







1	<div></div> <div>Company Name Not Available Bedford, MA USA</div>		Case Name: BINAK SUMMER-D03.hsc		
2			Unit Set: Binak3a13132		
3			Date/Time: Mon Mar 7 11:52:07 2022		
4					
5	Material Stream: 01		Fluid Package: Basis-1		
Property Package: Peng-Robinson					
6	CONDITIONS				
7					
8		Overall	Vapour Phase		
9	Vapour / Phase Fraction	1.0000	1.0000		
10	Temperature: (C)	46.11	46.11		
11	Pressure: (bar_g)	5.500	5.500		
12	Molar Flow (MMSCFD)	5.000	5.000		
13	Mass Flow (kg/h)	6564	6564		
14	Std Ideal Liq Vol Flow (barrel/day)	2458	2458		
15	Molar Enthalpy (kJ/kgmole)	-9.536e+004	-9.536e+004		
16	Molar Entropy (kJ/kgmole-C)	179.5	179.5		
17	Heat Flow (kW)	-6597	-6597		
18	Liq Vol Flow @Std Cond (barrel/day)	8.834e+005 *	8.834e+005		
19	PROPERTIES				
20					
21		Overall	Vapour Phase		
22	Molecular Weight	26.36	26.36		
23	Molar Density (kgmole/m3)	0.2528	0.2528		
24	Mass Density (kg/m3)	6.664	6.664		
25	Act. Volume Flow (m3/h)	985.0	985.0		
26	Mass Enthalpy (kJ/kg)	-3618	-3618		
27	Mass Entropy (kJ/kg-C)	6.812	6.812		
28	Heat Capacity (kJ/kgmole-C)	51.06	51.06		
29	Mass Heat Capacity (kJ/kg-C)	1.937	1.937		
30	LHV Molar Basis (Std) (kJ/kgmole)	1.143e+006	1.143e+006		
31	HHV Molar Basis (Std) (kJ/kgmole)	1.246e+006	1.246e+006		
32	HHV Mass Basis (Std) (kJ/kg)	4.726e+004	4.726e+004		
33	CO2 Loading	---	---		
34	CO2 Apparent Mole Conc. (kgmole/m3)	---	---		
35	CO2 Apparent Wt. Conc. (kgmol/kg)	---	---		
36	LHV Mass Basis (Std) (kJ/kg)	4.335e+004	4.335e+004		
37	Phase Fraction [Vol. Basis]	1.000	1.000		
38	Phase Fraction [Mass Basis]	1.000	1.000		
39	Phase Fraction [Act. Vol. Basis]	1.000	1.000		
40	Mass Exergy (kJ/kg)	173.5	---		
41	Partial Pressure of CO2 (bar_g)	-0.7883	---		
42	Cost Based on Flow (Cost/s)	0.0000	0.0000		
43	Act. Gas Flow (ACT_m3/h)	985.0	985.0		
44	Avg. Liq. Density (kgmole/m3)	15.30	15.30		
45	Specific Heat (kJ/kgmole-C)	51.06	51.06		
46	Std. Gas Flow (Nm3/h)	5582	5582		
47	Std. Ideal Liq. Mass Density (kg/m3)	403.1	403.1		
48	Act. Liq. Flow (m3/s)	---	---		
49	Z Factor	0.9704	0.9704		
50	Watson K	16.41	16.41		
51	User Property	---	---		
52	Partial Pressure of H2S (bar_g)	-0.8306	---		
53	Cp/(Cp - R)	1.195	1.195		
54	Cp/Cv	1.225	1.225		
55	Heat of Vap. (kJ/kgmole)	2.019e+004	---		
56	Kinematic Viscosity (cSt)	1.734	1.734		
57	Liq. Mass Density (Std. Cond) (kg/m3)	1.122	1.122		
58	Liq. Vol. Flow (Std. Cond) (barrel/day)	8.834e+005	8.834e+005		
59	Liquid Fraction	0.0000	0.0000		
60	Molar Volume (m3/kgmole)	3.955	3.955		
61	Mass Heat of Vap. (kJ/kg)	765.9	---		
62	Phase Fraction [Molar Basis]	1.0000	1.0000		
63	Surface Tension (dyne/cm)	---	---		
64	Thermal Conductivity (W/m-K)	2.918e-002	2.918e-002		
65	Viscosity (cP)	1.156e-002	1.156e-002		
66	Aspen Technology Inc. Aspen HYSYS Version 11 Page 1 of 40				


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2									
3							Unit Set: Binak3a13132		
4							Date/Time: Mon Mar 7 11:52:07 2022		
5	<div>Material Stream: 01 (continued)</div>			Fluid Package: Basis-1					
6				Property Package: Peng-Robinson					
7									
8									
9	PROPERTIES								
10									
11		Overall	Vapour Phase						
12	Cv (Semi-Ideal) (kJ/kgmole-C)	42.74	42.74						
13	Mass Cv (Semi-Ideal) (kJ/kg-C)	1.622	1.622						
14	Cv (kJ/kgmole-C)	41.68	41.68						
15	Mass Cv (kJ/kg-C)	1.581	1.581						
16	Cv (Ent. Method) (kJ/kgmole-C)	---	---						
17	Mass Cv (Ent. Method) (kJ/kg-C)	---	---						
18	Cp/Cv (Ent. Method)	---	---						
19	Reid VP at 37.8 C (bar_g)	---	---						
20	True VP at 37.8 C (bar_g)	141.7	141.7						
21	Liq. Vol. Flow - Sum(Std. Cond) (m3/h)	5852	5852						
22	Viscosity Index	-18.58	---						
23	Ideal Gas Cp/Cv	1.200	1.200						
24	Ideal Gas Cp (kJ/kgmole-C)	49.85	49.85						
25	Mass Ideal Gas Cp (kJ/kg-C)	1.891	1.891						
26	Bubble Point Pressure (bar_g)	154.5	---						
27									
28	COMPOSITION								
29									
30	Overall Phase			Vapour Fraction		1.0000			
31	COMPONENTS	MOLAR FLOW (kgmole/h)	MOLE FRACTION	MASS FLOW (kg/h)	MASS FRACTION	LIQUID VOLUME FLOW (m3/h)			
32						LIQUID VOLUME FRACTION			
33	H2O	3.9458	0.0158	71.0844	0.0108	0.0712			
34	CO2	8.6022	0.0345	378.5811	0.0577	0.4587			
35	H2S	6.9847	0.0280	238.0109	0.0363	0.3019			
36	Methane	143.0517	0.5744	2294.9643	0.3496	7.6654			
37	Ethane	43.2807	0.1738	1301.4457	0.1983	3.6590			
38	Propane	26.2723	0.1055	1158.5298	0.1765	2.2865			
39	i-Butane	3.1615	0.0127	183.7590	0.0280	0.3270			
40	n-Butane	7.3033	0.0293	424.4975	0.0647	0.7278			
41	i-Pentane	1.8871	0.0076	136.1559	0.0207	0.2184			
42	n-Pentane	1.2254	0.0049	88.4129	0.0135	0.1404			
43	n-Hexane	2.0096	0.0081	173.1861	0.0264	0.2613			
44	n-Heptane	0.7107	0.0029	71.2182	0.0108	0.1037			
45	n-Octane	0.1961	0.0008	22.3966	0.0034	0.0318			
46	n-Nonane	0.0735	0.0003	9.4300	0.0014	0.0131			
47	n-Decane	0.0245	0.0001	3.4871	0.0005	0.0048			
48	n-C11	0.0000	0.0000	0.0000	0.0000	0.0000			
49	Nitrogen	0.3186	0.0013	8.9250	0.0014	0.0111			
50	TEGlycol	0.0000	0.0000	0.0000	0.0000	0.0000			
51	Total	249.0478	1.0000	6564.0844	1.0000	16.2821			
52									
53	Vapour Phase			Phase Fraction		1.000			
54	COMPONENTS	MOLAR FLOW (kgmole/h)	MOLE FRACTION	MASS FLOW (kg/h)	MASS FRACTION	LIQUID VOLUME FLOW (m3/h)			
55						LIQUID VOLUME FRACTION			
56	H2O	3.9458	0.0158	71.0844	0.0108	0.0712			
57	CO2	8.6022	0.0345	378.5811	0.0577	0.4587			
58	H2S	6.9847	0.0280	238.0109	0.0363	0.3019			
59	Methane	143.0517	0.5744	2294.9643	0.3496	7.6654			
60	Ethane	43.2807	0.1738	1301.4457	0.1983	3.6590			
61	Propane	26.2723	0.1055	1158.5298	0.1765	2.2865			
62	i-Butane	3.1615	0.0127	183.7590	0.0280	0.3270			
63	n-Butane	7.3033	0.0293	424.4975	0.0647	0.7278			
64	i-Pentane	1.8871	0.0076	136.1559	0.0207	0.2184			
65	n-Pentane	1.2254	0.0049	88.4129	0.0135	0.1404			
66	n-Hexane	2.0096	0.0081	173.1861	0.0264	0.2613			
67	n-Heptane	0.7107	0.0029	71.2182	0.0108	0.1037			
68	n-Octane	0.1961	0.0008	22.3966	0.0034	0.0318			
69	Aspen Technology Inc. Aspen HYSYS Version 11 Page 2 of 40								


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2					Unit Set: Binak3a13132		
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4							
5							
6	Material Stream: 01 (continued)				Fluid Package: Basis-1		
7					Property Package: Peng-Robinson		
8							
9	COMPOSITION						
10							
11	Vapour Phase (continued)					Phase Fraction 1.000	
12							
13	COMPONENTS	MOLAR FLOW (kgmole/h)	MOLE FRACTION	MASS FLOW (kg/h)	MASS FRACTION	LIQUID VOLUME FLOW (m3/h)	LIQUID VOLUME FRACTION
14							
15	n-Nonane	0.0735	0.0003	9.4300	0.0014	0.0131	0.0008
16	n-Decane	0.0245	0.0001	3.4871	0.0005	0.0048	0.0003
17	n-C11	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
18	Nitrogen	0.3186	0.0013	8.9250	0.0014	0.0111	0.0007
19	TEGlycol	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
20	Total	249.0478	1.0000	6564.0844	1.0000	16.2821	1.0000
21							
22	Material Stream: 02				Fluid Package: Basis-1		
23					Property Package: Peng-Robinson		
24	CONDITIONS						
25							
26		Overall	Vapour Phase				
27	Vapour / Phase Fraction	1.0000	1.0000				
28	Temperature: (C)	32.00	32.00				
29	Pressure: (bar_g)	5.500	5.500				
30	Molar Flow (MMSCFD)	9.600	9.600				
31	Mass Flow (kg/h)	1.127e+004	1.127e+004				
32	Std Ideal Liq Vol Flow (barrel/day)	4367	4367				
33	Molar Enthalpy (kJ/kgmole)	-8.724e+004	-8.724e+004				
34	Molar Entropy (kJ/kgmole-C)	177.2	177.2				
35	Heat Flow (kW)	-1.159e+004	-1.159e+004				
36	Liq Vol Flow @Std Cond (barrel/day)	1.698e+006 *	1.698e+006				
37	PROPERTIES						
38							
39		Overall	Vapour Phase				
40	Molecular Weight	23.57	23.57				
41	Molar Density (kgmole/m3)	0.2637	0.2637				
42	Mass Density (kg/m3)	6.214	6.214				
43	Act. Volume Flow (m3/h)	1813	1813				
44	Mass Enthalpy (kJ/kg)	-3702	-3702				
45	Mass Entropy (kJ/kg-C)	7.517	7.517				
46	Heat Capacity (kJ/kgmole-C)	44.79	44.79				
47	Mass Heat Capacity (kJ/kg-C)	1.901	1.901				
48	LHV Molar Basis (Std) (kJ/kgmole)	9.895e+005	9.895e+005				
49	HHV Molar Basis (Std) (kJ/kgmole)	1.081e+006	1.081e+006				
50	HHV Mass Basis (Std) (kJ/kg)	4.588e+004	4.588e+004				
51	CO2 Loading	---	---				
52	CO2 Apparent Mole Conc. (kgmole/m3)	---	---				
53	CO2 Apparent Wt. Conc. (kgmol/kg)	---	---				
54	LHV Mass Basis (Std) (kJ/kg)	4.198e+004	4.198e+004				
55	Phase Fraction [Vol. Basis]	1.000	1.000				
56	Phase Fraction [Mass Basis]	1.000	1.000				
57	Phase Fraction [Act. Vol. Basis]	1.000	1.000				
58	Mass Exergy (kJ/kg)	193.4	---				
59	Partial Pressure of CO2 (bar_g)	-0.8173	---				
60	Cost Based on Flow (Cost/s)	0.0000	0.0000				
61	Act. Gas Flow (ACT_m3/h)	1813	1813				
62	Avg. Liq. Density (kgmole/m3)	16.53	16.53				
63	Specific Heat (kJ/kgmole-C)	44.79	44.79				
64	Std. Gas Flow (Nm3/h)	1.072e+004	1.072e+004				
65	Std. Ideal Liq. Mass Density (kg/m3)	389.6	389.6				
66	Act. Liq. Flow (m3/s)	---	---				
67	Z Factor	0.9737	0.9737				
68	Watson K	16.47	16.47				
69	Aspen Technology Inc. Aspen HYSYS Version 11 Page 3 of 40						


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2				Unit Set: Binak3a13132		
3						
4						
5				Date/Time: Mon Mar 7 11:52:07 2022		
6	Material Stream: 02 (continued)			Fluid Package: Basis-1		
7				Property Package: Peng-Robinson		
8						
9	PROPERTIES					
10						
11		Overall	Vapour Phase			
12	User Property	---	---			
13	Partial Pressure of H2S (bar_g)	-0.5723	---			
14	Cp/(Cp - R)	1.228	1.228			
15	Cp/Cv	1.261	1.261			
16	Heat of Vap. (kJ/kgmole)	1.743e+004	---			
17	Kinematic Viscosity (cSt)	1.842	1.842			
18	Liq. Mass Density (Std. Cond) (kg/m3)	1.002	1.002			
19	Liq. Vol. Flow (Std. Cond) (barrel/day)	1.698e+006	1.698e+006			
20	Liquid Fraction	0.0000	0.0000			
21	Molar Volume (m3/kgmole)	3.793	3.793			
22	Mass Heat of Vap. (kJ/kg)	739.7	---			
23	Phase Fraction [Molar Basis]	1.0000	1.0000			
24	Surface Tension (dyne/cm)	---	---			
25	Thermal Conductivity (W/m-K)	2.900e-002	2.900e-002			
26	Viscosity (cP)	1.145e-002	1.145e-002			
27	Cv (Semi-Ideal) (kJ/kgmole-C)	36.48	36.48			
28	Mass Cv (Semi-Ideal) (kJ/kg-C)	1.548	1.548			
29	Cv (kJ/kgmole-C)	35.54	35.54			
30	Mass Cv (kJ/kg-C)	1.508	1.508			
31	Cv (Ent. Method) (kJ/kgmole-C)	---	---			
32	Mass Cv (Ent. Method) (kJ/kg-C)	---	---			
33	Cp/Cv (Ent. Method)	---	---			
34	Reid VP at 37.8 C (bar_g)	---	---			
35	True VP at 37.8 C (bar_g)	182.7	182.7			
36	Liq. Vol. Flow - Sum(Std. Cond) (m3/h)	1.125e+004	1.125e+004			
37	Viscosity Index	-18.07	---			
38	Ideal Gas Cp/Cv	1.235	1.235			
39	Ideal Gas Cp (kJ/kgmole-C)	43.73	43.73			
40	Mass Ideal Gas Cp (kJ/kg-C)	1.855	1.855			
41	Bubble Point Pressure (bar_g)	173.6	---			
42	COMPOSITION					
43						
44	Overall Phase					
45				Vapour Fraction		1.0000
46	COMPONENTS	MOLAR FLOW (kgmole/h)	MOLE FRACTION	MASS FLOW (kg/h)	MASS FRACTION	LIQUID VOLUME FLOW (m3/h)
47						LIQUID VOLUME FRACTION
48	H2O	3.5542	0.0074	64.0285	0.0057	0.0642
49	CO2	14.3814	0.0301	632.9202	0.0562	0.7669
50	H2S	32.3700	0.0677	1103.0391	0.0979	1.3991
51	Methane	321.5638	0.6725	5158.8166	0.4578	17.2309
52	Ethane	56.7186	0.1186	1705.5239	0.1513	4.7951
53	Propane	29.9493	0.0626	1320.6761	0.1172	2.6065
54	i-Butane	2.9427	0.0062	171.0429	0.0152	0.3044
55	n-Butane	6.2177	0.0130	361.3971	0.0321	0.6197
56	i-Pentane	3.1800	0.0067	229.4431	0.0204	0.3680
57	n-Pentane	1.5188	0.0032	109.5848	0.0097	0.1740
58	n-Hexane	2.7529	0.0058	237.2367	0.0211	0.3580
59	n-Heptane	0.7119	0.0015	71.3409	0.0063	0.1039
60	n-Octane	0.2373	0.0005	27.1091	0.0024	0.0384
61	n-Nonane	0.1424	0.0003	18.2628	0.0016	0.0254
62	n-Decane	0.0475	0.0001	6.7526	0.0006	0.0092
63	n-C11	0.0000	0.0000	0.0000	0.0000	0.0000
64	Nitrogen	1.8511	0.0039	51.8540	0.0046	0.0643
65	TEGlycol	0.0000	0.0000	0.0000	0.0000	0.0000
66	Total	478.1397	1.0000	11269.0285	1.0000	28.9278
67						
68						
69	Aspen Technology Inc.		Aspen HYSYS Version 11		Page 4 of 40	
Licensed to: Company Name Not Available						
* Specified by user.						


1	<div></div> <div>Company Name Not Available Bedford, MA USA</div>			Case Name: BINAK SUMMER-D03.hsc				
2				<div>Material Stream: 02 (continued)</div>			Unit Set: Binak3a13132	
3							Date/Time: Mon Mar 7 11:52:07 2022	
4								
5	<div>Fluid Package: Basis-1</div> <div>Property Package: Peng-Robinson</div>							
6								
7								
8								
9	COMPOSITION							
10								
11	Vapour Phase							
12						Phase Fraction	1.000	
13	COMPONENTS	MOLAR FLOW	MOLE FRACTION	MASS FLOW	MASS FRACTION	LIQUID VOLUME	LIQUID VOLUME	
14		(kgmole/h)		(kg/h)		FLOW (m3/h)	FRACTION	
15	H2O	3.5542	0.0074	64.0285	0.0057	0.0642	0.0022	
16	CO2	14.3814	0.0301	632.9202	0.0562	0.7669	0.0265	
17	H2S	32.3700	0.0677	1103.0391	0.0979	1.3991	0.0484	
18	Methane	321.5638	0.6725	5158.8166	0.4578	17.2309	0.5957	
19	Ethane	56.7186	0.1186	1705.5239	0.1513	4.7951	0.1658	
20	Propane	29.9493	0.0626	1320.6761	0.1172	2.6065	0.0901	
21	i-Butane	2.9427	0.0062	171.0429	0.0152	0.3044	0.0105	
22	n-Butane	6.2177	0.0130	361.3971	0.0321	0.6197	0.0214	
23	i-Pentane	3.1800	0.0067	229.4431	0.0204	0.3680	0.0127	
24	n-Pentane	1.5188	0.0032	109.5848	0.0097	0.1740	0.0060	
25	n-Hexane	2.7529	0.0058	237.2367	0.0211	0.3580	0.0124	
26	n-Heptane	0.7119	0.0015	71.3409	0.0063	0.1039	0.0036	
27	n-Octane	0.2373	0.0005	27.1091	0.0024	0.0384	0.0013	
28	n-Nonane	0.1424	0.0003	18.2628	0.0016	0.0254	0.0009	
29	n-Decane	0.0475	0.0001	6.7526	0.0006	0.0092	0.0003	
30	n-C11	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
31	Nitrogen	1.8511	0.0039	51.8540	0.0046	0.0643	0.0022	
32	TEGlycol	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
33	Total	478.1397	1.0000	11269.0285	1.0000	28.9278	1.0000	
34	<div>Material Stream: 03</div>			Fluid Package: Basis-1				
35				Property Package: Peng-Robinson				
36								
37	CONDITIONS							
38								
39		Overall	Vapour Phase	Aqueous Phase				
40	Vapour / Phase Fraction	0.9999	0.9999	0.0001				
41	Temperature: (C)	37.17	37.17	37.17				
42	Pressure: (bar_g)	5.300	5.300	5.300				
43	Molar Flow (MMSCFD)	14.60	14.60	1.638e-003				
44	Mass Flow (kg/h)	1.783e+004	1.783e+004	1.470				
45	Std Ideal Liq Vol Flow (barrel/day)	6825	6824	0.2224				
46	Molar Enthalpy (kJ/kgmole)	-9.002e+004	-9.000e+004	-2.852e+005				
47	Molar Entropy (kJ/kgmole-C)	178.4	178.4	56.87				
48	Heat Flow (kW)	-1.818e+004	-1.818e+004	-6.462				
49	Liq Vol Flow @Std Cond (barrel/day)	2.582e+006 *	2.581e+006	0.2187				
50	PROPERTIES							
51								
52		Overall	Vapour Phase	Aqueous Phase				
53	Molecular Weight	24.52	24.52	18.02				
54	Molar Density (kgmole/m3)	0.2514	0.2514	55.38				
55	Mass Density (kg/m3)	6.165	6.164	998.2				
56	Act. Volume Flow (m3/h)	2893	2893	1.473e-003				
57	Mass Enthalpy (kJ/kg)	-3671	-3670	-1.582e+004				
58	Mass Entropy (kJ/kg-C)	7.273	7.274	3.155				
59	Heat Capacity (kJ/kgmole-C)	46.87	46.86	77.71				
60	Mass Heat Capacity (kJ/kg-C)	1.911	1.911	4.312				
61	LHV Molar Basis (Std) (kJ/kgmole)	1.042e+006	1.042e+006	203.7				
62	HHV Molar Basis (Std) (kJ/kgmole)	1.138e+006	1.138e+006	4.121e+004				
63	HHV Mass Basis (Std) (kJ/kg)	4.639e+004	4.639e+004	2287				
64	CO2 Loading	---	---	---				
65	CO2 Apparent Mole Conc. (kgmole/m3)	---	---	3.977e-003				
66	CO2 Apparent Wt. Conc. (kgmol/kg)	---	---	3.984e-006				
67	LHV Mass Basis (Std) (kJ/kg)	4.249e+004	4.249e+004	11.30				
68	Phase Fraction [Vol. Basis]	1.000	1.000	3.259e-005				
69	Aspen Technology Inc. Aspen HYSYS Version 11 Page 5 of 40							


1	<div></div> <div>Company Name Not Available Bedford, MA USA</div>			Case Name: BINAK SUMMER-D03.hsc			
2				Unit Set: Binak3a13132			
3				Date/Time: Mon Mar 7 11:52:07 2022			
4							
5							
6	Material Stream: 03 (continued)			Fluid Package: Basis-1			
7				Property Package: Peng-Robinson			
8							
9	PROPERTIES						
10							
11		Overall	Vapour Phase	Aqueous Phase			
12	Phase Fraction [Mass Basis]	0.9999	0.9999	8.245e-005			
13	Phase Fraction [Act. Vol. Basis]	1.000	1.000	5.092e-007			
14	Mass Exergy (kJ/kg)	182.8	---	---			
15	Partial Pressure of CO2 (bar_g)	-0.8137	---	---			
16	Cost Based on Flow (Cost/s)	0.0000	0.0000	0.0000			
17	Act. Gas Flow (ACT_m3/h)	2893	2893	---			
18	Avg. Liq. Density (kgmole/m3)	16.08	16.08	55.36			
19	Specific Heat (kJ/kgmole-C)	46.87	46.86	77.71			
20	Std. Gas Flow (Nm3/h)	1.630e+004	1.630e+004	1.828			
21	Std. Ideal Liq. Mass Density (kg/m3)	394.5	394.4	997.8			
22	Act. Liq. Flow (m3/s)	4.091e-007	---	4.091e-007			
23	Z Factor	---	0.9735	4.418e-003			
24	Watson K	16.45	16.45	9.078			
25	User Property	---	---	---			
26	Partial Pressure of H2S (bar_g)	-0.6715	---	---			
27	Cp/(Cp - R)	1.216	1.216	1.120			
28	Cp/Cv	1.246	1.246	1.154			
29	Heat of Vap. (kJ/kgmole)	1.844e+004	---	---			
30	Kinematic Viscosity (cSt)	---	1.865	0.6893			
31	Liq. Mass Density (Std. Cond) (kg/m3)	1.043	1.043	1015			
32	Liq. Vol. Flow (Std. Cond) (barrel/day)	2.582e+006	2.581e+006	0.2187			
33	Liquid Fraction	1.122e-004	0.0000	1.000			
34	Molar Volume (m3/kgmole)	3.978	3.978	1.806e-002			
35	Mass Heat of Vap. (kJ/kg)	752.1	---	---			
36	Phase Fraction [Molar Basis]	0.9999	0.9999	0.0001			
37	Surface Tension (dyne/cm)	69.96	---	69.96			
38	Thermal Conductivity (W/m-K)	---	2.908e-002	0.6279			
39	Viscosity (cP)	---	1.150e-002	0.6881			
40	Cv (Semi-Ideal) (kJ/kgmole-C)	38.55	38.55	69.40			
41	Mass Cv (Semi-Ideal) (kJ/kg-C)	1.572	1.572	3.850			
42	Cv (kJ/kgmole-C)	37.60	37.60	67.33			
43	Mass Cv (kJ/kg-C)	1.533	1.533	3.736			
44	Cv (Ent. Method) (kJ/kgmole-C)	---	---	66.77			
45	Mass Cv (Ent. Method) (kJ/kg-C)	---	---	3.705			
46	Cp/Cv (Ent. Method)	---	---	1.164			
47	Reid VP at 37.8 C (bar_g)	---	---	37.31			
48	True VP at 37.8 C (bar_g)	168.1	168.1	-0.3773			
49	Liq. Vol. Flow - Sum(Std. Cond) (m3/h)	1.710e+004	1.710e+004	1.449e-003			
50	Viscosity Index	-17.80	---	---			
51	Ideal Gas Cp/Cv	1.222	1.222	1.328			
52	Ideal Gas Cp (kJ/kgmole-C)	45.79	45.79	33.65			
53	Mass Ideal Gas Cp (kJ/kg-C)	1.867	1.867	1.867			
54	Bubble Point Pressure (bar_g)	167.1	---	---			
55	COMPOSITION						
56							
57							
58	Overall Phase			Vapour Fraction		0.9999	
59	COMPONENTS	MOLAR FLOW (kgmole/h)	MOLE FRACTION	MASS FLOW (kg/h)	MASS FRACTION	LIQUID VOLUME FLOW (m3/h)	LIQUID VOLUME FRACTION
60							
61	H2O	7.5000	0.0103	135.1129	0.0076	0.1354	0.0030
62	CO2	22.9836	0.0316	1011.5013	0.0567	1.2256	0.0271
63	H2S	39.3547	0.0541	1341.0500	0.0752	1.7010	0.0376
64	Methane	464.6156	0.6389	7453.7810	0.4180	24.8962	0.5507
65	Ethane	99.9993	0.1375	3006.9696	0.1686	8.4541	0.1870
66	Propane	56.2216	0.0773	2479.2059	0.1390	4.8931	0.1082
67	i-Butane	6.1042	0.0084	354.8019	0.0199	0.6314	0.0140
68	n-Butane	13.5210	0.0186	785.8946	0.0441	1.3475	0.0298
69	Aspen Technology Inc.			Aspen HYSYS Version 11		Page 6 of 40	


1	<div></div> <div>Company Name Not Available Bedford, MA USA</div>				Case Name: BINAK SUMMER-D03.hsc		
2					Unit Set: Binak3a13132		
3					Date/Time: Mon Mar 7 11:52:07 2022		
4							
5							
6	Material Stream: 03 (continued)				Fluid Package: Basis-1		
7					Property Package: Peng-Robinson		
8							
9	COMPOSITION						
10							
11	Overall Phase (continued)						Vapour Fraction 0.9999
12							
13	COMPONENTS	MOLAR FLOW (kgmole/h)	MOLE FRACTION	MASS FLOW (kg/h)	MASS FRACTION	LIQUID VOLUME FLOW (m3/h)	LIQUID VOLUME FRACTION
14							
15	i-Pentane	5.0671	0.0070	365.5990	0.0205	0.5864	0.0130
16	n-Pentane	2.7442	0.0038	197.9977	0.0111	0.3144	0.0070
17	n-Hexane	4.7625	0.0065	410.4228	0.0230	0.6194	0.0137
18	n-Heptane	1.4227	0.0020	142.5591	0.0080	0.2076	0.0046
19	n-Octane	0.4334	0.0006	49.5057	0.0028	0.0702	0.0016
20	n-Nonane	0.2159	0.0003	27.6928	0.0016	0.0384	0.0009
21	n-Decane	0.0720	0.0001	10.2397	0.0006	0.0140	0.0003
22	n-C11	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
23	Nitrogen	2.1697	0.0030	60.7789	0.0034	0.0754	0.0017
24	TEGlycol	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
25	Total	727.1875	1.0000	17833.1129	1.0000	45.2099	1.0000
26							
27	Vapour Phase						Phase Fraction 0.9999
28	COMPONENTS	MOLAR FLOW (kgmole/h)	MOLE FRACTION	MASS FLOW (kg/h)	MASS FRACTION	LIQUID VOLUME FLOW (m3/h)	LIQUID VOLUME FRACTION
29							
30	H2O	7.4184	0.0102	133.6440	0.0075	0.1339	0.0030
31	CO2	22.9836	0.0316	1011.5010	0.0567	1.2256	0.0271
32	H2S	39.3546	0.0541	1341.0489	0.0752	1.7010	0.0376
33	Methane	464.6156	0.6390	7453.7810	0.4180	24.8962	0.5507
34	Ethane	99.9993	0.1375	3006.9696	0.1686	8.4541	0.1870
35	Propane	56.2216	0.0773	2479.2059	0.1390	4.8931	0.1082
36	i-Butane	6.1042	0.0084	354.8019	0.0199	0.6314	0.0140
37	n-Butane	13.5210	0.0186	785.8946	0.0441	1.3475	0.0298
38	i-Pentane	5.0671	0.0070	365.5990	0.0205	0.5864	0.0130
39	n-Pentane	2.7442	0.0038	197.9977	0.0111	0.3144	0.0070
40	n-Hexane	4.7625	0.0065	410.4228	0.0230	0.6194	0.0137
41	n-Heptane	1.4227	0.0020	142.5591	0.0080	0.2076	0.0046
42	n-Octane	0.4334	0.0006	49.5057	0.0028	0.0702	0.0016
43	n-Nonane	0.2159	0.0003	27.6928	0.0016	0.0384	0.0009
44	n-Decane	0.0720	0.0001	10.2397	0.0006	0.0140	0.0003
45	n-C11	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
46	Nitrogen	2.1697	0.0030	60.7789	0.0034	0.0754	0.0017
47	TEGlycol	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
48	Total	727.1059	1.0000	17831.6426	1.0000	45.2084	1.0000
49							
50	Aqueous Phase						Phase Fraction 1.122e-004
51	COMPONENTS	MOLAR FLOW (kgmole/h)	MOLE FRACTION	MASS FLOW (kg/h)	MASS FRACTION	LIQUID VOLUME FLOW (m3/h)	LIQUID VOLUME FRACTION
52							
53	H2O	0.0815	0.9995	1.4689	0.9991	0.0015	0.9988
54	CO2	0.0000	0.0001	0.0003	0.0002	0.0000	0.0002
55	H2S	0.0000	0.0004	0.0011	0.0007	0.0000	0.0009
56	Methane	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
57	Ethane	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
58	Propane	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
59	i-Butane	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
60	n-Butane	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
61	i-Pentane	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
62	n-Pentane	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
63	n-Hexane	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
64	n-Heptane	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
65	n-Octane	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
66	n-Nonane	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
67	n-Decane	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
68	n-C11	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
69	Aspen Technology Inc. Aspen HYSYS Version 11 Page 7 of 40						


1	<div></div> <div>Company Name Not Available Bedford, MA USA</div>				Case Name: BINAK SUMMER-D03.hsc		
2					Unit Set: Binak3a13132		
3					Date/Time: Mon Mar 7 11:52:07 2022		
4							
5							
6	Material Stream: 03 (continued)				Fluid Package: Basis-1		
7					Property Package: Peng-Robinson		
8							
9	COMPOSITION						
10							
11	Aqueous Phase (continued)				Phase Fraction 1.122e-004		
12							
13	COMPONENTS	MOLAR FLOW (kgmole/h)	MOLE FRACTION	MASS FLOW (kg/h)	MASS FRACTION	LIQUID VOLUME FLOW (m3/h)	LIQUID VOLUME FRACTION
14							
15	Nitrogen	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
16	TEGlycol	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
17	Total	0.0816	1.0000	1.4703	1.0000	0.0015	1.0000
18							
19	Material Stream: 04				Fluid Package: Basis-1		
20					Property Package: Peng-Robinson		
21	CONDITIONS						
22							
23		Overall	Vapour Phase	Aqueous Phase			
24	Vapour / Phase Fraction	1.0000	1.0000	0.0000			
25	Temperature: (C)	36.92	36.92	36.92			
26	Pressure: (bar_g)	5.100	5.100	5.100			
27	Molar Flow (MMSCFD)	14.60	14.60	0.0000			
28	Mass Flow (kg/h)	1.783e+004	1.783e+004	0.0000			
29	Std Ideal Liq Vol Flow (barrel/day)	6825	6825	0.0000			
30	Molar Enthalpy (kJ/kgmole)	-9.002e+004	-9.002e+004	-2.852e+005			
31	Molar Entropy (kJ/kgmole-C)	178.6	178.6	56.81			
32	Heat Flow (kW)	-1.818e+004	-1.818e+004	0.0000			
33	Liq Vol Flow @Std Cond (barrel/day)	2.582e+006 *	2.582e+006	0.0000			
34	PROPERTIES						
35							
36		Overall	Vapour Phase	Aqueous Phase			
37	Molecular Weight	24.52	24.52	18.02			
38	Molar Density (kgmole/m3)	0.2434	0.2434	46.75			
39	Mass Density (kg/m3)	5.969	5.969	842.6			
40	Act. Volume Flow (m3/h)	2988	2988	0.0000			
41	Mass Enthalpy (kJ/kg)	-3671	-3671	-1.582e+004			
42	Mass Entropy (kJ/kg-C)	7.284	7.284	3.152			
43	Heat Capacity (kJ/kgmole-C)	46.81	46.81	77.71			
44	Mass Heat Capacity (kJ/kg-C)	1.909	1.909	4.312			
45	LHV Molar Basis (Std) (kJ/kgmole)	1.042e+006	1.042e+006	199.7			
46	HHV Molar Basis (Std) (kJ/kgmole)	1.138e+006	1.138e+006	4.121e+004			
47	HHV Mass Basis (Std) (kJ/kg)	4.639e+004	4.639e+004	2286			
48	CO2 Loading	---	---	---			
49	CO2 Apparent Mole Conc. (kgmole/m3)	---	---	---			
50	CO2 Apparent Wt. Conc. (kgmol/kg)	---	---	---			
51	LHV Mass Basis (Std) (kJ/kg)	4.249e+004	4.249e+004	11.08			
52	Phase Fraction [Vol. Basis]	1.000	1.000	---			
53	Phase Fraction [Mass Basis]	1.000	1.000	0.0000			
54	Phase Fraction [Act. Vol. Basis]	1.000	1.000	0.0000			
55	Mass Exergy (kJ/kg)	179.7	---	---			
56	Partial Pressure of CO2 (bar_g)	-0.8200	---	---			
57	Cost Based on Flow (Cost/s)	0.0000	0.0000	0.0000			
58	Act. Gas Flow (ACT_m3/h)	2988	2988	---			
59	Avg. Liq. Density (kgmole/m3)	16.08	16.08	55.36			
60	Specific Heat (kJ/kgmole-C)	46.81	46.81	77.71			
61	Std. Gas Flow (Nm3/h)	1.630e+004	1.630e+004	0.0000			
62	Std. Ideal Liq. Mass Density (kg/m3)	394.5	394.5	997.8			
63	Act. Liq. Flow (m3/s)	0.0000	---	0.0000			
64	Z Factor	---	0.9743	5.072e-003			
65	Watson K	16.45	16.45	9.078			
66	User Property	---	---	---			
67	Partial Pressure of H2S (bar_g)	-0.6824	---	---			
68	Cp/(Cp - R)	1.216	1.216	1.120			
69	Aspen Technology Inc. Aspen HYSYS Version 11 Page 8 of 40						

1	<div></div> <div>Company Name Not Available Bedford, MA USA</div>			Case Name: BINAK SUMMER-D03.hsc					
2				Unit Set: Binak3a13132					
3									
4				Date/Time: Mon Mar 7 11:52:07 2022					
5	<div>Material Stream: 04 (continued)</div>								
6								Fluid Package: Basis-1	
7								Property Package: Peng-Robinson	
8									
9	PROPERTIES								
10									
11		Overall	Vapour Phase	Aqueous Phase					
12	Cp/Cv	1.246	1.246	1.154					
13	Heat of Vap. (kJ/kgmole)	1.847e+004	---	---					
14	Kinematic Viscosity (cSt)	1.924	1.924	0.8207					
15	Liq. Mass Density (Std. Cond) (kg/m3)	1.043	1.043	1015					
16	Liq. Vol. Flow (Std. Cond) (barrel/day)	2.582e+006	2.582e+006	0.0000					
17	Liquid Fraction	0.0000	0.0000	1.000					
18	Molar Volume (m3/kgmole)	4.109	4.109	2.139e-002					
19	Mass Heat of Vap. (kJ/kg)	753.2	---	---					
20	Phase Fraction [Molar Basis]	1.0000	1.0000	0.0000					
21	Surface Tension (dyne/cm)	---	---	70.00					
22	Thermal Conductivity (W/m-K)	2.903e-002	2.903e-002	0.6276					
23	Viscosity (cP)	1.148e-002	1.148e-002	0.6915					
24	Cv (Semi-Ideal) (kJ/kgmole-C)	38.49	38.49	69.40					
25	Mass Cv (Semi-Ideal) (kJ/kg-C)	1.570	1.570	3.850					
26	Cv (kJ/kgmole-C)	37.57	37.57	67.34					
27	Mass Cv (kJ/kg-C)	1.532	1.532	3.736					
28	Cv (Ent. Method) (kJ/kgmole-C)	---	---	---					
29	Mass Cv (Ent. Method) (kJ/kg-C)	---	---	---					
30	Cp/Cv (Ent. Method)	---	---	---					
31	Reid VP at 37.8 C (bar_g)	---	---	37.31					
32	True VP at 37.8 C (bar_g)	168.1	168.1	-0.3897					
33	Liq. Vol. Flow - Sum(Std. Cond) (m3/h)	1.710e+004	1.710e+004	0.0000					
34	Viscosity Index	-17.48	---	---					
35	Ideal Gas Cp/Cv	1.222	1.222	1.328					
36	Ideal Gas Cp (kJ/kgmole-C)	45.77	45.77	33.65					
37	Mass Ideal Gas Cp (kJ/kg-C)	1.866	1.866	1.867					
38	Bubble Point Pressure (bar_g)	166.7	---	---					
39	COMPOSITION								
40									
41									
42	Overall Phase			Vapour Fraction		1.0000			
43	COMPONENTS	MOLAR FLOW (kgmole/h)	MOLE FRACTION	MASS FLOW (kg/h)	MASS FRACTION	LIQUID VOLUME FLOW (m3/h)	LIQUID VOLUME FRACTION		
44									
45	H2O	7.5000	0.0103	135.1129	0.0076	0.1354	0.0030		
46	CO2	22.9836	0.0316	1011.5013	0.0567	1.2256	0.0271		
47	H2S	39.3547	0.0541	1341.0500	0.0752	1.7010	0.0376		
48	Methane	464.6156	0.6389	7453.7810	0.4180	24.8962	0.5507		
49	Ethane	99.9993	0.1375	3006.9696	0.1686	8.4541	0.1870		
50	Propane	56.2216	0.0773	2479.2059	0.1390	4.8931	0.1082		
51	i-Butane	6.1042	0.0084	354.8019	0.0199	0.6314	0.0140		
52	n-Butane	13.5210	0.0186	785.8946	0.0441	1.3475	0.0298		
53	i-Pentane	5.0671	0.0070	365.5990	0.0205	0.5864	0.0130		
54	n-Pentane	2.7442	0.0038	197.9977	0.0111	0.3144	0.0070		
55	n-Hexane	4.7625	0.0065	410.4228	0.0230	0.6194	0.0137		
56	n-Heptane	1.4227	0.0020	142.5591	0.0080	0.2076	0.0046		
57	n-Octane	0.4334	0.0006	49.5057	0.0028	0.0702	0.0016		
58	n-Nonane	0.2159	0.0003	27.6928	0.0016	0.0384	0.0009		
59	n-Decane	0.0720	0.0001	10.2397	0.0006	0.0140	0.0003		
60	n-C11	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		
61	Nitrogen	2.1697	0.0030	60.7789	0.0034	0.0754	0.0017		
62	TEGlycol	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		
63	Total	727.1875	1.0000	17833.1129	1.0000	45.2099	1.0000		
64	Vapour Phase								
65				Phase Fraction		1.000			
66	COMPONENTS	MOLAR FLOW (kgmole/h)	MOLE FRACTION	MASS FLOW (kg/h)	MASS FRACTION	LIQUID VOLUME FLOW (m3/h)	LIQUID VOLUME FRACTION		
67									
68	H2O	7.5000	0.0103	135.1129	0.0076	0.1354	0.0030		
69	Aspen Technology Inc. Aspen HYSYS Version 11 Page 9 of 40								


1	<div></div> <div>Company Name Not Available Bedford, MA USA</div>			Case Name: BINAK SUMMER-D03.hsc			
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6	Material Stream: 04 (continued)				Fluid Package: Basis-1		
7					Property Package: Peng-Robinson		
8							
9	COMPOSITION						
10							
11	Vapour Phase (continued)				Phase Fraction		1.000
12							
13	COMPONENTS	MOLAR FLOW (kgmole/h)	MOLE FRACTION	MASS FLOW (kg/h)	MASS FRACTION	LIQUID VOLUME FLOW (m3/h)	LIQUID VOLUME FRACTION
14							
15	CO2	22.9836	0.0316	1011.5013	0.0567	1.2256	0.0271
16	H2S	39.3547	0.0541	1341.0500	0.0752	1.7010	0.0376
17	Methane	464.6156	0.6389	7453.7810	0.4180	24.8962	0.5507
18	Ethane	99.9993	0.1375	3006.9696	0.1686	8.4541	0.1870
19	Propane	56.2216	0.0773	2479.2059	0.1390	4.8931	0.1082
20	i-Butane	6.1042	0.0084	354.8019	0.0199	0.6314	0.0140
21	n-Butane	13.5210	0.0186	785.8946	0.0441	1.3475	0.0298
22	i-Pentane	5.0671	0.0070	365.5990	0.0205	0.5864	0.0130
23	n-Pentane	2.7442	0.0038	197.9977	0.0111	0.3144	0.0070
24	n-Hexane	4.7625	0.0065	410.4228	0.0230	0.6194	0.0137
25	n-Heptane	1.4227	0.0020	142.5591	0.0080	0.2076	0.0046
26	n-Octane	0.4334	0.0006	49.5057	0.0028	0.0702	0.0016
27	n-Nonane	0.2159	0.0003	27.6928	0.0016	0.0384	0.0009
28	n-Decane	0.0720	0.0001	10.2397	0.0006	0.0140	0.0003
29	n-C11	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
30	Nitrogen	2.1697	0.0030	60.7789	0.0034	0.0754	0.0017
31	TEGlycol	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
32	Total	727.1875	1.0000	17833.1129	1.0000	45.2099	1.0000
33							
34	Aqueous Phase				Phase Fraction		0.0000
35	COMPONENTS	MOLAR FLOW (kgmole/h)	MOLE FRACTION	MASS FLOW (kg/h)	MASS FRACTION	LIQUID VOLUME FLOW (m3/h)	LIQUID VOLUME FRACTION
36							
37	H2O	0.0000	0.9995	0.0000	0.9991	0.0000	0.9989
38	CO2	0.0000	0.0001	0.0000	0.0002	0.0000	0.0002
39	H2S	0.0000	0.0004	0.0000	0.0007	0.0000	0.0009
40	Methane	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
41	Ethane	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
42	Propane	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
43	i-Butane	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
44	n-Butane	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
45	i-Pentane	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
46	n-Pentane	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
47	n-Hexane	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
48	n-Heptane	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
49	n-Octane	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
50	n-Nonane	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
51	n-Decane	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
52	n-C11	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
53	Nitrogen	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
54	TEGlycol	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
55	Total	0.0000	1.0000	0.0000	1.0000	0.0000	1.0000
56							
57	Material Stream: 05				Fluid Package: Basis-1		
58					Property Package: Peng-Robinson		
59							
60	CONDITIONS						
61		Overall	Vapour Phase	Aqueous Phase			
62	Vapour / Phase Fraction	1.0000	1.0000	0.0000			
63	Temperature: (C)	36.92	36.92	36.92			
64	Pressure: (bar_g)	5.100	5.100	5.100			
65	Molar Flow (MMSCFD)	7.093	7.093	0.0000			
66	Mass Flow (kg/h)	8664	8664	0.0000			
67	Std Ideal Liq Vol Flow (barrel/day)	3316	3316	0.0000			
68	Molar Enthalpy (kJ/kgmole)	-9.002e+004	-9.002e+004	-2.852e+005			
69	Aspen Technology Inc. Aspen HYSYS Version 11 Page 10 of 40						


1	<div></div> <div>Company Name Not Available Bedford, MA USA</div>		Case Name: BINAK SUMMER-D03.hsc		
2			Unit Set: Binak3a13132		
3			Date/Time: Mon Mar 7 11:52:07 2022		
4					
5					
6	Material Stream: 05 (continued)			Fluid Package:	Basis-1
7				Property Package:	Peng-Robinson
8					
9	CONDITIONS				
10					
11		Overall	Vapour Phase	Aqueous Phase	
12	Molar Entropy (kJ/kgmole-C)	178.6	178.6	56.81	
13	Heat Flow (kW)	-8834	-8834	0.0000	
14	Liq Vol Flow @Std Cond (barrel/day)	1.254e+006 *	1.254e+006	0.0000	
15	PROPERTIES				
16					
17		Overall	Vapour Phase	Aqueous Phase	
18	Molecular Weight	24.52	24.52	18.02	
19	Molar Density (kgmole/m3)	0.2434	0.2434	46.75	
20	Mass Density (kg/m3)	5.969	5.969	842.6	
21	Act. Volume Flow (m3/h)	1451	1451	0.0000	
22	Mass Enthalpy (kJ/kg)	-3671	-3671	-1.582e+004	
23	Mass Entropy (kJ/kg-C)	7.284	7.284	3.152	
24	Heat Capacity (kJ/kgmole-C)	46.81	46.81	77.71	
25	Mass Heat Capacity (kJ/kg-C)	1.909	1.909	4.312	
26	LHV Molar Basis (Std) (kJ/kgmole)	1.042e+006	1.042e+006	199.7	
27	HHV Molar Basis (Std) (kJ/kgmole)	1.138e+006	1.138e+006	4.121e+004	
28	HHV Mass Basis (Std) (kJ/kg)	4.639e+004	4.639e+004	2286	
29	CO2 Loading	---	---	---	
30	CO2 Apparent Mole Conc. (kgmole/m3)	---	---	---	
31	CO2 Apparent Wt. Conc. (kgmol/kg)	---	---	---	
32	LHV Mass Basis (Std) (kJ/kg)	4.249e+004	4.249e+004	11.08	
33	Phase Fraction [Vol. Basis]	1.000	1.000	---	
34	Phase Fraction [Mass Basis]	1.000	1.000	0.0000	
35	Phase Fraction [Act. Vol. Basis]	1.000	1.000	0.0000	
36	Mass Exergy (kJ/kg)	179.7	---	---	
37	Partial Pressure of CO2 (bar_g)	-0.8200	---	---	
38	Cost Based on Flow (Cost/s)	0.0000	0.0000	0.0000	
39	Act. Gas Flow (ACT_m3/h)	1451	1451	---	
40	Avg. Liq. Density (kgmole/m3)	16.08	16.08	55.36	
41	Specific Heat (kJ/kgmole-C)	46.81	46.81	77.71	
42	Std. Gas Flow (Nm3/h)	7918	7918	0.0000	
43	Std. Ideal Liq. Mass Density (kg/m3)	394.5	394.5	997.8	
44	Act. Liq. Flow (m3/s)	0.0000	---	0.0000	
45	Z Factor	---	0.9743	5.072e-003	
46	Watson K	16.45	16.45	9.078	
47	User Property	---	---	---	
48	Partial Pressure of H2S (bar_g)	-0.6824	---	---	
49	Cp/(Cp - R)	1.216	1.216	1.120	
50	Cp/Cv	1.246	1.246	1.154	
51	Heat of Vap. (kJ/kgmole)	1.847e+004	---	---	
52	Kinematic Viscosity (cSt)	1.924	1.924	0.8207	
53	Liq. Mass Density (Std. Cond) (kg/m3)	1.043	1.043	1015	
54	Liq. Vol. Flow (Std. Cond) (barrel/day)	1.254e+006	1.254e+006	0.0000	
55	Liquid Fraction	0.0000	0.0000	1.000	
56	Molar Volume (m3/kgmole)	4.109	4.109	2.139e-002	
57	Mass Heat of Vap. (kJ/kg)	753.2	---	---	
58	Phase Fraction [Molar Basis]	1.0000	1.0000	0.0000	
59	Surface Tension (dyne/cm)	---	---	70.00	
60	Thermal Conductivity (W/m-K)	2.903e-002	2.903e-002	0.6276	
61	Viscosity (cP)	1.148e-002	1.148e-002	0.6915	
62	Cv (Semi-Ideal) (kJ/kgmole-C)	38.49	38.49	69.40	
63	Mass Cv (Semi-Ideal) (kJ/kg-C)	1.570	1.570	3.850	
64	Cv (kJ/kgmole-C)	37.57	37.57	67.34	
65	Mass Cv (kJ/kg-C)	1.532	1.532	3.736	
66	Cv (Ent. Method) (kJ/kgmole-C)	---	---	---	
67	Mass Cv (Ent. Method) (kJ/kg-C)	---	---	---	
68	Cp/Cv (Ent. Method)	---	---	---	
69	Aspen Technology Inc.		Aspen HYSYS Version 11		Page 11 of 40


1	<div></div> <div>Company Name Not Available Bedford, MA USA</div>			Case Name: BINAK SUMMER-D03.hsc					
2				Unit Set: Binak3a13132					
3									
4				Date/Time: Mon Mar 7 11:52:07 2022					
5	<div>Material Stream: 05 (continued)</div>								
6								Fluid Package: Basis-1	
7								Property Package: Peng-Robinson	
8									
9	PROPERTIES								
10									
11		Overall	Vapour Phase	Aqueous Phase					
12	Reid VP at 37.8 C (bar_g)	---	---	37.31					
13	True VP at 37.8 C (bar_g)	168.1	168.1	-0.3897					
14	Liq. Vol. Flow - Sum(Std. Cond) (m3/h)	8309	8309	0.0000					
15	Viscosity Index	-17.48	---	---					
16	Ideal Gas Cp/Cv	1.222	1.222	1.328					
17	Ideal Gas Cp (kJ/kgmole-C)	45.77	45.77	33.65					
18	Mass Ideal Gas Cp (kJ/kg-C)	1.866	1.866	1.867					
19	Bubble Point Pressure (bar_g)	166.7	---	---					
20	COMPOSITION								
21									
22	Overall Phase								
23						Vapour Fraction	1.0000		
24	COMPONENTS	MOLAR FLOW (kgmole/h)	MOLE FRACTION	MASS FLOW (kg/h)	MASS FRACTION	LIQUID VOLUME FLOW (m3/h)	LIQUID VOLUME FRACTION		
25									
26	H2O	3.6436	0.0103	65.6405	0.0076	0.0658	0.0030		
27	CO2	11.1659	0.0316	491.4069	0.0567	0.5954	0.0271		
28	H2S	19.1193	0.0541	651.5080	0.0752	0.8264	0.0376		
29	Methane	225.7192	0.6389	3621.1910	0.4180	12.0951	0.5507		
30	Ethane	48.5816	0.1375	1460.8440	0.1686	4.1072	0.1870		
31	Propane	27.3136	0.0773	1204.4462	0.1390	2.3771	0.1082		
32	i-Butane	2.9655	0.0084	172.3696	0.0199	0.3067	0.0140		
33	n-Butane	6.5688	0.0186	381.8028	0.0441	0.6546	0.0298		
34	i-Pentane	2.4617	0.0070	177.6151	0.0205	0.2849	0.0130		
35	n-Pentane	1.3332	0.0038	96.1911	0.0111	0.1528	0.0070		
36	n-Hexane	2.3137	0.0065	199.3913	0.0230	0.3009	0.0137		
37	n-Heptane	0.6912	0.0020	69.2580	0.0080	0.1008	0.0046		
38	n-Octane	0.2105	0.0006	24.0508	0.0028	0.0341	0.0016		
39	n-Nonane	0.1049	0.0003	13.4537	0.0016	0.0187	0.0009		
40	n-Decane	0.0350	0.0001	4.9747	0.0006	0.0068	0.0003		
41	n-C11	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		
42	Nitrogen	1.0541	0.0030	29.5276	0.0034	0.0366	0.0017		
43	TEGlycol	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		
44	Total	353.2817	1.0000	8663.6713	1.0000	21.9638	1.0000		
45	Vapour Phase								
46						Phase Fraction	1.000		
47	COMPONENTS	MOLAR FLOW (kgmole/h)	MOLE FRACTION	MASS FLOW (kg/h)	MASS FRACTION	LIQUID VOLUME FLOW (m3/h)	LIQUID VOLUME FRACTION		
48									
49	H2O	3.6436	0.0103	65.6405	0.0076	0.0658	0.0030		
50	CO2	11.1659	0.0316	491.4069	0.0567	0.5954	0.0271		
51	H2S	19.1193	0.0541	651.5080	0.0752	0.8264	0.0376		
52	Methane	225.7192	0.6389	3621.1910	0.4180	12.0951	0.5507		
53	Ethane	48.5816	0.1375	1460.8440	0.1686	4.1072	0.1870		
54	Propane	27.3136	0.0773	1204.4462	0.1390	2.3771	0.1082		
55	i-Butane	2.9655	0.0084	172.3696	0.0199	0.3067	0.0140		
56	n-Butane	6.5688	0.0186	381.8028	0.0441	0.6546	0.0298		
57	i-Pentane	2.4617	0.0070	177.6151	0.0205	0.2849	0.0130		
58	n-Pentane	1.3332	0.0038	96.1911	0.0111	0.1528	0.0070		
59	n-Hexane	2.3137	0.0065	199.3913	0.0230	0.3009	0.0137		
60	n-Heptane	0.6912	0.0020	69.2580	0.0080	0.1008	0.0046		
61	n-Octane	0.2105	0.0006	24.0508	0.0028	0.0341	0.0016		
62	n-Nonane	0.1049	0.0003	13.4537	0.0016	0.0187	0.0009		
63	n-Decane	0.0350	0.0001	4.9747	0.0006	0.0068	0.0003		
64	n-C11	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		
65	Nitrogen	1.0541	0.0030	29.5276	0.0034	0.0366	0.0017		
66	TEGlycol	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		
67	Total	353.2817	1.0000	8663.6713	1.0000	21.9638	1.0000		
68									
69	Aspen Technology Inc.		Aspen HYSYS Version 11			Page 12 of 40			


1	<div></div> <div>Company Name Not Available Bedford, MA USA</div>			Case Name: BINAK SUMMER-D03.hsc		
2				Unit Set: Binak3a13132		
3				Date/Time: Mon Mar 7 11:52:07 2022		
4						
5						
6	Material Stream: 05 (continued)				Fluid Package:	Basis-1
7					Property Package:	Peng-Robinson
8						
9	COMPOSITION					
10						
11	Aqueous Phase					
12	Phase Fraction 0.0000					
13	COMPONENTS	MOLAR FLOW	MOLE FRACTION	MASS FLOW	MASS FRACTION	LIQUID VOLUME
14		(kgmole/h)		(kg/h)		FLOW (m3/h)
15						LIQUID VOLUME
16						FRACTION
15	H2O	0.0000	0.9995	0.0000	0.9991	0.0000
16	CO2	0.0000	0.0001	0.0000	0.0002	0.0000
17	H2S	0.0000	0.0004	0.0000	0.0007	0.0000
18	Methane	0.0000	0.0000	0.0000	0.0000	0.0000
19	Ethane	0.0000	0.0000	0.0000	0.0000	0.0000
20	Propane	0.0000	0.0000	0.0000	0.0000	0.0000
21	i-Butane	0.0000	0.0000	0.0000	0.0000	0.0000
22	n-Butane	0.0000	0.0000	0.0000	0.0000	0.0000
23	i-Pentane	0.0000	0.0000	0.0000	0.0000	0.0000
24	n-Pentane	0.0000	0.0000	0.0000	0.0000	0.0000
25	n-Hexane	0.0000	0.0000	0.0000	0.0000	0.0000
26	n-Heptane	0.0000	0.0000	0.0000	0.0000	0.0000
27	n-Octane	0.0000	0.0000	0.0000	0.0000	0.0000
28	n-Nonane	0.0000	0.0000	0.0000	0.0000	0.0000
29	n-Decane	0.0000	0.0000	0.0000	0.0000	0.0000
30	n-C11	0.0000	0.0000	0.0000	0.0000	0.0000
31	Nitrogen	0.0000	0.0000	0.0000	0.0000	0.0000
32	TEGlycol	0.0000	0.0000	0.0000	0.0000	0.0000
33	Total	0.0000	1.0000	0.0000	1.0000	0.0000
34						
35	Material Stream: 06				Fluid Package:	Basis-1
36					Property Package:	Peng-Robinson
37						
38	CONDITIONS					
39		Overall	Vapour Phase	Aqueous Phase		
40	Vapour / Phase Fraction	1.0000	1.0000	0.0000		
41	Temperature: (C)	36.78	36.78	36.78		
42	Pressure: (bar_g)	4.900	4.900	4.900		
43	Molar Flow (MMSCFD)	7.093	7.093	0.0000		
44	Mass Flow (kg/h)	8664	8664	0.0000		
45	Std Ideal Liq Vol Flow (barrel/day)	3316	3316	0.0000		
46	Molar Enthalpy (kJ/kgmole)	-9.002e+004	-9.002e+004	-2.852e+005		
47	Molar Entropy (kJ/kgmole-C)	178.9	178.9	56.77		
48	Heat Flow (kW)	-8834	-8834	0.0000		
49	Liq Vol Flow @Std Cond (barrel/day)	1.254e+006 *	1.254e+006	0.0000		
50						
51	PROPERTIES					
52		Overall	Vapour Phase	Aqueous Phase		
53	Molecular Weight	24.52	24.52	18.02		
54	Molar Density (kgmole/m3)	0.2353	0.2353	46.75		
55	Mass Density (kg/m3)	5.771	5.771	842.7		
56	Act. Volume Flow (m3/h)	1501	1501	0.0000		
57	Mass Enthalpy (kJ/kg)	-3671	-3671	-1.582e+004		
58	Mass Entropy (kJ/kg-C)	7.295	7.295	3.150		
59	Heat Capacity (kJ/kgmole-C)	46.76	46.76	77.71		
60	Mass Heat Capacity (kJ/kg-C)	1.907	1.907	4.312		
61	LHV Molar Basis (Std) (kJ/kgmole)	1.042e+006	1.042e+006	198.7		
62	HHV Molar Basis (Std) (kJ/kgmole)	1.138e+006	1.138e+006	4.121e+004		
63	HHV Mass Basis (Std) (kJ/kg)	4.639e+004	4.639e+004	2286		
64	CO2 Loading	---	---	---		
65	CO2 Apparent Mole Conc. (kgmole/m3)	---	---	---		
66	CO2 Apparent Wt. Conc. (kgmol/kg)	---	---	---		
67	LHV Mass Basis (Std) (kJ/kg)	4.249e+004	4.249e+004	11.02		
68	Phase Fraction [Vol. Basis]	1.000	1.000	---		
69	Aspen Technology Inc.		Aspen HYSYS Version 11		Page 13 of 40	


1	<div></div> <div>Company Name Not Available Bedford, MA USA</div>			Case Name: BINAK SUMMER-D03.hsc		
2				Unit Set: Binak3a13132		
3				Date/Time: Mon Mar 7 11:52:07 2022		
4						
5	<div>Material Stream: 06 (continued)</div>			Fluid Package: Basis-1		
6				Property Package: Peng-Robinson		
7						
8						
9	PROPERTIES					
10						
11		Overall	Vapour Phase	Aqueous Phase		
12	Phase Fraction [Mass Basis]	1.000	1.000	0.0000		
13	Phase Fraction [Act. Vol. Basis]	1.000	1.000	0.0000		
14	Mass Exergy (kJ/kg)	176.4	---	---		
15	Partial Pressure of CO2 (bar_g)	-0.8264	---	---		
16	Cost Based on Flow (Cost/s)	0.0000	0.0000	0.0000		
17	Act. Gas Flow (ACT_m3/h)	1501	1501	---		
18	Avg. Liq. Density (kgmole/m3)	16.08	16.08	55.36		
19	Specific Heat (kJ/kgmole-C)	46.76	46.76	77.71		
20	Std. Gas Flow (Nm3/h)	7918	7918	0.0000		
21	Std. Ideal Liq. Mass Density (kg/m3)	394.5	394.5	997.8		
22	Act. Liq. Flow (m3/s)	0.0000	---	0.0000		
23	Z Factor	---	0.9751	4.908e-003		
24	Watson K	16.45	16.45	9.078		
25	User Property	---	---	---		
26	Partial Pressure of H2S (bar_g)	-0.6932	---	---		
27	Cp/(Cp - R)	1.216	1.216	1.120		
28	Cp/Cv	1.245	1.245	1.154		
29	Heat of Vap. (kJ/kgmole)	1.850e+004	---	---		
30	Kinematic Viscosity (cSt)	1.988	1.988	0.8229		
31	Liq. Mass Density (Std. Cond) (kg/m3)	1.043	1.043	1015		
32	Liq. Vol. Flow (Std. Cond) (barrel/day)	1.254e+006	1.254e+006	0.0000		
33	Liquid Fraction	0.0000	0.0000	1.000		
34	Molar Volume (m3/kgmole)	4.249	4.249	2.139e-002		
35	Mass Heat of Vap. (kJ/kg)	754.3	---	---		
36	Phase Fraction [Molar Basis]	1.0000	1.0000	0.0000		
37	Surface Tension (dyne/cm)	---	---	70.03		
38	Thermal Conductivity (W/m-K)	2.900e-002	2.900e-002	0.6274		
39	Viscosity (cP)	1.147e-002	1.147e-002	0.6934		
40	Cv (Semi-Ideal) (kJ/kgmole-C)	38.45	38.45	69.39		
41	Mass Cv (Semi-Ideal) (kJ/kg-C)	1.568	1.568	3.850		
42	Cv (kJ/kgmole-C)	37.56	37.56	67.34		
43	Mass Cv (kJ/kg-C)	1.532	1.532	3.736		
44	Cv (Ent. Method) (kJ/kgmole-C)	---	---	---		
45	Mass Cv (Ent. Method) (kJ/kg-C)	---	---	---		
46	Cp/Cv (Ent. Method)	---	---	---		
47	Reid VP at 37.8 C (bar_g)	---	---	37.31		
48	True VP at 37.8 C (bar_g)	168.1	168.1	-0.3930		
49	Liq. Vol. Flow - Sum(Std. Cond) (m3/h)	8309	8309	0.0000		
50	Viscosity Index	-17.13	---	---		
51	Ideal Gas Cp/Cv	1.222	1.222	1.328		
52	Ideal Gas Cp (kJ/kgmole-C)	45.76	45.76	33.64		
53	Mass Ideal Gas Cp (kJ/kg-C)	1.866	1.866	1.867		
54	Bubble Point Pressure (bar_g)	166.5	---	---		
55	COMPOSITION					
56						
57	Overall Phase					
58					Vapour Fraction	1.0000
59	COMPONENTS	MOLAR FLOW (kgmole/h)	MOLE FRACTION	MASS FLOW (kg/h)	MASS FRACTION	LIQUID VOLUME FLOW (m3/h)
60						LIQUID VOLUME FRACTION
61	H2O	3.6436	0.0103	65.6405	0.0076	0.0658
62	CO2	11.1659	0.0316	491.4069	0.0567	0.5954
63	H2S	19.1193	0.0541	651.5080	0.0752	0.8264
64	Methane	225.7192	0.6389	3621.1910	0.4180	12.0951
65	Ethane	48.5816	0.1375	1460.8440	0.1686	4.1072
66	Propane	27.3136	0.0773	1204.4462	0.1390	2.3771
67	i-Butane	2.9655	0.0084	172.3696	0.0199	0.3067
68	n-Butane	6.5688	0.0186	381.8028	0.0441	0.6546
69	Aspen Technology Inc.		Aspen HYSYS Version 11			Page 14 of 40

1	<div></div> <div>Company Name Not Available Bedford, MA USA</div>			Case Name: BINAK SUMMER-D03.hsc				
2				Unit Set: Binak3a13132				
3								
4				Date/Time: Mon Mar 7 11:52:07 2022				
5	<div>Material Stream: 06 (continued)</div>							
6								Fluid Package: Basis-1
7								Property Package: Peng-Robinson
8								
9	COMPOSITION							
10								
11	Overall Phase (continued)							
12							Vapour Fraction	1.0000
13	COMPONENTS	MOLAR FLOW (kgmole/h)	MOLE FRACTION	MASS FLOW (kg/h)	MASS FRACTION	LIQUID VOLUME FLOW (m3/h)	LIQUID VOLUME FRACTION	
14								
15	i-Pentane	2.4617	0.0070	177.6151	0.0205	0.2849	0.0130	
16	n-Pentane	1.3332	0.0038	96.1911	0.0111	0.1528	0.0070	
17	n-Hexane	2.3137	0.0065	199.3913	0.0230	0.3009	0.0137	
18	n-Heptane	0.6912	0.0020	69.2580	0.0080	0.1008	0.0046	
19	n-Octane	0.2105	0.0006	24.0508	0.0028	0.0341	0.0016	
20	n-Nonane	0.1049	0.0003	13.4537	0.0016	0.0187	0.0009	
21	n-Decane	0.0350	0.0001	4.9747	0.0006	0.0068	0.0003	
22	n-C11	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
23	Nitrogen	1.0541	0.0030	29.5276	0.0034	0.0366	0.0017	
24	TEGlycol	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
25	Total	353.2817	1.0000	8663.6713	1.0000	21.9638	1.0000	
26								
27	Vapour Phase							
28							Phase Fraction	1.000
29	COMPONENTS	MOLAR FLOW (kgmole/h)	MOLE FRACTION	MASS FLOW (kg/h)	MASS FRACTION	LIQUID VOLUME FLOW (m3/h)	LIQUID VOLUME FRACTION	
30	H2O	3.6436	0.0103	65.6405	0.0076	0.0658	0.0030	
31	CO2	11.1659	0.0316	491.4069	0.0567	0.5954	0.0271	
32	H2S	19.1193	0.0541	651.5080	0.0752	0.8264	0.0376	
33	Methane	225.7192	0.6389	3621.1910	0.4180	12.0951	0.5507	
34	Ethane	48.5816	0.1375	1460.8440	0.1686	4.1072	0.1870	
35	Propane	27.3136	0.0773	1204.4462	0.1390	2.3771	0.1082	
36	i-Butane	2.9655	0.0084	172.3696	0.0199	0.3067	0.0140	
37	n-Butane	6.5688	0.0186	381.8028	0.0441	0.6546	0.0298	
38	i-Pentane	2.4617	0.0070	177.6151	0.0205	0.2849	0.0130	
39	n-Pentane	1.3332	0.0038	96.1911	0.0111	0.1528	0.0070	
40	n-Hexane	2.3137	0.0065	199.3913	0.0230	0.3009	0.0137	
41	n-Heptane	0.6912	0.0020	69.2580	0.0080	0.1008	0.0046	
42	n-Octane	0.2105	0.0006	24.0508	0.0028	0.0341	0.0016	
43	n-Nonane	0.1049	0.0003	13.4537	0.0016	0.0187	0.0009	
44	n-Decane	0.0350	0.0001	4.9747	0.0006	0.0068	0.0003	
45	n-C11	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
46	Nitrogen	1.0541	0.0030	29.5276	0.0034	0.0366	0.0017	
47	TEGlycol	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
48	Total	353.2817	1.0000	8663.6713	1.0000	21.9638	1.0000	
49								
50	Aqueous Phase							
51							Phase Fraction	0.0000
52	COMPONENTS	MOLAR FLOW (kgmole/h)	MOLE FRACTION	MASS FLOW (kg/h)	MASS FRACTION	LIQUID VOLUME FLOW (m3/h)	LIQUID VOLUME FRACTION	
53	H2O	0.0000	0.9995	0.0000	0.9991	0.0000	0.9989	
54	CO2	0.0000	0.0001	0.0000	0.0002	0.0000	0.0002	
55	H2S	0.0000	0.0004	0.0000	0.0007	0.0000	0.0009	
56	Methane	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
57	Ethane	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
58	Propane	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
59	i-Butane	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
60	n-Butane	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
61	i-Pentane	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
62	n-Pentane	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
63	n-Hexane	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
64	n-Heptane	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
65	n-Octane	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
66	n-Nonane	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
67	n-Decane	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
68	n-C11	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
69	Aspen Technology Inc. Aspen HYSYS Version 11 Page 15 of 40							


1	<div></div> <div>Company Name Not Available Bedford, MA USA</div>				Case Name: BINAK SUMMER-D03.hsc		
2					Unit Set: Binak3a13132		
3					Date/Time: Mon Mar 7 11:52:07 2022		
4							
5							
6	Material Stream: 06 (continued)				Fluid Package: Basis-1		
7					Property Package: Peng-Robinson		
8							
9	COMPOSITION						
10							
11	Aqueous Phase (continued)					Phase Fraction 0.0000	
12							
13	COMPONENTS	MOLAR FLOW (kgmole/h)	MOLE FRACTION	MASS FLOW (kg/h)	MASS FRACTION	LIQUID VOLUME FLOW (m3/h)	LIQUID VOLUME FRACTION
14							
15	Nitrogen	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
16	TEGlycol	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
17	Total	0.0000	1.0000	0.0000	1.0000	0.0000	1.0000
18	Material Stream: 07				Fluid Package: Basis-1		
19					Property Package: Peng-Robinson		
20							
21	CONDITIONS						
22							
23		Overall	Vapour Phase				
24	Vapour / Phase Fraction	1.0000	1.0000				
25	Temperature: (C)	124.8	124.8				
26	Pressure: (bar_g)	19.00 *	19.00				
27	Molar Flow (MMSCFD)	7.093	7.093				
28	Mass Flow (kg/h)	8664	8664				
29	Std Ideal Liq Vol Flow (barrel/day)	3316	3316				
30	Molar Enthalpy (kJ/kgmole)	-8.594e+004	-8.594e+004				
31	Molar Entropy (kJ/kgmole-C)	180.6	180.6				
32	Heat Flow (kW)	-8434	-8434				
33	Liq Vol Flow @Std Cond (barrel/day)	1.254e+006 *	1.254e+006				
34	PROPERTIES						
35							
36		Overall	Vapour Phase				
37	Molecular Weight	24.52	24.52				
38	Molar Density (kgmole/m3)	0.6273	0.6273				
39	Mass Density (kg/m3)	15.38	15.38				
40	Act. Volume Flow (m3/h)	563.2	563.2				
41	Mass Enthalpy (kJ/kg)	-3504	-3504				
42	Mass Entropy (kJ/kg-C)	7.365	7.365				
43	Heat Capacity (kJ/kgmole-C)	54.53	54.53				
44	Mass Heat Capacity (kJ/kg-C)	2.223	2.223				
45	LHV Molar Basis (Std) (kJ/kgmole)	1.042e+006	1.042e+006				
46	HHV Molar Basis (Std) (kJ/kgmole)	1.138e+006	1.138e+006				
47	HHV Mass Basis (Std) (kJ/kg)	4.639e+004	4.639e+004				
48	CO2 Loading	---	---				
49	CO2 Apparent Mole Conc. (kgmole/m3)	---	---				
50	CO2 Apparent Wt. Conc. (kgmol/kg)	---	---				
51	LHV Mass Basis (Std) (kJ/kg)	4.249e+004	4.249e+004				
52	Phase Fraction [Vol. Basis]	1.000	1.000				
53	Phase Fraction [Mass Basis]	1.000	1.000				
54	Phase Fraction [Act. Vol. Basis]	1.000	1.000				
55	Mass Exergy (kJ/kg)	321.7	---				
56	Partial Pressure of CO2 (bar_g)	-0.3807	---				
57	Cost Based on Flow (Cost/s)	0.0000	0.0000				
58	Act. Gas Flow (ACT_m3/h)	563.2	563.2				
59	Avg. Liq. Density (kgmole/m3)	16.08	16.08				
60	Specific Heat (kJ/kgmole-C)	54.53	54.53				
61	Std. Gas Flow (Nm3/h)	7918	7918				
62	Std. Ideal Liq. Mass Density (kg/m3)	394.5	394.5				
63	Act. Liq. Flow (m3/s)	---	---				
64	Z Factor	0.9642	0.9642				
65	Watson K	16.45	16.45				
66	User Property	---	---				
67	Partial Pressure of H2S (bar_g)	6.985e-002	---				
68	Cp/(Cp - R)	1.180	1.180				
69	Aspen Technology Inc. Aspen HYSYS Version 11 Page 16 of 40						


1	<div></div> <div>Company Name Not Available Bedford, MA USA</div>			Case Name: BINAK SUMMER-D03.hsc					
2				Unit Set: Binak3a13132					
3									
4				Date/Time: Mon Mar 7 11:52:07 2022					
5	<div>Material Stream: 07 (continued)</div>								
6								Fluid Package: Basis-1	
7								Property Package: Peng-Robinson	
8									
9	PROPERTIES								
10									
11		Overall	Vapour Phase						
12	Cp/Cv	1.225	1.225						
13	Heat of Vap. (kJ/kgmole)	1.700e+004	---						
14	Kinematic Viscosity (cSt)	0.9595	0.9595						
15	Liq. Mass Density (Std. Cond) (kg/m3)	1.043	1.043						
16	Liq. Vol. Flow (Std. Cond) (barrel/day)	1.254e+006	1.254e+006						
17	Liquid Fraction	0.0000	0.0000						
18	Molar Volume (m3/kgmole)	1.594	1.594						
19	Mass Heat of Vap. (kJ/kg)	693.3	---						
20	Phase Fraction [Molar Basis]	1.0000	1.0000						
21	Surface Tension (dyne/cm)	---	---						
22	Thermal Conductivity (W/m-K)	4.164e-002	4.164e-002						
23	Viscosity (cP)	1.476e-002	1.476e-002						
24	Cv (Semi-Ideal) (kJ/kgmole-C)	46.21	46.21						
25	Mass Cv (Semi-Ideal) (kJ/kg-C)	1.884	1.884						
26	Cv (kJ/kgmole-C)	44.50	44.50						
27	Mass Cv (kJ/kg-C)	1.815	1.815						
28	Cv (Ent. Method) (kJ/kgmole-C)	---	---						
29	Mass Cv (Ent. Method) (kJ/kg-C)	---	---						
30	Cp/Cv (Ent. Method)	---	---						
31	Reid VP at 37.8 C (bar_g)	---	---						
32	True VP at 37.8 C (bar_g)	168.1	168.1						
33	Liq. Vol. Flow - Sum(Std. Cond) (m3/h)	8309	8309						
34	Viscosity Index	-23.90	---						
35	Ideal Gas Cp/Cv	1.188	1.188						
36	Ideal Gas Cp (kJ/kgmole-C)	52.55	52.55						
37	Mass Ideal Gas Cp (kJ/kg-C)	2.143	2.143						
38	Bubble Point Pressure (bar_g)	---	---						
39	COMPOSITION								
40									
41									
42	Overall Phase			Vapour Fraction 1.0000					
43	COMPONENTS	MOLAR FLOW (kgmole/h)	MOLE FRACTION	MASS FLOW (kg/h)	MASS FRACTION	LIQUID VOLUME FLOW (m3/h)	LIQUID VOLUME FRACTION		
44									
45	H2O	3.6436	0.0103	65.6405	0.0076	0.0658	0.0030		
46	CO2	11.1659	0.0316	491.4069	0.0567	0.5954	0.0271		
47	H2S	19.1193	0.0541	651.5080	0.0752	0.8264	0.0376		
48	Methane	225.7192	0.6389	3621.1910	0.4180	12.0951	0.5507		
49	Ethane	48.5816	0.1375	1460.8440	0.1686	4.1072	0.1870		
50	Propane	27.3136	0.0773	1204.4462	0.1390	2.3771	0.1082		
51	i-Butane	2.9655	0.0084	172.3696	0.0199	0.3067	0.0140		
52	n-Butane	6.5688	0.0186	381.8028	0.0441	0.6546	0.0298		
53	i-Pentane	2.4617	0.0070	177.6151	0.0205	0.2849	0.0130		
54	n-Pentane	1.3332	0.0038	96.1911	0.0111	0.1528	0.0070		
55	n-Hexane	2.3137	0.0065	199.3913	0.0230	0.3009	0.0137		
56	n-Heptane	0.6912	0.0020	69.2580	0.0080	0.1008	0.0046		
57	n-Octane	0.2105	0.0006	24.0508	0.0028	0.0341	0.0016		
58	n-Nonane	0.1049	0.0003	13.4537	0.0016	0.0187	0.0009		
59	n-Decane	0.0350	0.0001	4.9747	0.0006	0.0068	0.0003		
60	n-C11	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		
61	Nitrogen	1.0541	0.0030	29.5276	0.0034	0.0366	0.0017		
62	TEGlycol	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		
63	Total	353.2817	1.0000	8663.6713	1.0000	21.9638	1.0000		
64	Vapour Phase								
65				Phase Fraction 1.000					
66	COMPONENTS	MOLAR FLOW (kgmole/h)	MOLE FRACTION	MASS FLOW (kg/h)	MASS FRACTION	LIQUID VOLUME FLOW (m3/h)	LIQUID VOLUME FRACTION		
67									
68	H2O	3.6436	0.0103	65.6405	0.0076	0.0658	0.0030		
69	Aspen Technology Inc. Aspen HYSYS Version 11 Page 17 of 40								


1	<div></div> <div>Company Name Not Available Bedford, MA USA</div>			Case Name: BINAK SUMMER-D03.hsc			
2				Unit Set: Binak3a13132			
3							
4				Date/Time: Mon Mar 7 11:52:07 2022			
5							
6	Material Stream: 07 (continued)				Fluid Package: Basis-1		
7					Property Package: Peng-Robinson		
8							
9	COMPOSITION						
10							
11	Vapour Phase (continued)				Phase Fraction		1.000
12							
13	COMPONENTS	MOLAR FLOW (kgmole/h)	MOLE FRACTION	MASS FLOW (kg/h)	MASS FRACTION	LIQUID VOLUME FLOW (m3/h)	LIQUID VOLUME FRACTION
14							
15	CO2	11.1659	0.0316	491.4069	0.0567	0.5954	0.0271
16	H2S	19.1193	0.0541	651.5080	0.0752	0.8264	0.0376
17	Methane	225.7192	0.6389	3621.1910	0.4180	12.0951	0.5507
18	Ethane	48.5816	0.1375	1460.8440	0.1686	4.1072	0.1870
19	Propane	27.3136	0.0773	1204.4462	0.1390	2.3771	0.1082
20	i-Butane	2.9655	0.0084	172.3696	0.0199	0.3067	0.0140
21	n-Butane	6.5688	0.0186	381.8028	0.0441	0.6546	0.0298
22	i-Pentane	2.4617	0.0070	177.6151	0.0205	0.2849	0.0130
23	n-Pentane	1.3332	0.0038	96.1911	0.0111	0.1528	0.0070
24	n-Hexane	2.3137	0.0065	199.3913	0.0230	0.3009	0.0137
25	n-Heptane	0.6912	0.0020	69.2580	0.0080	0.1008	0.0046
26	n-Octane	0.2105	0.0006	24.0508	0.0028	0.0341	0.0016
27	n-Nonane	0.1049	0.0003	13.4537	0.0016	0.0187	0.0009
28	n-Decane	0.0350	0.0001	4.9747	0.0006	0.0068	0.0003
29	n-C11	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
30	Nitrogen	1.0541	0.0030	29.5276	0.0034	0.0366	0.0017
31	TEGlycol	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
32	Total	353.2817	1.0000	8663.6713	1.0000	21.9638	1.0000
33	Material Stream: 08				Fluid Package: Basis-1		
34					Property Package: Peng-Robinson		
35							
36	CONDITIONS						
37							
38		Overall	Vapour Phase				
39	Vapour / Phase Fraction	1.0000	1.0000				
40	Temperature: (C)	60.00 *	60.00				
41	Pressure: (bar_g)	18.30	18.30				
42	Molar Flow (MMSCFD)	7.093	7.093				
43	Mass Flow (kg/h)	8664	8664				
44	Std Ideal Liq Vol Flow (barrel/day)	3316	3316				
45	Molar Enthalpy (kJ/kgmole)	-8.932e+004	-8.932e+004				
46	Molar Entropy (kJ/kgmole-C)	171.6	171.6				
47	Heat Flow (kW)	-8766	-8766				
48	Liq Vol Flow @Std Cond (barrel/day)	1.254e+006 *	1.254e+006				
49	PROPERTIES						
50							
51		Overall	Vapour Phase				
52	Molecular Weight	24.52	24.52				
53	Molar Density (kgmole/m3)	0.7453	0.7453				
54	Mass Density (kg/m3)	18.28	18.28				
55	Act. Volume Flow (m3/h)	474.0	474.0				
56	Mass Enthalpy (kJ/kg)	-3642	-3642				
57	Mass Entropy (kJ/kg-C)	6.999	6.999				
58	Heat Capacity (kJ/kgmole-C)	50.54	50.54				
59	Mass Heat Capacity (kJ/kg-C)	2.061	2.061				
60	LHV Molar Basis (Std) (kJ/kgmole)	1.042e+006	1.042e+006				
61	HHV Molar Basis (Std) (kJ/kgmole)	1.138e+006	1.138e+006				
62	HHV Mass Basis (Std) (kJ/kg)	4.639e+004	4.639e+004				
63	CO2 Loading	---	---				
64	CO2 Apparent Mole Conc. (kgmole/m3)	---	---				
65	CO2 Apparent Wt. Conc. (kgmol/kg)	---	---				
66	LHV Mass Basis (Std) (kJ/kg)	4.249e+004	4.249e+004				
67	Phase Fraction [Vol. Basis]	1.000	1.000				
68	Phase Fraction [Mass Basis]	1.000	1.000				
69	Aspen Technology Inc.		Aspen HYSYS Version 11		Page 18 of 40		


1	 <div> <div>Company Name Not Available</div> <div>Bedford, MA</div> <div>USA</div> </div>			Case Name: BINAK SUMMER-D03.hsc		
2				Unit Set: Binak3a13132		
3				Date/Time: Mon Mar 7 11:52:07 2022		
4						
5	Material Stream: 08 (continued)				Fluid Package: Basis-1	
6					Property Package: Peng-Robinson	
7						
8	COMPOSITION					
9						
10	Overall Phase (continued)					
11						
12						Vapour Fraction 1.0000
13	COMPONENTS	MOLAR FLOW (kgmole/h)	MOLE FRACTION	MASS FLOW (kg/h)	MASS FRACTION	LIQUID VOLUME FLOW (m3/h)
14						LIQUID VOLUME FRACTION
15	n-Pentane	1.3332	0.0038	96.1911	0.0111	0.1528
16	n-Hexane	2.3137	0.0065	199.3913	0.0230	0.3009
17	n-Heptane	0.6912	0.0020	69.2580	0.0080	0.1008
18	n-Octane	0.2105	0.0006	24.0508	0.0028	0.0341
19	n-Nonane	0.1049	0.0003	13.4537	0.0016	0.0187
20	n-Decane	0.0350	0.0001	4.9747	0.0006	0.0068
21	n-C11	0.0000	0.0000	0.0000	0.0000	0.0000
22	Nitrogen	1.0541	0.0030	29.5276	0.0034	0.0366
23	TEGlycol	0.0000	0.0000	0.0000	0.0000	0.0000
24	Total	353.2817	1.0000	8663.6713	1.0000	21.9638
25						
26	Vapour Phase					
27						
28	COMPONENTS	MOLAR FLOW (kgmole/h)	MOLE FRACTION	MASS FLOW (kg/h)	MASS FRACTION	LIQUID VOLUME FLOW (m3/h)
29						LIQUID VOLUME FRACTION
30	H2O	3.6436	0.0103	65.6405	0.0076	0.0658
31	CO2	11.1659	0.0316	491.4069	0.0567	0.5954
32	H2S	19.1193	0.0541	651.5080	0.0752	0.8264
33	Methane	225.7192	0.6389	3621.1910	0.4180	12.0951
34	Ethane	48.5816	0.1375	1460.8440	0.1686	4.1072
35	Propane	27.3136	0.0773	1204.4462	0.1390	2.3771
36	i-Butane	2.9655	0.0084	172.3696	0.0199	0.3067
37	n-Butane	6.5688	0.0186	381.8028	0.0441	0.6546
38	i-Pentane	2.4617	0.0070	177.6151	0.0205	0.2849
39	n-Pentane	1.3332	0.0038	96.1911	0.0111	0.1528
40	n-Hexane	2.3137	0.0065	199.3913	0.0230	0.3009
41	n-Heptane	0.6912	0.0020	69.2580	0.0080	0.1008
42	n-Octane	0.2105	0.0006	24.0508	0.0028	0.0341
43	n-Nonane	0.1049	0.0003	13.4537	0.0016	0.0187
44	n-Decane	0.0350	0.0001	4.9747	0.0006	0.0068
45	n-C11	0.0000	0.0000	0.0000	0.0000	0.0000
46	Nitrogen	1.0541	0.0030	29.5276	0.0034	0.0366
47	TEGlycol	0.0000	0.0000	0.0000	0.0000	0.0000
48	Total	353.2817	1.0000	8663.6713	1.0000	21.9638
49	Material Stream: 09				Fluid Package: Basis-1	
50					Property Package: Peng-Robinson	
51						
52	CONDITIONS					
53		Overall	Vapour Phase	Aqueous Phase		
54	Vapour / Phase Fraction	1.0000	1.0000	0.0000		
55	Temperature: (C)	59.88	59.88	59.88		
56	Pressure: (bar_g)	18.10	18.10	18.10		
57	Molar Flow (MMSCFD)	7.093	7.093	0.0000		
58	Mass Flow (kg/h)	8664	8664	0.0000		
59	Std Ideal Liq Vol Flow (barrel/day)	3316	3316	0.0000		
60	Molar Enthalpy (kJ/kgmole)	-8.932e+004	-8.932e+004	-2.833e+005		
61	Molar Entropy (kJ/kgmole-C)	171.7	171.7	62.42		
62	Heat Flow (kW)	-8766	-8766	0.0000		
63	Liq Vol Flow @Std Cond (barrel/day)	1.254e+006 *	1.254e+006	0.0000		
64						
65	PROPERTIES					
66		Overall	Vapour Phase	Aqueous Phase		
67	Molecular Weight	24.52	24.52	18.03		
68	Molar Density (kgmole/m3)	0.7374	0.7374	45.98		
69	<div> <div>Aspen Technology Inc.</div> <div>Aspen HYSYS Version 11</div> <div>Page 20 of 40</div> </div>					

1	<div></div> <div>Company Name Not Available Bedford, MA USA</div>		Case Name: BINAK SUMMER-D03.hsc		
2			<div>Unit Set: Binak3a13132</div>		
3					
4					
5			Date/Time: Mon Mar 7 11:52:07 2022		
6	<div>Material Stream: 09 (continued)</div>		Fluid Package: Basis-1		
7			<div>Property Package: Peng-Robinson</div>		
8					
9	PROPERTIES				
10					
11		Overall	Vapour Phase	Aqueous Phase	
12	Mass Density (kg/m3)	18.08	18.08	829.1	
13	Act. Volume Flow (m3/h)	479.1	479.1	0.0000	
14	Mass Enthalpy (kJ/kg)	-3642	-3642	-1.571e+004	
15	Mass Entropy (kJ/kg-C)	7.002	7.002	3.461	
16	Heat Capacity (kJ/kgmole-C)	50.49	50.49	77.93	
17	Mass Heat Capacity (kJ/kg-C)	2.059	2.059	4.322	
18	LHV Molar Basis (Std) (kJ/kgmole)	1.042e+006	1.042e+006	448.2	
19	HHV Molar Basis (Std) (kJ/kgmole)	1.138e+006	1.138e+006	4.145e+004	
20	HHV Mass Basis (Std) (kJ/kg)	4.639e+004	4.639e+004	2299	
21	CO2 Loading	---	---	---	
22	CO2 Apparent Mole Conc. (kgmole/m3)	---	---	---	
23	CO2 Apparent Wt. Conc. (kgmol/kg)	---	---	---	
24	LHV Mass Basis (Std) (kJ/kg)	4.249e+004	4.249e+004	24.86	
25	Phase Fraction [Vol. Basis]	1.000	1.000	---	
26	Phase Fraction [Mass Basis]	1.000	1.000	0.0000	
27	Phase Fraction [Act. Vol. Basis]	1.000	1.000	0.0000	
28	Mass Exergy (kJ/kg)	292.0	---	---	
29	Partial Pressure of CO2 (bar_g)	-0.4092	---	---	
30	Cost Based on Flow (Cost/s)	0.0000	0.0000	0.0000	
31	Act. Gas Flow (ACT_m3/h)	479.1	479.1	---	
32	Avg. Liq. Density (kgmole/m3)	16.08	16.08	55.31	
33	Specific Heat (kJ/kgmole-C)	50.49	50.49	77.93	
34	Std. Gas Flow (Nm3/h)	7918	7918	0.0000	
35	Std. Ideal Liq. Mass Density (kg/m3)	394.5	394.5	997.5	
36	Act. Liq. Flow (m3/s)	0.0000	---	0.0000	
37	Z Factor	---	0.9361	1.501e-002	
38	Watson K	16.45	16.45	9.082	
39	User Property	---	---	---	
40	Partial Pressure of H2S (bar_g)	2.114e-002	---	---	
41	Cp/(Cp - R)	1.197	1.197	1.119	
42	Cp/Cv	1.278	1.278	1.164	
43	Heat of Vap. (kJ/kgmole)	1.709e+004	---	---	
44	Kinematic Viscosity (cSt)	0.6991	0.6991	0.5351	
45	Liq. Mass Density (Std. Cond) (kg/m3)	1.043	1.043	1015	
46	Liq. Vol. Flow (Std. Cond) (barrel/day)	1.254e+006	1.254e+006	0.0000	
47	Liquid Fraction	0.0000	0.0000	1.000	
48	Molar Volume (m3/kgmole)	1.356	1.356	2.175e-002	
49	Mass Heat of Vap. (kJ/kg)	696.7	---	---	
50	Phase Fraction [Molar Basis]	1.0000	1.0000	0.0000	
51	Surface Tension (dyne/cm)	---	---	65.92	
52	Thermal Conductivity (W/m-K)	3.306e-002	3.306e-002	0.6526	
53	Viscosity (cP)	1.264e-002	1.264e-002	0.4437	
54	Cv (Semi-Ideal) (kJ/kgmole-C)	42.18	42.18	69.62	
55	Mass Cv (Semi-Ideal) (kJ/kg-C)	1.720	1.720	3.860	
56	Cv (kJ/kgmole-C)	39.50	39.50	66.96	
57	Mass Cv (kJ/kg-C)	1.611	1.611	3.713	
58	Cv (Ent. Method) (kJ/kgmole-C)	---	---	---	
59	Mass Cv (Ent. Method) (kJ/kg-C)	---	---	---	
60	Cp/Cv (Ent. Method)	---	---	---	
61	Reid VP at 37.8 C (bar_g)	---	---	37.15	
62	True VP at 37.8 C (bar_g)	168.1	168.1	1.333	
63	Liq. Vol. Flow - Sum(Std. Cond) (m3/h)	8309	8309	0.0000	
64	Viscosity Index	-32.60	---	---	
65	Ideal Gas Cp/Cv	1.212	1.212	1.326	
66	Ideal Gas Cp (kJ/kgmole-C)	47.48	47.48	33.79	
67	Mass Ideal Gas Cp (kJ/kg-C)	1.936	1.936	1.874	
68	Bubble Point Pressure (bar_g)	---	---	---	
69	Aspen Technology Inc. Aspen HYSYS Version 11 Page 21 of 40				


1	 <div> <div>Company Name Not Available</div> <div>Bedford, MA</div> <div>USA</div> </div>			Case Name: BINAK SUMMER-D03.hsc		
2				Unit Set: Binak3a13132		
3				Date/Time: Mon Mar 7 11:52:07 2022		
4						
5	Material Stream: 09 (continued)				Fluid Package: Basis-1	
6					Property Package: Peng-Robinson	
7						
8	COMPOSITION					
9						
10	Overall Phase					
11						
12						Vapour Fraction 1.0000
13	COMPONENTS	MOLAR FLOW (kgmole/h)	MOLE FRACTION	MASS FLOW (kg/h)	MASS FRACTION	LIQUID VOLUME FLOW (m3/h)
14						LIQUID VOLUME FRACTION
15	H2O	3.6436	0.0103	65.6405	0.0076	0.0658
16	CO2	11.1659	0.0316	491.4069	0.0567	0.5954
17	H2S	19.1193	0.0541	651.5080	0.0752	0.8264
18	Methane	225.7192	0.6389	3621.1910	0.4180	12.0951
19	Ethane	48.5816	0.1375	1460.8440	0.1686	4.1072
20	Propane	27.3136	0.0773	1204.4462	0.1390	2.3771
21	i-Butane	2.9655	0.0084	172.3696	0.0199	0.3067
22	n-Butane	6.5688	0.0186	381.8028	0.0441	0.6546
23	i-Pentane	2.4617	0.0070	177.6151	0.0205	0.2849
24	n-Pentane	1.3332	0.0038	96.1911	0.0111	0.1528
25	n-Hexane	2.3137	0.0065	199.3913	0.0230	0.3009
26	n-Heptane	0.6912	0.0020	69.2580	0.0080	0.1008
27	n-Octane	0.2105	0.0006	24.0508	0.0028	0.0341
28	n-Nonane	0.1049	0.0003	13.4537	0.0016	0.0187
29	n-Decane	0.0350	0.0001	4.9747	0.0006	0.0068
30	n-C11	0.0000	0.0000	0.0000	0.0000	0.0000
31	Nitrogen	1.0541	0.0030	29.5276	0.0034	0.0366
32	TEGlycol	0.0000	0.0000	0.0000	0.0000	0.0000
33	Total	353.2817	1.0000	8663.6713	1.0000	21.9638
34						
35	Vapour Phase					
36						Phase Fraction 1.000
37	COMPONENTS	MOLAR FLOW (kgmole/h)	MOLE FRACTION	MASS FLOW (kg/h)	MASS FRACTION	LIQUID VOLUME FLOW (m3/h)
38						LIQUID VOLUME FRACTION
39	H2O	3.6436	0.0103	65.6405	0.0076	0.0658
40	CO2	11.1659	0.0316	491.4069	0.0567	0.5954
41	H2S	19.1193	0.0541	651.5080	0.0752	0.8264
42	Methane	225.7192	0.6389	3621.1910	0.4180	12.0951
43	Ethane	48.5816	0.1375	1460.8440	0.1686	4.1072
44	Propane	27.3136	0.0773	1204.4462	0.1390	2.3771
45	i-Butane	2.9655	0.0084	172.3696	0.0199	0.3067
46	n-Butane	6.5688	0.0186	381.8028	0.0441	0.6546
47	i-Pentane	2.4617	0.0070	177.6151	0.0205	0.2849
48	n-Pentane	1.3332	0.0038	96.1911	0.0111	0.1528
49	n-Hexane	2.3137	0.0065	199.3913	0.0230	0.3009
50	n-Heptane	0.6912	0.0020	69.2580	0.0080	0.1008
51	n-Octane	0.2105	0.0006	24.0508	0.0028	0.0341
52	n-Nonane	0.1049	0.0003	13.4537	0.0016	0.0187
53	n-Decane	0.0350	0.0001	4.9747	0.0006	0.0068
54	n-C11	0.0000	0.0000	0.0000	0.0000	0.0000
55	Nitrogen	1.0541	0.0030	29.5276	0.0034	0.0366
56	TEGlycol	0.0000	0.0000	0.0000	0.0000	0.0000
57	Total	353.2817	1.0000	8663.6713	1.0000	21.9638
58						
59	Aqueous Phase					
60						Phase Fraction 0.0000
61	COMPONENTS	MOLAR FLOW (kgmole/h)	MOLE FRACTION	MASS FLOW (kg/h)	MASS FRACTION	LIQUID VOLUME FLOW (m3/h)
62						LIQUID VOLUME FRACTION
63	H2O	0.0000	0.9990	0.0000	0.9980	0.0000
64	CO2	0.0000	0.0002	0.0000	0.0004	0.0000
65	H2S	0.0000	0.0009	0.0000	0.0016	0.0000
66	Methane	0.0000	0.0000	0.0000	0.0000	0.0000
67	Ethane	0.0000	0.0000	0.0000	0.0000	0.0000
68	Propane	0.0000	0.0000	0.0000	0.0000	0.0000
69	i-Butane	0.0000	0.0000	0.0000	0.0000	0.0000
70	n-Butane	0.0000	0.0000	0.0000	0.0000	0.0000


1	<div></div> <div>Company Name Not Available Bedford, MA USA</div>				Case Name: BINAK SUMMER-D03.hsc	
2					Unit Set: Binak3a13132	
3					Date/Time: Mon Mar 7 11:52:07 2022	
4						
5						
6	Material Stream: 09 (continued)				Fluid Package:	Basis-1
7					Property Package:	Peng-Robinson
8						
9	COMPOSITION					
10						
11	Aqueous Phase (continued)				Phase Fraction	0.0000
12						
13	COMPONENTS	MOLAR FLOW	MOLE FRACTION	MASS FLOW	MASS FRACTION	LIQUID VOLUME
14		(kgmole/h)		(kg/h)		FLOW (m3/h)
15	i-Pentane	0.0000	0.0000	0.0000	0.0000	0.0000
16	n-Pentane	0.0000	0.0000	0.0000	0.0000	0.0000
17	n-Hexane	0.0000	0.0000	0.0000	0.0000	0.0000
18	n-Heptane	0.0000	0.0000	0.0000	0.0000	0.0000
19	n-Octane	0.0000	0.0000	0.0000	0.0000	0.0000
20	n-Nonane	0.0000	0.0000	0.0000	0.0000	0.0000
21	n-Decane	0.0000	0.0000	0.0000	0.0000	0.0000
22	n-C11	0.0000	0.0000	0.0000	0.0000	0.0000
23	Nitrogen	0.0000	0.0000	0.0000	0.0000	0.0000
24	TEGlycol	0.0000	0.0000	0.0000	0.0000	0.0000
25	Total	0.0000	1.0000	0.0000	1.0000	0.0000
26	Material Stream: 10				Fluid Package:	Basis-1
27					Property Package:	Peng-Robinson
28						
29	CONDITIONS					
30						
31		Overall	Vapour Phase			
32	Vapour / Phase Fraction	1.0000	1.0000			
33	Temperature: (C)	142.3	142.3			
34	Pressure: (bar_g)	54.80 *	54.80			
35	Molar Flow (MMSCFD)	7.093	7.093			
36	Mass Flow (kg/h)	8664	8664			
37	Std Ideal Liq Vol Flow (barrel/day)	3316	3316			
38	Molar Enthalpy (kJ/kgmole)	-8.569e+004	-8.569e+004			
39	Molar Entropy (kJ/kgmole-C)	173.2	173.2			
40	Heat Flow (kW)	-8409	-8409			
41	Liq Vol Flow @Std Cond (barrel/day)	1.254e+006 *	1.254e+006			
42	PROPERTIES					
43						
44		Overall	Vapour Phase			
45	Molecular Weight	24.52	24.52			
46	Molar Density (kgmole/m3)	1.750	1.750			
47	Mass Density (kg/m3)	42.92	42.92			
48	Act. Volume Flow (m3/h)	201.8	201.8			
49	Mass Enthalpy (kJ/kg)	-3494	-3494			
50	Mass Entropy (kJ/kg-C)	7.062	7.062			
51	Heat Capacity (kJ/kgmole-C)	59.25	59.25			
52	Mass Heat Capacity (kJ/kg-C)	2.416	2.416			
53	LHV Molar Basis (Std) (kJ/kgmole)	1.042e+006	1.042e+006			
54	HHV Molar Basis (Std) (kJ/kgmole)	1.138e+006	1.138e+006			
55	HHV Mass Basis (Std) (kJ/kg)	4.639e+004	4.639e+004			
56	CO2 Loading	---	---			
57	CO2 Apparent Mole Conc. (kgmole/m3)	---	---			
58	CO2 Apparent Wt. Conc. (kgmol/kg)	---	---			
59	LHV Mass Basis (Std) (kJ/kg)	4.249e+004	4.249e+004			
60	Phase Fraction [Vol. Basis]	1.000	1.000			
61	Phase Fraction [Mass Basis]	1.000	1.000			
62	Phase Fraction [Act. Vol. Basis]	1.000	1.000			
63	Mass Exergy (kJ/kg)	422.4	---			
64	Partial Pressure of CO2 (bar_g)	0.7508	---			
65	Cost Based on Flow (Cost/s)	0.0000	0.0000			
66	Act. Gas Flow (ACT_m3/h)	201.8	201.8			
67	Avg. Liq. Density (kgmole/m3)	16.08	16.08			
68	Specific Heat (kJ/kgmole-C)	59.25	59.25			
69	Aspen Technology Inc. Aspen HYSYS Version 11 Page 23 of 40					


1	<div></div> <div>Company Name Not Available Bedford, MA USA</div>			Case Name: BINAK SUMMER-D03.hsc							
2				<div>Material Stream: 10 (continued)</div>							
3								Unit Set: Binak3a13132			
4								Date/Time: Mon Mar 7 11:52:07 2022			
5	<div>Fluid Package: Basis-1</div> <div>Property Package: Peng-Robinson</div>										
6											
7											
8	<div>PROPERTIES</div>										
9											
10											
11		Overall	Vapour Phase								
12	Std. Gas Flow (Nm3/h)	7918	7918								
13	Std. Ideal Liq. Mass Density (kg/m3)	394.5	394.5								
14	Act. Liq. Flow (m3/s)	---	---								
15	Z Factor	0.9232	0.9232								
16	Watson K	16.45	16.45								
17	User Property	---	---								
18	Partial Pressure of H2S (bar_g)	2.007	---								
19	Cp/(Cp - R)	1.163	1.163								
20	Cp/Cv	1.278	1.278								
21	Heat of Vap. (kJ/kgmole)	1.390e+004	---								
22	Kinematic Viscosity (cSt)	0.3793	0.3793								
23	Liq. Mass Density (Std. Cond) (kg/m3)	1.043	1.043								
24	Liq. Vol. Flow (Std. Cond) (barrel/day)	1.254e+006	1.254e+006								
25	Liquid Fraction	0.0000	0.0000								
26	Molar Volume (m3/kgmole)	0.5713	0.5713								
27	Mass Heat of Vap. (kJ/kg)	566.7	---								
28	Phase Fraction [Molar Basis]	1.0000	1.0000								
29	Surface Tension (dyne/cm)	---	---								
30	Thermal Conductivity (W/m-K)	4.666e-002	4.666e-002								
31	Viscosity (cP)	1.628e-002	1.628e-002								
32	Cv (Semi-Ideal) (kJ/kgmole-C)	50.94	50.94								
33	Mass Cv (Semi-Ideal) (kJ/kg-C)	2.077	2.077								
34	Cv (kJ/kgmole-C)	46.35	46.35								
35	Mass Cv (kJ/kg-C)	1.890	1.890								
36	Cv (Ent. Method) (kJ/kgmole-C)	---	---								
37	Mass Cv (Ent. Method) (kJ/kg-C)	---	---								
38	Cp/Cv (Ent. Method)	---	---								
39	Reid VP at 37.8 C (bar_g)	---	---								
40	True VP at 37.8 C (bar_g)	168.1	168.1								
41	Liq. Vol. Flow - Sum(Std. Cond) (m3/h)	8309	8309								
42	Viscosity Index	-48.81	---								
43	Ideal Gas Cp/Cv	1.182	1.182								
44	Ideal Gas Cp (kJ/kgmole-C)	53.96	53.96								
45	Mass Ideal Gas Cp (kJ/kg-C)	2.200	2.200								
46	Bubble Point Pressure (bar_g)	---	---								
47	<div>COMPOSITION</div>										
48											
49	<div>Overall Phase</div>			<div>Vapour Fraction 1.0000</div>							
50											
51	COMPONENTS	MOLAR FLOW (kgmole/h)	MOLE FRACTION	MASS FLOW (kg/h)	MASS FRACTION	LIQUID VOLUME FLOW (m3/h)	LIQUID VOLUME FRACTION				
52											
53	H2O	3.6436	0.0103	65.6405	0.0076	0.0658	0.0030				
54	CO2	11.1659	0.0316	491.4069	0.0567	0.5954	0.0271				
55	H2S	19.1193	0.0541	651.5080	0.0752	0.8264	0.0376				
56	Methane	225.7192	0.6389	3621.1910	0.4180	12.0951	0.5507				
57	Ethane	48.5816	0.1375	1460.8440	0.1686	4.1072	0.1870				
58	Propane	27.3136	0.0773	1204.4462	0.1390	2.3771	0.1082				
59	i-Butane	2.9655	0.0084	172.3696	0.0199	0.3067	0.0140				
60	n-Butane	6.5688	0.0186	381.8028	0.0441	0.6546	0.0298				
61	i-Pentane	2.4617	0.0070	177.6151	0.0205	0.2849	0.0130				
62	n-Pentane	1.3332	0.0038	96.1911	0.0111	0.1528	0.0070				
63	n-Hexane	2.3137	0.0065	199.3913	0.0230	0.3009	0.0137				
64	n-Heptane	0.6912	0.0020	69.2580	0.0080	0.1008	0.0046				
65	n-Octane	0.2105	0.0006	24.0508	0.0028	0.0341	0.0016				
66	n-Nonane	0.1049	0.0003	13.4537	0.0016	0.0187	0.0009				
67	n-Decane	0.0350	0.0001	4.9747	0.0006	0.0068	0.0003				
68	n-C11	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000				
69	<div>Aspen Technology Inc. Aspen HYSYS Version 11 Page 24 of 40</div> <div>Licensed to: Company Name Not Available * Specified by user.</div>										


1	<div></div> <div>Company Name Not Available Bedford, MA USA</div>				Case Name: BINAK SUMMER-D03.hsc		
2					Unit Set: Binak3a13132		
3							
4							
5					Date/Time: Mon Mar 7 11:52:07 2022		
6	Material Stream: 10 (continued)					Fluid Package:	Basis-1
7						Property Package:	Peng-Robinson
8							
9	COMPOSITION						
10							
11	Overall Phase (continued)					Vapour Fraction	1.0000
12							
13	COMPONENTS	MOLAR FLOW	MOLE FRACTION	MASS FLOW	MASS FRACTION	LIQUID VOLUME	LIQUID VOLUME
14		(kgmole/h)		(kg/h)		FLOW (m3/h)	FRACTION
15	Nitrogen	1.0541	0.0030	29.5276	0.0034	0.0366	0.0017
16	TEGlycol	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
17	Total	353.2817	1.0000	8663.6713	1.0000	21.9638	1.0000
18							
19	Vapour Phase					Phase Fraction	1.000
20	COMPONENTS	MOLAR FLOW	MOLE FRACTION	MASS FLOW	MASS FRACTION	LIQUID VOLUME	LIQUID VOLUME
21		(kgmole/h)		(kg/h)		FLOW (m3/h)	FRACTION
22	H2O	3.6436	0.0103	65.6405	0.0076	0.0658	0.0030
23	CO2	11.1659	0.0316	491.4069	0.0567	0.5954	0.0271
24	H2S	19.1193	0.0541	651.5080	0.0752	0.8264	0.0376
25	Methane	225.7192	0.6389	3621.1910	0.4180	12.0951	0.5507
26	Ethane	48.5816	0.1375	1460.8440	0.1686	4.1072	0.1870
27	Propane	27.3136	0.0773	1204.4462	0.1390	2.3771	0.1082
28	i-Butane	2.9655	0.0084	172.3696	0.0199	0.3067	0.0140
29	n-Butane	6.5688	0.0186	381.8028	0.0441	0.6546	0.0298
30	i-Pentane	2.4617	0.0070	177.6151	0.0205	0.2849	0.0130
31	n-Pentane	1.3332	0.0038	96.1911	0.0111	0.1528	0.0070
32	n-Hexane	2.3137	0.0065	199.3913	0.0230	0.3009	0.0137
33	n-Heptane	0.6912	0.0020	69.2580	0.0080	0.1008	0.0046
34	n-Octane	0.2105	0.0006	24.0508	0.0028	0.0341	0.0016
35	n-Nonane	0.1049	0.0003	13.4537	0.0016	0.0187	0.0009
36	n-Decane	0.0350	0.0001	4.9747	0.0006	0.0068	0.0003
37	n-C11	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
38	Nitrogen	1.0541	0.0030	29.5276	0.0034	0.0366	0.0017
39	TEGlycol	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
40	Total	353.2817	1.0000	8663.6713	1.0000	21.9638	1.0000
41	Material Stream: 11					Fluid Package:	Basis-1
42						Property Package:	Peng-Robinson
43							
44	CONDITIONS						
45							
46		Overall	Vapour Phase	Aqueous Phase			
47	Vapour / Phase Fraction	0.9941	0.9941	0.0059			
48	Temperature: (C)	60.00 *	60.00	60.00			
49	Pressure: (bar_g)	54.10	54.10	54.10			
50	Molar Flow (MMSCFD)	7.093	7.051	4.155e-002			
51	Mass Flow (kg/h)	8664	8626	37.36			
52	Std Ideal Liq Vol Flow (barrel/day)	3316	3310	5.658			
53	Molar Enthalpy (kJ/kgmole)	-9.072e+004	-8.958e+004	-2.830e+005			
54	Molar Entropy (kJ/kgmole-C)	159.7	160.3	62.54			
55	Heat Flow (kW)	-8902	-8740	-162.7			
56	Liq Vol Flow @Std Cond (barrel/day)	1.254e+006 *	1.247e+006	5.560			
57	PROPERTIES						
58							
59		Overall	Vapour Phase	Aqueous Phase			
60	Molecular Weight	24.52	24.56	18.05			
61	Molar Density (kgmole/m3)	2.432	2.418	54.39			
62	Mass Density (kg/m3)	59.63	59.39	981.9			
63	Act. Volume Flow (m3/h)	145.3	145.2	3.805e-002			
64	Mass Enthalpy (kJ/kg)	-3699	-3647	-1.567e+004			
65	Mass Entropy (kJ/kg-C)	6.514	6.527	3.464			
66	Heat Capacity (kJ/kgmole-C)	59.06	58.95	77.81			
67	Mass Heat Capacity (kJ/kg-C)	2.408	2.400	4.310			
68	LHV Molar Basis (Std) (kJ/kgmole)	1.042e+006	1.048e+006	967.0			
69	Aspen Technology Inc.		Aspen HYSYS Version 11		Page 25 of 40		


1	<div></div> <div>Company Name Not Available Bedford, MA USA</div>			Case Name: BINAK SUMMER-D03.hsc		
2						
3						Unit Set: Binak3a13132
4						Date/Time: Mon Mar 7 11:52:07 2022
5	<div>Material Stream: 11 (continued)</div>			Fluid Package: Basis-1		
6						
7						Property Package: Peng-Robinson
8						
9	PROPERTIES					
10						
11		Overall	Vapour Phase	Aqueous Phase		
12	HHV Molar Basis (Std) (kJ/kgmole)	1.138e+006	1.144e+006	4.196e+004		
13	HHV Mass Basis (Std) (kJ/kg)	4.639e+004	4.658e+004	2324		
14	CO2 Loading	---	---	---		
15	CO2 Apparent Mole Conc. (kgmole/m3)	---	---	1.958e-002		
16	CO2 Apparent Wt. Conc. (kgmol/kg)	---	---	1.994e-005		
17	LHV Mass Basis (Std) (kJ/kg)	4.249e+004	4.267e+004	53.56		
18	Phase Fraction [Vol. Basis]	0.9983	0.9983	1.707e-003		
19	Phase Fraction [Mass Basis]	0.9957	0.9957	4.313e-003		
20	Phase Fraction [Act. Vol. Basis]	0.9997	0.9997	2.619e-004		
21	Mass Exergy (kJ/kg)	380.9	---	---		
22	Partial Pressure of CO2 (bar_g)	0.7388	---	---		
23	Cost Based on Flow (Cost/s)	0.0000	0.0000	0.0000		
24	Act. Gas Flow (ACT_m3/h)	145.2	145.2	---		
25	Avg. Liq. Density (kgmole/m3)	16.08	16.02	55.21		
26	Specific Heat (kJ/kgmole-C)	59.06	58.95	77.81		
27	Std. Gas Flow (Nm3/h)	7918	7872	46.39		
28	Std. Ideal Liq. Mass Density (kg/m3)	394.5	393.4	996.9		
29	Act. Liq. Flow (m3/s)	1.057e-005	---	1.057e-005		
30	Z Factor	---	0.8229	3.658e-002		
31	Watson K	16.45	16.45	9.074		
32	User Property	---	---	---		
33	Partial Pressure of H2S (bar_g)	1.986	---	---		
34	Cp/(Cp - R)	1.164	1.164	1.120		
35	Cp/Cv	1.457	1.462	1.163		
36	Heat of Vap. (kJ/kgmole)	1.396e+004	---	---		
37	Kinematic Viscosity (cSt)	---	0.2386	0.5034		
38	Liq. Mass Density (Std. Cond) (kg/m3)	1.043	1.044	1015		
39	Liq. Vol. Flow (Std. Cond) (barrel/day)	1.254e+006	1.247e+006	5.560		
40	Liquid Fraction	5.858e-003	0.0000	1.000		
41	Molar Volume (m3/kgmole)	0.4112	0.4136	1.839e-002		
42	Mass Heat of Vap. (kJ/kg)	569.2	---	---		
43	Phase Fraction [Molar Basis]	0.9941	0.9941	0.0059		
44	Surface Tension (dyne/cm)	65.83	---	65.83		
45	Thermal Conductivity (W/m-K)	---	3.700e-002	0.6515		
46	Viscosity (cP)	---	1.417e-002	0.4943		
47	Cv (Semi-Ideal) (kJ/kgmole-C)	50.74	50.63	69.50		
48	Mass Cv (Semi-Ideal) (kJ/kg-C)	2.069	2.062	3.849		
49	Cv (kJ/kgmole-C)	40.54	40.32	66.93		
50	Mass Cv (kJ/kg-C)	1.653	1.642	3.707		
51	Cv (Ent. Method) (kJ/kgmole-C)	---	---	---		
52	Mass Cv (Ent. Method) (kJ/kg-C)	---	---	3.637		
53	Cp/Cv (Ent. Method)	---	---	1.185		
54	Reid VP at 37.8 C (bar_g)	---	---	37.90		
55	True VP at 37.8 C (bar_g)	168.1	168.1	30.75		
56	Liq. Vol. Flow - Sum(Std. Cond) (m3/h)	8260	8260	3.683e-002		
57	Viscosity Index	---	---	---		
58	Ideal Gas Cp/Cv	1.212	1.212	1.326		
59	Ideal Gas Cp (kJ/kgmole-C)	47.48	47.57	33.80		
60	Mass Ideal Gas Cp (kJ/kg-C)	1.936	1.937	1.872		
61	Bubble Point Pressure (bar_g)	---	---	---		
62	COMPOSITION					
63						
64	Overall Phase			Vapour Fraction 0.9941		
65						
66	COMPONENTS	MOLAR FLOW (kgmole/h)	MOLE FRACTION	MASS FLOW (kg/h)	MASS FRACTION	LIQUID VOLUME FLOW (m3/h)
67						LIQUID VOLUME FRACTION
68	H2O	3.6436	0.0103	65.6405	0.0076	0.0658 0.0030
69	Aspen Technology Inc. Aspen HYSYS Version 11 Page 26 of 40					


1	<div></div> <div>Company Name Not Available Bedford, MA USA</div>				Case Name: BINAK SUMMER-D03.hsc					
2					Fluid Package: Basis-1					
3								Unit Set: Binak3a13132		
4								Date/Time: Mon Mar 7 11:52:07 2022		
5										
6	Material Stream: 11 (continued)				Fluid Package: Basis-1					
7					Property Package: Peng-Robinson					
8										
9	COMPOSITION									
10										
11	Overall Phase (continued)						Vapour Fraction	0.9941		
12										
13	COMPONENTS	MOLAR FLOW (kgmole/h)	MOLE FRACTION	MASS FLOW (kg/h)	MASS FRACTION	LIQUID VOLUME FLOW (m3/h)	LIQUID VOLUME FRACTION			
14										
15	CO2	11.1659	0.0316	491.4069	0.0567	0.5954	0.0271			
16	H2S	19.1193	0.0541	651.5080	0.0752	0.8264	0.0376			
17	Methane	225.7192	0.6389	3621.1910	0.4180	12.0951	0.5507			
18	Ethane	48.5816	0.1375	1460.8440	0.1686	4.1072	0.1870			
19	Propane	27.3136	0.0773	1204.4462	0.1390	2.3771	0.1082			
20	i-Butane	2.9655	0.0084	172.3696	0.0199	0.3067	0.0140			
21	n-Butane	6.5688	0.0186	381.8028	0.0441	0.6546	0.0298			
22	i-Pentane	2.4617	0.0070	177.6151	0.0205	0.2849	0.0130			
23	n-Pentane	1.3332	0.0038	96.1911	0.0111	0.1528	0.0070			
24	n-Hexane	2.3137	0.0065	199.3913	0.0230	0.3009	0.0137			
25	n-Heptane	0.6912	0.0020	69.2580	0.0080	0.1008	0.0046			
26	n-Octane	0.2105	0.0006	24.0508	0.0028	0.0341	0.0016			
27	n-Nonane	0.1049	0.0003	13.4537	0.0016	0.0187	0.0009			
28	n-Decane	0.0350	0.0001	4.9747	0.0006	0.0068	0.0003			
29	n-C11	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			
30	Nitrogen	1.0541	0.0030	29.5276	0.0034	0.0366	0.0017			
31	TEGlycol	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			
32	Total	353.2817	1.0000	8663.6713	1.0000	21.9638	1.0000			
33										
34	Vapour Phase						Phase Fraction	0.9941		
35	COMPONENTS	MOLAR FLOW (kgmole/h)	MOLE FRACTION	MASS FLOW (kg/h)	MASS FRACTION	LIQUID VOLUME FLOW (m3/h)	LIQUID VOLUME FRACTION			
36										
37	H2O	1.5787	0.0045	28.4400	0.0033	0.0285	0.0013			
38	CO2	11.1651	0.0318	491.3741	0.0570	0.5954	0.0272			
39	H2S	19.1154	0.0544	651.3765	0.0755	0.8262	0.0377			
40	Methane	225.7192	0.6427	3621.1910	0.4198	12.0951	0.5516			
41	Ethane	48.5816	0.1383	1460.8440	0.1693	4.1072	0.1873			
42	Propane	27.3136	0.0778	1204.4462	0.1396	2.3771	0.1084			
43	i-Butane	2.9655	0.0084	172.3696	0.0200	0.3067	0.0140			
44	n-Butane	6.5688	0.0187	381.8028	0.0443	0.6546	0.0299			
45	i-Pentane	2.4617	0.0070	177.6151	0.0206	0.2849	0.0130			
46	n-Pentane	1.3332	0.0038	96.1911	0.0112	0.1528	0.0070			
47	n-Hexane	2.3137	0.0066	199.3913	0.0231	0.3009	0.0137			
48	n-Heptane	0.6912	0.0020	69.2580	0.0080	0.1008	0.0046			
49	n-Octane	0.2105	0.0006	24.0508	0.0028	0.0341	0.0016			
50	n-Nonane	0.1049	0.0003	13.4537	0.0016	0.0187	0.0009			
51	n-Decane	0.0350	0.0001	4.9747	0.0006	0.0068	0.0003			
52	n-C11	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			
53	Nitrogen	1.0541	0.0030	29.5275	0.0034	0.0366	0.0017			
54	TEGlycol	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			
55	Total	351.2122	1.0000	8626.3064	1.0000	21.9263	1.0000			
56										
57	Aqueous Phase						Phase Fraction	5.858e-003		
58	COMPONENTS	MOLAR FLOW (kgmole/h)	MOLE FRACTION	MASS FLOW (kg/h)	MASS FRACTION	LIQUID VOLUME FLOW (m3/h)	LIQUID VOLUME FRACTION			
59										
60	H2O	2.0650	0.9978	37.2005	0.9956	0.0373	0.9945			
61	CO2	0.0007	0.0004	0.0328	0.0009	0.0000	0.0011			
62	H2S	0.0039	0.0019	0.1315	0.0035	0.0002	0.0045			
63	Methane	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			
64	Ethane	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			
65	Propane	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			
66	i-Butane	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			
67	n-Butane	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			
68	i-Pentane	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			
69	Aspen Technology Inc. Aspen HYSYS Version 11 Page 27 of 40									


1	<div></div> <div>Company Name Not Available Bedford, MA USA</div>				Case Name: BINAK SUMMER-D03.hsc		
2					Unit Set: Binak3a13132		
3					Date/Time: Mon Mar 7 11:52:07 2022		
4							
5							
6	Material Stream: 11 (continued)				Fluid Package: Basis-1		
7					Property Package: Peng-Robinson		
8							
9	COMPOSITION						
10							
11	Aqueous Phase (continued)					Phase Fraction 5.858e-003	
12							
13	COMPONENTS	MOLAR FLOW (kgmole/h)	MOLE FRACTION	MASS FLOW (kg/h)	MASS FRACTION	LIQUID VOLUME FLOW (m3/h)	LIQUID VOLUME FRACTION
14							
15	n-Pentane	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
16	n-Hexane	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
17	n-Heptane	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
18	n-Octane	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
19	n-Nonane	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
20	n-Decane	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
21	n-C11	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
22	Nitrogen	0.0000	0.0000	0.0001	0.0000	0.0000	0.0000
23	TEGlycol	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
24	Total	2.0696	1.0000	37.3649	1.0000	0.0375	1.0000
25	Material Stream: 12				Fluid Package: Basis-1		
26					Property Package: Peng-Robinson		
27							
28	CONDITIONS						
29							
30		Overall	Vapour Phase	Aqueous Phase			
31	Vapour / Phase Fraction	0.9941	0.9941	0.0059			
32	Temperature: (C)	60.00	60.00	60.00			
33	Pressure: (bar_g)	54.10	54.10	54.10			
34	Molar Flow (MMSCFD)	14.19	14.10	8.311e-002			
35	Mass Flow (kg/h)	1.733e+004	1.725e+004	74.73			
36	Std Ideal Liq Vol Flow (barrel/day)	6631	6620	11.32			
37	Molar Enthalpy (kJ/kgmole)	-9.072e+004	-8.958e+004	-2.830e+005			
38	Molar Entropy (kJ/kgmole-C)	159.7	160.3	62.54			
39	Heat Flow (kW)	-1.780e+004	-1.748e+004	-325.3			
40	Liq Vol Flow @Std Cond (barrel/day)	2.509e+006 *	2.494e+006	11.12			
41	PROPERTIES						
42							
43		Overall	Vapour Phase	Aqueous Phase			
44	Molecular Weight	24.52	24.56	18.05			
45	Molar Density (kgmole/m3)	2.432	2.418	54.39			
46	Mass Density (kg/m3)	59.63	59.39	981.9			
47	Act. Volume Flow (m3/h)	290.6	290.5	7.611e-002			
48	Mass Enthalpy (kJ/kg)	-3699	-3647	-1.567e+004			
49	Mass Entropy (kJ/kg-C)	6.514	6.527	3.464			
50	Heat Capacity (kJ/kgmole-C)	59.06	58.95	77.81			
51	Mass Heat Capacity (kJ/kg-C)	2.408	2.400	4.310			
52	LHV Molar Basis (Std) (kJ/kgmole)	1.042e+006	1.048e+006	967.0			
53	HHV Molar Basis (Std) (kJ/kgmole)	1.138e+006	1.144e+006	4.196e+004			
54	HHV Mass Basis (Std) (kJ/kg)	4.639e+004	4.658e+004	2324			
55	CO2 Loading	---	---	---			
56	CO2 Apparent Mole Conc. (kgmole/m3)	---	---	1.958e-002			
57	CO2 Apparent Wt. Conc. (kgmol/kg)	---	---	1.994e-005			
58	LHV Mass Basis (Std) (kJ/kg)	4.249e+004	4.267e+004	53.56			
59	Phase Fraction [Vol. Basis]	0.9983	0.9983	1.707e-003			
60	Phase Fraction [Mass Basis]	0.9957	0.9957	4.313e-003			
61	Phase Fraction [Act. Vol. Basis]	0.9997	0.9997	2.619e-004			
62	Mass Exergy (kJ/kg)	380.9	---	---			
63	Partial Pressure of CO2 (bar_g)	0.7388	---	---			
64	Cost Based on Flow (Cost/s)	0.0000	0.0000	0.0000			
65	Act. Gas Flow (ACT_m3/h)	290.5	290.5	---			
66	Avg. Liq. Density (kgmole/m3)	16.08	16.02	55.21			
67	Specific Heat (kJ/kgmole-C)	59.06	58.95	77.81			
68	Std. Gas Flow (Nm3/h)	1.584e+004	1.574e+004	92.78			
69	Aspen Technology Inc.		Aspen HYSYS Version 11		Page 28 of 40		

1	<div></div> <div>Company Name Not Available Bedford, MA USA</div>			Case Name: BINAK SUMMER-D03.hsc			
2				Unit Set: Binak3a13132			
3				Date/Time: Mon Mar 7 11:52:07 2022			
4							
5							
6	Material Stream: 12 (continued)				Fluid Package: Basis-1		
7					Property Package: Peng-Robinson		
8							
9	PROPERTIES						
10							
11		Overall	Vapour Phase	Aqueous Phase			
12	Std. Ideal Liq. Mass Density (kg/m3)	394.5	393.4	996.9			
13	Act. Liq. Flow (m3/s)	2.114e-005	---	2.114e-005			
14	Z Factor	---	0.8229	3.658e-002			
15	Watson K	16.45	16.45	9.074			
16	User Property	---	---	---			
17	Partial Pressure of H2S (bar_g)	1.986	---	---			
18	Cp/(Cp - R)	1.164	1.164	1.120			
19	Cp/Cv	1.457	1.462	1.163			
20	Heat of Vap. (kJ/kgmole)	1.396e+004	---	---			
21	Kinematic Viscosity (cSt)	---	0.2386	0.5034			
22	Liq. Mass Density (Std. Cond) (kg/m3)	1.043	1.044	1015			
23	Liq. Vol. Flow (Std. Cond) (barrel/day)	2.509e+006	2.494e+006	11.12			
24	Liquid Fraction	5.858e-003	0.0000	1.000			
25	Molar Volume (m3/kgmole)	0.4112	0.4136	1.839e-002			
26	Mass Heat of Vap. (kJ/kg)	569.2	---	---			
27	Phase Fraction [Molar Basis]	0.9941	0.9941	0.0059			
28	Surface Tension (dyne/cm)	65.83	---	65.83			
29	Thermal Conductivity (W/m-K)	---	3.700e-002	0.6515			
30	Viscosity (cP)	---	1.417e-002	0.4943			
31	Cv (Semi-Ideal) (kJ/kgmole-C)	50.74	50.63	69.50			
32	Mass Cv (Semi-Ideal) (kJ/kg-C)	2.069	2.062	3.849			
33	Cv (kJ/kgmole-C)	40.54	40.32	66.93			
34	Mass Cv (kJ/kg-C)	1.653	1.642	3.707			
35	Cv (Ent. Method) (kJ/kgmole-C)	---	---	74.02			
36	Mass Cv (Ent. Method) (kJ/kg-C)	---	---	4.100			
37	Cp/Cv (Ent. Method)	---	---	1.051			
38	Reid VP at 37.8 C (bar_g)	---	---	37.90			
39	True VP at 37.8 C (bar_g)	168.1	168.1	---			
40	Liq. Vol. Flow - Sum(Std. Cond) (m3/h)	1.652e+004	1.652e+004	7.366e-002			
41	Viscosity Index	---	---	---			
42	Ideal Gas Cp/Cv	1.212	1.212	1.326			
43	Ideal Gas Cp (kJ/kgmole-C)	47.48	47.57	33.80			
44	Mass Ideal Gas Cp (kJ/kg-C)	1.936	1.937	1.872			
45	Bubble Point Pressure (bar_g)	---	---	---			
46	COMPOSITION						
47							
48							
49	Overall Phase			Vapour Fraction		0.9941	
50	COMPONENTS	MOLAR FLOW (kgmole/h)	MOLE FRACTION	MASS FLOW (kg/h)	MASS FRACTION	LIQUID VOLUME FLOW (m3/h)	LIQUID VOLUME FRACTION
51							
52	H2O	7.2873	0.0103	131.2809	0.0076	0.1315	0.0030
53	CO2	22.3318	0.0316	982.8138	0.0567	1.1908	0.0271
54	H2S	38.2385	0.0541	1303.0161	0.0752	1.6527	0.0376
55	Methane	451.4385	0.6389	7242.3820	0.4180	24.1901	0.5507
56	Ethane	97.1632	0.1375	2921.6880	0.1686	8.2143	0.1870
57	Propane	54.6271	0.0773	2408.8924	0.1390	4.7543	0.1082
58	i-Butane	5.9311	0.0084	344.7393	0.0199	0.6135	0.0140
59	n-Butane	13.1375	0.0186	763.6056	0.0441	1.3093	0.0298
60	i-Pentane	4.9234	0.0070	355.2302	0.0205	0.5698	0.0130
61	n-Pentane	2.6664	0.0038	192.3822	0.0111	0.3055	0.0070
62	n-Hexane	4.6274	0.0065	398.7827	0.0230	0.6018	0.0137
63	n-Heptane	1.3823	0.0020	138.5159	0.0080	0.2017	0.0046
64	n-Octane	0.4211	0.0006	48.1016	0.0028	0.0682	0.0016
65	n-Nonane	0.2098	0.0003	26.9074	0.0016	0.0374	0.0009
66	n-Decane	0.0699	0.0001	9.9493	0.0006	0.0136	0.0003
67	n-C11	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
68	Nitrogen	2.1081	0.0030	59.0552	0.0034	0.0732	0.0017
69	Aspen Technology Inc. Aspen HYSYS Version 11 Page 29 of 40						
	Licensed to: Company Name Not Available			* Specified by user.			


1	 <div> <div>Company Name Not Available</div> <div>Bedford, MA</div> <div>USA</div> </div>			Case Name: BINAK SUMMER-D03.hsc		
2				Unit Set: Binak3a13132		
3				Date/Time: Mon Mar 7 11:52:07 2022		
4						
5	Material Stream: 12 (continued)				Fluid Package: Basis-1	
6					Property Package: Peng-Robinson	
7						
8	COMPOSITION					
9						
10	Overall Phase (continued)					
11						
12						Vapour Fraction 0.9941
13	COMPONENTS	MOLAR FLOW (kgmole/h)	MOLE FRACTION	MASS FLOW (kg/h)	MASS FRACTION	LIQUID VOLUME FLOW (m3/h)
14						LIQUID VOLUME FRACTION
15	TEGlycol	0.0000	0.0000	0.0000	0.0000	0.0000
16	Total	706.5635	1.0000	17327.3426	1.0000	43.9277
17						
18	Vapour Phase					
19						
20	COMPONENTS	MOLAR FLOW (kgmole/h)	MOLE FRACTION	MASS FLOW (kg/h)	MASS FRACTION	LIQUID VOLUME FLOW (m3/h)
21						LIQUID VOLUME FRACTION
22	H2O	3.1572	0.0045	56.8771	0.0033	0.0570
23	CO2	22.3303	0.0318	982.7482	0.0570	1.1907
24	H2S	38.2308	0.0544	1302.7530	0.0755	1.6524
25	Methane	451.4385	0.6427	7242.3820	0.4198	24.1901
26	Ethane	97.1632	0.1383	2921.6880	0.1693	8.2143
27	Propane	54.6271	0.0778	2408.8924	0.1396	4.7543
28	i-Butane	5.9311	0.0084	344.7393	0.0200	0.6135
29	n-Butane	13.1375	0.0187	763.6056	0.0443	1.3093
30	i-Pentane	4.9234	0.0070	355.2302	0.0206	0.5698
31	n-Pentane	2.6664	0.0038	192.3822	0.0112	0.3055
32	n-Hexane	4.6274	0.0066	398.7827	0.0231	0.6018
33	n-Heptane	1.3823	0.0020	138.5159	0.0080	0.2017
34	n-Octane	0.4211	0.0006	48.1016	0.0028	0.0682
35	n-Nonane	0.2098	0.0003	26.9074	0.0016	0.0374
36	n-Decane	0.0699	0.0001	9.9493	0.0006	0.0136
37	n-C11	0.0000	0.0000	0.0000	0.0000	0.0000
38	Nitrogen	2.1081	0.0030	59.0550	0.0034	0.0732
39	TEGlycol	0.0000	0.0000	0.0000	0.0000	0.0000
40	Total	702.4242	1.0000	17252.6100	1.0000	43.8527
41						
42	Aqueous Phase					
43						
44	COMPONENTS	MOLAR FLOW (kgmole/h)	MOLE FRACTION	MASS FLOW (kg/h)	MASS FRACTION	LIQUID VOLUME FLOW (m3/h)
45						LIQUID VOLUME FRACTION
46	H2O	4.1301	0.9978	74.4038	0.9956	0.0746
47	CO2	0.0015	0.0004	0.0656	0.0009	0.0001
48	H2S	0.0077	0.0019	0.2630	0.0035	0.0003
49	Methane	0.0000	0.0000	0.0001	0.0000	0.0000
50	Ethane	0.0000	0.0000	0.0000	0.0000	0.0000
51	Propane	0.0000	0.0000	0.0000	0.0000	0.0000
52	i-Butane	0.0000	0.0000	0.0000	0.0000	0.0000
53	n-Butane	0.0000	0.0000	0.0000	0.0000	0.0000
54	i-Pentane	0.0000	0.0000	0.0000	0.0000	0.0000
55	n-Pentane	0.0000	0.0000	0.0000	0.0000	0.0000
56	n-Hexane	0.0000	0.0000	0.0000	0.0000	0.0000
57	n-Heptane	0.0000	0.0000	0.0000	0.0000	0.0000
58	n-Octane	0.0000	0.0000	0.0000	0.0000	0.0000
59	n-Nonane	0.0000	0.0000	0.0000	0.0000	0.0000
60	n-Decane	0.0000	0.0000	0.0000	0.0000	0.0000
61	n-C11	0.0000	0.0000	0.0000	0.0000	0.0000
62	Nitrogen	0.0000	0.0000	0.0002	0.0000	0.0000
63	TEGlycol	0.0000	0.0000	0.0000	0.0000	0.0000
64	Total	4.1393	1.0000	74.7327	1.0000	0.0750
65						
66						
67						
68						
69	Aspen Technology Inc.		Aspen HYSYS Version 11			Page 30 of 40


1	<div></div> <div>Company Name Not Available Bedford, MA USA</div>		Case Name: BINAK SUMMER-D03.hsc		
2			<div>Unit Set: Binak3a13132</div> <div>Date/Time: Mon Mar 7 11:52:07 2022</div>		
3					
4					
5	<div>Material Stream: 13</div>		Fluid Package: Basis-1		
6			Property Package: Peng-Robinson		
7					
8					
9	CONDITIONS				
10					
11		Overall	Vapour Phase	Aqueous Phase	
12	Vapour / Phase Fraction	1.0000	1.0000	0.0000	
13	Temperature: (C)	59.89	59.89	59.89	
14	Pressure: (bar_g)	53.90	53.90	53.90	
15	Molar Flow (MMSCFD)	14.10	14.10	0.0000	
16	Mass Flow (kg/h)	1.725e+004	1.725e+004	0.0000	
17	Std Ideal Liq Vol Flow (barrel/day)	6620	6620	0.0000	
18	Molar Enthalpy (kJ/kgmole)	-8.958e+004	-8.958e+004	-2.830e+005	
19	Molar Entropy (kJ/kgmole-C)	160.3	160.3	62.51	
20	Heat Flow (kW)	-1.748e+004	-1.748e+004	0.0000	
21	Liq Vol Flow @Std Cond (barrel/day)	2.494e+006 *	2.494e+006	0.0000	
22	PROPERTIES				
23					
24		Overall	Vapour Phase	Aqueous Phase	
25	Molecular Weight	24.56	24.56	18.05	
26	Molar Density (kgmole/m3)	2.409	2.409	54.39	
27	Mass Density (kg/m3)	59.17	59.17	982.0	
28	Act. Volume Flow (m3/h)	291.6	291.6	0.0000	
29	Mass Enthalpy (kJ/kg)	-3647	-3647	-1.567e+004	
30	Mass Entropy (kJ/kg-C)	6.528	6.528	3.462	
31	Heat Capacity (kJ/kgmole-C)	58.90	58.90	77.81	
32	Mass Heat Capacity (kJ/kg-C)	2.398	2.398	4.310	
33	LHV Molar Basis (Std) (kJ/kgmole)	1.048e+006	1.048e+006	965.7	
34	HHV Molar Basis (Std) (kJ/kgmole)	1.144e+006	1.144e+006	4.196e+004	
35	HHV Mass Basis (Std) (kJ/kg)	4.658e+004	4.658e+004	2324	
36	CO2 Loading	---	---	---	
37	CO2 Apparent Mole Conc. (kgmole/m3)	---	---	---	
38	CO2 Apparent Wt. Conc. (kgmol/kg)	---	---	---	
39	LHV Mass Basis (Std) (kJ/kg)	4.267e+004	4.267e+004	53.49	
40	Phase Fraction [Vol. Basis]	1.000	1.000	---	
41	Phase Fraction [Mass Basis]	1.000	1.000	0.0000	
42	Phase Fraction [Act. Vol. Basis]	1.000	1.000	0.0000	
43	Mass Exergy (kJ/kg)	381.3	---	---	
44	Partial Pressure of CO2 (bar_g)	0.7325	---	---	
45	Cost Based on Flow (Cost/s)	0.0000	0.0000	0.0000	
46	Act. Gas Flow (ACT_m3/h)	291.6	291.6	---	
47	Avg. Liq. Density (kgmole/m3)	16.02	16.02	55.21	
48	Specific Heat (kJ/kgmole-C)	58.90	58.90	77.81	
49	Std. Gas Flow (Nm3/h)	1.574e+004	1.574e+004	0.0000	
50	Std. Ideal Liq. Mass Density (kg/m3)	393.4	393.4	996.9	
51	Act. Liq. Flow (m3/s)	0.0000	---	0.0000	
52	Z Factor	---	0.8232	3.646e-002	
53	Watson K	16.45	16.45	9.074	
54	User Property	---	---	---	
55	Partial Pressure of H2S (bar_g)	1.976	---	---	
56	Cp/(Cp - R)	1.164	1.164	1.120	
57	Cp/Cv	1.461	1.461	1.163	
58	Heat of Vap. (kJ/kgmole)	1.260e+004	---	---	
59	Kinematic Viscosity (cSt)	0.2392	0.2392	0.5042	
60	Liq. Mass Density (Std. Cond) (kg/m3)	1.044	1.044	1015	
61	Liq. Vol. Flow (Std. Cond) (barrel/day)	2.494e+006	2.494e+006	0.0000	
62	Liquid Fraction	0.0000	0.0000	1.000	
63	Molar Volume (m3/kgmole)	0.4151	0.4151	1.839e-002	
64	Mass Heat of Vap. (kJ/kg)	513.0	---	---	
65	Phase Fraction [Molar Basis]	1.0000	1.0000	0.0000	
66	Surface Tension (dyne/cm)	---	---	65.84	
67	Thermal Conductivity (W/m-K)	3.697e-002	3.697e-002	0.6514	
68	Viscosity (cP)	1.416e-002	1.416e-002	0.4952	
69	Aspen Technology Inc. Aspen HYSYS Version 11 Page 31 of 40				


1	 <div> <div>Company Name Not Available</div> <div>Bedford, MA</div> <div>USA</div> </div>			Case Name: BINAK SUMMER-D03.hsc		
2				Unit Set: Binak3a13132		
3				Date/Time: Mon Mar 7 11:52:07 2022		
4						
5	Material Stream: 13 (continued)				Fluid Package: Basis-1	
6					Property Package: Peng-Robinson	
7						
8						
9	PROPERTIES					
10		Overall	Vapour Phase	Aqueous Phase		
11						
12	Cv (Semi-Ideal) (kJ/kgmole-C)	50.58	50.58	69.49		
13	Mass Cv (Semi-Ideal) (kJ/kg-C)	2.059	2.059	3.849		
14	Cv (kJ/kgmole-C)	40.31	40.31	66.93		
15	Mass Cv (kJ/kg-C)	1.641	1.641	3.707		
16	Cv (Ent. Method) (kJ/kgmole-C)	---	---	73.96		
17	Mass Cv (Ent. Method) (kJ/kg-C)	---	---	4.097		
18	Cp/Cv (Ent. Method)	---	---	1.052		
19	Reid VP at 37.8 C (bar_g)	---	---	37.90		
20	True VP at 37.8 C (bar_g)	168.1	168.1	29.90		
21	Liq. Vol. Flow - Sum(Std. Cond) (m3/h)	1.652e+004	1.652e+004	0.0000		
22	Viscosity Index	---	---	---		
23	Ideal Gas Cp/Cv	1.212	1.212	1.326		
24	Ideal Gas Cp (kJ/kgmole-C)	47.56	47.56	33.79		
25	Mass Ideal Gas Cp (kJ/kg-C)	1.936	1.936	1.872		
26	Bubble Point Pressure (bar_g)	---	---	---		
27	COMPOSITION					
28						
29	Overall Phase					
30						Vapour Fraction 1.0000
31	COMPONENTS	MOLAR FLOW (kgmole/h)	MOLE FRACTION	MASS FLOW (kg/h)	MASS FRACTION	LIQUID VOLUME FLOW (m3/h)
32						LIQUID VOLUME FRACTION
33	H2O	3.1510	0.0045	56.7654	0.0033	0.0569
34	CO2	22.3303	0.0318	982.7482	0.0570	1.1907
35	H2S	38.2308	0.0544	1302.7530	0.0755	1.6524
36	Methane	451.4385	0.6427	7242.3820	0.4198	24.1901
37	Ethane	97.1632	0.1383	2921.6880	0.1693	8.2143
38	Propane	54.6271	0.0778	2408.8924	0.1396	4.7543
39	i-Butane	5.9311	0.0084	344.7393	0.0200	0.6135
40	n-Butane	13.1375	0.0187	763.6056	0.0443	1.3093
41	i-Pentane	4.9234	0.0070	355.2302	0.0206	0.5698
42	n-Pentane	2.6664	0.0038	192.3822	0.0112	0.3055
43	n-Hexane	4.6274	0.0066	398.7827	0.0231	0.6018
44	n-Heptane	1.3823	0.0020	138.5159	0.0080	0.2017
45	n-Octane	0.4211	0.0006	48.1016	0.0028	0.0682
46	n-Nonane	0.2098	0.0003	26.9074	0.0016	0.0374
47	n-Decane	0.0699	0.0001	9.9493	0.0006	0.0136
48	n-C11	0.0000	0.0000	0.0000	0.0000	0.0000
49	Nitrogen	2.1081	0.0030	59.0550	0.0034	0.0732
50	TEGlycol	0.0000	0.0000	0.0000	0.0000	0.0000
51	Total	702.4180	1.0000	17252.4982	1.0000	43.8526
52	Vapour Phase					
53						Phase Fraction 1.000
54	COMPONENTS	MOLAR FLOW (kgmole/h)	MOLE FRACTION	MASS FLOW (kg/h)	MASS FRACTION	LIQUID VOLUME FLOW (m3/h)
55						LIQUID VOLUME FRACTION
56	H2O	3.1510	0.0045	56.7654	0.0033	0.0569
57	CO2	22.3303	0.0318	982.7482	0.0570	1.1907
58	H2S	38.2308	0.0544	1302.7530	0.0755	1.6524
59	Methane	451.4385	0.6427	7242.3820	0.4198	24.1901
60	Ethane	97.1632	0.1383	2921.6880	0.1693	8.2143
61	Propane	54.6271	0.0778	2408.8924	0.1396	4.7543
62	i-Butane	5.9311	0.0084	344.7393	0.0200	0.6135
63	n-Butane	13.1375	0.0187	763.6056	0.0443	1.3093
64	i-Pentane	4.9234	0.0070	355.2302	0.0206	0.5698
65	n-Pentane	2.6664	0.0038	192.3822	0.0112	0.3055
66	n-Hexane	4.6274	0.0066	398.7827	0.0231	0.6018
67	n-Heptane	1.3823	0.0020	138.5159	0.0080	0.2017
68	n-Octane	0.4211	0.0006	48.1016	0.0028	0.0682
69	Aspen Technology Inc. Aspen HYSYS Version 11 Page 32 of 40					


1	<div></div> <div>Company Name Not Available Bedford, MA USA</div>				Case Name: BINAK SUMMER-D03.hsc		
2					Unit Set: Binak3a13132		
3					Date/Time: Mon Mar 7 11:52:07 2022		
4							
5							
6	Material Stream: 13 (continued)				Fluid Package: Basis-1		
7					Property Package: Peng-Robinson		
8							
9							
10	COMPOSITION						
11							
12	Vapour Phase (continued)					Phase Fraction 1.000	
13	COMPONENTS	MOLAR FLOW (kgmole/h)	MOLE FRACTION	MASS FLOW (kg/h)	MASS FRACTION	LIQUID VOLUME FLOW (m3/h)	LIQUID VOLUME FRACTION
14							
15	n-Nonane	0.2098	0.0003	26.9074	0.0016	0.0374	0.0009
16	n-Decane	0.0699	0.0001	9.9493	0.0006	0.0136	0.0003
17	n-C11	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
18	Nitrogen	2.1081	0.0030	59.0550	0.0034	0.0732	0.0017
19	TEGlycol	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
20	Total	702.4180	1.0000	17252.4982	1.0000	43.8526	1.0000
21							
22	Aqueous Phase					Phase Fraction 0.0000	
23	COMPONENTS	MOLAR FLOW (kgmole/h)	MOLE FRACTION	MASS FLOW (kg/h)	MASS FRACTION	LIQUID VOLUME FLOW (m3/h)	LIQUID VOLUME FRACTION
24							
25	H2O	0.0000	0.9978	0.0000	0.9956	0.0000	0.9945
26	CO2	0.0000	0.0004	0.0000	0.0009	0.0000	0.0011
27	H2S	0.0000	0.0019	0.0000	0.0035	0.0000	0.0044
28	Methane	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
29	Ethane	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
30	Propane	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
31	i-Butane	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
32	n-Butane	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
33	i-Pentane	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
34	n-Pentane	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
35	n-Hexane	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
36	n-Heptane	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
37	n-Octane	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
38	n-Nonane	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
39	n-Decane	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
40	n-C11	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
41	Nitrogen	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
42	TEGlycol	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
43	Total	0.0000	1.0000	0.0000	1.0000	0.0000	1.0000
44							
45	Material Stream: 14				Fluid Package: Basis-1		
46					Property Package: Peng-Robinson		
47							
48	CONDITIONS						
49		Overall	Vapour Phase				
50	Vapour / Phase Fraction	1.0000	1.0000				
51	Temperature: (C)	59.40	59.40				
52	Pressure: (bar_g)	52.90	52.90				
53	Molar Flow (MMSCFD)	14.03	14.03				
54	Mass Flow (kg/h)	1.717e+004	1.717e+004				
55	Std Ideal Liq Vol Flow (barrel/day)	6605	6605				
56	Molar Enthalpy (kJ/kgmole)	-8.895e+004	-8.895e+004				
57	Molar Entropy (kJ/kgmole-C)	160.3	160.3				
58	Heat Flow (kW)	-1.726e+004	-1.726e+004				
59	Liq Vol Flow @Std Cond (barrel/day)	2.480e+006 *	2.480e+006				
60							
61	PROPERTIES						
62		Overall	Vapour Phase				
63	Molecular Weight	24.58	24.58				
64	Molar Density (kgmole/m3)	2.362	2.362				
65	Mass Density (kg/m3)	58.06	58.06				
66	Act. Volume Flow (m3/h)	295.8	295.8				
67	Mass Enthalpy (kJ/kg)	-3619	-3619				
68	Mass Entropy (kJ/kg-C)	6.524	6.524				
69	Aspen Technology Inc. Aspen HYSYS Version 11 Page 33 of 40						
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1	<div></div> <div>Company Name Not Available Bedford, MA USA</div>		Case Name: BINAK SUMMER-D03.hsc		
2			Unit Set: Binak3a13132		
3			Date/Time: Mon Mar 7 11:52:07 2022		
4					
5	<div>Material Stream: 14 (continued)</div>		Fluid Package: Basis-1		
6			Property Package: Peng-Robinson		
7					
8					
9	PROPERTIES				
10					
11		Overall	Vapour Phase		
12	Heat Capacity (kJ/kgmole-C)	58.70	58.70		
13	Mass Heat Capacity (kJ/kg-C)	2.388	2.388		
14	LHV Molar Basis (Std) (kJ/kgmole)	1.053e+006	1.053e+006		
15	HHV Molar Basis (Std) (kJ/kgmole)	1.149e+006	1.149e+006		
16	HHV Mass Basis (Std) (kJ/kg)	4.676e+004	4.676e+004		
17	CO2 Loading	---	---		
18	CO2 Apparent Mole Conc. (kgmole/m3)	---	---		
19	CO2 Apparent Wt. Conc. (kgmol/kg)	---	---		
20	LHV Mass Basis (Std) (kJ/kg)	4.284e+004	4.284e+004		
21	Phase Fraction [Vol. Basis]	1.000	1.000		
22	Phase Fraction [Mass Basis]	1.000	1.000		
23	Phase Fraction [Act. Vol. Basis]	1.000	1.000		
24	Mass Exergy (kJ/kg)	379.6	---		
25	Partial Pressure of CO2 (bar_g)	0.7065	---		
26	Cost Based on Flow (Cost/s)	0.0000	0.0000		
27	Act. Gas Flow (ACT_m3/h)	295.8	295.8		
28	Avg. Liq. Density (kgmole/m3)	15.97	15.97		
29	Specific Heat (kJ/kgmole-C)	58.70	58.70		
30	Std. Gas Flow (Nm3/h)	1.566e+004	1.566e+004		
31	Std. Ideal Liq. Mass Density (kg/m3)	392.4	392.4		
32	Act. Liq. Flow (m3/s)	---	---		
33	Z Factor	0.8254	0.8254		
34	Watson K	16.46	16.46		
35	User Property	---	---		
36	Partial Pressure of H2S (bar_g)	1.897	---		
37	Cp/(Cp - R)	1.165	1.165		
38	Cp/Cv	1.456	1.456		
39	Heat of Vap. (kJ/kgmole)	1.226e+004	---		
40	Kinematic Viscosity (cSt)	0.2430	0.2430		
41	Liq. Mass Density (Std. Cond) (kg/m3)	1.045	1.045		
42	Liq. Vol. Flow (Std. Cond) (barrel/day)	2.480e+006	2.480e+006		
43	Liquid Fraction	0.0000	0.0000		
44	Molar Volume (m3/kgmole)	0.4233	0.4233		
45	Mass Heat of Vap. (kJ/kg)	498.9	---		
46	Phase Fraction [Molar Basis]	1.0000	1.0000		
47	Surface Tension (dyne/cm)	---	---		
48	Thermal Conductivity (W/m-K)	3.682e-002	3.682e-002		
49	Viscosity (cP)	1.411e-002	1.411e-002		
50	Cv (Semi-Ideal) (kJ/kgmole-C)	50.39	50.39		
51	Mass Cv (Semi-Ideal) (kJ/kg-C)	2.050	2.050		
52	Cv (kJ/kgmole-C)	40.32	40.32		
53	Mass Cv (kJ/kg-C)	1.641	1.641		
54	Cv (Ent. Method) (kJ/kgmole-C)	---	---		
55	Mass Cv (Ent. Method) (kJ/kg-C)	---	---		
56	Cp/Cv (Ent. Method)	---	---		
57	Reid VP at 37.8 C (bar_g)	---	---		
58	True VP at 37.8 C (bar_g)	---	---		
59	Liq. Vol. Flow - Sum(Std. Cond) (m3/h)	1.643e+004	1.643e+004		
60	Viscosity Index	---	---		
61	Ideal Gas Cp/Cv	1.212	1.212		
62	Ideal Gas Cp (kJ/kgmole-C)	47.58	47.58		
63	Mass Ideal Gas Cp (kJ/kg-C)	1.936	1.936		
64	Bubble Point Pressure (bar_g)	---	---		
65	Water Content[Gas] (lb/MMSCF)	10.56	10.56		
66					
67					
68					
69	Aspen Technology Inc.		Aspen HYSYS Version 11		Page 34 of 40


1	<div></div> <div>Company Name Not Available Bedford, MA USA</div>				Case Name: BINAK SUMMER-D03.hsc				
2									
3								Unit Set: Binak3a13132	
4								Date/Time: Mon Mar 7 11:52:07 2022	
5									
6	Material Stream: 14 (continued)				Fluid Package: Basis-1				
7					Property Package: Peng-Robinson				
8									
9	COMPOSITION								
10									
11	Overall Phase Vapour Fraction 1.0000								
12									
13	COMPONENTS	MOLAR FLOW (kgmole/h)	MOLE FRACTION	MASS FLOW (kg/h)	MASS FRACTION	LIQUID VOLUME FLOW (m3/h)	LIQUID VOLUME FRACTION		
14									
15	H2O	0.1554	0.0002	2.7989	0.0002	0.0028	0.0001		
16	CO2	22.2863	0.0319	980.8150	0.0571	1.1884	0.0272		
17	H2S	37.7093	0.0540	1284.9815	0.0748	1.6298	0.0372		
18	Methane	451.3815	0.6461	7241.4677	0.4217	24.1871	0.5528		
19	Ethane	97.1423	0.1390	2921.0583	0.1701	8.2125	0.1877		
20	Propane	54.5902	0.0781	2407.2626	0.1402	4.7511	0.1086		
21	i-Butane	5.9066	0.0085	343.3153	0.0200	0.6109	0.0140		
22	n-Butane	13.1259	0.0188	762.9322	0.0444	1.3081	0.0299		
23	i-Pentane	4.8902	0.0070	352.8302	0.0205	0.5659	0.0129		
24	n-Pentane	2.6616	0.0038	192.0376	0.0112	0.3050	0.0070		
25	n-Hexane	4.6274	0.0066	398.7821	0.0232	0.6018	0.0138		
26	n-Heptane	1.3823	0.0020	138.5158	0.0081	0.2017	0.0046		
27	n-Octane	0.4211	0.0006	48.1016	0.0028	0.0682	0.0016		
28	n-Nonane	0.2098	0.0003	26.9074	0.0016	0.0374	0.0009		
29	n-Decane	0.0699	0.0001	9.9493	0.0006	0.0136	0.0003		
30	n-C11	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		
31	Nitrogen	2.1080	0.0030	59.0500	0.0034	0.0732	0.0017		
32	TEGlycol	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		
33	Total	698.6677	1.0000	17170.8055	1.0000	43.7575	1.0000		
34									
35	Vapour Phase Phase Fraction 1.000								
36	COMPONENTS	MOLAR FLOW (kgmole/h)	MOLE FRACTION	MASS FLOW (kg/h)	MASS FRACTION	LIQUID VOLUME FLOW (m3/h)	LIQUID VOLUME FRACTION		
37									
38	H2O	0.1554	0.0002	2.7989	0.0002	0.0028	0.0001		
39	CO2	22.2863	0.0319	980.8150	0.0571	1.1884	0.0272		
40	H2S	37.7093	0.0540	1284.9815	0.0748	1.6298	0.0372		
41	Methane	451.3815	0.6461	7241.4677	0.4217	24.1871	0.5528		
42	Ethane	97.1423	0.1390	2921.0583	0.1701	8.2125	0.1877		
43	Propane	54.5902	0.0781	2407.2626	0.1402	4.7511	0.1086		
44	i-Butane	5.9066	0.0085	343.3153	0.0200	0.6109	0.0140		
45	n-Butane	13.1259	0.0188	762.9322	0.0444	1.3081	0.0299		
46	i-Pentane	4.8902	0.0070	352.8302	0.0205	0.5659	0.0129		
47	n-Pentane	2.6616	0.0038	192.0376	0.0112	0.3050	0.0070		
48	n-Hexane	4.6274	0.0066	398.7821	0.0232	0.6018	0.0138		
49	n-Heptane	1.3823	0.0020	138.5158	0.0081	0.2017	0.0046		
50	n-Octane	0.4211	0.0006	48.1016	0.0028	0.0682	0.0016		
51	n-Nonane	0.2098	0.0003	26.9074	0.0016	0.0374	0.0009		
52	n-Decane	0.0699	0.0001	9.9493	0.0006	0.0136	0.0003		
53	n-C11	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		
54	Nitrogen	2.1080	0.0030	59.0500	0.0034	0.0732	0.0017		
55	TEGlycol	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		
56	Total	698.6677	1.0000	17170.8055	1.0000	43.7575	1.0000		
57									
58	Material Stream: 15				Fluid Package: Basis-1				
59					Property Package: Peng-Robinson				
60									
61	CONDITIONS								
62		Overall	Vapour Phase						
63	Vapour / Phase Fraction	1.0000	1.0000						
64	Temperature: (C)	58.27	58.27						
65	Pressure: (bar_g)	50.92 *	50.92						
66	Molar Flow (MMSCFD)	14.03	14.03						
67	Mass Flow (kg/h)	1.717e+004	1.717e+004						
68	Std Ideal Liq Vol Flow (barrel/day)	6605	6605						
69	Aspen Technology Inc. Aspen HYSYS Version 11 Page 35 of 40								
	Licensed to: Company Name Not Available * Specified by user.								

1	<div></div> <div>Company Name Not Available Bedford, MA USA</div>		Case Name: BINAK SUMMER-D03.hsc		
2			<div>Unit Set: Binak3a13132</div> <div>Date/Time: Mon Mar 7 11:52:07 2022</div>		
3					
4					
5					
6	<div>Material Stream: 15 (continued)</div>			Fluid Package: Basis-1	
7				Property Package: Peng-Robinson	
8					
9	CONDITIONS				
10					
11		Overall	Vapour Phase		
12	Molar Enthalpy (kJ/kgmole)	-8.895e+004	-8.895e+004		
13	Molar Entropy (kJ/kgmole-C)	160.6	160.6		
14	Heat Flow (kW)	-1.726e+004	-1.726e+004		
15	Liq Vol Flow @Std Cond (barrel/day)	2.480e+006 *	2.480e+006		
16	PROPERTIES				
17					
18		Overall	Vapour Phase		
19	Molecular Weight	24.58	24.58		
20	Molar Density (kgmole/m3)	2.273	2.273		
21	Mass Density (kg/m3)	55.86	55.86		
22	Act. Volume Flow (m3/h)	307.4	307.4		
23	Mass Enthalpy (kJ/kg)	-3619	-3619		
24	Mass Entropy (kJ/kg-C)	6.534	6.534		
25	Heat Capacity (kJ/kgmole-C)	58.21	58.21		
26	Mass Heat Capacity (kJ/kg-C)	2.368	2.368		
27	LHV Molar Basis (Std) (kJ/kgmole)	1.053e+006	1.053e+006		
28	HHV Molar Basis (Std) (kJ/kgmole)	1.149e+006	1.149e+006		
29	HHV Mass Basis (Std) (kJ/kg)	4.676e+004	4.676e+004		
30	CO2 Loading	---	---		
31	CO2 Apparent Mole Conc. (kgmole/m3)	---	---		
32	CO2 Apparent Wt. Conc. (kgmol/kg)	---	---		
33	LHV Mass Basis (Std) (kJ/kg)	4.284e+004	4.284e+004		
34	Phase Fraction [Vol. Basis]	1.000	1.000		
35	Phase Fraction [Mass Basis]	1.000	1.000		
36	Phase Fraction [Act. Vol. Basis]	1.000	1.000		
37	Mass Exergy (kJ/kg)	376.5	---		
38	Partial Pressure of CO2 (bar_g)	0.6433	---		
39	Cost Based on Flow (Cost/s)	0.0000	0.0000		
40	Act. Gas Flow (ACT_m3/h)	307.4	307.4		
41	Avg. Liq. Density (kgmole/m3)	15.97	15.97		
42	Specific Heat (kJ/kgmole-C)	58.21	58.21		
43	Std. Gas Flow (Nm3/h)	1.566e+004	1.566e+004		
44	Std. Ideal Liq. Mass Density (kg/m3)	392.4	392.4		
45	Act. Liq. Flow (m3/s)	---	---		
46	Z Factor	0.8292	0.8292		
47	Watson K	16.46	16.46		
48	User Property	---	---		
49	Partial Pressure of H2S (bar_g)	1.790	---		
50	Cp/(Cp - R)	1.167	1.167		
51	Cp/Cv	1.448	1.448		
52	Heat of Vap. (kJ/kgmole)	1.249e+004	---		
53	Kinematic Viscosity (cSt)	0.2502	0.2502		
54	Liq. Mass Density (Std. Cond) (kg/m3)	1.045	1.045		
55	Liq. Vol. Flow (Std. Cond) (barrel/day)	2.480e+006	2.480e+006		
56	Liquid Fraction	0.0000	0.0000		
57	Molar Volume (m3/kgmole)	0.4400	0.4400		
58	Mass Heat of Vap. (kJ/kg)	508.1	---		
59	Phase Fraction [Molar Basis]	1.0000	1.0000		
60	Surface Tension (dyne/cm)	---	---		
61	Thermal Conductivity (W/m-K)	3.646e-002	3.646e-002		
62	Viscosity (cP)	1.398e-002	1.398e-002		
63	Cv (Semi-Ideal) (kJ/kgmole-C)	49.89	49.89		
64	Mass Cv (Semi-Ideal) (kJ/kg-C)	2.030	2.030		
65	Cv (kJ/kgmole-C)	40.20	40.20		
66	Mass Cv (kJ/kg-C)	1.636	1.636		
67	Cv (Ent. Method) (kJ/kgmole-C)	---	---		
68	Mass Cv (Ent. Method) (kJ/kg-C)	---	---		
69	Aspen Technology Inc. Aspen HYSYS Version 11 Page 36 of 40				

1	<div></div> <div>Company Name Not Available Bedford, MA USA</div>			Case Name: BINAK SUMMER-D03.hsc			
2				Unit Set: Binak3a13132			
3							
4				Date/Time: Mon Mar 7 11:52:07 2022			
5							
6	Material Stream: 15 (continued)				Fluid Package: Basis-1		
7					Property Package: Peng-Robinson		
8							
9	PROPERTIES						
10							
11		Overall	Vapour Phase				
12	Cp/Cv (Ent. Method)	---	---				
13	Reid VP at 37.8 C (bar_g)	---	---				
14	True VP at 37.8 C (bar_g)	---	---				
15	Liq. Vol. Flow - Sum(Std. Cond) (m3/h)	1.643e+004	1.643e+004				
16	Viscosity Index	---	---				
17	Ideal Gas Cp/Cv	1.212	1.212				
18	Ideal Gas Cp (kJ/kgmole-C)	47.49	47.49				
19	Mass Ideal Gas Cp (kJ/kg-C)	1.932	1.932				
20	Bubble Point Pressure (bar_g)	---	---				
21	COMPOSITION						
22							
23	Overall Phase Vapour Fraction 1.0000						
24							
25	COMPONENTS	MOLAR FLOW (kgmole/h)	MOLE FRACTION	MASS FLOW (kg/h)	MASS FRACTION	LIQUID VOLUME FLOW (m3/h)	LIQUID VOLUME FRACTION
26							
27	H2O	0.1554	0.0002	2.7989	0.0002	0.0028	0.0001
28	CO2	22.2863	0.0319	980.8150	0.0571	1.1884	0.0272
29	H2S	37.7093	0.0540	1284.9815	0.0748	1.6298	0.0372
30	Methane	451.3815	0.6461	7241.4677	0.4217	24.1871	0.5528
31	Ethane	97.1423	0.1390	2921.0583	0.1701	8.2125	0.1877
32	Propane	54.5902	0.0781	2407.2626	0.1402	4.7511	0.1086
33	i-Butane	5.9066	0.0085	343.3153	0.0200	0.6109	0.0140
34	n-Butane	13.1259	0.0188	762.9322	0.0444	1.3081	0.0299
35	i-Pentane	4.8902	0.0070	352.8302	0.0205	0.5659	0.0129
36	n-Pentane	2.6616	0.0038	192.0376	0.0112	0.3050	0.0070
37	n-Hexane	4.6274	0.0066	398.7821	0.0232	0.6018	0.0138
38	n-Heptane	1.3823	0.0020	138.5158	0.0081	0.2017	0.0046
39	n-Octane	0.4211	0.0006	48.1016	0.0028	0.0682	0.0016
40	n-Nonane	0.2098	0.0003	26.9074	0.0016	0.0374	0.0009
41	n-Decane	0.0699	0.0001	9.9493	0.0006	0.0136	0.0003
42	n-C11	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
43	Nitrogen	2.1080	0.0030	59.0500	0.0034	0.0732	0.0017
44	TEGlycol	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
45	Total	698.6677	1.0000	17170.8055	1.0000	43.7575	1.0000
46	Vapour Phase Phase Fraction 1.000						
47							
48	COMPONENTS	MOLAR FLOW (kgmole/h)	MOLE FRACTION	MASS FLOW (kg/h)	MASS FRACTION	LIQUID VOLUME FLOW (m3/h)	LIQUID VOLUME FRACTION
49							
50	H2O	0.1554	0.0002	2.7989	0.0002	0.0028	0.0001
51	CO2	22.2863	0.0319	980.8150	0.0571	1.1884	0.0272
52	H2S	37.7093	0.0540	1284.9815	0.0748	1.6298	0.0372
53	Methane	451.3815	0.6461	7241.4677	0.4217	24.1871	0.5528
54	Ethane	97.1423	0.1390	2921.0583	0.1701	8.2125	0.1877
55	Propane	54.5902	0.0781	2407.2626	0.1402	4.7511	0.1086
56	i-Butane	5.9066	0.0085	343.3153	0.0200	0.6109	0.0140
57	n-Butane	13.1259	0.0188	762.9322	0.0444	1.3081	0.0299
58	i-Pentane	4.8902	0.0070	352.8302	0.0205	0.5659	0.0129
59	n-Pentane	2.6616	0.0038	192.0376	0.0112	0.3050	0.0070
60	n-Hexane	4.6274	0.0066	398.7821	0.0232	0.6018	0.0138
61	n-Heptane	1.3823	0.0020	138.5158	0.0081	0.2017	0.0046
62	n-Octane	0.4211	0.0006	48.1016	0.0028	0.0682	0.0016
63	n-Nonane	0.2098	0.0003	26.9074	0.0016	0.0374	0.0009
64	n-Decane	0.0699	0.0001	9.9493	0.0006	0.0136	0.0003
65	n-C11	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
66	Nitrogen	2.1080	0.0030	59.0500	0.0034	0.0732	0.0017
67	TEGlycol	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
68	Total	698.6677	1.0000	17170.8055	1.0000	43.7575	1.0000
69	Aspen Technology Inc. Aspen HYSYS Version 11 Page 37 of 40						

1	<div></div> <div>Company Name Not Available Bedford, MA USA</div>		Case Name: BINAK SUMMER-D03.hsc		
2			Unit Set: Binak3a13132		
3			Date/Time: Mon Mar 7 11:52:07 2022		
4					
5					
6	Material Stream: 16			Fluid Package:	Basis-1
7				Property Package: Peng-Robinson	
8					
9	CONDITIONS				
10					
11		Overall	Vapour Phase	Aqueous Phase	
12	Vapour / Phase Fraction	1.0000	1.0000	0.0000	
13	Temperature: (C)	36.92	36.92	36.92	
14	Pressure: (bar_g)	5.100	5.100	5.100	
15	Molar Flow (MMSCFD)	0.4141	0.4141	0.0000	
16	Mass Flow (kg/h)	505.8 *	505.8	0.0000	
17	Std Ideal Liq Vol Flow (barrel/day)	193.6	193.6	0.0000	
18	Molar Enthalpy (kJ/kgmole)	-9.002e+004	-9.002e+004	-2.852e+005	
19	Molar Entropy (kJ/kgmole-C)	178.6	178.6	56.81	
20	Heat Flow (kW)	-515.7	-515.7	0.0000	
21	Liq Vol Flow @Std Cond (barrel/day)	7.322e+004 *	7.322e+004	0.0000	
22	PROPERTIES				
23					
24		Overall	Vapour Phase	Aqueous Phase	
25	Molecular Weight	24.52	24.52	18.02	
26	Molar Density (kgmole/m3)	0.2434	0.2434	46.75	
27	Mass Density (kg/m3)	5.969	5.969	842.6	
28	Act. Volume Flow (m3/h)	84.73	84.73	0.0000	
29	Mass Enthalpy (kJ/kg)	-3671	-3671	-1.582e+004	
30	Mass Entropy (kJ/kg-C)	7.284	7.284	3.152	
31	Heat Capacity (kJ/kgmole-C)	46.81	46.81	77.71	
32	Mass Heat Capacity (kJ/kg-C)	1.909	1.909	4.312	
33	LHV Molar Basis (Std) (kJ/kgmole)	1.042e+006	1.042e+006	199.7	
34	HHV Molar Basis (Std) (kJ/kgmole)	1.138e+006	1.138e+006	4.121e+004	
35	HHV Mass Basis (Std) (kJ/kg)	4.639e+004	4.639e+004	2286	
36	CO2 Loading	---	---	---	
37	CO2 Apparent Mole Conc. (kgmole/m3)	---	---	---	
38	CO2 Apparent Wt. Conc. (kgmol/kg)	---	---	---	
39	LHV Mass Basis (Std) (kJ/kg)	4.249e+004	4.249e+004	11.08	
40	Phase Fraction [Vol. Basis]	1.000	1.000	---	
41	Phase Fraction [Mass Basis]	1.000	1.000	0.0000	
42	Phase Fraction [Act. Vol. Basis]	1.000	1.000	0.0000	
43	Mass Exergy (kJ/kg)	179.7	---	---	
44	Partial Pressure of CO2 (bar_g)	-0.8200	---	---	
45	Cost Based on Flow (Cost/s)	0.0000	0.0000	0.0000	
46	Act. Gas Flow (ACT_m3/h)	84.73	84.73	---	
47	Avg. Liq. Density (kgmole/m3)	16.08	16.08	55.36	
48	Specific Heat (kJ/kgmole-C)	46.81	46.81	77.71	
49	Std. Gas Flow (Nm3/h)	462.3	462.3	0.0000	
50	Std. Ideal Liq. Mass Density (kg/m3)	394.5	394.5	997.8	
51	Act. Liq. Flow (m3/s)	0.0000	---	0.0000	
52	Z Factor	---	0.9743	5.072e-003	
53	Watson K	16.45	16.45	9.078	
54	User Property	---	---	---	
55	Partial Pressure of H2S (bar_g)	-0.6824	---	---	
56	Cp/(Cp - R)	1.216	1.216	1.120	
57	Cp/Cv	1.246	1.246	1.154	
58	Heat of Vap. (kJ/kgmole)	1.847e+004	---	---	
59	Kinematic Viscosity (cSt)	1.924	1.924	0.8207	
60	Liq. Mass Density (Std. Cond) (kg/m3)	1.043	1.043	1015	
61	Liq. Vol. Flow (Std. Cond) (barrel/day)	7.322e+004	7.322e+004	0.0000	
62	Liquid Fraction	0.0000	0.0000	1.000	
63	Molar Volume (m3/kgmole)	4.109	4.109	2.139e-002	
64	Mass Heat of Vap. (kJ/kg)	753.2	---	---	
65	Phase Fraction [Molar Basis]	1.0000	1.0000	0.0000	
66	Surface Tension (dyne/cm)	---	---	70.00	
67	Thermal Conductivity (W/m-K)	2.903e-002	2.903e-002	0.6276	
68	Viscosity (cP)	1.148e-002	1.148e-002	0.6915	
69	Aspen Technology Inc. Aspen HYSYS Version 11 Page 38 of 40				

1	<div></div> <div>Company Name Not Available Bedford, MA USA</div>			Case Name: BINAK SUMMER-D03.hsc			
2				Unit Set: Binak3a13132			
3							
4				Date/Time: Mon Mar 7 11:52:07 2022			
5							
6	Material Stream: 16 (continued)				Fluid Package: Basis-1		
7					Property Package: Peng-Robinson		
8							
9	PROPERTIES						
10							
11		Overall	Vapour Phase	Aqueous Phase			
12	Cv (Semi-Ideal) (kJ/kgmole-C)	38.49	38.49	69.40			
13	Mass Cv (Semi-Ideal) (kJ/kg-C)	1.570	1.570	3.850			
14	Cv (kJ/kgmole-C)	37.57	37.57	67.34			
15	Mass Cv (kJ/kg-C)	1.532	1.532	3.736			
16	Cv (Ent. Method) (kJ/kgmole-C)	---	---	---			
17	Mass Cv (Ent. Method) (kJ/kg-C)	---	---	---			
18	Cp/Cv (Ent. Method)	---	---	---			
19	Reid VP at 37.8 C (bar_g)	---	---	37.30			
20	True VP at 37.8 C (bar_g)	168.1	168.1	-0.3897			
21	Liq. Vol. Flow - Sum(Std. Cond) (m3/h)	485.1	485.1	0.0000			
22	Viscosity Index	-17.48	---	---			
23	Ideal Gas Cp/Cv	1.222	1.222	1.328			
24	Ideal Gas Cp (kJ/kgmole-C)	45.77	45.77	33.65			
25	Mass Ideal Gas Cp (kJ/kg-C)	1.866	1.866	1.867			
26	Bubble Point Pressure (bar_g)	166.7	---	---			
27							
28	COMPOSITION						
29							
30	Overall Phase				Vapour Fraction	1.0000	
31	COMPONENTS	MOLAR FLOW (kgmole/h)	MOLE FRACTION	MASS FLOW (kg/h)	MASS FRACTION	LIQUID VOLUME FLOW (m3/h)	
32						LIQUID VOLUME FRACTION	
33	H2O	0.2127	0.0103	3.8320	0.0076	0.0038	
34	CO2	0.6518	0.0316	28.6875	0.0567	0.0348	
35	H2S	1.1161	0.0541	38.0339	0.0752	0.0482	
36	Methane	13.1771	0.6389	211.3989	0.4180	0.7061	
37	Ethane	2.8361	0.1375	85.2816	0.1686	0.2398	
38	Propane	1.5945	0.0773	70.3135	0.1390	0.1388	
39	i-Butane	0.1731	0.0084	10.0626	0.0199	0.0179	
40	n-Butane	0.3835	0.0186	22.2890	0.0441	0.0382	
41	i-Pentane	0.1437	0.0070	10.3689	0.0205	0.0166	
42	n-Pentane	0.0778	0.0038	5.6155	0.0111	0.0089	
43	n-Hexane	0.1351	0.0065	11.6401	0.0230	0.0176	
44	n-Heptane	0.0403	0.0020	4.0432	0.0080	0.0059	
45	n-Octane	0.0123	0.0006	1.4040	0.0028	0.0020	
46	n-Nonane	0.0061	0.0003	0.7854	0.0016	0.0011	
47	n-Decane	0.0020	0.0001	0.2904	0.0006	0.0004	
48	n-C11	0.0000	0.0000	0.0000	0.0000	0.0000	
49	Nitrogen	0.0615	0.0030	1.7238	0.0034	0.0021	
50	TEGlycol	0.0000	0.0000	0.0000	0.0000	0.0000	
51	Total	20.6240	1.0000	505.7703	1.0000	1.2822	
52							
53	Vapour Phase				Phase Fraction	1.000	
54	COMPONENTS	MOLAR FLOW (kgmole/h)	MOLE FRACTION	MASS FLOW (kg/h)	MASS FRACTION	LIQUID VOLUME FLOW (m3/h)	
55						LIQUID VOLUME FRACTION	
56	H2O	0.2127	0.0103	3.8320	0.0076	0.0038	
57	CO2	0.6518	0.0316	28.6875	0.0567	0.0348	
58	H2S	1.1161	0.0541	38.0339	0.0752	0.0482	
59	Methane	13.1771	0.6389	211.3989	0.4180	0.7061	
60	Ethane	2.8361	0.1375	85.2816	0.1686	0.2398	
61	Propane	1.5945	0.0773	70.3135	0.1390	0.1388	
62	i-Butane	0.1731	0.0084	10.0626	0.0199	0.0179	
63	n-Butane	0.3835	0.0186	22.2890	0.0441	0.0382	
64	i-Pentane	0.1437	0.0070	10.3689	0.0205	0.0166	
65	n-Pentane	0.0778	0.0038	5.6155	0.0111	0.0089	
66	n-Hexane	0.1351	0.0065	11.6401	0.0230	0.0176	
67	n-Heptane	0.0403	0.0020	4.0432	0.0080	0.0059	
68	n-Octane	0.0123	0.0006	1.4040	0.0028	0.0020	
69	Aspen Technology Inc. Aspen HYSYS Version 11 Page 39 of 40						

1	<div></div> <div>Company Name Not Available Bedford, MA USA</div>				Case Name: BINAK SUMMER-D03.hsc					
2					Fluid Package: Basis-1					
3								Unit Set: Binak3a13132		
4								Date/Time: Mon Mar 7 11:52:07 2022		
5										
6	Material Stream: 16 (continued)				Fluid Package: Basis-1					
7					Property Package: Peng-Robinson					
8										
9	COMPOSITION									
10										
11	Vapour Phase (continued)									
12							Phase Fraction	1.000		
13	COMPONENTS	MOLAR FLOW	MOLE FRACTION	MASS FLOW	MASS FRACTION	LIQUID VOLUME	LIQUID VOLUME			
14		(kgmole/h)		(kg/h)		FLOW (m3/h)	FRACTION			
15	n-Nonane	0.0061	0.0003	0.7854	0.0016	0.0011	0.0009			
16	n-Decane	0.0020	0.0001	0.2904	0.0006	0.0004	0.0003			
17	n-C11	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			
18	Nitrogen	0.0615	0.0030	1.7238	0.0034	0.0021	0.0017			
19	TEGlycol	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			
20	Total	20.6240	1.0000	505.7703	1.0000	1.2822	1.0000			
21										
22	Aqueous Phase									
23							Phase Fraction	0.0000		
24	COMPONENTS	MOLAR FLOW	MOLE FRACTION	MASS FLOW	MASS FRACTION	LIQUID VOLUME	LIQUID VOLUME			
25		(kgmole/h)		(kg/h)		FLOW (m3/h)	FRACTION			
26	H2O	0.0000	0.9995	0.0000	0.9991	0.0000	0.9989			
27	CO2	0.0000	0.0001	0.0000	0.0002	0.0000	0.0002			
28	H2S	0.0000	0.0004	0.0000	0.0007	0.0000	0.0009			
29	Methane	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			
30	Ethane	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			
31	Propane	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			
32	i-Butane	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			
33	n-Butane	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			
34	i-Pentane	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			
35	n-Pentane	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			
36	n-Hexane	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			
37	n-Heptane	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			
38	n-Octane	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			
39	n-Nonane	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			
40	n-Decane	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			
41	n-C11	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			
42	Nitrogen	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			
43	TEGlycol	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			
44	Total	0.0000	1.0000	0.0000	1.0000	0.0000	1.0000			
45										
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69	Aspen Technology Inc.		Aspen HYSYS Version 11			Page 40 of 40				