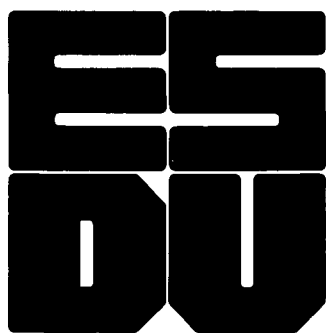




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Vapour pressures and critical points of liquids

Part 1 B: C₈ and C₉ alkanes

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The work on this Item was carried out in the Internal Flow and Physical Properties Group of the Engineering Sciences Data Unit. The member of staff who undertook the initial assessment of the available information and the construction and subsequent development of the Item was

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with special help and advice from Dr D.Ambrose.

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(Continued on inside back cover)

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VAPOUR PRESSURES AND CRITICAL POINTS OF LIQUIDS
PART 1B C₈ AND C₉ ALKANES

1. INTRODUCTION

This Data Item presents saturated vapour pressures of the C₈ and C₉ alkanes listed with alternative names if any, in Table 1 (Page 2). With Item No.84022 it replaces Item No.72028 which dealt with C₁ to C₈ alkanes only.

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 $q = 1 - T/T_c$ and T_c and p_c are the critical temperature and critical pressure respectively. This equation has been fitted to the experimental and calculated data that have been selected and weighted in accordance with a critical assessment of all the data.

Table 2 is an index to Tables 5 onward. Table 3 gives T_c , p_c and the coefficients b_1 , b_2 , b_3 and b_4 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 (Centigrade) and degrees Fahrenheit, the value of dp/dT at the normal boiling point and the acentric factor.

Tables 5 to 9 present values of vapour pressure, in kPa, at 5 K intervals of temperature down to a temperature just above the freezing point or an arbitrary lower limit where the freezing point is not known.

Tables 5(C) to 9(C) present the vapour pressures, in atm and mmHg, at intervals of 5 degrees C and Tables 5(F) to 9(F) give the values, in psia, at intervals of 10 degrees F. In Table 5(C) to 9(C) the units of pressure change from atm to mmHg at approximately 2 atm.

The 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. - 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

OCTANES and NONANES

No.	Name	Alternative Name
OCTANES		
1	Octane	n-Octane
2	2-Methylheptane	
3	3-Methylheptane	
4	4-Methylheptane	
5	3-Ethylhexane	
6	2,2-Dimethylhexane	
7	2,3-Dimethylhexane	
8	2,4-Dimethylhexane	
9	2,5-Dimethylhexane	
10	3,3-Dimethylhexane	
11	3,4-Dimethylhexane	
12	2-Methyl-3-ethylpentane	
13	3-Methyl-3-ethylpentane	
14	2,2,3-Trimethylpentane	
15	2,2,4-Trimethylpentane	Iso-octane
16	2,3,3-Trimethylpentane	
17	2,3,4-Trimethylpentane	
18	2,2,3,3-Tetramethylbutane	Hexamethylethane
NONANES		
19	Nonane	n-Nonane
20	2-Methyloctane	
21	2,2-Dimethylheptane	
22	2,2,5-Trimethylhexane	
23	2,3,5-Trimethylhexane	
24	2,4,4-Trimethylhexane	
25	3,3-Diethylpentane	
26	2,2,3,3-Tetramethylpentane	
27	2,2,3,4-Tetramethylpentane	
28	2,2,4,4-Tetramethylpentane	
29	2,3,3,4-Tetramethylpentane	

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
OCTANES							
1	Octane	5	6, 7	5(C)	16,17	5(F)	26,17
2	2-Methylheptane	5	6, 7	5(C)	16,17	5(F)	26,17
3	3-Methylheptane	5	6, 7	5(C)	16,17	5(F)	26,17
4	4-Methylheptane	5	6, 7	5(C)	16,17	5(F)	26,17
5	3-Ethylhexane	5	6, 7	5(C)	16,17	5(F)	26,17
6	2,2-Dimethylhexane	6	8, 9	6(C)	18,19	6(F)	28,29
7	2,3-Dimethylhexane	6	8, 9	6(C)	18,19	6(F)	28,29
8	2,4-Dimethylhexane	6	8, 9	6(C)	18,19	6(F)	28,29
9	2,5-Dimethylhexane	6	8, 9	6(C)	18,19	6(F)	28,29
10	3,3-Dimethylhexane	6	8, 9	6(C)	18,19	6(F)	28,29
11	3,4-Dimethylhexane	6	8, 9	6(C)	18,19	6(F)	28,29
12	2-Methyl-3-ethylpentane	7	10,11	7(C)	20,21	7(F)	30,31
13	3-Methyl-3-ethylpentane	7	10,11	7(C)	20,21	7(F)	30,31
14	2,2,3-Trimethylpentane	7	10,11	7(C)	20,21	7(F)	30,31
15	2,2,4-Trimethylpentane	7	10,11	7(C)	20,21	7(F)	30,31
16	2,3,3-Trimethylpentane	7	10,11	7(C)	20,21	7(F)	30,31
17	2,3,4-Trimethylpentane	7	10,11	7(C)	20,21	7(F)	30,31
18	2,2,3,3-Tetramethylbutane	7	10,11	7(C)	20,21	7(F)	30,31
NONANES							
19	Nonane	8	12,13	8(C)	22,23	8(F)	32,33
20	2-Methyloctane	8	12,13	8(C)	22,23	8(F)	32,33
21	2,2-Dimethylheptane	8	12,13	8(C)	22,23	8(F)	32,33
22	2,2,5-Trimethylhexane	8	12,13	8(C)	22,23	8(F)	32,33
23	2,3,5-Trimethylhexane	8	12,13	8(C)	22,23	8(F)	32,33
24	2,4,4-Trimethylhexane	8	12,13	8(C)	22,23	8(F)	32,33
25	3,3-Diethylpentane	9	14,15	9(C)	24,25	9(F)	34,35
26	2,2,3,3-Tetramethylpentane	9	14,15	9(C)	24,25	9(F)	34,35
27	2,2,3,4-Tetramethylpentane	9	14,15	9(C)	24,25	9(F)	34,35
28	2,2,4,4-Tetramethylpentane	9	14,15	9(C)	24,25	9(F)	34,35
29	2,3,3,4-Tetramethylpentane	9	14,15	9(C)	24,25	9(F)	34,35

TABLE 3
CONSTANTS in EQUATION (1)

Name	T _C K	p _C kPa	b ₁	b ₂	b ₃	b ₄
OCTANES						
Octane	568.95	2488	-7.91796	1.43618	-4.08115	-2.65883
2-Methylheptane	559.65	2485	-7.84896	1.47150	-3.94563	-2.55316
3-Methylheptane	563.65	2545	-7.84855	1.57247	-4.09871	-2.11150
4-Methylheptane	561.75	2542	-7.78795	1.41618	-3.85427	-2.65527
3-Ethylhexane	565.45	2606	-7.78117	1.50528	-3.88143	-2.45709
2,2-Dimethylhexane	549.85	2529	-7.69507	1.56681	-3.84034	-2.38751
2,3-Dimethylhexane	563.45	2624	-7.65912	1.35498	-3.40456	-3.54406
2,4-Dimethylhexane	553.55	2556	-7.67409	1.46674	-3.75117	-2.28438
2,5-Dimethylhexane	550.05	2486	-7.79507	1.59378	-3.97280	-2.21283
3,3-Dimethylhexane	562.05	2653	-7.56404	1.42856	-3.40183	-2.46857
3,4-Dimethylhexane	568.85	2690	-7.66850	1.48637	-3.65371	-2.35280
2-Methyl-3-ethylpentane	567.05	2700	-7.66393	1.55794	-3.67435	-2.27424
3-Methyl-3-ethylpentane	576.55	2798	-7.40421	1.22310	-2.85470	-3.00195
2,2,3-Trimethylpentane	563.55	2731	-7.46542	1.47116	-3.39100	-1.98623
2,2,4-Trimethylpentane	543.85	2563	-7.48875	1.43429	-3.26730	-2.45218
2,3,3-Trimethylpentane	573.55	2820	-7.42454	1.40117	-2.99356	-2.72844
2,3,4-Trimethylpentane	566.45	2730	-7.55350	1.45145	-3.34937	-2.51231
2,2,3,3-Tetramethylbutane	568.15	2875	-7.20012	1.39598	-2.95068	-1.80108
NONANES						
Nonane	594.65	2281	-8.16778	1.52637	-4.61450	-2.57724
2-Methyloctane	586.75	2300	-8.09718	1.60730	-4.71386	-2.01995
2,2-Dimethylheptane	576.75	2350	-7.88351	1.42484	-4.00969	-2.66427
2,2,5-Trimethylhexane	572.15	2445	-7.76370	1.72498	-4.46982	-1.01396
2,3,5-Trimethylhexane	579.15	2456	-7.79327	1.39199	-3.81683	-2.69564
2,4,4-Trimethylhexane	582.15	2448	-7.61375	1.31864	-3.40575	-2.75857
3,3-Diethylpentane	609.15	2609	-7.50096	1.07696	-2.73938	-3.58460
2,2,3,3-Tetramethylpentane	607.65	2694	-7.47961	1.55304	-3.69479	-1.39959
2,2,3,4-Tetramethylpentane	592.75	2592	-7.50100	1.40827	-3.43541	-2.11770
2,2,4,4-Tetramethylpentane	574.75	2456	-7.50426	1.48379	-3.59669	-1.75332
2,3,3,4-Tetramethylpentane	607.65	2720	-7.45621	1.23313	-2.98793	-2.94814

TABLE 4

NORMAL BOILING POINTS AND ACENTRIC FACTORS

Name	Normal Boiling Point						Ac.
	p=101.325 kPa		p=760 mmHg		p=14.69595 psia		Fctr.
	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	
OCTANES							
Octane	398.82	0.3554	125.67	0.04739	258.21	4.411	0.397
2-Methylheptane	390.81	0.3522	117.66	0.04695	243.79	4.371	0.378
3-Methylheptane	392.07	0.3536	118.92	0.04714	246.06	4.388	0.370
4-Methylheptane	390.86	0.3523	117.71	0.04697	243.88	4.372	0.371
3-Ethylhexane	391.69	0.3541	118.54	0.04721	245.37	4.395	0.361
2,2-Dimethylhexane	379.99	0.3490	106.84	0.04653	224.32	4.331	0.338
2,3-Dimethylhexane	388.76	0.3545	115.61	0.04726	240.11	4.399	0.346
2,4-Dimethylhexane	382.58	0.3499	109.43	0.04665	228.98	4.342	0.343
2,5-Dimethylhexane	382.26	0.3487	109.11	0.04649	228.39	4.328	0.356
3,3-Dimethylhexane	385.12	0.3558	111.97	0.04743	233.55	4.415	0.320
3,4-Dimethylhexane	390.88	0.3567	117.73	0.04755	243.92	4.427	0.338
2-Methyl-3-ethylpentane	388.81	0.3564	115.66	0.04751	240.18	4.423	0.330
3-Methyl-3-ethylpentane	391.42	0.3635	118.27	0.04846	244.88	4.511	0.303
2,2,3-Trimethylpentane	383.00	0.3568	109.85	0.04756	229.72	4.428	0.297
2,2,4-Trimethylpentane	372.38	0.3490	99.23	0.04652	210.61	4.331	0.303
2,3,3-Trimethylpentane	387.92	0.3628	114.77	0.04836	238.58	4.502	0.290
2,3,4-Trimethylpentane	386.62	0.3572	113.47	0.04762	236.25	4.433	0.315
2,2,3,3-Tetramethylbutane	379.47	0.3615	106.32	0.04820	223.38	4.487	0.248
NONANES							
Nonane	423.97	0.3727	150.82	0.04969	303.47	4.626	0.443
2-Methyloctane	416.41	0.3690	143.26	0.04920	289.86	4.579	0.423
2,2-Dimethylheptane	405.85	0.3656	132.70	0.04874	270.86	4.537	0.390
2,2,5-Trimethylhexane	397.25	0.3635	124.10	0.04846	255.37	4.511	0.345
2,3,5-Trimethylhexane	404.49	0.3657	131.34	0.04875	268.41	4.538	0.374
2,4,4-Trimethylhexane	403.81	0.3722	130.66	0.04962	267.19	4.619	0.341
3,3-Diethylpentane	419.34	0.3865	146.19	0.05152	295.13	4.796	0.334
2,2,3,3-Tetramethylpentane	413.44	0.3848	140.29	0.05131	284.53	4.776	0.296
2,2,3,4-Tetramethylpentane	406.18	0.3775	133.03	0.05033	271.45	4.685	0.311
2,2,4,4-Tetramethylpentane	395.44	0.3706	122.29	0.04941	252.13	4.600	0.307
2,3,3,4-Tetramethylpentane	414.72	0.3838	141.57	0.05117	286.82	4.763	0.313

TABLE 5

OCTANES -I (kPa v. K)

No.	n-Octane				
	1	2	3	4	5
1 Octane					
2 2-Methylheptane					
3 3-Methylheptane					
4 4-Methylheptane					
5 3-Ethylhexane					
T _C (K)	568.95	559.65	563.65	561.75	565.45
P _C (kPa)	2488	2485	2545	2542	2606
T K	p kPa				
565	2356.0				2590.0
560	2198.5		2420.1	2481.5	2419.4
555	2050.4	2329.5	2258.8	2316.6	2259.5
550	1910.8	2172.6	2107.2	2161.7	2108.9
545	1779.2	2025.1	1964.4	2015.8	1966.8
540	1655.0	1886.1	1829.8	1878.1	1832.7
535	1537.8	1755.1	1702.8	1748.2	1706.1
530	1427.3	1631.5	1582.9	1625.5	1586.5
525	1323.1	1515.0	1469.9	1509.8	1473.7
520	1225.0	1405.2	1363.4	1400.7	1367.3
515	1132.6	1301.6	1263.0	1297.8	1266.9
510	1045.6	1204.2	1168.4	1200.8	1172.3
505	963.90	1112.4	1079.4	1109.5	1083.3
500	887.15	1026.2	995.63	1023.6	999.48
495	815.15	945.15	916.96	942.93	920.73
490	747.69	869.09	843.12	867.16	846.78
485	684.56	797.78	773.88	796.09	777.42
480	625.55	731.01	709.05	729.53	712.46
475	570.49	668.56	648.41	667.27	651.68
470	519.19	610.24	591.78	609.11	594.90
465	471.46	555.86	538.97	554.86	541.95
460	427.15	505.23	489.81	504.35	492.63
455	386.07	458.18	444.11	457.40	446.79
450	348.07	414.52	401.72	413.84	404.25
445	312.99	374.10	362.47	373.49	364.85
440	280.68	336.74	326.20	336.21	328.44
435	250.98	302.30	292.76	301.82	294.86
430	223.76	270.61	261.99	270.19	263.96
425	198.87	241.52	233.76	241.15	235.60
420	176.17	214.89	207.92	214.57	209.64
415	155.53	190.58	184.34	190.30	185.93
410	136.81	168.45	162.87	168.20	164.34
405	119.90	148.36	143.38	148.14	144.74
400	104.67	130.18	125.76	129.98	127.01
395	91.005	113.78	109.87	113.61	111.01
390	78.781	99.047	95.590	98.896	96.637
385	67.894	85.851	82.810	85.720	83.764
380	58.237	74.080	71.416	73.967	72.281
375	49.706	63.623	61.298	63.526	62.079
370	42.207	54.374	52.354	54.290	53.056
365	35.644	46.229	44.482	46.157	45.109
360	29.931	39.091	37.587	39.030	38.146
355	24.983	32.867	31.579	32.816	32.073
350	20.722	27.468	26.372	27.426	26.807

TABLE 5 continued

OCTANES -I (kPa v. K) continued

No.	1	2	3	4	5
continued					
T K	p kPa				
345	17.074	22.812	21.885	22.777	22.264
340	13.971	18.820	18.040	18.791	18.369
335	11.348	15.418	14.766	15.394	15.050
330	9.1472	12.539	11.998	12.519	12.241
325	7.3132	10.118	9.6729	10.103	9.8787
320	5.7969	8.0984	7.7348	8.0860	7.9078
315	4.5536	6.4261	6.1317	6.4163	6.2759
310	3.5430	5.0528	4.8166	5.0451	4.9356
305	2.7289	3.9350	3.7473	3.9290	3.8445
300	2.0796	3.0334	2.8858	3.0288	2.9644
295	1.5670	2.3133	2.1985	2.3098	2.2613
290	1.1667	1.7441	1.6559	1.7415	1.7055
285	8.577E-1	1.2992	1.2322	1.2972	1.2708
280	6.221E-1	9.554E-1	9.053E-1	9.539E-1	9.350E-1
275	4.449E-1	6.931E-1	6.561E-1	6.920E-1	6.786E-1
270	3.133E-1	4.956E-1	4.687E-1	4.948E-1	4.855E-1
265	2.171E-1	3.489E-1	3.297E-1	3.484E-1	3.420E-1
260	1.479E-1	2.417E-1	2.282E-1	2.413E-1	2.371E-1
255	9.895E-2	1.645E-1	1.552E-1	1.642E-1	1.615E-1
250	6.491E-2	1.099E-1	1.036E-1	1.097E-1	1.080E-1
245	4.170E-2	7.199E-2	6.784E-2	7.185E-2	7.079E-2
240	2.620E-2	4.616E-2	4.348E-2	4.606E-2	4.543E-2
235	1.608E-2	2.893E-2	2.724E-2	2.887E-2	2.851E-2
230	9.615E-3	1.770E-2	1.666E-2	1.765E-2	1.746E-2
225	5.595E-3	1.054E-2	9.930E-3	1.052E-2	1.042E-2
220	3.161E-3	6.109E-3	5.755E-3	6.091E-3	6.046E-3
215		3.434E-3	3.237E-3	3.422E-3	3.405E-3
210		1.868E-3	1.763E-3	1.861E-3	1.856E-3
205		9.813E-4	9.272E-4	9.773E-4	9.772E-4
200		4.962E-4	4.697E-4	4.939E-4	4.954E-4
195		2.408E-4	2.285E-4	2.396E-4	2.411E-4
190		1.118E-4	1.063E-4	1.111E-4	1.123E-4
185		4.943E-5	4.718E-5	4.909E-5	4.981E-5
180		2.073E-5	1.987E-5	2.057E-5	2.097E-5
175		8.211E-6	7.909E-6	8.138E-6	8.341E-6
170		3.053E-6	2.959E-6	3.023E-6	3.117E-6
165		1.060E-6	1.034E-6	1.048E-6	1.088E-6
160			3.354E-7	3.365E-7	3.520E-7
155			1.002E-7	9.944E-8	1.049E-7
150					2.853E-8
T _f	216	164	153	152	—

TABLE 6

OCTANES-II (kPa v. K)

- 6 2,2-Dimethylhexane
- 7 2,3-Dimethylhexane
- 8 2,4-Dimethylhexane
- 9 2,5-Dimethylhexane
- 10 3,3-Dimethylhexane
- 11 3,4-Dimethylhexane

No.	6	7	8	9	10	11
T ^C (K)	549.85	563.45	553.55	550.05	562.05	568.85
p ^C (kPa)	2529	2624	2556	2486	2653	2690
T K	p kPa					
565						2555.2
560		2504.7			2581.4	2389.9
555		2341.1			2414.8	2234.3
550		2186.9	2434.3	2484.2	2258.1	2087.3
545	2364.7	2041.3	2272.5	2316.0	2110.1	1948.4
540	2206.2	1903.8	2120.4	2158.9	1970.3	1817.1
535	2057.1	1773.8	1976.9	2011.2	1838.0	1692.9
530	1916.7	1651.0	1841.5	1872.2	1713.0	1575.6
525	1784.2	1535.0	1713.8	1741.2	1594.8	1464.8
520	1659.3	1425.4	1593.2	1617.8	1483.0	1360.1
515	1541.5	1322.0	1479.4	1501.5	1377.4	1261.2
510	1430.4	1224.5	1372.0	1391.9	1277.8	1168.0
505	1325.6	1132.6	1270.8	1288.7	1183.7	1080.2
500	1226.9	1046.0	1175.4	1191.5	1095.0	997.42
495	1134.0	964.56	1085.7	1100.1	1011.4	919.58
490	1046.6	888.03	1001.2	1014.2	932.81	846.43
485	964.35	816.19	921.82	933.54	858.88	777.76
480	887.16	748.83	847.31	857.85	789.46	713.38
475	814.73	685.76	777.44	786.92	724.35	653.11
470	746.87	626.78	712.00	720.52	663.36	596.75
465	683.36	571.72	650.80	658.46	606.32	544.14
460	624.01	520.39	593.65	600.53	553.04	495.10
455	568.62	472.62	540.37	546.53	503.37	449.47
450	517.02	428.25	490.76	496.28	457.13	407.09
445	469.02	387.10	444.67	449.60	414.17	367.80
440	424.46	349.02	401.92	406.31	374.32	331.46
435	383.17	313.86	362.35	366.26	337.45	297.91
430	344.99	281.47	325.80	329.27	303.39	267.00
425	309.75	251.69	292.12	295.19	272.01	238.61
420	277.32	224.38	261.15	263.86	243.16	212.58
415	247.53	199.41	232.74	235.14	216.71	188.79
410	220.24	176.63	206.77	208.86	192.52	167.10
405	195.32	155.91	183.07	184.90	170.46	147.39
400	172.61	137.13	161.52	163.11	150.40	129.53
395	151.99	120.15	141.98	143.35	132.21	113.40
390	133.32	104.86	124.32	125.50	115.78	98.875
385	116.48	91.134	108.42	109.43	100.98	85.854
380	101.34	78.860	94.149	95.010	87.705	74.220
375	87.786	67.928	81.395	82.121	75.839	63.867
370	75.691	58.231	70.040	70.649	65.275	54.694
365	64.947	49.667	59.975	60.480	55.911	46.601
360	55.445	42.139	51.092	51.507	47.646	39.495
355	47.081	35.554	43.290	43.628	40.386	33.286
350	39.755	29.822	36.471	36.743	34.040	27.889

TABLE 6 continued

OCTANES-II (kPa v. K) continued

No.	6	7	8	9	10	11
continued						
T K	p kPa					
345	33.370	24.861	30.543	30.760	28.522	23.223
340	27.837	20.592	25.419	25.588	23.750	19.213
335	23.070	16.939	21.014	21.145	19.648	15.787
330	18.988	13.834	17.252	17.351	16.142	12.879
325	15.514	11.213	14.060	14.133	13.166	10.427
320	12.580	9.0160	11.370	11.422	10.657	8.3753
315	10.118	7.1882	9.1202	9.1558	8.5561	6.6707
310	8.0682	5.6799	7.2525	7.2757	6.8112	5.2660
305	6.3759	4.4458	5.7150	5.7289	5.3735	4.1183
300	4.9907	3.4451	4.4603	4.4673	4.1991	3.1889
295	3.8671	2.6414	3.4457	3.4480	3.2484	2.4435
290	2.9645	2.0026	2.6333	2.6325	2.4862	1.8516
285	2.2469	1.5002	1.9896	1.9869	1.8815	1.3867
280	1.6826	1.1097	1.4851	1.4814	1.4068	1.0256
275	1.2440	8.098E-1	1.0943	1.0903	1.0386	7.486E-1
270	9.073E-1	5.825E-1	7.955E-1	7.914E-1	7.565E-1	5.387E-1
265	6.523E-1	4.127E-1	5.698E-1	5.661E-1	5.431E-1	3.820E-1
260	4.617E-1	2.877E-1	4.020E-1	3.987E-1	3.840E-1	2.665E-1
255	3.215E-1	1.970E-1	2.789E-1	2.762E-1	2.671E-1	1.829E-1
250	2.200E-1	1.325E-1	1.901E-1	1.880E-1	1.825E-1	1.232E-1
245	1.478E-1	8.734E-2	1.272E-1	1.255E-1	1.225E-1	8.142E-2
240	9.728E-2	5.636E-2	8.342E-2	8.214E-2	8.056E-2	5.271E-2
235	6.268E-2	3.555E-2	5.354E-2	5.260E-2	5.187E-2	3.338E-2
230	3.948E-2	2.188E-2	3.358E-2	3.291E-2	3.264E-2	2.065E-2
225	2.426E-2	1.312E-2	2.055E-2	2.009E-2	2.005E-2	1.245E-2
220	1.452E-2	7.648E-3	1.224E-2	1.194E-2	1.199E-2	7.304E-3
215	8.443E-3	4.324E-3	7.092E-3	6.894E-3	6.974E-3	4.162E-3
210	4.763E-3	2.366E-3	3.983E-3	3.860E-3	3.934E-3	2.298E-3
205	2.599E-3	1.249E-3	2.164E-3	2.090E-3	2.147E-3	1.226E-3
200	1.369E-3	6.350E-4	1.134E-3	1.092E-3	1.131E-3	6.309E-4
195	6.934E-4	3.095E-4	5.719E-4	5.484E-4	5.732E-4	3.119E-4
190	3.368E-4	1.442E-4	2.765E-4	2.641E-4	2.787E-4	1.476E-4
185	1.563E-4	6.398E-5	1.277E-4	1.214E-4	1.295E-4	6.670E-5
180	6.903E-5	2.690E-5	5.614E-5		5.726E-5	2.864E-5
175	2.888E-5	1.067E-5	2.337E-5		2.400E-5	1.163E-5
170	1.139E-5	3.968E-6	9.169E-6		9.481E-6	4.444E-6
165	4.207E-6	1.376E-6	3.371E-6		3.512E-6	1.589E-6
160	1.448E-6	4.416E-7	1.154E-6		1.212E-6	5.280E-7
155	4.605E-7	1.302E-7	3.653E-7		3.868E-7	1.619E-7
150		3.492E-8	1.060E-7		1.133E-7	4.542E-8
T _f	152	—	—	182	147	—

TABLE 7
OCTANES-III (kPa v. K)

12	2-Methyl-3-ethylpentane						
13	3-Methyl-3-ethylpentane						
14	2,2,3-Trimethylpentane						
15	2,2,4-Trimethylpentane						
16	2,3,3-Trimethylpentane						
17	2,3,4-Trimethylpentane						
18	2,2,3,3-Tetramethylbutane						
	Iso-octane						
	Hexamethylethane						
No.	12	13	14	15	16	17	18
T _C (K)	567.05	576.55	563.55	543.85	573.55	566.45	568.15
p _C (kPa)	2700	2798	2731	2563	2820	2730	2875
T				p			
K				kPa			
575		2743.2					
570		2573.6			2694.4		
565	2626.8	2413.5			2526.8	2678.1	2763.5
560	2457.0	2261.7	2606.7		2368.5	2507.0	2595.3
555	2297.3	2117.9	2441.1		2218.7	2346.0	2436.2
550	2146.7	1981.5	2284.9		2076.7	2193.9	2285.5
545	2004.5	1852.1	2137.3		1942.1	2050.2	2142.5
540	1870.1	1729.5	1997.6	2431.8	1814.6	1914.2	2006.8
535	1743.0	1613.2	1865.4	2271.2	1693.8	1785.6	1878.0
530	1622.9	1503.0	1740.3	2120.0	1579.3	1663.9	1755.7
525	1509.5	1398.7	1621.9	1977.3	1470.9	1548.9	1639.7
520	1402.3	1300.0	1509.8	1842.6	1368.3	1440.1	1529.6
515	1301.2	1206.7	1403.9	1715.4	1271.2	1337.3	1425.3
510	1205.7	1118.5	1303.7	1595.3	1179.5	1240.2	1326.4
505	1115.7	1035.3	1209.1	1481.8	1092.9	1148.6	1232.8
500	1030.9	956.79	1119.8	1374.7	1011.2	1062.2	1144.3
495	951.14	882.87	1035.5	1273.7	934.18	980.89	1060.6
490	876.13	813.33	956.18	1178.5	861.66	904.35	981.54
485	805.67	747.98	881.48	1088.8	793.45	832.40	906.96
480	739.58	686.65	811.25	1004.4	729.37	764.85	836.68
475	677.66	629.18	745.30	925.03	669.26	701.51	770.53
470	619.73	575.40	683.44	850.49	612.95	642.19	708.34
465	565.61	525.15	625.51	780.55	560.27	586.73	649.96
460	515.12	478.27	571.34	715.03	511.06	534.95	595.23
455	468.11	434.62	520.76	653.73	465.18	486.69	544.00
450	424.41	394.05	473.61	596.46	422.46	441.78	496.13
445	383.86	356.41	429.73	543.03	382.78	400.07	451.46
440	346.32	321.55	388.99	493.28	345.97	361.40	409.87
435	311.62	289.36	351.22	447.04	311.91	325.64	371.21
430	279.63	259.67	316.28	404.13	280.46	292.62	335.35
425	250.20	232.37	284.04	364.40	251.47	262.21	302.16
420	223.19	207.32	254.35	327.69	224.83	234.27	271.50
415	198.48	184.41	227.08	293.85	200.40	208.67	243.25
410	175.92	163.49	202.09	262.72	178.06	185.27	217.29
405	155.39	144.45	179.27	234.17	157.69	163.93	193.49
400	136.76	127.19	158.48	208.04	139.16	144.55	171.73
395	119.91	111.57	139.59	184.20	122.37	126.99	151.90
390	104.72	97.487	122.49	162.51	107.20	111.13	133.87
385	91.079	84.840	107.07	142.85	93.529	96.863	117.54
380	78.871	73.520	93.196	125.07	81.266	84.069	102.80
375	67.989	63.427	80.772	109.05	70.303	72.643	89.536

TABLE 7 continued

OCTANES-III (kPa v. K) continued

No.	12	13	14	15	16	17	18
continued							
T K	p kPa						
370	58.330	54.465	69.686	94.684	60.541	62.478	
365	49.793	46.541	59.837	81.836	51.885	53.473	
360	42.283	39.566	51.123	70.396	44.244	45.533	
355	35.708	33.455	43.449	60.255	37.528	38.563	
350	29.981	28.129	36.724	51.305	31.656	32.477	
345	25.020	23.509	30.861	43.444	26.546	27.189	
340	20.747	19.526	25.777	36.575	22.125	22.620	
335	17.088	16.111	21.392	30.605	18.322	18.695	
330	13.974	13.201	17.634	25.445	15.069	15.345	
325	11.343	10.738	14.434	21.012	12.305	12.504	
320	9.1350	8.6671	11.726	17.228	9.9724	10.110	
315	7.2958	6.9389	9.4512	14.019	8.0177	8.1090	
310	5.7761	5.5077	7.5546	11.317	6.3919	6.4484	
305	4.5307	4.3322	5.9858	9.0598	5.0507	5.0816	
300	3.5192	3.3749	4.6989	7.1882	3.9534	3.9663	
295	2.7053	2.6025	3.6526	5.6497	3.0638	3.0646	
290	2.0570	1.9854	2.8099	4.3964	2.3495	2.3427	
285	1.5459	1.4974	2.1380	3.3851	1.7816	1.7706	
280	1.1476	1.1157	1.6079	2.5773	1.3351	1.3221	
275	8.409E-1	8.207E-1	1.1943	1.9390	9.879E-1	9.747E-1	
270	6.076E-1	5.955E-1	8.755E-1	1.4404	7.213E-1	7.089E-1	
265	4.326E-1	4.258E-1	6.330E-1	1.0557	5.192E-1	5.082E-1	
260	3.032E-1	2.998E-1	4.508E-1	7.627E-1	3.681E-1	3.587E-1	
255	2.090E-1	2.076E-1	3.161E-1	5.427E-1	2.568E-1	2.491E-1	
250	1.415E-1	1.413E-1	2.179E-1	3.798E-1	1.761E-1	1.700E-1	
245	9.401E-2	9.432E-2	1.475E-1	2.613E-1	1.185E-1	1.138E-1	
240	6.119E-2	6.172E-2	9.798E-2	1.764E-1	7.821E-2	7.473E-2	
235	3.897E-2	3.952E-2	6.375E-2	1.167E-1	5.054E-2	4.802E-2	
230	2.425E-2	2.473E-2	4.057E-2	7.561E-2	3.193E-2	3.016E-2	
225	1.471E-2	1.509E-2	2.522E-2	4.787E-2	1.969E-2	1.848E-2	
220	8.692E-3	8.970E-3	1.529E-2	2.956E-2	1.183E-2	1.103E-2	
215	4.988E-3	5.180E-3	9.015E-3	1.778E-2	6.908E-3	6.399E-3	
210	2.775E-3	2.899E-3	5.163E-3	1.039E-2	3.914E-3	3.600E-3	
205	1.493E-3	1.570E-3	2.865E-3	5.886E-3	2.147E-3	1.960E-3	
200	7.743E-4	8.195E-4	1.536E-3	3.225E-3	1.137E-3	1.029E-3	
195	3.862E-4	4.114E-4	7.937E-4	1.704E-3	5.793E-4	5.202E-4	
190	1.846E-4	1.979E-4	3.940E-4	8.660E-4	2.832E-4	2.521E-4	
185	8.425E-5	9.093E-5	1.873E-4	4.216E-4	1.324E-4	1.167E-4	
180	3.657E-5		8.490E-5	1.959E-4	5.890E-5	5.144E-5	
175	1.502E-5		3.655E-5	8.654E-5	2.484E-5	2.147E-5	
170	5.812E-6		1.487E-5	3.616E-5		8.450E-6	
165	2.106E-6		5.689E-6			3.116E-6	
160	7.100E-7						
T _f	158	182	161	166	172	164	373.96

TABLE 8

NONANES -I (kPa v. K)

19 Nonane		n-Nonane				
20 2-Methyloctane						
21 2,2-Dimethylheptane						
22 2,2,5-Trimethylhexane						
23 2,3,5-Trimethylhexane						
24 2,4,4-Trimethylhexane						
No.	19	20	21	22	23	24
T _C (K)	594.65	586.75	576.75	572.15	579.15	582.15
p _C (kPa)	2281	2300	2350	2445	2456	2448
T K	p kPa					
590	2141.1					
585	1999.8	2245.5				
580	1866.9	2097.3				2380.6
575	1741.6	1958.3	2294.8		2323.6	2230.9
570	1623.3	1827.3	2144.4	2375.4	2173.3	2089.7
565	1511.8	1703.8	2003.0	2221.6	2031.4	1956.1
560	1406.4	1587.3	1869.7	2077.2	1897.5	1829.6
555	1307.1	1477.4	1743.8	1941.1	1770.9	1709.8
550	1213.3	1373.7	1625.0	1812.6	1651.2	1596.4
545	1125.0	1275.9	1512.7	1691.3	1538.1	1488.9
540	1041.7	1183.6	1406.7	1576.7	1431.2	1387.2
535	963.35	1096.7	1306.7	1468.4	1330.2	1290.9
530	889.61	1014.8	1212.3	1366.0	1234.8	1199.9
525	820.30	937.73	1123.2	1269.4	1144.7	1113.9
520	755.22	865.25	1039.3	1178.1	1059.8	1032.7
515	694.17	797.15	960.35	1092.0	979.85	956.00
510	636.97	733.22	886.04	1010.9	904.56	883.74
505	583.44	673.29	816.20	934.35	833.74	815.69
500	533.42	617.16	750.64	862.32	767.22	751.68
495	486.74	564.66	689.15	794.58	704.80	691.52
490	443.24	515.64	631.57	730.93	646.30	635.07
485	402.77	469.91	577.71	671.19	591.55	582.16
480	365.19	427.33	527.40	615.20	540.38	532.65
475	330.35	387.76	480.49	562.79	492.63	486.38
470	298.11	351.03	436.81	513.80	448.15	443.20
465	268.34	317.02	396.22	468.08	406.78	402.99
460	240.91	285.58	358.55	425.49	368.37	365.59
455	215.69	256.58	323.68	385.87	332.79	330.89
450	192.56	229.89	291.45	349.08	299.88	298.75
445	171.39	205.38	261.73	315.01	269.51	269.03
440	152.08	182.94	234.38	283.50	241.55	241.63
435	134.50	162.44	209.29	254.44	215.87	216.41
430	118.55	143.76	186.31	227.69	192.34	193.26
425	104.12	126.80	165.33	203.13	170.84	172.06
420	91.108	111.43	146.22	180.65	151.24	152.70
415	79.413	97.567	128.88	160.12	133.44	135.07
410	68.938	85.092	113.18	141.43	117.30	119.06
405	59.591	73.908	99.015	124.47	102.74	104.56
400	51.283	63.919	86.280	109.12	89.624	91.487
395	43.929	55.034	74.871	95.291	77.866	79.729
390	37.447	47.161	64.688	82.863	67.360	69.194
385	31.759	40.217	55.636	71.743	58.010	59.790
380	26.792	34.119	47.622	61.830	49.723	51.429
375	22.476	28.790	40.559	53.032	42.410	44.027