

	A	B	C	D	E	F	G	H	I	J	K	L
1	Steam, Saturated Water and R134a properties											
2		Steam		Excel Steam Functions:								
3		(Keenan et al. 1969)		$h(P, T)$	$P(v, T)$	$P(h, T)$	$P(s, T)$	$s(P, T)$	$T(h, P)$	$T(s, P)$	$v(P, T)$	
4	T (R)	1059.67		23733.63	259.948	256.8845	259.5121	29.62489	1060.109	1060.131	$v(B5, B4)$	
5	P (psia)	260										
6	v (ft ³ /lb-mol)	41.959										
7	h (Btu/lb-mol)	23737.88										
8	s (Btu/lb-mol-R)	29.6291										
9												
10		Saturated Water		Excel Saturated Water Functions:								
11		(Keenan et al. 1969)		$T_{sat}(P)$	$P_{sat}(T)$	$\rho_{sat}(T)$	$h(P, T)$	$s(P, T)$				
12	T (R)	859.67		247.0764	247.0764	2.978606	6756.381	10.20808				
13	P (psia)	247.1										
14	ρ (lb-mol/ft ³)	2.9779										
15	h (Btu/lb-mol)	6758.16										
16	s (Btu/lb-mol-R)	10.21										
17												
18		R-134a (vapor)		Excel R-134a Functions:								
19		(Dupont, 1993)		$\hat{h}(P, T)$	$P(\hat{v}, T)$	$P(\hat{h}, T)$	$P(\hat{s}, T)$	$\hat{s}(P, T)$	$T(\hat{h}, P)$	$T(\hat{s}, P)$	$\hat{v}(P, T)$	
20	T (R)	581.67		191.5673	29.00366	30.75683	29.07767	0.457251	581.2935	581.5333	2.044684	
21	P (psia)	29.008										
22	v (ft ³ /lb)	2.045										
23	h (Btu/lb)	191.486										
24	s (Btu/lb-R)	0.4572										

Function Arguments

v_Steam

Pressure

Temperature

No help available.

Pressure

Formula result = 41.95023024

[Help on this function](#)

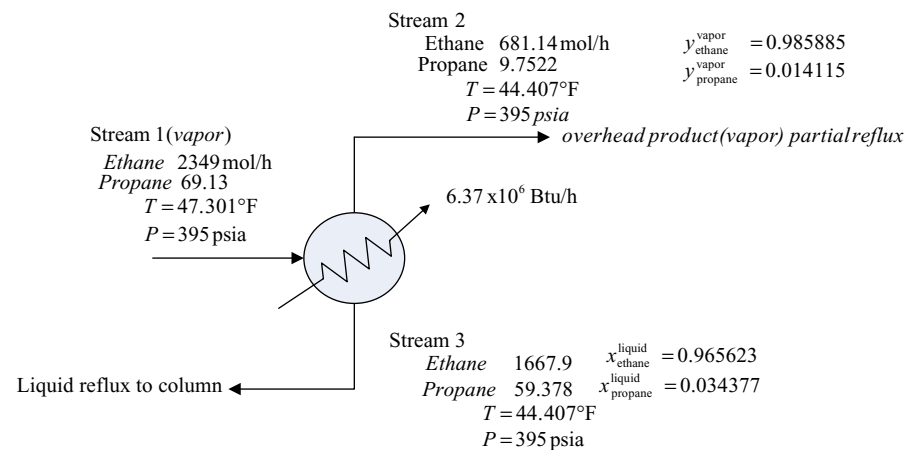
FIGURE 8.1

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
1	Solution Example 8.3													
2					Cv_a	Cv_b	Cv_c			a	b		h ₀	s ₀
3	T ₀	216.54		Cv	16.0488	-0.00004474	-158.08		RK-EOS	63770000	29.7		3101.2708	0.7569
4	Rgas	1.9872												
5				h cal/g-mol		h cal/g-mol		h total		s cal/g-mol-K		s cal/g-mol-K		s total
6	T (K)	P (atm)		∫Cv dT		RK-EOS				∫Cv/T dT		RK-EOS		
7	500	9.8692		2127.4854		961.2016		6189.9578		6.0715		16.5127		23.3411
8	700	9.8692		4036.6218		1375.5395		8513.4321		9.2731		17.2092		27.2392
9	900	9.8692		6119.2307		1781.0238		11001.5253		11.8864		17.7181		30.3614
10	500	49.3462		2127.4854		832.5675		6061.3237		6.0715		13.1311		19.9594
11	700	49.3462		4036.6218		1315.6973		8453.5899		9.2731		13.9407		23.9707
12	900	49.3462		6119.2307		1752.7324		10973.2339		11.8864		14.4866		27.1299
13	500	98.6923		2127.4854		674.5636		5903.3198		6.0715		11.5248		18.3532
14	700	98.6923		4036.6218		1247.2586		8385.1512		9.2731		12.4817		22.5117
15	900	98.6923		6119.2307		1721.3255		10941.8271		11.8864		13.0706		25.7139

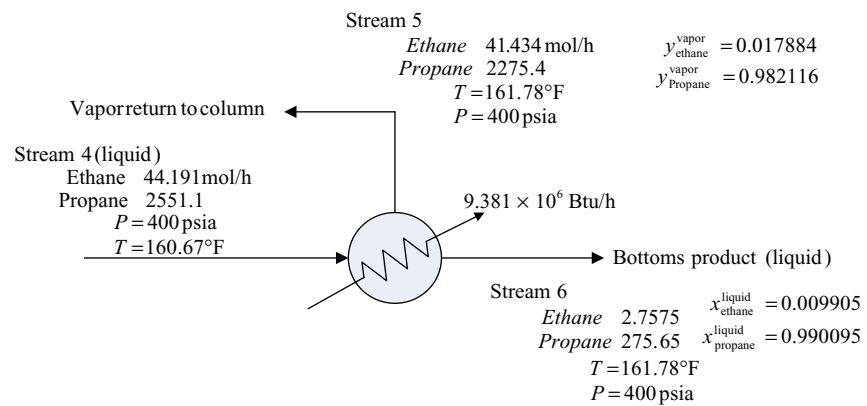
FIGURE 8.3

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
1	Solution Example 8.4													
2					Cv_a	Cv_b	Cv_c			a	b		h ₀	s ₀
3	T ₀	216.54		Cv	16.0488	-0.00004474	-158.08		RK-EOS	63770000	29.7		3101.2708	0.7569
4	Rgas	1.9872												
5				h cal/g-mol		h cal/g-mol		h total		s cal/g-mol-K		s cal/g-mol-K		s total
6	T (K)	P (atm)		∫Cv dT		RK-EOS				∫Cv/T dT		RK-EOS		
7	216.54	5.1054		0.0000		-3101.2708		0.0000		0.0000		-0.7569		0.0000
8	240	19.7385		130.7243		-2759.6585		472.3365		0.5727		0.8350		2.1646
9	250	19.7385		190.1038		-2616.6472		674.7274		0.8151		1.4763		3.0483
10	230	49.3462		73.4673		-2888.5929		286.1452		0.3291		0.0913		1.1773
11	250	49.3462		190.1038		-2610.4318		680.9427		0.8151		1.3669		2.9389
12	270	49.3462		314.7367		-2316.4536		1099.5540		1.2945		2.5988		4.6502
13	230	98.6923		73.4673		-2866.7051		308.0329		0.3291		-0.0335		1.0525
14	250	98.6923		190.1038		-2596.4479		694.9267		0.8151		1.2043		2.7762
15	280	98.6923		379.7719		-2175.8378		1305.2049		1.5310		2.9262		5.2141

FIGURE 8.4



(a) Condenser



(b) Reboiler

FIGURE 8.7