Appendix A
Property Tables and Units

TABLE A-1A—COMPONENT PROPERTIES FOR CUSTOMARY UNITS

Compound		Molecular Weight M (lbm/lbm mol)	Specific Gravity* γ	Liquid Density ρ_{sc} (lbm/ft^3)	Critical Constants p_c (psia)	T_c (°R)	v_c (ft^3/lbm mol)	Z_c	Acentric Factor ω	Normal Boiling Point T_b (°R)	Ideal Liquid Yield L (gal/Mscf)	Gross Heating Value H (Btu/scf)
Nitrogen	N_2	28.02	0.4700	29.31	493.0	227.3	1.443	0.2916	0.0450	139.3		
Carbon dioxide	CO_2	44.01	0.5000	31.18	1,070.6	547.6	1.505	0.2742	0.2310	350.4		
Hydrogen sulfide	H_2S	34.08	0.5000	31.18	1,306.0	672.4	1.564	0.2831	0.1000	383.1		672
Methane	C_1	16.04	0.3300	20.58	667.8	343.0	1.590	0.2884	0.0115	201.0		1,012
Ethane	C_2	30.07	0.4500	28.06	707.8	549.8	2.370	0.2843	0.0908	332.2		1,783
Propane	C_3	44.09	0.5077	31.66	616.3	665.7	3.250	0.2804	0.1454	416.0	27.4	2,557
iso-butane	*i*-C_4	58.12	0.5613	35.01	529.1	734.7	4.208	0.2824	0.1756	470.6	32.7	3,354
Butane	*n*-C_4	58.12	0.5844	36.45	550.7	765.3	4.080	0.2736	0.1928	490.8	31.4	3,369
iso-pentane	*i*-C_5	72.15	0.6274	39.13	490.4	828.8	4.899	0.2701	0.2273	541.8	36.3	4,001
Pentane	*n*-C_5	72.15	0.6301	39.30	488.6	845.4	4.870	0.2623	0.2510	556.6	36.2	4,009
Hexane	*n*-C_6	86.17	0.6604	41.19	436.9	913.4	5.929	0.2643	0.2957	615.4	41.2	4,756
Heptane	*n*-C_7	100.20	0.6828	42.58	396.8	972.5	6.924	0.2633	0.3506	668.8	46.3	5,503
Octane	*n*-C_8	114.20	0.7086	44.19	360.6	1,023.9	7.882	0.2587	0.3978	717.9	50.9	6,250
Nonane	*n*-C_9	128.30	0.7271	45.35	332.0	1,070.3	8.773	0.2536	0.4437	763.1	55.7	6,996
Decane	*n*-C_{10}	142.30	0.7324	45.68	304.0	1,111.8	9.661	0.2462	0.4902	805.2	61.4	7,743
Air		28.97	0.4700	29.31	547.0	239.0	1.364	0.2910	0.0400	141.9		
Water	H_2O	18.02	1.0000	62.37	3,206.0	1,165.0	0.916	0.2350	0.3440	671.6		
Oxygen	O_2	32.00	0.5000	31.18	732.0	278.0	1.174	0.2880	0.0250	162.2		

*Water = 1.

TABLE A-1B—COMPONENT PROPERTIES IN SI METRIC UNITS

Compound		Molecular Weight M (kg/kmol)	Specific Gravity* γ	Liquid Density ρ_{sc} (kg/m^3)	Critical Constants p_c (kPa)	T_c (K)	v_c (m^3/kmol)	Z_c	Acentric Factor ω	Normal Boiling Point T_b (K)	Ideal Liquid Yield L (m^3/1000 m^3)	Gross Heating Value H (MJ/std m^3)
Nitrogen	N_2	28.02	0.4700	469.5	3 399	126.3	0.0901	0.2916	0.0450	77.39		
Carbon dioxide	CO_2	44.01	0.5000	499.5	7 382	304.2	0.0940	0.2742	0.2310	194.67		
Hydrogen sulfide	H_2S	34.08	0.5000	499.5	9 005	373.6	0.0976	0.2831	0.1000	212.83		25.04
Methane	C_1	16.04	0.3300	329.7	4 604	190.6	0.0993	0.2884	0.0115	111.67		37.71
Ethane	C_2	30.07	0.4500	449.6	4 880	305.4	0.1479	0.2843	0.0908	184.56		66.43
Propane	C_3	44.09	0.5077	507.2	4 249	369.8	0.2029	0.2804	0.1454	231.11	3.67	95.27
iso-butane	i-C_4	58.12	0.5613	560.7	3 648	408.2	0.2627	0.2824	0.1756	261.44	4.37	125.0
Butane	n-C_4	58.12	0.5844	583.8	3 797	425.2	0.2547	0.2736	0.1928	272.67	4.20	125.5
iso-pentane	i-C_5	72.15	0.6274	626.8	3 381	460.4	0.3058	0.2701	0.2273	301.00	4.86	149.1
Pentane	n-C_5	72.15	0.6301	629.5	3 369	469.7	0.3040	0.2623	0.2510	309.22	4.83	149.4
Hexane	n-C_6	86.17	0.6604	659.7	3 012	507.4	0.3701	0.2643	0.2957	341.89	5.51	177.2
Heptane	n-C_7	100.20	0.6828	682.1	2 736	540.3	0.4322	0.2633	0.3506	371.56	6.20	205.0
Octane	n-C_8	114.20	0.7086	707.9	2 486	568.8	0.4920	0.2587	0.3978	398.83	6.80	232.9
Nonane	n-C_9	128.30	0.7271	726.4	2 289	594.6	0.5477	0.2536	0.4437	423.94	7.45	260.7
Decane	n-C_{10}	142.30	0.7324	731.7	2 096	617.7	0.6031	0.2462	0.4902	447.33	8.20	288.5
Air		28.97	0.4700	469.5	3 771	132.8	0.0852	0.2910	0.0400	78.83		
Water	H_2O	18.02	1.0000	999.0	22 105	647.2	0.0572	0.2350	0.3440	373.11		
Oxygen	O_2	32.00	0.5000	499.5	5 047	154.4	0.0733	0.2880	0.0250	90.11		

*Water = 1.