20	0.913
3	Methane	48,362	1.449
4	Ethane	5,132	0.348
5	Propane	2,096	0.112
6	Isobutane	220	0.050
7	n-butane	660	0.0373
8	Isopentane	129	0.0175
9	n-pentane	193	0.0138
10	n-hexane	112	0.00515
11	n-heptane	69	0.00195
12	n-octane	30	0.00084

Input			
Input flash temperature, °F.?		-65	
Input flash pressure, psia.?		860	
Input number of components?		12	
Input feed and equilibrium K of each component?		1,201.0	2.874
		20.0	0.913
		48,362.0	1.449
		5,132.0	0.348
		2,096.0	0.112
		220.0	0.050
		660.0	0.0373
		129.0	0.0175
		193.0	0.0138
		112.0	0.00515
		69.0	0.00195
		30.0	0.00084

Output
Multicomponent equilibrium flash calculation at -65.0° F. and 860.0 psia

Component number	K-value	Feed		Liquid		Vapor	
		Moles/hr	Mole frac.	Moles/hr	Mole frac.	Moles/hr	Mole frac.
1	2.874	1,201.000	0.021	124.824	0.009	1,076.176	0.025
2	0.913	20.000	0.000	5.349	0.000	14.651	0.000
3	0.449	48,362.000	0.831	9,045.078	0.621	39,316.922	0.900
4	0.348	5,132.000	0.088	2,510.829	0.172	2,621.171	0.060
5	0.112	2,096.000	0.036	1,568.883	0.108	527.117	0.012
6	0.050	220.000	0.004	191.306	0.013	28.694	0.001
7	0.037	660.000	0.011	593.582	0.041	66.418	0.002
8	0.017	129.000	0.002	122.566	0.008	6.434	0.000
9	0.014	193.000	0.003	185.328	0.013	7.672	0.000
10	0.005	112.000	0.002	110.296	0.008	1.704	0.000
11	0.002	69.000	0.001	68.599	0.005	0.401	0.000
12	0.001	30.000	0.001	29.925	0.002	0.075	0.000
Totals		58,224.000	1.000	14,556.559	1.000	43,667.422	1.000

Do you want to terminate the program? Yes/No

The author. . .



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Table 6

Equilibrium separation (Example 4)

Feed stream data			
Component		Feed, mole fraction	Equilibrium constant, K
Number	Name		
1	C ₃ H ₈	10	3.20
2	iC ₄ H ₁₀	30	1.60
3	C ₄ H ₁₀	50	1.20
4	iC ₅ H ₁₂	40	0.57
5	C ₅ H ₁₂	10	0.47

Input			
Input flash temperature, °F.?		160	
Input flash pressure, psia.?		100	
Input number of components?		5	
Input feed and equilibrium K of each component?		10.0	3.20
		30.0	1.60
		50.0	1.20
		40.0	0.57
		10.0	0.47

Output
Multicomponent equilibrium flash calculation at 16.0° F. and 100.0 psi

Component number	K-value	Feed		Liquid		Vapor	
		Moles/hr	Mole frac.	Moles/hr	Mole frac.	Moles/hr	Mole frac.
1	3.200	10.000	0.071	1.611	0.030	8.389	0.097
2	1.600	30.000	0.214	8.326	0.156	21.674	0.250
3	0.200	50.000	0.357	16.935	0.318	33.065	0.381
4	0.570	40.000	0.286	20.753	0.389	19.247	0.222
5	0.470	10.000	0.071	5.667	0.106	4.333	0.050
Totals		140.000	1.000	53.293	1.000	86.707	1.000

Do you want to terminate the program? Yes/No