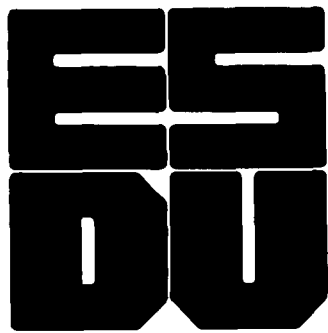




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Vapour pressure and critical points of liquids

Part 3A: C₆ to C₁₀ alkylbenzenes

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(Continued on inside back cover)

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VAPOUR PRESSURES AND CRITICAL POINTS OF LIQUIDS

PART 3A: C₆ TO C₁₀ ALKYL BENZENES

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VAPOUR PRESSURES AND CRITICAL POINTS OF LIQUIDS

PART 3A: C₆ TO C₁₀ ALKYL BENZENES

1. INTRODUCTION

This Data Item presents saturated vapour pressures of the C₆ to C₁₀ alkylbenzenes listed, with alternative names if any, in Table 1 (page 2).

The values of vapour pressure given in the Tables have been 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 (IPTS 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 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 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 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 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, ESDU International, 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
C₆ and C₇ ALKYL BENZENES		
1 C ₆ H ₆	Benzene	
2 C ₇ H ₈	Toluene	Methylbenzene
C₈ ALKYL BENZENES		
3 C ₈ H ₁₀	Ethylbenzene	
4	1,2-Dimethylbenzene	2-Methyltoluene o-Xylene
5	1,3-Dimethylbenzene	3-Methyltoluene m-Xylene
6	1,4-Dimethylbenzene	4-Methyltoluene p-Xylene
C₉ ALKYL BENZENES		
7 C ₉ H ₁₂	Propylbenzene	1-Phenylpropane
8	Isopropylbenzene	2-Phenylpropane Cumene
9	1-Methyl-2-ethylbenzene	2-Ethyltoluene
10	1-Methyl-3-ethylbenzene	3-Ethyltoluene
11	1-Methyl-4-ethylbenzene	4-Ethyltoluene
12	1,2,3-Trimethylbenzene	Hemimelitene
13	1,2,4-Trimethylbenzene	pseudoCumene
14	1,3,5-Trimethylbenzene	Mesitylene
C₁₀ ALKYL BENZENES		
15 C ₁₀ H ₁₄	Butylbenzene	1-Phenylbutane
16	sec-Butylbenzene	2-Phenylbutane
17	Isobutylbenzene	1-Phenyl-2-methylpropane
18	tert-Butylbenzene	2-Phenyl-2-methylpropane
19	1-Methyl-2-propylbenzene	2-Propyltoluene
20	1-Methyl-3-propylbenzene	3-Propyltoluene
21	1-Methyl-4-propylbenzene	4-Propyltoluene
22	1-Methyl-2-isopropylbenzene	2-Isopropyltoluene o-Cymene
23	1-Methyl-3-isopropylbenzene	3-Isopropyltoluene m-Cymene
24	1-Methyl-4-isopropylbenzene	4-Isopropyltoluene p-Cymene
25	1,2-Diethylbenzene	o-Diethylbenzene
26	1,3-Diethylbenzene	m-Diethylbenzene
27	1,4-Diethylbenzene	p-Diethylbenzene
28	1,2-Dimethyl-3-ethylbenzene	3-Ethyl-o-xylene
29	1,2-Dimethyl-4-ethylbenzene	4-Ethyl-o-xylene
30	1,3-Dimethyl-2-ethylbenzene	2-Ethyl-m-xylene
31	1,3-Dimethyl-4-ethylbenzene	4-Ethyl-m-xylene
32	1,3-Dimethyl-5-ethylbenzene	5-Ethyl-m-xylene
33	1,4-Dimethyl-2-ethylbenzene	2-Ethyl-p-xylene
34	1,2,3,4-Tetramethylbenzene	Prehnitene
35	1,2,3,5-Tetramethylbenzene	Isodurene
36	1,2,4,5-Tetramethylbenzene	Durene

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 ₆ and C ₇ ALKYL BENZENES							
1	Benzene	5	6, 7	5(C)	18,19	5(F)	30,31
2	Toluene	5	6, 7	5(C)	18,19	5(F)	30,31
C ₈ ALKYL BENZENES							
3	Ethylbenzene	5	6, 7	5(C)	18,19	5(F)	30,31
4	1,2-Dimethylbenzene	5	6, 7	5(C)	18,19	5(F)	30,31
5	1,3-Dimethylbenzene	5	6, 7	5(C)	18,19	5(F)	30,31
6	1,4-Dimethylbenzene	5	6, 7	5(C)	18,19	5(F)	30,31
C ₉ ALKYL BENZENES							
7	Propylbenzene	6	8, 9	6(C)	20,21	6(F)	32,33
8	Isopropylbenzene	6	8, 9	6(C)	20,21	6(F)	32,33
9	1-Methyl-2-ethylbenzene	6	8, 9	6(C)	20,21	6(F)	32,33
10	1-Methyl-3-ethylbenzene	6	8, 9	6(C)	20,21	6(F)	32,33
11	1-Methyl-4-ethylbenzene	6	8, 9	6(C)	20,21	6(F)	32,33
12	1,2,3-Trimethylbenzene	6	8, 9	6(C)	20,21	6(F)	32,33
13	1,2,4-Trimethylbenzene	6	8, 9	6(C)	20,21	6(F)	32,33
14	1,3,5-Trimethylbenzene	6	8, 9	6(C)	20,21	6(F)	32,33
C ₁₀ ALKYL BENZENES							
15	Butylbenzene	7	10,11	7(C)	22,23	7(F)	34,35
16	sec-Butylbenzene	7	10,11	7(C)	22,23	7(F)	34,35
17	Isobutylbenzene	7	10,11	7(C)	22,23	7(F)	34,35
18	tert-Butylbenzene	7	10,11	7(C)	22,23	7(F)	34,35
19	1-Methyl-2-propylbenzene	7	10,11	7(C)	22,23	7(F)	34,35
20	1-Methyl-3-propylbenzene	7	10,11	7(C)	22,23	7(F)	34,35
21	1-Methyl-4-propylbenzene	7	10,11	7(C)	22,23	7(F)	34,35
22	1-Methyl-2-isopropylbenzene	8	12,13	8(C)	24,25	8(F)	36,37
23	1-Methyl-3-isopropylbenzene	8	12,13	8(C)	24,25	8(F)	36,37
24	1-Methyl-4-isopropylbenzene	8	12,13	8(C)	24,25	8(F)	36,37
25	1,2-Diethylbenzene	8	12,13	8(C)	24,25	8(F)	36,37
26	1,3-Diethylbenzene	8	12,13	8(C)	24,25	8(F)	36,37
27	1,4-Diethylbenzene	8	12,13	8(C)	24,25	8(F)	36,37
28	1,2-Dimethyl-3-ethylbenzene	9	14,15	9(C)	26,27	9(F)	38,39
29	1,2-Dimethyl-4-ethylbenzene	9	14,15	9(C)	26,27	9(F)	38,39
30	1,3-Dimethyl-2-ethylbenzene	9	14,15	9(C)	26,27	9(F)	38,39
31	1,3-Dimethyl-4-ethylbenzene	9	14,15	9(C)	26,27	9(F)	38,39
32	1,3-Dimethyl-5-ethylbenzene	9	14,15	9(C)	26,27	9(F)	38,39
33	1,4-Dimethyl-2-ethylbenzene	9	14,15	9(C)	26,27	9(F)	38,39
34	1,2,3,4-Tetramethylbenzene	10	16,17	10(C)	28,29	10(F)	40,41
35	1,2,3,5-Tetramethylbenzene	10	16,17	10(C)	28,29	10(F)	40,41
36	1,2,4,5-Tetramethylbenzene	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

$$\ln p = \ln p_c + (T_c/T)(b_1q + b_2q^{3/2} + b_3q^3 + b_4q^6), \quad \text{where } q = 1 - T/T_c,$$

give p in kPa for T in kelvins.

Name	T_c K	p_c kPa	b_1	b_2	b_3	b_4
C₆ and C₇ ALKYL BENZENES						
Benzene	562.16	4898	-6.97961	1.32329	-2.60988	-3.38770
Toluene	591.8	4106	-7.25881	1.33129	-2.79827	-2.69277
C₈ ALKYL BENZENES						
Ethylbenzene	617.2	3599	-7.44975	1.36404	-3.17059	-2.94897
1,2-Dimethylbenzene	630.33	3734	-7.55426	1.47231	-3.25227	-2.31034
1,3-Dimethylbenzene	617.05	3537	-7.58536	1.38141	-3.20942	-2.28806
1,4-Dimethylbenzene	616.23	3514	-7.64630	1.54693	-3.29887	-2.31277
C₉ ALKYL BENZENES						
Propylbenzene	638.32	3200	-7.73858	1.52924	-3.54777	-2.95533
Isopropylbenzene	631.13	3209	-7.65952	1.64235	-4.00827	-1.61733
1-Methyl-2-ethylbenzene	647.15	3285	-7.78352	1.54270	-3.71131	-2.49542
1-Methyl-3-ethylbenzene	637.15	3150	-7.83482	1.51316	-3.74216	-2.41076
1-Methyl-4-ethylbenzene	638.15	3100	-7.79158	1.47860	-3.64029	-2.38585
1,2,3-Trimethylbenzene	664.47	3454	-7.69842	1.10514	-2.66696	-5.02803
1,2,4-Trimethylbenzene	649.17	3232	-7.76038	1.17517	-3.00669	-4.03845
1,3,5-Trimethylbenzene	637.35	3127	-7.84497	1.10695	-2.96605	-4.32177
C₁₀ ALKYL BENZENES						
Butylbenzene	660.53	2887	-7.99512	1.59746	-3.93544	-3.34619
sec-Butylbenzene	650.15	2906	-7.77306	1.35090	-3.35084	-3.94824
Isobutylbenzene	648.15	2827	-7.81937	1.53823	-3.83074	-2.62339
tert-Butylbenzene	645.15	2911	-7.79039	1.50554	-3.69164	-3.41631
1-Methyl-2-propylbenzene	662.15	2900	-7.91976	1.33674	-3.52723	-3.96953
1-Methyl-3-propylbenzene	654.15	2800	-7.98584	1.37023	-3.70601	-3.39507
1-Methyl-4-propylbenzene	656.15	2735	-7.95457	1.40356	-3.73764	-3.18778
1-Methyl-2-isopropylbenzene	656.15	2982	-7.92123	1.51543	-3.90488	-2.48094
1-Methyl-3-isopropylbenzene	648.15	2894	-7.96870	1.52540	-4.00532	-2.49046
1-Methyl-4-isopropylbenzene	651.15	2854	-7.94464	1.51979	-3.95591	-2.48226
1,2-Diethylbenzene	660.15	2888	-7.98372	1.55521	-4.07942	-2.58309
1,3-Diethylbenzene	653.15	2806	-8.04375	1.53630	-4.14678	-2.50603
1,4-Diethylbenzene	657.97	2803	-7.99571	1.49957	-3.99709	-2.45441
1,2-Dimethyl-3-ethylbenzene	676.15	3020	-7.96357	1.30957	-3.55145	-3.74225
1,2-Dimethyl-4-ethylbenzene	667.15	2935	-7.96235	1.17220	-3.24494	-4.69175
1,3-Dimethyl-2-ethylbenzene	671.15	3022	-7.94238	1.30898	-3.52206	-3.70273
1,3-Dimethyl-4-ethylbenzene	665.15	2885	-7.97507	1.31164	-3.58254	-3.40997
1,3-Dimethyl-5-ethylbenzene	655.15	2795	-7.98197	1.18033	-3.30818	-4.37736
1,4-Dimethyl-2-ethylbenzene	662.15	2825	-7.94240	1.25219	-3.40596	-3.72494
1,2,3,4-Tetramethylbenzene	693.15	3065	-7.97842	1.35326	-3.66884	-3.35344
1,2,3,5-Tetramethylbenzene	679.15	2985	-8.01039	1.22684	-3.44755	-4.03679
1,2,4,5-Tetramethylbenzene	678.15	3000	-8.02468	1.31524	-3.65780	-3.39429

TABLE 4

NORMAL BOILING POINTS and ACENTRIC FACTORS

Name	Normal Boiling Point						Acentric
	p= 101.325 kPa		760 mmHg		14.69595 psia		Factor
	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 ₆ and C ₇ ALKYL BENZENES							
Benzene	353.24	0.3206	80.09	0.04275	176.16	3.979	0.209
Toluene	383.78	0.3475	110.63	0.04633	231.14	4.312	0.263
C ₈ ALKYL BENZENES							
Ethylbenzene	409.34	0.3677	136.19	0.04902	277.14	4.563	0.302
1,2-Dimethylbenzene	417.58	0.3729	144.43	0.04972	291.97	4.628	0.311
1,3-Dimethylbenzene	412.27	0.3679	139.12	0.04905	282.41	4.566	0.326
1,4-Dimethylbenzene	411.51	0.3691	138.36	0.04921	281.05	4.581	0.322
C ₉ ALKYL BENZENES							
Propylbenzene	432.39	0.3859	159.24	0.05145	318.64	4.789	0.345
Isopropylbenzene	425.56	0.3811	152.41	0.05081	306.35	4.730	0.326
1-Methyl-2-ethylbenzene	438.33	0.3877	165.18	0.05168	329.33	4.811	0.355
1-Methyl-3-ethylbenzene	434.48	0.3837	161.33	0.05116	322.40	4.762	0.368
1-Methyl-4-ethylbenzene	435.17	0.3865	162.02	0.05152	323.63	4.796	0.362
1,2,3-Trimethylbenzene	449.27	0.3948	176.12	0.05264	349.01	4.900	0.367
1,2,4-Trimethylbenzene	442.53	0.3892	169.38	0.05189	336.89	4.830	0.377
1,3,5-Trimethylbenzene	437.89	0.3826	164.74	0.05101	328.54	4.749	0.399
C ₁₀ ALKYL BENZENES							
Butylbenzene	456.46	0.4024	183.31	0.05364	361.95	4.993	0.393
sec-Butylbenzene	446.49	0.3987	173.34	0.05315	344.01	4.948	0.367
Isobutylbenzene	445.94	0.3992	172.79	0.05322	343.02	4.955	0.364
tert-Butylbenzene	442.30	0.3954	169.15	0.05272	336.47	4.907	0.360
1-Methyl-2-propylbenzene	457.98	0.4024	184.83	0.05365	364.70	4.994	0.399
1-Methyl-3-propylbenzene	454.98	0.3990	181.83	0.05319	359.30	4.952	0.410
1-Methyl-4-propylbenzene	456.49	0.4031	183.34	0.05374	362.01	5.002	0.402
1-Methyl-2-isopropylbenzene	451.51	0.3973	178.36	0.05296	353.05	4.930	0.386
1-Methyl-3-isopropylbenzene	448.12	0.3936	174.97	0.05248	346.95	4.885	0.396
1-Methyl-4-isopropylbenzene	450.30	0.3972	177.15	0.05296	350.87	4.930	0.391
1,2-Diethylbenzene	456.61	0.4007	183.46	0.05343	362.23	4.973	0.397
1,3-Diethylbenzene	454.29	0.3973	181.14	0.05296	358.05	4.930	0.411
1,4-Diethylbenzene	456.94	0.4015	183.79	0.05353	362.82	4.983	0.403
1,2-Dimethyl-3-ethylbenzene	467.11	0.4062	193.96	0.05416	381.12	5.042	0.410
1,2-Dimethyl-4-ethylbenzene	462.93	0.4028	189.78	0.05370	373.61	4.999	0.419
1,3-Dimethyl-2-ethylbenzene	463.19	0.4037	190.04	0.05383	374.07	5.011	0.406
1,3-Dimethyl-4-ethylbenzene	461.59	0.4032	188.44	0.05376	371.20	5.005	0.412
1,3-Dimethyl-5-ethylbenzene	456.93	0.3991	183.78	0.05320	362.80	4.953	0.423
1,4-Dimethyl-2-ethylbenzene	460.09	0.4039	186.94	0.05384	368.49	5.012	0.409
1,2,3,4-Tetramethylbenzene	478.24	0.4150	205.09	0.05533	401.16	5.150	0.410
1,2,3,5-Tetramethylbenzene	471.20	0.4076	198.05	0.05434	388.49	5.058	0.425
1,2,4,5-Tetramethylbenzene	469.99	0.4066	196.84	0.05420	386.32	5.046	0.422

TABLE 5
VAPOUR PRESSURE of C₆ to C₈ ALKYL BENZENES

Units: kPa v. K

1	Benzene		Methylbenzene			
2	Toluene					
3	Ethylbenzene					
4	1,2-Dimethylbenzene		2-Methyltoluene		o-Xylene	
5	1,3-Dimethylbenzene		3-Methyltoluene		m-Xylene	
6	1,4-Dimethylbenzene		4-Methyltoluene		p-Xylene	
No.	1	2	3	4	5	6
T _c (K)	562.16	591.80	617.20	630.33	617.05	616.23
p _c (kPa)	4898	4106	3599	3734	3537	3514
T			p			
K			kPa			
630			3719.3			
625			3505.1			
620			3302.7			
615			3505.4	3110.7	3449.6	3461.1
610			3301.8	2928.3	3245.6	3255.2
605			3108.9	2754.8	3052.7	3060.8
600			2925.8	2589.7	2869.6	2876.7
595			2751.6	2432.7	2695.8	2702.1
590		4017.0	2586.0	2283.4	2530.7	2536.4
585		3780.0	2428.5	2141.3	2373.8	2379.0
580		3555.8	2278.7	2006.2	2224.7	2229.6
575		3342.9	2136.1	1877.8	2083.1	2087.8
570		3140.7	2000.6	1755.9	1948.6	1953.2
565		2948.5	1871.9	1640.1	1820.9	1825.4
560	4769.4	2765.8	1749.5	1530.2	1699.8	1704.3
555	4484.8	2592.0	1633.4	1426.1	1585.0	1589.4
550	4215.6	2426.9	1523.2	1327.4	1476.2	1480.6
545	3960.1	2270.0	1418.8	1233.9	1373.1	1377.6
540	3717.4	2121.0	1319.8	1145.5	1275.7	1280.2
535	3486.7	1979.5	1226.1	1062.0	1183.5	1188.1
530	3267.4	1845.3	1137.5	983.14	1096.5	1101.1
525	3059.0	1718.1	1053.9	908.78	1014.4	1019.1
520	2860.9	1597.6	974.88	838.74	937.05	941.71
515	2672.7	1483.6	900.42	772.84	864.22	868.89
510	2494.1	1375.7	830.30	710.91	795.74	800.41
505	2324.5	1273.9	764.36	652.80	731.44	736.08
500	2163.8	1177.7	702.43	598.35	671.14	675.74
495	2011.4	1087.1	644.34	547.40	614.68	619.22
490	1867.2	1001.8	589.94	499.80	561.88	566.35
485	1730.8	921.61	539.07	455.41	512.59	516.98
480	1601.9	846.30	491.57	414.07	466.65	470.93
475	1480.2	775.67	447.30	375.65	423.91	428.08
470	1365.4	709.55	406.12	340.00	384.21	388.25
465	1257.4	647.74	367.87	307.00	347.42	351.31
460	1155.7	590.06	332.43	276.51	313.38	317.12
455	1060.3	536.32	299.64	248.40	281.96	285.54
450	970.79	486.35	269.39	222.54	253.01	256.43
445	886.99	439.97	241.53	198.82	226.42	229.66
440	808.66	397.02	215.93	177.10	202.03	205.10
435	735.57	357.32	192.48	157.27	179.74	182.62
430	667.49	320.71	171.05	139.21	159.40	162.11
425	604.21	287.03	151.51	122.82	140.91	143.43
420	545.50	256.13	133.75	107.98	124.13	126.48
415	491.17	227.84	117.67	94.592	108.97	111.14
410	440.98	202.02	103.13	82.550	95.309	97.303
405	394.75	178.52	90.051	71.758	83.038	84.863
400	352.27	157.19	78.314	62.120	72.055	73.718

TABLE 5 continued
 VAPOUR PRESSURE of C_6 to C_8 ALKYL BENZENES continued

Units: kPa v. K

No.	1	2	3	4	5	6
continued						
T K	p kPa					
395	313.33	137.90	67.822	53.545	62.262	63.769
390	277.75	120.51	58.480	45.946	53.564	54.922
385	245.33	104.88	50.193	39.241	45.869	47.086
380	215.88	90.894	42.875	33.349	39.090	40.176
375	189.22	78.422	36.441	28.197	33.146	34.108
370	165.16	67.346	30.809	23.712	27.957	28.805
365	143.54	57.552	25.904	19.828	23.451	24.193
360	124.19	48.931	21.655	16.482	19.557	20.203
355	106.93	41.377	17.993	13.616	16.211	16.769
350	91.603	34.792	14.855	11.175	13.352	13.831
345	78.060	29.081	12.182	9.1095	10.923	11.331
340	66.149	24.157	9.9205	7.3723	8.8739	9.2188
335	55.727	19.934	8.0189	5.9215	7.1559	7.4452
330	46.656	16.336	6.4314	4.7186	5.7258	5.9664
325	38.807	13.290	5.1159	3.7287	4.5441	4.7425
320	32.056	10.729	4.0344	2.9206	3.5753	3.7375
315	26.287	8.5920	3.1526	2.2666	2.7877	2.9189
310	21.391	6.8217	2.4399	1.7419	2.1528	2.2579
305	17.265	5.3674	1.8691	1.3249	1.6458	1.7291
300	13.815	4.1829	1.4166	9.97E-1	1.2448	1.3102
295	10.953	3.2271	1.0614	7.41E-1	9.31E-1	9.82E-1
290	8.6003	2.4631	7.86E-1	5.45E-1	6.88E-1	7.27E-1
285	6.6836	1.8587	5.74E-1	3.95E-1	5.02E-1	
280	5.1374	1.3859	4.14E-1	2.83E-1	3.62E-1	
275		1.0202	2.94E-1	1.99E-1	2.57E-1	
270		7.41E-1	2.06E-1	1.38E-1	1.79E-1	
265		5.30E-1	1.42E-1	9.46E-2	1.24E-1	
260		3.74E-1	9.61E-2	6.35E-2	8.36E-2	
255		2.59E-1	6.38E-2	4.19E-2	5.55E-2	
250		1.77E-1	4.16E-2	2.71E-2	3.62E-2	
245		1.18E-1	2.65E-2		2.31E-2	
240		7.75E-2	1.66E-2		1.44E-2	
235		4.97E-2	1.01E-2		8.81E-3	
230		3.12E-2	5.99E-3		5.24E-3	
225		1.91E-2	3.46E-3		3.03E-3	
220		1.14E-2	1.94E-3			
215		6.59E-3	1.05E-3			
210		3.71E-3	5.53E-4			
205		2.02E-3	2.80E-4			
200		1.06E-3	1.36E-4			
195		5.34E-4	6.33E-5			
190		2.59E-4	2.81E-5			
185		1.20E-4	1.19E-5			
180		5.27E-5	4.74E-6			
T_f (K)	278.68	178.18	178.17	248	225	286

TABLE 6
VAPOUR PRESSURE of C₉ ALKYL BENZENES

Units: kPa v. K

7	Propylbenzene							
8	Isopropylbenzene							
				1-Phenylpropane				
				2-Phenylpropane		Cumene		
9	1-Methyl-2-ethylbenzene			2-Ethyltoluene				
10	1-Methyl-3-ethylbenzene			3-Ethyltoluene				
11	1-Methyl-4-ethylbenzene			4-Ethyltoluene				
12	1,2,3-Trimethylbenzene					Hemimelitene		
13	1,2,4-Trimethylbenzene					pseudoCumene		
14	1,3,5-Trimethylbenzene					Mesitylene		
No.								
T _c (K)	638.32	631.13	647.15	637.15	638.15	664.47	649.17	637.35
P _c (kPa)	3200	3209	3285	3150	3100	3454	3232	3127
T								
K								
660						3280.5		
655						3096.1		
650						2920.5		
645			3201.8			2753.3	3075.7	
640			3016.9			2593.9	2897.7	
635	3074.9		2841.9	3068.5	2984.0	2442.0	2728.6	3038.3
630	2895.8	3165.6	2675.8	2887.2	2808.8	2297.2	2567.7	2857.5
625	2726.2	2981.5	2518.0	2715.9	2643.0	2159.3	2414.8	2686.1
620	2565.3	2807.7	2368.1	2553.5	2485.6	2027.9	2269.2	2523.4
615	2412.4	2642.9	2225.5	2399.4	2336.2	1902.8	2130.7	2368.8
610	2267.1	2486.5	2089.9	2253.1	2194.3	1783.8	1998.9	2221.9
605	2129.0	2338.0	1960.9	2114.1	2059.4	1670.6	1873.7	2082.4
600	1997.8	2196.7	1838.4	1982.1	1931.2	1563.0	1754.6	1949.9
595	1873.0	2062.5	1721.9	1856.7	1809.5	1460.8	1641.4	1824.1
590	1754.5	1934.9	1611.3	1737.7	1693.8	1363.8	1534.0	1704.7
585	1641.9	1813.6	1506.2	1624.7	1584.0	1271.8	1432.1	1591.5
580	1535.0	1698.3	1406.5	1517.5	1479.9	1184.6	1335.5	1484.1
575	1433.6	1588.8	1312.0	1415.9	1381.1	1102.1	1243.9	1382.5
570	1337.4	1484.8	1222.4	1319.7	1287.4	1024.0	1157.2	1286.2
565	1246.2	1386.1	1137.5	1228.5	1198.7	950.18	1075.2	1195.2
560	1159.8	1292.6	1057.2	1142.2	1114.8	880.49	997.69	1109.3
555	1078.1	1203.9	981.34	1060.7	1035.4	814.77	924.52	1028.1
550	1000.9	1119.8	909.63	983.64	960.36	752.85	855.51	951.56
545	927.91	1040.3	841.97	910.93	889.54	694.59	790.49	879.46
540	859.04	965.16	778.20	842.38	822.77	639.84	729.31	811.60
535	794.11	894.15	718.14	777.81	759.86	588.44	671.80	747.82
530	732.97	827.13	661.67	717.08	700.67	540.27	617.81	687.94
525	675.45	763.96	608.62	660.01	645.04	495.17	567.20	631.81
520	621.42	704.47	558.86	606.45	592.83	453.01	519.82	579.24
515	570.73	648.53	512.24	556.26	543.89	413.67	475.52	530.10
510	523.23	595.99	468.64	509.29	498.07	377.01	434.18	484.22
505	478.79	546.71	427.92	465.39	455.25	342.91	395.65	441.45
500	437.27	500.55	389.95	424.44	415.29	311.23	359.80	401.65
495	398.55	457.39	354.60	386.29	378.06	281.87	326.51	364.68
490	362.50	417.10	321.75	350.82	343.43	254.71	295.64	330.38
485	328.99	379.54	291.29	317.90	311.29	229.62	267.08	298.64
480	297.90	344.59	263.09	287.39	281.50	206.50	240.70	269.32
475	269.11	312.14	237.03	259.19	253.95	185.24	216.40	242.28
470	242.51	282.06	213.01	233.17	228.52	165.73	194.04	217.40
465	217.98	254.24	190.92	209.21	205.11	147.87	173.53	194.57
460	195.41	228.57	170.65	187.21	183.60	131.55	154.76	173.65
455	174.69	204.93	152.09	167.04	163.88	116.70	137.62	154.54
450	155.71	183.22	135.15	148.61	145.85	103.20	122.01	137.13
445	138.38	163.32	119.71	131.81	129.41	90.967	107.83	121.30
440	122.60	145.13	105.70	116.53	114.45	79.918	94.986	106.95
435	108.26	128.56	93.013	102.68	100.89	69.967	83.388	93.986
430	95.269	113.50	81.561	90.166	88.635	61.032	72.947	82.302
425	83.542	99.853	71.255	78.888	77.585	53.036	63.577	71.807

TABLE 6 continued
VAPOUR PRESSURE of C₉ ALKYL BENZENES continued

Units: kPa v. K

No.	7	8	9	10	11	12	13	14
continued								
T K	p kPa							
420	72.987	87.528	62.014	68.760	67.658	45.905	55.197	62.412
415	63.520	76.435	53.756	59.697	58.770	39.569	47.729	54.031
410	55.057	66.483	46.404	51.616	50.842	33.960	41.097	46.581
405	47.521	57.588	39.883	44.437	43.796	29.015	35.232	39.984
400	40.836	49.668	34.123	38.086	37.559	24.673	30.065	34.165
395	34.930	42.645	29.056	32.489	32.060	20.878	25.533	29.055
390	29.734	36.442	24.619	27.580	27.234	17.574	21.575	24.587
385	25.184	30.989	20.751	23.292	23.016	14.714	18.135	20.698
380	21.218	26.216	17.397	19.566	19.349	12.249	15.160	17.329
375	17.778	22.059	14.501	16.344	16.175	10.137	12.600	14.426
370	14.809	18.457	12.016	13.573	13.444	8.3365	10.409	11.937
365	12.262	15.351	9.8952	11.202	11.106	6.8111	8.5444	9.8164
360	10.088	12.690	8.0954	9.1865	9.1154	5.5265	6.9674	8.0192
355	8.2444	10.422	6.5776	7.4825	7.4318	4.4519	5.6418	6.5057
350	6.6906	8.5013	5.3061	6.0514	6.0167	3.5591	4.5350	5.2397
345	5.3897	6.8852	4.2482	4.8578	4.8351	2.8226	3.6173	4.1878
340	4.3083	5.5347	3.3744	3.8692	3.8555	2.2197	2.8620	3.3202
335	3.4159	4.4142	2.6580	3.0565	3.0494	1.7302	2.2451	2.6102
330	2.6853	3.4915	2.0754	2.3937	2.3912	1.3360	1.7454	2.0337
325	2.0919	2.7378	1.6057	1.8577	1.8583	1.0215	1.3441	1.5697
320	1.6143	2.1272	1.2302	1.4279	1.4304	7.73E-1	1.0247	1.1996
315	1.2332	1.6369	9.33E-1	1.0866	1.0901	5.79E-1	7.73E-1	9.07E-1
310	9.32E-1	1.2469	7.00E-1	8.18E-1	8.22E-1	4.28E-1	5.77E-1	6.79E-1
305	6.97E-1	9.40E-1	5.19E-1	6.09E-1	6.13E-1	3.13E-1	4.25E-1	5.02E-1
300	5.15E-1	7.00E-1	3.80E-1	4.48E-1	4.52E-1	2.26E-1	3.10E-1	3.66E-1
295	3.76E-1	5.16E-1	2.75E-1	3.26E-1	3.29E-1	1.60E-1	2.23E-1	2.64E-1
290	2.70E-1	3.75E-1	1.97E-1	2.33E-1	2.36E-1	1.12E-1	1.58E-1	1.88E-1
285	1.92E-1	2.69E-1	1.38E-1	1.65E-1	1.67E-1	7.76E-2	1.10E-1	1.31E-1
280	1.34E-1	1.90E-1	9.59E-2	1.15E-1	1.17E-1	5.27E-2	7.57E-2	9.05E-2
275	9.25E-2	1.33E-1	6.55E-2	7.88E-2	8.03E-2	3.52E-2	5.12E-2	6.14E-2
270	6.26E-2	9.10E-2	4.39E-2	5.31E-2	5.43E-2	2.30E-2	3.40E-2	4.09E-2
265	4.17E-2	6.14E-2	2.89E-2	3.52E-2	3.61E-2	1.48E-2	2.21E-2	2.67E-2
260	2.72E-2	4.07E-2	1.87E-2	2.29E-2	2.35E-2	9.29E-3	1.41E-2	1.71E-2
255	1.74E-2	2.64E-2	1.19E-2	1.46E-2	1.50E-2	5.71E-3	8.84E-3	1.07E-2
250	1.09E-2	1.68E-2	7.35E-3	9.09E-3	9.40E-3	3.43E-3	5.40E-3	6.59E-3
245	6.68E-3	1.05E-2	4.45E-3	5.54E-3	5.75E-3		3.22E-3	3.94E-3
240	3.99E-3	6.40E-3	2.63E-3	3.30E-3	3.43E-3		1.87E-3	2.30E-3
235	2.32E-3	3.80E-3	1.51E-3	1.91E-3	2.00E-3		1.06E-3	1.30E-3
230	1.31E-3	2.20E-3	8.47E-4	1.08E-3	1.13E-3		5.80E-4	7.17E-4
225	7.21E-4	1.24E-3	4.60E-4	5.90E-4	6.21E-4			
220	3.83E-4	6.78E-4	2.42E-4	3.13E-4	3.31E-4			
215	1.97E-4	3.59E-4	1.23E-4	1.60E-4	1.70E-4			
210	9.75E-5	1.83E-4	5.99E-5	7.90E-5				
205	4.63E-5	9.03E-5	2.81E-5	3.75E-5				
200	2.11E-5	4.27E-5	1.26E-5	1.70E-5				
195	9.16E-6	1.93E-5	5.42E-6	7.37E-6				
190	3.78E-6	8.34E-6		3.04E-6				
185	1.48E-6	3.42E-6		1.19E-6				
180	5.43E-7	1.33E-6		4.36E-7				
175	1.87E-7							
T _f (K)	173	177	192	177	211	248	229	228

TABLE 7

VAPOUR PRESSURE of C₁₀ ALKYL BENZENES I

Units: kPa v. K

15	Butylbenzene	1-Phenylbutane					
16	sec-Butylbenzene	2-Phenylbutane					
17	Isobutylbenzene	1-Phenyl-2-methylpropane					
18	tert-Butylbenzene	2-Phenyl-2-methylpropane					
19	1-Methyl-2-propylbenzene	2-Propyltoluene					
20	1-Methyl-3-propylbenzene	3-Propyltoluene					
21	1-Methyl-4-propylbenzene	4-Propyltoluene					
No.	15	16	17	18	19	20	21
T _c (K)	660.53	650.15	648.15	645.15	662.15	654.15	656.15
p _c (kPa)	2887	2906	2827	2911	2900	2800	2735
T	p						
K	kPa						
660	2868.6				2826.8		
655	2701.9				2663.8		2697.3
650	2544.5	2900.8			2509.4	2662.7	2540.0
645	2395.4	2733.7	2722.5	2905.7	2362.7	2505.8	2391.1
640	2253.9	2575.8	2564.7	2737.1	2223.2	2357.2	2249.9
635	2119.5	2425.9	2415.2	2577.9	2090.5	2216.1	2115.8
630	1991.7	2283.4	2273.4	2427.0	1964.3	2082.1	1988.4
625	1870.4	2147.9	2138.6	2283.7	1844.3	1954.8	1867.3
620	1755.0	2018.9	2010.6	2147.5	1730.2	1833.9	1752.2
615	1645.4	1896.3	1888.8	2018.1	1621.7	1719.0	1642.8
610	1541.3	1779.6	1773.0	1895.0	1518.7	1609.9	1538.9
605	1442.5	1668.7	1663.0	1778.0	1420.8	1506.3	1440.3
600	1348.6	1563.3	1558.4	1666.8	1327.8	1408.0	1346.6
595	1259.6	1463.1	1459.0	1561.1	1239.7	1314.8	1257.7
590	1175.3	1367.9	1364.7	1460.7	1156.1	1226.4	1173.5
585	1095.3	1277.6	1275.1	1365.4	1076.9	1142.7	1093.7
580	1019.6	1191.9	1190.1	1275.0	1002.0	1063.5	1018.1
575	948.03	1110.8	1109.6	1189.2	931.06	988.55	946.56
570	880.34	1033.9	1033.3	1108.0	864.06	917.72	878.96
565	816.42	961.09	961.02	1031.0	800.81	850.85	815.11
560	756.10	892.28	892.69	958.21	741.16	787.77	754.87
555	699.24	827.29	828.11	889.37	684.95	728.33	698.09
550	645.70	765.96	767.15	824.36	632.06	672.38	644.62
545	595.34	708.15	709.64	763.02	582.34	619.77	594.33
540	548.04	653.71	655.46	705.19	535.67	570.37	547.10
535	503.65	602.51	604.47	650.75	491.91	524.03	502.78
530	462.07	554.41	556.55	599.55	450.93	480.63	461.25
525	423.15	509.29	511.56	551.47	412.62	440.03	422.40
520	386.79	467.02	469.38	506.36	376.85	402.11	386.10
515	352.87	427.48	429.89	464.11	343.52	366.75	352.25
510	321.28	390.54	392.98	424.58	312.49	333.83	320.71
505	291.90	356.09	358.53	387.67	283.67	303.23	291.39
500	264.64	324.01	326.43	353.26	256.95	274.84	264.18
495	239.38	294.20	296.57	321.22	232.22	248.55	238.97
490	216.02	266.54	268.84	291.45	209.37	224.25	215.67
485	194.46	240.92	243.15	263.84	188.30	201.83	194.16
480	174.62	217.25	219.38	238.28	168.93	181.20	174.36
475	156.38	195.42	197.45	214.66	151.15	162.24	156.17
470	139.66	175.32	177.24	192.90	134.86	144.88	139.49
465	124.38	156.87	158.68	172.87	119.99	129.00	124.24
460	110.44	139.97	141.66	154.50	106.44	114.53	110.33
455	97.754	124.52	126.10	137.68	94.124	101.36	97.682
450	86.249	110.45	111.90	122.32	82.966	89.427	86.205

TABLE 7 continued
 VAPOUR PRESSURE of C₁₀ ALKYL BENZENES I continued

Units: kPa v. K

No.	15	16	17	18	19	20	21
continued							
T K	p kPa						
445	75.843	97.651	98.990	108.34	72.885	78.633	75.823
440	66.459	86.054	87.279	95.641	63.805	68.902	66.461
435	58.024	75.574	76.690	84.143	55.652	60.157	58.045
430	50.467	66.133	67.144	73.765	48.357	52.324	50.503
425	43.721	57.655	58.567	64.427	41.851	45.332	43.769
420	37.719	50.069	50.886	56.054	36.070	39.113	37.778
415	32.402	43.303	44.033	48.573	30.954	33.603	32.468
410	27.708	37.293	37.942	41.913	26.443	28.741	27.780
405	23.583	31.975	32.548	36.007	22.484	24.468	23.659
400	19.974	27.288	27.792	30.791	19.023	20.728	20.051
395	16.830	23.175	23.617	26.204	16.012	17.471	16.907
390	14.105	19.582	19.967	22.189	13.405	14.647	14.181
385	11.754	16.459	16.792	18.689	11.159	12.212	11.828
380	9.7382	13.756	14.045	15.655	9.2350	10.122	9.8082
375	8.0181	11.431	11.678	13.038	7.5954	8.3385	8.0841
370	6.5593	9.4405	9.6521	10.793	6.2064	6.8255	6.6206
365	5.3296	7.7467	7.9269	8.8778	5.0370	5.5496	5.3859
360	4.2998	6.3142	6.4667	7.2539	4.0588	4.4806	4.3509
355	3.4432	5.1103	5.2388	5.8857	3.2462	3.5909	3.4890
350	2.7357	4.1052	4.2130	4.7406	2.5759	2.8556	2.7763
345	2.1557	3.2722	3.3621	3.7889	2.0271	2.2524	2.1914
340	1.6841	2.5869	2.6614	3.0037	1.5814	1.7615	1.7150
335	1.3038	2.0274	2.0889	2.3610	1.2225	1.3653	1.3302
330	1.00E0	1.5746	1.6250	1.8392	9.36E-1	1.0482	1.0221
325	7.59E-1	1.2112	1.2522	1.4192	7.09E-1	7.97E-1	7.78E-1
320	5.70E-1	9.22E-1	9.55E-1	1.0842	5.32E-1	5.99E-1	5.85E-1
315	4.23E-1	6.95E-1	7.21E-1	8.20E-1	3.94E-1	4.46E-1	4.36E-1
310	3.11E-1	5.18E-1	5.39E-1	6.13E-1	2.89E-1	3.28E-1	3.21E-1
305	2.25E-1	3.81E-1	3.98E-1	4.53E-1	2.09E-1	2.38E-1	2.33E-1
300	1.61E-1	2.77E-1	2.90E-1	3.30E-1	1.49E-1	1.71E-1	1.67E-1
295	1.14E-1	1.99E-1	2.09E-1	2.38E-1	1.05E-1	1.21E-1	1.18E-1
290	7.90E-2	1.40E-1	1.48E-1	1.69E-1	7.28E-2	8.40E-2	8.27E-2
285	5.41E-2	9.78E-2	1.04E-1	1.18E-1	4.97E-2	5.76E-2	5.68E-2
280	3.64E-2	6.71E-2	7.15E-2	8.15E-2	3.33E-2	3.89E-2	3.84E-2
275	2.41E-2	4.52E-2	4.84E-2	5.52E-2	2.20E-2	2.58E-2	2.55E-2
270	1.56E-2	3.00E-2	3.23E-2	3.68E-2	1.42E-2	1.68E-2	1.66E-2
265	9.94E-3	1.95E-2	2.11E-2	2.40E-2	9.02E-3	1.07E-2	1.06E-2
260	6.20E-3	1.24E-2	1.35E-2	1.54E-2	5.60E-3	6.71E-3	6.67E-3
255	3.77E-3	7.72E-3	8.51E-3	9.66E-3	3.39E-3	4.10E-3	4.09E-3
250	2.25E-3	4.70E-3	5.23E-3	5.92E-3	2.01E-3	2.45E-3	2.45E-3
245	1.30E-3	2.79E-3	3.14E-3	3.54E-3	1.16E-3	1.43E-3	1.43E-3
240	7.35E-4	1.61E-3	1.84E-3	2.07E-3	6.50E-4	8.08E-4	8.13E-4
235	4.03E-4	9.08E-4	1.05E-3	1.17E-3	3.54E-4	4.45E-4	4.49E-4
230	2.14E-4	4.95E-4	5.79E-4	6.46E-4	1.87E-4	2.37E-4	2.41E-4
225	1.10E-4	2.62E-4	3.11E-4	3.45E-4	9.53E-5	1.23E-4	1.25E-4
220	5.44E-5	1.33E-4		1.78E-4	4.68E-5	6.11E-5	6.24E-5
215	2.59E-5	6.56E-5		8.83E-5	2.21E-5	2.93E-5	3.01E-5
210	1.19E-5	3.09E-5				1.35E-5	1.39E-5
205	5.19E-6	1.40E-5				5.93E-6	
200	2.16E-6	6.02E-6				2.49E-6	
195	8.54E-7					9.91E-7	
190	3.19E-7						
T _f (K)	185	198	222	215	213	191	209

TABLE 8

VAPOUR PRESSURE of C₁₀ ALKYL BENZENES II

Units: kPa v. K

22	1-Methyl-2-isopropylbenzene	2-Isopropyltoluene	o-Cymene
23	1-Methyl-3-isopropylbenzene	3-Isopropyltoluene	m-Cymene
24	1-Methyl-4-isopropylbenzene	4-Isopropyltoluene	p-Cymene
25	1,2-Diethylbenzene		o-Diethylbenzene
26	1,3-Diethylbenzene		m-Diethylbenzene
27	1,4-Diethylbenzene		p-Diethylbenzene

No.	22	23	24	25	26	27
T _C (K)	656.15	648.15	651.15	660.15	653.15	657.97
p _C (kPa)	2982	2894	2854	2888	2806	2803
T K	p kPa					
660				2882.8		
655	2941.1			2715.2		2704.4
650	2770.5		2814.5	2557.1	2700.1	2546.4
645	2609.2	2785.0	2649.5	2407.3	2540.3	2396.7
640	2456.3	2620.4	2493.7	2265.1	2389.1	2254.8
635	2311.0	2464.7	2345.9	2130.1	2245.8	2120.0
630	2173.0	2317.1	2205.7	2001.7	2109.9	1991.9
625	2041.8	2177.0	2072.6	1879.7	1980.8	1870.3
620	1917.0	2044.0	1946.1	1763.7	1858.2	1754.6
615	1798.5	1917.7	1825.9	1653.5	1741.8	1644.8
610	1685.8	1797.8	1711.7	1548.8	1631.4	1540.5
605	1578.8	1683.9	1603.3	1449.4	1526.5	1441.4
600	1477.1	1575.8	1500.3	1355.1	1427.0	1347.4
595	1380.7	1473.2	1402.6	1265.6	1332.7	1258.2
590	1289.1	1375.9	1309.9	1180.7	1243.3	1173.7
585	1202.4	1283.7	1222.0	1100.3	1158.6	1093.6
580	1120.1	1196.3	1138.8	1024.1	1078.5	1017.8
575	1042.3	1113.6	1060.0	952.11	1002.7	946.11
570	968.68	1035.3	985.39	884.02	931.00	878.33
565	899.09	961.36	914.90	819.70	863.33	814.33
560	833.37	891.50	848.32	759.01	799.49	753.95
555	771.38	825.58	785.50	701.81	739.32	697.04
550	712.95	763.45	726.29	647.95	682.67	643.47
545	657.95	704.94	670.54	597.29	629.38	593.10
540	606.24	649.91	618.10	549.71	579.33	545.79
535	557.68	598.21	568.84	505.06	532.38	501.41
530	512.14	549.70	522.63	463.24	488.38	459.83
525	469.48	504.25	479.33	424.10	447.21	420.95
520	429.59	461.72	438.82	387.54	408.75	384.62
515	392.34	421.98	400.97	353.44	372.88	350.75
510	357.60	384.90	365.67	321.69	339.46	319.21
505	325.27	350.37	332.80	292.17	308.39	289.90
500	295.23	318.27	302.24	264.78	279.56	262.70
495	267.37	288.47	273.88	239.41	252.84	237.51
490	241.58	260.86	247.61	215.95	228.14	214.23
485	217.75	235.34	223.33	194.32	205.35	192.76
480	195.79	211.79	200.93	174.40	184.37	173.00
475	175.58	190.10	180.32	156.11	165.09	154.85
470	157.03	170.18	161.38	139.35	147.42	138.23
465	140.05	151.93	144.03	124.03	131.26	123.03
460	124.54	135.24	128.18	110.07	116.53	109.18
455	110.41	120.02	113.72	97.370	103.13	96.588
450	97.575	106.18	100.58	85.858	90.977	85.173

TABLE 8 continued
 VAPOUR PRESSURE of C₁₀ ALKYL BENZENES II continued

Units: kPa v. K						
No.	22	23	24	25	26	27
continued						
T K	p kPa					
445	85.948	93.629	88.665	75.452	79.986	74.854
440	75.447	82.282	77.896	66.074	70.077	65.555
435	65.993	72.054	68.193	57.649	61.171	57.202
430	57.509	62.865	59.478	50.107	53.194	49.724
425	49.921	54.637	51.676	43.378	46.074	43.053
420	43.159	47.295	44.718	37.397	39.743	37.123
415	37.156	40.769	38.535	32.101	34.134	31.872
410	31.848	34.989	33.061	27.431	29.184	27.241
405	27.172	29.893	28.236	23.330	24.836	23.174
400	23.072	25.417	24.000	19.744	21.032	19.618
395	19.493	21.504	20.298	16.624	17.719	16.523
390	16.383	18.099	17.078	13.922	14.848	13.842
385	13.694	15.150	14.290	11.593	12.373	11.531
380	11.381	12.610	11.890	9.5975	10.250	9.5501
375	9.4017	10.434	9.8341	7.8965	8.4399	7.8613
370	7.7183	8.5789	8.0830	6.4553	6.9047	6.4298
365	6.2947	7.0080	6.6003	5.2416	5.6109	5.2239
360	5.0985	5.6857	5.3528	4.2260	4.5275	4.2144
355	4.0999	4.5798	4.3101	3.3820	3.6264	3.3751
350	3.2720	3.6614	3.4443	2.6856	2.8822	2.6821
345	2.5906	2.9041	2.7308	2.1152	2.2721	2.1142
340	2.0341	2.2843	2.1472	1.6518	1.7759	1.6524
335	1.5831	1.7812	1.6736	1.2783	1.3757	1.2800
330	1.2208	1.3763	1.2926	9.80E-1	1.0557	9.82E-1
325	9.32E-1	1.0531	9.89E-1	7.44E-1	8.02E-1	7.46E-1
320	7.05E-1	7.98E-1	7.49E-1	5.59E-1	6.03E-1	5.61E-1
315	5.27E-1	5.98E-1	5.61E-1	4.15E-1	4.48E-1	4.17E-1
310	3.90E-1	4.43E-1	4.15E-1	3.05E-1	3.30E-1	3.07E-1
305	2.85E-1	3.24E-1	3.04E-1	2.21E-1	2.39E-1	2.23E-1
300	2.05E-1	2.35E-1	2.20E-1	1.58E-1	1.72E-1	1.60E-1
295	1.46E-1	1.67E-1	1.57E-1	1.12E-1	1.21E-1	1.13E-1
290	1.03E-1	1.18E-1	1.10E-1	7.77E-2	8.45E-2	7.88E-2
285	7.10E-2	8.16E-2	7.63E-2	5.32E-2	5.80E-2	5.41E-2
280	4.83E-2	5.57E-2	5.21E-2	3.59E-2	3.92E-2	3.66E-2
275	3.23E-2	3.74E-2	3.49E-2	2.38E-2	2.60E-2	2.43E-2
270	2.13E-2	2.46E-2	2.30E-2	1.55E-2	1.70E-2	1.59E-2
265	1.37E-2	1.59E-2	1.49E-2	9.88E-3	1.08E-2	1.01E-2
260	8.68E-3	1.01E-2	9.44E-3	6.17E-3	6.79E-3	6.36E-3
255	5.37E-3	6.28E-3	5.86E-3	3.78E-3	4.16E-3	3.90E-3
250	3.25E-3	3.81E-3	3.55E-3	2.26E-3	2.49E-3	2.34E-3
245	1.92E-3	2.26E-3	2.10E-3	1.31E-3	1.45E-3	1.37E-3
240	1.11E-3	1.30E-3	1.21E-3		8.27E-4	7.80E-4
235	6.19E-4	7.32E-4	6.82E-4		4.57E-4	4.32E-4
230	3.37E-4	3.99E-4	3.72E-4		2.45E-4	2.32E-4
225	1.77E-4	2.11E-4	1.96E-4		1.27E-4	
220	9.03E-5	1.08E-4	1.00E-4		6.39E-5	
215	4.43E-5	5.31E-5	4.94E-5		3.09E-5	
210	2.09E-5	2.51E-5	2.34E-5		1.43E-5	
205	9.46E-6		1.06E-5		6.37E-6	
200					2.70E-6	
195					1.09E-6	
190					4.16E-7	
T _f (K)	201	209	205	242	189	230