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Vapour pressures and critical points of liquids

Part 2 A: C₂ to C₆ alkenes

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(Continued on inside back cover)

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VAPOUR PRESSURES AND CRITICAL POINTS OF LIQUIDS

PART 2A: C₂ TO C₆ ALKENES

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VAPOUR PRESSURES AND CRITICAL POINTS OF LIQUIDS

PART 2A: C₂ TO C₆ ALKENES

1. INTRODUCTION

This Data Item presents saturated vapour pressures of the C₂ to C₆ alkenes listed, with alternative names if any, in Table 1 (page 2).

The values of vapour pressure given in the Tables were obtained by evaluating, for each compound, a Wagner equation of the form

$$\ln p = \ln p_c + (T_c/T) [b_1q + b_2q^{3/2} + b_3q^3 + b_4q^6] \quad (1)$$

where T is the temperature in Kelvins ($T = 273.15 +$ the Celsius temperature), on the International Practical Temperature Scale, 1968, (ITS 68), p is the vapour pressure in kPa, T_c, p_c are the critical temperature and critical pressure respectively and $q = 1 - T/T_c$. Equation (1) was fitted to the experimental and calculated data that had been selected and weighted in accordance with a critical assessment of all the data. Note that the estimated values of T_c are rounded to the nearest degree Celsius and that values in other units are obtained by exact conversion.

Table 2 is an index to Tables 5 onward. Table 3 gives T_c, p_c and the coefficients b₁, b₂, b₃ and b₄ for each compound that, when used in Equation (1), give p in kPa for T in Kelvins. Table 4 shows for each compound, the normal boiling point in Kelvins, degrees Celsius and degrees Fahrenheit, the value of dp/dT at the normal boiling point and the acentric factor.

Tables 5 to 10 present values of vapour pressure, in kPa, at 5 K intervals of temperature down to a temperature just above the freezing point, T_f, or an arbitrary lower limit where the freezing point is not known.

Tables 5(C) to 10(C) present the vapour pressures, in atm or mmHg, at intervals of 5 degrees C and Tables 5(F) to 10(F) give the values, in psia, at intervals of 10 degrees F. In Tables 5(C) to 10(C) the units of pressure change from atm to mmHg at approximately 2 atm.

The sources of experimental and calculated data for each compound, on which the tabulated values are based, are detailed in Appendix A. The suggested uncertainties in the tabulated values of vapour pressure that the user should allow for are discussed and tabulated in Appendix B.

A full explanation of the correlation procedure used to derive the tabulated values of vapour pressure together with notation and units, conversion factors and References is given in the Introductory Data Item, Reference 1.

2. REFERENCE

1. ESDU Vapour pressures and critical points of liquids. Introduction to Data Items issued after September 1984. Item No. 84021, Engineering Sciences Data Unit, 1984.

TABLE 1
LIST of COMPOUNDS

The empirical formula, name and alternative names, if any, of each compound considered in this Data Item are as follows:

No. Emp. Form.	Name	Alternative Names	
C ₂ to C ₆ ALKENES			
C ₂ and C ₃ ALKENES			
1 C ₂ H ₄	Ethylene	Ethene	
2 C ₃ H ₆	Propylene	Propene	
BUTENES			
3 C ₄ H ₈	But-1-ene	1-Butene	1-Butylene
4	cis-But-2-ene	cis-2-Butene	cis-2-Butylene
5	trans-But-2-ene	trans-2-Butene	trans-2-Butylene
6	2-Methylpropene	Isobutene	Isobutylene
PENTENES			
7 C ₅ H ₁₀	Pent-1-ene	1-Pentene	alpha-Amylene
8	cis-Pent-2-ene	cis-2-Pentene	cis-beta-Amylene
9	trans-Pent-2-ene	trans-2-Pentene	trans-beta-Amylene
10	2-Methylbut-1-ene	2-Methyl-1-butene	gamma-Amylene
11	3-Methylbut-1-ene	3-Methyl-1-butene	alpha-Isoamylene
12	2-Methylbut-2-ene	2-Methyl-2-butene	beta-Isoamylene
HEXENES			
13 C ₆ H ₁₂	Hex-1-ene	1-Hexene	alpha-Hexylene
14	cis-Hex-2-ene	cis-2-Hexene	
15	trans-Hex-2-ene	trans-2-Hexene	
16	cis-Hex-3-ene	cis-3-Hexene	
17	trans-Hex-3-ene	trans-3-Hexene	
18	2-Methylpent-1-ene	2-Methyl-1-pentene	
19	3-Methylpent-1-ene	3-Methyl-1-pentene	
20	4-Methylpent-1-ene	4-Methyl-1-pentene	
21	2-Methylpent-2-ene	2-Methyl-2-pentene	
22	3-Methyl-cis-pent-2-ene	3-Methyl-cis-2-pentene	
23	3-Methyl-trans-pent-2-ene	3-Methyl-trans-2-pentene	
24	4-Methyl-cis-pent-2-ene	4-Methyl-cis-2-pentene	
25	4-Methyl-trans-pent-2-ene	4-Methyl-trans-2-pentene	
26	2-Ethylbut-1-ene	2-Ethyl-1-butene	
27	2,3-Dimethylbut-1-ene	2,3-Dimethyl-1-butene	
28	3,3-Dimethylbut-1-ene	3,3-Dimethyl-1-butene	
29	2,3-Dimethylbut-2-ene	2,3-Dimethyl-2-butene	

TABLE 2
INDEX TO MAIN TABLES

The locations of the Tables giving vapour pressures in various units are as follows:-

		kPa v K		atm or mmHg v deg.C		psia v deg.F	
No.	Name	Table	Pages	Table	Pages	Table	Pages
C ₂ AND C ₃ ALKENES							
1	Ethylene	5	6, 7	5(C)	18,19	5(F)	30,31
2	Propylene	5	6, 7	5(C)	18,19	5(F)	30,31
BUTENES							
3	But-1-ene	5	6, 7	5(C)	18,19	5(F)	30,31
4	cis-But-2-ene	5	6, 7	5(C)	18,19	5(F)	30,31
5	trans-But-2-ene	5	6, 7	5(C)	18,19	5(F)	30,31
6	2-Methylpropene	5	6, 7	5(C)	18,19	5(F)	30,31
PENTENES							
7	Pent-1-ene	6	8, 9	6(C)	20,21	6(F)	32,33
8	cis-Pent-2-ene	6	8, 9	6(C)	20,21	6(F)	32,33
9	trans-Pent-2-ene	6	8, 9	6(C)	20,21	6(F)	32,33
10	2-Methylbut-1-ene	6	8, 9	6(C)	20,21	6(F)	32,33
11	3-Methylbut-1-ene	6	8, 9	6(C)	20,21	6(F)	32,33
12	2-Methylbut-2-ene	6	8, 9	6(C)	20,21	6(F)	32,33
HEXENES							
13	Hex-1-ene	7	10,11	7(C)	22,23	7(F)	34,35
14	cis-Hex-2-ene	7	10,11	7(C)	22,23	7(F)	34,35
15	trans-Hex-2-ene	7	10,11	7(C)	22,23	7(F)	34,35
16	cis-Hex-3-ene	7	10,11	7(C)	22,23	7(F)	34,35
17	trans-Hex-3-ene	7	10,11	7(C)	22,23	7(F)	34,35
18	2-Methylpent-1-ene	8	12,13	8(C)	24,25	8(F)	36,37
19	3-Methylpent-1-ene	8	12,13	8(C)	24,25	8(F)	36,37
20	4-Methylpent-1-ene	8	12,13	8(C)	24,25	8(F)	36,37
21	2-Methylpent-2-ene	8	12,13	8(C)	24,25	8(F)	36,37
22	3-Methyl-cis-pent-2-ene	9	14,15	9(C)	26,27	9(F)	38,39
23	3-Methyl-trans-pent-2-ene	9	14,15	9(C)	26,27	9(F)	38,39
24	4-Methyl-cis-pent-2-ene	9	14,15	9(C)	26,27	9(F)	38,39
25	4-Methyl-trans-pent-2-ene	9	14,15	9(C)	26,27	9(F)	38,39
26	2-Ethylbut-1-ene	10	16,17	10(C)	28,29	10(F)	40,41
27	2,3-Dimethylbut-1-ene	10	16,17	10(C)	28,29	10(F)	40,41
28	3,3-Dimethylbut-1-ene	10	16,17	10(C)	28,29	10(F)	40,41
29	2,3-Dimethylbut-2-ene	10	16,17	10(C)	28,29	10(F)	40,41

TABLE 3
CONSTANTS in EQUATION (1)

This Table lists the constants for each compound that, when used in the equation

$$\ln p = \ln p_c + (T_c/T)(b_1q + b_2q^{3/2} + b_3q^3 + b_4q^6),$$

give p in kPa for T in kelvins.

Name	T_c K	p_c kPa	b_1	b_2	b_3	b_4
C₂ and C₃ ALKENES						
Ethylene	282.345	5040.3	-6.35758	1.22349	-1.62846	-1.62167
Propylene	365.57	4665.6	-6.64251	1.27244	-1.99268	-1.83757
BUTENES						
But-1-ene	419.95	4043	-6.90440	1.33447	-2.41028	-1.52404
cis-But-2-ene	435.58	4243	-6.94774	1.23320	-2.19279	-3.21105
trans-But-2-ene	428.63	3964	-6.97307	1.34838	-2.50881	-1.51099
2-Methylpropene	417.9	4000	-6.90796	1.30308	-2.43240	-1.49388
PENTENES						
Pent-1-ene	464.78	3513	-7.13319	1.41797	-2.81830	-1.94508
cis-Pent-2-ene	475.15	3637	-7.18250	1.38230	-2.87167	-2.34558
trans-Pent-2-ene	474.15	3656	-7.16485	1.28694	-2.66656	-2.34976
2-Methylbut-1-ene	470.15	3780	-7.11299	1.40481	-2.82424	-1.93227
3-Methylbut-1-ene	453.15	3554	-7.00190	1.36905	-2.58297	-2.00390
2-Methylbut-2-ene	481.15	3862	-7.13248	1.31047	-2.66797	-2.14984
HEXENES						
Hex-1-ene	504.03	3143	-7.32534	1.32252	-3.02513	-2.38804
cis-Hex-2-ene	511.15	3178	-7.38128	1.32192	-3.09774	-2.45262
trans-Hex-2-ene	510.15	3211	-7.38045	1.32330	-3.09709	-2.45015
cis-Hex-3-ene	508.15	3185	-7.36346	1.32912	-3.07675	-2.42539
trans-Hex-3-ene	509.15	3251	-7.39698	1.32782	-3.12321	-2.45721
2-Methylpent-1-ene	505.15	3292	-7.28578	1.31463	-2.96341	-2.36933
3-Methylpent-1-ene	495.15	3137	-7.12677	1.29937	-2.73513	-2.23978
4-Methylpent-1-ene	492.15	3094	-7.19646	1.30434	-2.83456	-2.29838
2-Methylpent-2-ene	513.15	3425	-7.35097	1.32376	-3.06007	-2.41419
3-Methyl-cis-pent-2-ene	515.15	3406	-7.28827	1.31523	-2.96585	-2.37234
3-Methyl-trans-pent-2-ene	519.15	3497	-7.33919	1.31978	-3.04088	-2.41061
4-Methyl-cis-pent-2-ene	496.15	3218	-7.26161	1.31702	-2.93104	-2.34215
4-Methyl-trans-pent-2-ene	500.15	3306	-7.28377	1.31615	-2.96021	-2.36623
2-Ethylbut-1-ene	511.15	3480	-7.30694	1.32051	-2.99350	-2.38441
2,3-Dimethylbut-1-ene	501.15	3441	-7.14865	1.30319	-2.76635	-2.25682
3,3-Dimethylbut-1-ene	480.15	3287	-7.04817	1.29886	-2.54857	-2.09938
2,3-Dimethylbut-2-ene	527.15	3694	-7.29869	1.31800	-2.98277	-2.37683

TABLE 4
NORMAL BOILING POINTS AND ACENTRIC FACTORS

Name	Normal Boiling Point						Ac. Fctr.
	p=101.325 kPa		p=760 mmHg		p=14.69595 psia		
	T	dT/dp	T	dT/dp	T	dT/dp	
	K	K per kPa	deg.C	deg.C per mmHg	deg.F	deg.F per psia	
C ₂ and C ₃ ALKENES							
Ethylene	169.41	0.1675	-103.74	0.02232	-154.73	2.078	0.087
Propylene	225.46	0.2169	-47.69	0.02891	-53.84	2.692	0.141
BUTENES							
But-1-ene	266.90	0.2532	-6.25	0.03376	20.75	3.143	0.190
cis-But-2-ene	276.87	0.2587	3.72	0.03449	38.69	3.210	0.206
trans-But-2-ene	274.02	0.2586	0.87	0.03447	33.57	3.209	0.203
2-Methylpropene	266.24	0.2521	-6.91	0.03361	19.56	3.128	0.194
PENTENES							
Pent-1-ene	303.11	0.2847	29.96	0.03796	85.92	3.533	0.231
cis-Pent-2-ene	310.08	0.2873	36.93	0.03830	98.48	3.566	0.245
trans-Pent-2-ene	309.49	0.2868	36.34	0.03824	97.42	3.560	0.248
2-Methylbut-1-ene	304.30	0.2834	31.15	0.03778	88.08	3.517	0.229
3-Methylbut-1-ene	293.20	0.2790	20.05	0.03720	68.09	3.463	0.208
2-Methylbut-2-ene	311.71	0.2883	38.56	0.03844	101.40	3.578	0.240
HEXENES							
Hex-1-ene	336.63	0.3112	63.48	0.04149	146.26	3.862	0.280
cis-Hex-2-ene	342.05	0.3137	68.90	0.04182	156.02	3.893	0.292
trans-Hex-2-ene	341.03	0.3124	67.88	0.04165	154.18	3.877	0.292
cis-Hex-3-ene	339.59	0.3121	66.44	0.04162	151.59	3.874	0.288
trans-Hex-3-ene	340.23	0.3107	67.08	0.04142	152.74	3.855	0.295
2-Methylpent-1-ene	335.25	0.3095	62.10	0.04127	143.79	3.841	0.273
3-Methylpent-1-ene	327.32	0.3098	54.17	0.04130	129.50	3.845	0.241
4-Methylpent-1-ene	327.01	0.3074	53.86	0.04099	128.94	3.815	0.255
2-Methylpent-2-ene	340.45	0.3105	67.30	0.04139	153.14	3.853	0.286
3-Methyl-cis-pent-2-ene	340.84	0.3133	67.69	0.04177	153.85	3.888	0.273
3-Methyl-trans-pent-2-ene	343.58	0.3129	70.43	0.04172	158.77	3.883	0.283
4-Methyl-cis-pent-2-ene	329.52	0.3060	56.37	0.04080	133.47	3.798	0.267
4-Methyl-trans-pent-2-ene	331.75	0.3062	58.60	0.04083	137.48	3.801	0.272
2-Ethylbut-1-ene	337.83	0.3091	64.68	0.04121	148.42	3.836	0.277
2,3-Dimethylbut-1-ene	328.76	0.3068	55.61	0.04091	132.09	3.808	0.245
3,3-Dimethylbut-1-ene	314.39	0.2996	41.24	0.03995	106.23	3.718	0.223
2,3-Dimethylbut-2-ene	346.35	0.3148	73.20	0.04197	163.76	3.907	0.275

TABLE 5
VAPOUR PRESSURE of C₂ to C₄ ALKENES

Units: kPa v. K

1	Ethylene	Ethene				
2	Propylene	Propene				
3	But-1-ene	1-Butene		1-Butylene		
4	cis-But-2-ene	cis-2-Butene		cis-2-Butylene		
5	trans-But-2-ene	trans-2-Butene		trans-2-Butylene		
6	2-Methylpropene	Isobutene		Isobutylene		
No.	1	2	3	4	5	6
T (K)	282.345	365.57	419.95	435.58	428.63	417.90
p _c (kPa)	5040.3	4665.6	4043	4243	3964	4000
T	p					
K	kPa					
435				4204.1		
430				3884.2		
425				3586.1	3738.8	
420				3307.2	3448.3	
415			3729.8	3045.8	3177.4	3814.4
410			3436.3	2801.0	2924.0	3513.5
405			3162.3	2571.6	2687.0	3233.2
400			2906.3	2356.8	2465.3	2971.4
395			2666.8	2155.9	2257.8	2726.6
390			2442.9	1968.1	2064.0	2497.8
385			2233.7	1792.9	1882.9	2284.0
380			2038.3	1629.5	1714.1	2084.4
375			1856.0	1477.4	1556.7	1898.1
370			1686.1	1336.1	1410.4	1724.5
365		4617.8	1528.1	1205.1	1274.5	1563.1
360		4220.1	1381.2	1083.8	1148.5	1413.1
355		3852.9	1245.1	971.84	1032.0	1273.9
350		3512.2	1119.1	868.64	924.42	1145.2
345		3195.6	1002.8	773.80	825.36	1026.3
340		2901.5	895.59	686.87	734.37	916.69
335		2628.4	797.09	607.42	651.03	816.00
330		2375.0	706.83	535.04	574.92	723.70
325		2140.1	624.35	469.31	505.63	639.36
320		1922.9	549.24	409.83	442.78	562.53
315		1722.3	481.06	356.21	385.96	492.78
310		1537.5	419.40	308.07	334.81	429.69
305		1367.6	363.86	265.03	288.94	372.85
300		1211.8	314.04	226.74	248.00	321.85
295		1069.4	269.55	192.83	211.64	276.31
290		939.56	230.01	162.95	179.51	235.82
285		821.69	195.06	136.79	151.26	200.03
280	4783.4	715.05	164.33	114.01	126.58	168.55
275	4275.5	618.96	137.48	94.300	105.15	141.03
270	3812.7	532.75	114.15	77.369	86.668	117.12
265	3389.9	455.79	94.032	62.930	70.841	96.500
260	3003.5	387.43	76.803	50.715	57.391	78.835
255	2650.9	327.05	62.165	40.467	46.055	63.823
250	2329.7	274.04	49.831	31.950	36.586	51.171

TABLE 5 continued
 VAPOUR PRESSURE of C₂ to C₄ ALKENES continued
 Units: kPa v. K

No.	1	2	3	4	5	6
continued						
T K	p kPa					
245	2037.8	227.80	39.533	24.940	28.750	40.605
240	1773.3	187.75	31.016	19.232	22.332	31.865
235	1534.6	153.34	24.047	14.637	17.132	24.711
230	1320.0	124.00	18.407	10.984	12.969	18.920
225	1127.9	99.212	13.898	8.1176	9.6774	14.289
220	956.95	78.476	10.340	5.9017	7.1109	10.633
215	805.59	61.311	7.5708	4.2151	5.1388	7.7880
210	672.46	47.263	5.4491	2.9532	3.6477	5.6071
205	556.19	35.909	3.8499	2.0264	2.5396	3.9627
200	455.43	26.857	2.6659	1.3593	1.7314	2.7449
195	368.88	19.745	1.8062	8.90E-1	1.1539	1.8605
190	295.22	14.249	1.1952	5.67E-1	7.50E-1	1.2315
185	233.21	10.076	7.71E-1	3.51E-1	4.75E-1	7.94E-1
180	181.60	6.9681	4.83E-1	2.10E-1	2.92E-1	4.98E-1
175	139.20	4.7030	2.94E-1	1.22E-1	1.74E-1	3.03E-1
170	104.87	3.0904	1.73E-1	6.77E-2	9.99E-2	1.78E-1
165	77.512	1.9719	9.79E-2	3.61E-2		1.01E-1
160	56.090	1.2180	5.33E-2	1.84E-2		5.51E-2
155	39.646	7.26E-1	2.77E-2	8.88E-3		2.87E-2
150	27.301	4.16E-1	1.37E-2	4.05E-3		1.42E-2
145	18.260	2.28E-1	6.43E-3	1.73E-3		6.66E-3
140	11.821	1.19E-1	2.83E-3	6.90E-4		2.94E-3
135	7.3772	5.85E-2	1.17E-3	2.54E-4		1.21E-3
130	4.4174	2.71E-2	4.45E-4			
125	2.5242	1.17E-2	1.56E-4			
120	1.3676	4.67E-3	4.94E-5			
115	6.97E-1	1.70E-3	1.40E-5			
110	3.32E-1	5.59E-4	3.51E-6			
105	1.45E-1	1.63E-4	7.60E-7			
100		4.14E-5	1.39E-7			
95		8.95E-6	2.10E-8			
90		1.60E-6	2.52E-9			
T _f	104	88	88	134	168	133

TABLE 6
VAPOUR PRESSURE of PENTENES
Units: kPa v. K

7	Pent-1-ene			1-Pentene		alpha-Amylene
8	cis-Pent-2-ene			cis-2-Pentene		cis-beta-Amylene
9	trans-Pent-2-ene			trans-2-Pentene		trans-beta-Amylene
10	2-Methylbut-1-ene			2-Methyl-1-butene		gamma-Amylene
11	3-Methylbut-1-ene			3-Methyl-1-butene		alpha-Isoamylene
12	2-Methylbut-2-ene			2-Methyl-2-butene		beta-Isoamylene
No.	7	8	9	10	11	12
T ^c (K)	464.78	475.15	474.15	470.15	453.15	481.15
p ^c (kPa)	3513	3637	3656	3780	3554	3862
T	p					
K	kPa					
480						3797.1
475		3628.8				3528.1
470		3367.0	3435.5	3771.5		3276.2
465		3122.9	3186.4	3499.3		3039.5
460	3266.9	2894.0	2952.8	3245.6		2816.9
455	3026.9	2679.0	2733.3	3007.7		2607.4
450	2802.2	2477.0	2527.1	2784.3	3386.7	2410.3
445	2591.4	2287.2	2333.3	2574.4	3136.7	2224.9
440	2393.4	2108.9	2151.2	2377.2	2902.9	2050.6
435	2207.6	1941.4	1980.2	2191.8	2683.7	1886.9
430	2033.2	1784.3	1819.7	2017.7	2477.9	1733.2
425	1869.6	1637.0	1669.3	1854.4	2284.7	1589.1
420	1716.1	1499.0	1528.4	1701.2	2103.4	1454.2
415	1572.4	1369.9	1396.6	1557.7	1933.3	1328.0
410	1437.9	1249.3	1273.5	1423.5	1773.9	1210.1
405	1312.3	1136.8	1158.6	1298.1	1624.5	1100.2
400	1194.9	1032.0	1051.7	1181.0	1484.8	997.91
395	1085.6	934.54	952.27	1072.0	1354.2	902.83
390	983.89	844.10	860.01	970.63	1232.3	814.65
385	889.40	760.32	774.57	876.52	1118.8	733.04
380	801.82	682.88	695.61	789.34	1013.2	657.67
375	720.79	611.47	622.82	708.76	915.11	588.24
370	646.00	545.77	555.87	634.44	824.23	524.44
365	577.14	485.50	494.47	566.08	740.19	465.96
360	513.89	430.35	438.29	503.36	662.66	412.53
355	455.96	380.04	387.06	445.98	591.31	363.84
350	403.06	334.30	340.48	393.64	525.82	319.64
345	354.90	292.84	298.28	346.06	465.89	279.63
340	311.20	255.40	260.18	302.95	411.19	243.55
335	271.69	221.72	225.90	264.03	361.45	211.14
330	236.11	191.55	195.20	229.03	316.36	182.16
325	204.19	164.63	167.81	197.68	275.65	156.34
320	175.68	140.73	143.49	169.74	239.02	133.45
315	150.33	119.61	122.00	144.94	206.21	113.26
310	127.90	101.04	103.11	123.04	176.96	95.535
305	108.15	84.804	86.585	103.80	150.99	80.069
300	90.866	70.695	72.222	87.003	128.07	66.651

TABLE 6 continued
VAPOUR PRESSURE of PENTENES continued

Units: kPa v. K

No.	7	8	9	10	11	12
continued						
T K	p kPa					
295	75.823	58.509	59.813	72.416	107.93	55.082
290	62.814	48.054	49.163	59.831	90.344	45.174
285	51.637	39.147	40.085	49.049	75.083	36.748
280	42.104	31.616	32.405	39.876	61.925	29.637
275	34.033	25.300	25.960	32.134	50.661	23.684
270	27.256	20.049	20.597	25.653	41.089	18.743
265	21.615	15.723	16.174	20.275	33.020	14.679
260	16.962	12.194	12.563	15.855	26.276	11.370
255	13.163	9.3454	9.6440	12.258	20.692	8.7036
250	10.093	7.0720	7.3113	9.3622	16.113	6.5790
245	7.6404	5.2795	5.4691	7.0585	12.398	4.9064
240	5.7052	3.8845	4.0329	5.2481	9.4181	3.6066
235	4.1981	2.8139	2.9284	3.8444	7.0567	2.6105
230	3.0409	2.0045	2.0917	2.7714	5.2099	1.8584
225	2.1656	1.4025	1.4677	1.9639	3.7859	1.2996
220	1.5145	9.63E-1	1.0105	1.3662	2.7045	8.92E-1
215	1.0386	6.47E-1	6.81E-1	9.32E-1	1.8968	5.99E-1
210	6.97E-1	4.25E-1	4.50E-1	6.22E-1	1.3041	3.94E-1
205	4.58E-1	2.73E-1	2.89E-1	4.06E-1	8.78E-1	2.53E-1
200	2.93E-1	1.70E-1	1.82E-1	2.58E-1	5.77E-1	1.58E-1
195	1.83E-1	1.03E-1	1.11E-1	1.60E-1	3.70E-1	9.59E-2
190	1.10E-1	6.08E-2	6.55E-2	9.59E-2	2.31E-1	5.65E-2
185	6.48E-2	3.46E-2	3.75E-2	5.58E-2	1.40E-1	3.22E-2
180	3.67E-2	1.90E-2	2.07E-2	3.14E-2	8.19E-2	1.77E-2
175	2.00E-2	9.99E-3	1.10E-2	1.70E-2	4.63E-2	9.35E-3
170	1.05E-2	5.04E-3	5.57E-3	8.80E-3	2.52E-2	4.73E-3
165	5.24E-3	2.42E-3	2.70E-3	4.36E-3	1.31E-2	2.28E-3
160	2.49E-3	1.10E-3	1.24E-3	2.05E-3	6.53E-3	1.04E-3
155	1.12E-3	4.72E-4	5.36E-4	9.14E-4	3.08E-3	4.50E-4
150	4.76E-4	1.90E-4	2.18E-4	3.83E-4	1.37E-3	1.82E-4
145	1.88E-4	7.10E-5	8.25E-5	1.50E-4	5.74E-4	6.87E-5
140	6.92E-5	2.45E-5	2.88E-5	5.42E-5	2.24E-4	2.39E-5
135	2.34E-5	7.73E-6	9.22E-6		8.04E-5	
130	7.19E-6	2.20E-6			2.65E-5	
125	1.99E-6	5.61E-7			7.88E-6	
120	4.88E-7				2.10E-6	
115	1.05E-7				4.90E-7	
110	1.92E-8				9.91E-8	
T _f	108	122	133	136	105	139

TABLE 7
VAPOUR PRESSURE of HEXENES-I

Units: kPa v. K					
13	Hex-1-ene		1-Hexene		alpha-Hexylene
14	cis-Hex-2-ene		cis-2-Hexene		
15	trans-Hex-2-ene		trans-2-Hexene		
16	cis-Hex-3-ene		cis-3-Hexene		
17	trans-Hex-3-ene		trans-3-Hexene		
No.	13	14	15	16	17
T (K)	504.03	511.15	510.15	508.15	509.15
p _c (kPa)	3143	3178	3211	3185	3251
T	p				
K	kPa				
510		3126.0	3204.1		
505		2909.9	2982.2	3044.0	3062.3
500	2965.6	2707.4	2774.6	2832.5	2848.6
495	2758.7	2516.8	2579.5	2633.9	2647.9
490	2564.3	2337.4	2395.8	2447.0	2459.0
485	2381.3	2168.3	2222.7	2271.0	2281.2
480	2209.1	2009.1	2059.6	2105.2	2113.7
475	2046.8	1859.1	1906.1	1949.0	1955.9
470	1894.0	1717.9	1761.5	1802.0	1807.5
465	1750.1	1585.0	1625.5	1663.7	1667.9
460	1614.8	1460.1	1497.7	1533.6	1536.6
455	1487.6	1342.9	1377.6	1411.4	1413.4
450	1368.2	1232.8	1265.0	1296.7	1297.7
445	1256.1	1129.7	1159.4	1189.2	1189.4
440	1151.0	1033.2	1060.5	1088.5	1087.9
435	1052.7	943.04	968.17	994.28	993.16
430	960.81	858.88	881.95	906.33	904.69
425	875.04	780.46	801.60	824.34	822.25
420	795.12	707.52	726.86	748.02	745.57
415	720.78	639.81	657.45	677.11	674.37
410	651.75	577.07	593.13	611.35	608.38
405	587.79	519.06	533.65	550.49	547.36
400	528.64	465.54	478.76	494.29	491.06
395	474.07	416.28	428.23	442.52	439.22
390	423.84	371.06	381.83	394.94	391.63
385	377.72	329.66	339.33	351.32	348.03
380	335.50	291.86	300.52	311.45	308.22
375	296.95	257.45	265.18	275.12	271.98
370	261.85	226.23	233.10	242.10	239.07
365	230.01	197.99	204.08	212.20	209.31
360	201.22	172.54	177.92	185.22	182.48
355	175.27	149.70	154.43	160.96	158.38
350	151.98	129.27	133.41	139.23	136.82
345	131.16	111.08	114.69	119.86	117.62
340	112.63	94.958	98.085	102.65	100.59
335	96.204	80.730	83.428	87.435	85.555
330	81.717	68.239	70.555	74.056	72.351
325	69.006	57.331	59.307	62.348	60.815

TABLE 7 continued
 VAPOUR PRESSURE of HEXENES-I continued

Units: kPa v. K					
No.	13	14	15	16	17
continued					
T K	p kPa				
320	57.911	47.858	49.534	52.160	50.791
315	48.283	39.680	41.092	43.346	42.134
310	39.978	32.665	33.847	35.767	34.703
305	32.860	26.687	27.669	29.294	28.367
300	26.801	21.628	22.438	23.803	23.003
295	21.681	17.380	18.043	19.180	18.496
290	17.387	13.842	14.379	15.318	14.739
285	13.815	10.919	11.351	12.119	11.634
280	10.870	8.5259	8.8701	9.4929	9.0905
275	8.4643	6.5862	6.8575	7.3571	7.0271
270	6.5184	5.0298	5.2413	5.6378	5.3703
265	4.9611	3.7947	3.9576	4.2686	4.0544
260	3.7287	2.8258	2.9498	3.1907	3.0216
255	2.7651	2.0754	2.1685	2.3526	2.2209
250	2.0215	1.5019	1.5708	1.7095	1.6084
245	1.4554	1.0698	1.1200	1.2230	1.1466
240	1.0308	7.49E-1	7.85E-1	8.60E-1	8.04E-1
235	7.17E-1	5.15E-1	5.41E-1	5.95E-1	5.53E-1
230	4.90E-1	3.48E-1	3.65E-1	4.03E-1	3.73E-1
225	3.28E-1	2.30E-1	2.41E-1	2.68E-1	2.47E-1
220	2.15E-1	1.48E-1	1.56E-1	1.74E-1	1.60E-1
215	1.37E-1	9.35E-2	9.86E-2	1.10E-1	1.01E-1
210	8.57E-2	5.74E-2	6.06E-2	6.82E-2	6.19E-2
205	5.20E-2	3.43E-2	3.63E-2	4.10E-2	3.70E-2
200	3.07E-2	1.98E-2	2.10E-2	2.39E-2	2.15E-2
195	1.75E-2	1.11E-2	1.18E-2	1.35E-2	1.20E-2
190	9.65E-3	6.01E-3	6.39E-3	7.35E-3	6.52E-3
185	5.13E-3	3.13E-3	3.33E-3	3.85E-3	3.39E-3
180	2.61E-3	1.56E-3	1.66E-3	1.94E-3	1.69E-3
175	1.27E-3	7.41E-4	7.92E-4	9.30E-4	8.06E-4
170	5.90E-4	3.35E-4	3.59E-4	4.25E-4	3.65E-4
165	2.59E-4	1.43E-4	1.54E-4	1.84E-4	1.56E-4
160	1.07E-4	5.75E-5	6.20E-5	7.47E-5	
155	4.16E-5	2.16E-5	2.34E-5	2.84E-5	
150	1.50E-5	7.54E-6	8.18E-6	1.01E-5	
145	5.00E-6	2.42E-6	2.63E-6	3.27E-6	
140	1.52E-6	7.08E-7		9.74E-7	
135	4.20E-7	1.87E-7			
T _f	133	132	140	135	160

TABLE 8
VAPOUR PRESSURE of HEXENES-II

Units: kPa v. K

18	2-Methylpent-1-ene	2-Methyl-1-pentene
19	3-Methylpent-1-ene	3-Methyl-1-pentene
20	4-Methylpent-1-ene	4-Methyl-1-pentene
21	2-Methylpent-2-ene	2-Methyl-2-pentene

No.	18	19	20	21
T _c (K)	505.15	495.15	492.15	513.15
p _c (kPa)	3292	3137	3094	3425

T K	p kPa			
510				3275.1
505	3284.9			3050.0
500	3058.2			2838.5
495	2845.9	3130.3		2639.4
490	2646.4	2914.7	2999.0	2451.7
485	2458.4	2712.8	2789.0	2274.8
480	2281.3	2522.9	2592.0	2108.1
475	2114.4	2344.0	2406.8	1951.0
470	1957.1	2175.4	2232.4	1803.0
465	1809.0	2016.4	2068.2	1663.8
460	1669.7	1866.5	1913.5	1532.9
455	1538.6	1725.4	1768.0	1410.0
450	1415.5	1592.5	1631.0	1294.6
445	1299.9	1467.5	1502.3	1186.4
440	1191.6	1350.0	1381.4	1085.2
435	1090.2	1239.7	1267.9	990.53
430	995.31	1136.2	1161.6	902.20
425	906.76	1039.3	1062.0	819.89
420	824.22	948.72	969.01	743.33
415	747.41	864.10	882.17	672.23
410	676.07	785.21	801.26	606.36
405	609.94	711.79	726.00	545.44
400	548.77	643.60	656.12	489.24
395	492.31	580.37	591.38	437.50
390	440.32	521.89	531.51	390.01
385	392.57	467.92	476.29	346.51
380	348.84	418.22	425.48	306.80
375	308.89	372.59	378.84	270.65
370	272.51	330.80	336.16	237.84
365	239.49	292.64	297.20	208.17
360	209.61	257.91	261.76	181.43
355	182.68	226.39	229.62	157.43
350	158.50	197.89	200.58	135.96
345	136.86	172.22	174.43	116.84
340	117.60	149.18	150.99	99.889
335	100.51	128.60	130.05	84.932
330	85.433	110.28	111.44	71.800
325	72.195	94.062	94.961	60.330

TABLE 8 continued
 VAPOUR PRESSURE of HEXENES-II continued

Units: kPa v. K

No.	18	19	20	21
continued				
T K	p kPa			
320	60.633	79.767	80.455	50.369
315	50.592	67.235	67.749	41.768
310	41.924	56.310	56.682	34.389
305	34.490	46.841	47.099	28.101
300	28.156	38.686	38.853	22.779
295	22.799	31.708	31.806	18.309
290	18.302	25.781	25.827	14.584
285	14.558	20.783	20.791	11.507
280	11.468	16.602	16.585	8.9883
275	8.9407	13.136	13.101	6.9455
270	6.8941	10.287	10.242	5.3060
265	5.2542	7.9681	7.9197	4.0045
260	3.9547	6.1008	6.0521	2.9833
255	2.9372	4.6134	4.5673	2.1920
250	2.1508	3.4428	3.4010	1.5870
245	1.5512	2.5330	2.4964	1.1310
240	1.1007	1.8356	1.8046	7.93E-1
235	7.68E-1	1.3088	1.2833	5.45E-1
230	5.25E-1	9.17E-1	8.97E-1	3.68E-1
225	3.52E-1	6.31E-1	6.15E-1	2.43E-1
220	2.31E-1	4.25E-1	4.13E-1	1.57E-1
215	1.48E-1	2.80E-1	2.71E-1	9.93E-2
210	9.28E-2	1.81E-1	1.74E-1	6.10E-2
205	5.65E-2	1.13E-1	1.09E-1	3.65E-2
200	3.34E-2	6.93E-2	6.63E-2	2.12E-2
195	1.91E-2	4.11E-2	3.92E-2	1.19E-2
190	1.06E-2	2.36E-2	2.24E-2	6.43E-3
185	5.64E-3	1.31E-2	1.23E-2	3.35E-3
180	2.89E-3	7.00E-3	6.55E-3	1.67E-3
175	1.41E-3	3.59E-3	3.33E-3	7.96E-4
170	6.58E-4	1.76E-3	1.62E-3	3.61E-4
165	2.91E-4	8.17E-4	7.48E-4	1.54E-4
160	1.21E-4	3.60E-4	3.27E-4	6.23E-5
155	4.73E-5	1.49E-4	1.34E-4	2.35E-5
150	1.72E-5	5.79E-5	5.15E-5	8.21E-6
145	5.75E-6	2.08E-5	1.83E-5	2.65E-6
140	1.77E-6	6.90E-6	6.00E-6	7.78E-7
135		2.08E-6	1.79E-6	
130		5.67E-7	4.79E-7	
125		1.37E-7	1.14E-7	
120			2.38E-8	
T _f	137	120	119	138