Virial Coefficients for Gaseous Hydrocarbons

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DIVISION OF APPLIED ORGANIC CHEMISTRY TECHNICAL PAPER NO. 1
COMMONWEALTH SCIENTIFIC AND INDUSTRIAL RESEARCH ORGANIZATION, AUSTRALIA 1974

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Division of Applied Organic Chemistry Technical Paper No. 1

Commonwealth Scientific and Industrial
Research Organization, Australia
1974

ISBN 0 643 00089 5

Printed by CSIRO, Melbourne

74.99-662

CSIRO Aust. Div. Appl. Organic Chem. Tech. Pap. No. 1, 1–42 (1974)

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Abstract

A compilation of second, third and, in some cases, fourth virial coefficients of the gaseous hydrocarbons is presented. Most of the values listed have been obtained from a re-analysis of the published experimental $p-V-T$ data. However, where the publications show only the values of virial coefficients, the present authors have included these in the compilation.

Virial Coefficients for Gaseous Hydrocarbons

Values of the first few virial coefficients in the virial equation of state for real gases and vapours are essential for testing intermolecular potential functions and theories of the nonadditivity of those functions.[1] However, for a large number of substances the spread of the experimental values of a particular virial coefficient at a particular temperature makes any detailed comparison with theory difficult. This remark applies especially to the third virial coefficient and to the investigation of nonadditive effects. The spread of values may be due in part to systematic errors in the measurements, but the major cause appears to be associated with the analysis of the experimental data.

Chen and Present[2] have recently analysed the available experimental isotherms for argon, krypton and xenon at a few low temperatures. They used a least squares procedure due to Michels *et al.*,[3] which consists of dividing the entire experimental range into several subintervals with successively higher densities. Each subinterval includes all the points of the previous subintervals. Polynomial fitting was carried out for each subinterval, and the lowest degree polynomial which began to show random scatter was taken to be the polynomial of best fit. The virial coefficients were then taken to be the means of the appropriate coefficients from the various polynomials of best fit.

We have used this method on published $p-V-T$ data for the hydrocarbons. For some sets of data, only the second virial coefficients gave a reasonably smooth temperature profile, while for others we were able to estimate both third and fourth virial coefficients. The results of this work are listed in Table 1. Also included in the table are values of virial coefficients reported by workers who did not publish their $p-V-T$ data. For this purpose we have drawn on the recent compilation of Dymond and Smith.[4]

References

[1] Mason, E. A., and Spurling, T. H. (1969). 'The Virial Equation of State.' (Pergamon: London.)
[2] Chen, C. T., and Present, R. D. (1972). *J. chem. Phys.* **57**, 757.
[3] Michels, A., Abels, J. C., Ten Seldam, C. A., and De Graaff, W. (1960). *Physica* **26**, 381.
[4] Dymond, J. H., and Smith, E. B. (1969). 'The Virial Coefficients of Gases.' (Clarendon Press: Oxford.)

Contents of Table 1

Table 1. Virial coefficients for gaseous hydrocarbons

Values rederived by the present authors are indicated by an asterisk

VIRIAL COEFFICIENTS FOR METHANE

T K	B 3 -1 CM MOL	C 6 -2 CM MOL	D 9 -3 CM MOL	REF. YEAR
108.45	-364.99			THOMAES 1960
	-361.54			THOMAES 1960
110.83	-330.10			BYRNE 1968
112.43	-319.90			BYRNE 1968
114.45	-307.80			BYRNE 1968
116.79	-295.50			BYRNE 1968
121.25	-274.50			BYRNE 1968
125.20	-267.97			THOMAES 1960
	-268.92			THOMAES 1960
126.58	-242.27	-20500		POPE 1973
128.84	-244.30			BYRNE 1968
131.93	-224.00	-13600		HOOVER 1968
135.99	-215.20	-1497		POPE 1973
136.75	-218.90			BYRNE 1968
144.28	-230.16	83452	-54.0+006	MUELLER 1961 *
	-221.00			MUELLER 1961
147.58	-185.00	1950		POPE 1973
148.28	-187.70			BYRNE 1968
149.10	-188.04			THOMAES 1960
	-187.64			THOMAES 1960
150.00	-169.10			EIZIO KANDA 1949
158.91	-161.51	3580		POPE 1973
162.29	-158.40			BYRNE 1968
172.05	-136.47	-7479	51.0+005	MUELLER 1961 *
	-153.50			MUELLER 1961
173.48	-137.63	4381		POPE 1973
178.41	-132.20			BYRNE 1968
186.40	-126.10			THOMAES 1960
	-126.20			THOMAES 1960
191.06	-116.31	4741		HOOVER 1968
191.10	-114.29	3990	60.0+003	POPE 1973
199.83	-106.04	5060	-18.0+004	MUELLER 1961 *
	-107.80			MUELLER 1961
200.00	-100.10			EIZIO KANDA 1949
	-106.12	4351		HOOVER 1968
202.49	-103.40			BYRNE 1968
203.16	-100.96	4518	-95.0+003	KVALNES 1931 *
	-98.69	2818	57.0+003	PAVLOVICH 1958 *
213.16	-88.48	2620	61.0+003	PAVLOVICH 1958 *
215.00	-92.59	4169		HOOVER 1968
221.10	-85.80			BYRNE 1968
223.16	-85.32	4256	-63.0+003	KVALNES 1931 *
	-83.87	2537	12.0+004	PAVLOVICH 1958 *
223.60	-82.62			THOMAES 1960
	-82.69			THOMAES 1960
227.60	-81.06	4091	-13.0+004	MUELLER 1961 *
	-81.70			MUELLER 1961
233.16	-72.96	1833	94.0+003	PAVLOVICH 1958 *
243.16	-68.49	2147	71.0+003	PAVLOVICH 1958 *
243.80	-70.30			BYRNE 1968
240.00	-72.72	3508		HOOVER 1968
248.16	-68.19	3515	-28.0+003	KVALNES 1931 *
249.30	-68.53			THOMAES 1960
	-68.38			THOMAES 1960
250.00	-63.14			EIZIO KANDA 1949
253.16	-66.86	3081	19.0+003	PAVLOVICH 1958 *
255.38	-63.85	3458	-93.0+003	MUELLER 1961 *
	-63.30			MUELLER 1961
263.16	-63.02	3311		PAVLOVICH 1958 *
273.15	-53.34	2605	10.0+003	HARRISON 1973 *
	-53.28	2670		HOOVER 1968
	-53.35	2635	63.0+002	SCHAMP 1958 *
	-53.36	2669	-75.0+002	SCHAMP 1958
	-53.43	2710		SCHAMP 1958
	-53.62	2880		SCHAMP 1958
273.16	-53.43	2626	24.0+003	DOUSLIN 1964 *
	-53.35	2620	50.0+002	DOUSLIN 1964
	-53.91			FREETH 1931
	-55.14	3280	-57.0+003	KEYES 1927 *
	-53.70	2619	35.0+003	KVALNES 1931 *
	-53.66	2674	76.0+002	MICHELS 1936 *
	-54.07	3047		MICHELS 1935
	-53.86	2870	-40.0+003	MICHELS 1936
	-56.84	2820	29.0+003	PAVLOVICH 1958 *
273.17	-53.70			BYRNE 1968
273.20	-54.10			GUNN 1958
283.16	-49.08	2456	27.0+003	MUELLER 1961 *
	-49.10			MUELLER 1961
293.16	-48.68	4524		FREETH 1931
	-46.49	2958	37.0+003	PAVLOVICH 1958 *
294.27	-44.75	2368	39.0+003	OLDS 1943 *
298.15	-42.74	2322	14.0+003	HARRISON 1973 *
	-42.79	2322	19.0+003	SCHAMP 1958 *
	-42.86	2441	-11.0+003	SCHAMP 1958
	-43.03	2510		SCHAMP 1958
	-43.26	2720		SCHAMP 1958

VIRIAL COEFFICIENTS FOR METHANE

T K	B 3 -1 CM MOL	C 6 -2 CM MOL	D 9 -3 CM MOL	REF. YEAR
298.16	-42.78	2314	26.0+003	DOUSLIN 1964 *
	-42.82	2370	50.0+002	DOUSLIN 1964
	-43.22	2094	59.0+003	KVALNES 1931 *
	-43.07	2366	19.0+003	MICHELS 1936 *
	-43.38	2624		MICHELS 1935
	-43.34	2620	-40.0+003	MICHELS 1936
300.00	-43.32			EIZIO KANDA 1949
303.15	-40.86	2292	16.0+003	HARRISON 1973 *
303.16	-40.93	2295	33.0+003	DOUSLIN 1964 *
	-40.91	2320	50.0+002	DOUSLIN 1964
	-38.20			HAMANN 1955
310.94	-38.10	1956	54.0+003	OLDS 1943 *
313.16	-37.42	2306		PAVLOVICH 1958 *
323.15	-34.24	2156	20.0+003	HARRISON 1973 *
	-34.29	2191	17.0+003	SCHAMP 1958 *
	-34.39	2328	-26.0+003	SCHAMP 1958
	-34.42	2310		SCHAMP 1958
	-34.58	2450		SCHAMP 1958
323.16	-34.19	2096	28.0+003	DOUSLIN 1964 *
	-34.23	2150	13.0+003	DOUSLIN 1964
	-35.20			HAMANN 1955
	-35.41	2537	-13.0+003	KEYES 1927 *
	-32.74	1582	67.0+003	KVALNES 1931 *
	-34.37	2125	29.0+003	MICHELS 1936 *
	-34.72	2430		MICHELS 1935
	-34.62	2370	-29.0+003	MICHELS 1936
327.60	-32.71	1749	65.0+003	OLDS 1943 *
333.16	-33.90			HAMANN 1955
	-31.11	1855	47.0+003	PAVLOVICH 1958 *
343.16	-28.50			HAMANN 1955
344.27	-27.78	1558	77.0+003	OLDS 1943 *
348.15	-26.97	1913	36.0+003	HARRISON 1973 *
	-27.16	2038	23.0+003	SCHAMP 1958 *
	-27.27	2184	-23.0+003	SCHAMP 1958
	-27.29	2170		SCHAMP 1958
	-27.45	2300		SCHAMP 1958
348.16	-27.09	1971	27.0+003	DOUSLIN 1964 *
	-27.06	1975	21.0+003	DOUSLIN 1964
	-27.43	2033	30.0+003	MICHELS 1936 *
	-27.87	2410		MICHELS 1935
	-27.73	2335	-43.0+003	MICHELS 1936
350.00	-26.80			EIZIO KANDA 1949
360.94	-23.62	1540	74.0+003	OLDS 1943 *
363.16	-22.70			HAMANN 1955
373.15	-20.94	1803	37.0+003	HARRISON 1973 *
	-21.18	1961	21.0+003	SCHAMP 1958 *
	-21.24	2061	-19.0+003	SCHAMP 1958
	-21.26	2030		SCHAMP 1958
	-21.26	2010		SCHAMP 1958
373.16	-21.05	1871	26.0+003	DOUSLIN 1964 *
	-21.00	1834	27.0+003	DOUSLIN 1964
	-22.55	2526	-46.0+003	KEYES 1927 *
	-21.14	1505	83.0+003	KVALNES 1931 *
	-21.31	1866	38.0+003	MICHELS 1936 *
	-21.74	2232		MICHELS 1935
	-21.58	2144	-29.0+003	MICHELS 1936
377.60	-19.81	1513	71.0+003	OLDS 1943 *
383.16	-19.70			HAMANN 1955
394.27	-16.35	1468	71.0+003	OLDS 1943 *
398.15	-15.82	1696	43.0+003	HARRISON 1973 *
	-15.93	1797	26.0+003	SCHAMP 1958 *
	-15.99	1877	18.0+002	SCHAMP 1958
	-15.99	1880		SCHAMP 1958
	-15.93	1800		SCHAMP 1958
398.16	-15.89	1732	35.0+003	DOUSLIN 1964 *
	-15.87	1727	31.0+003	DOUSLIN 1964
	-16.14	1767	54.0+003	MICHELS 1936 *
	-16.09	1750		MICHELS 1935
	-16.36	1999	-17.0+003	MICHELS 1936
400.00	-15.33			EIZIO KANDA 1949
410.94	-13.27	1466	67.0+003	OLDS 1943 *
423.15	-11.34	1605	46.0+003	HARRISON 1973 *
	-11.29	1595	50.0+003	SCHAMP 1958 *
	-11.24	1607	45.0+003	SCHAMP 1958
	-11.41	1760		SCHAMP 1958
	-11.24	1560		SCHAMP 1958
423.16	-11.40			BEATTIE 1942
	-11.44	1658	38.0+003	DOUSLIN 1964 *
	-11.40	1640	35.0+003	DOUSLIN 1964
	-12.97	2212	82.0+002	KEYES 1927 *
	-11.79	1462	93.0+003	KVALNES 1931 *
	-11.43	1590	65.0+003	MICHELS 1936 *
	-11.46	1656		MICHELS 1935
	-11.62	1767	11.0+003	MICHELS 1936
427.60	-10.48	1475	64.0+003	OLDS 1943 *
444.27	-7.88	1451	63.0+003	OLDS 1943 *

VIRIAL COEFFICIENTS FOR METHANE

T K	B 3 -1 CM MOL	C 6 -2 CM MOL	D 9 -3 CM MOL	REF. YEAR	
444.30	-8.10			GUNN 1958	
448.15	-7.46	1532	49.0+003	HARRISON 1973	*
448.16	-7.50			BEATTIE 1942	
	-7.54	1566	45.0+003	DOUSLIN 1964	*
	-7.56	1585	38.0+003	DOUSLIN 1964	
450.00	-3.91			EIZIO KANDA 1949	
460.94	-5.63	1457	60.0+003	OLDS 1943	*
473.15	-4.08	1479	51.0+003	HARRISON 1973	*
473.16	-4.00			BEATTIE 1942	
	-4.14	1501	53.0+003	DOUSLIN 1964	*
	-4.16	1514	43.0+003	DOUSLIN 1964	
	-5.54	2071	69.0+002	KEYES 1927	*
	-4.68	1384	13.0+004	KVALNES 1931	*
477.60	-3.60			GUNN 1958	
	-3.50	1437	59.0+003	OLDS 1943	*
494.27	-1.55	1426	59.0+003	OLDS 1943	*
498.15	-1.05	1415	54.0+003	HARRISON 1973	*
498.16	-0.90			BEATTIE 1942	
	-1.11	1419	58.0+003	DOUSLIN 1964	*
	-1.16	1465	48.0+003	DOUSLIN 1964	
510.90	0.00			GUNN 1958	
510.94	0.30	1401	59.0+003	OLDS 1943	*
523.15	1.63	1358	61.0+003	HARRISON 1973	*
523.16	1.90			BEATTIE 1942	
	1.58	1352	65.0+003	DOUSLIN 1964	*
	1.49	1420	52.0+003	DOUSLIN 1964	
548.15	4.04	1319	63.0+003	HARRISON 1973	*
548.16	4.50			BEATTIE 1942	
	3.97	1312	70.0+003	DOUSLIN 1964	*
	3.89	1385	55.0+003	DOUSLIN 1964	
573.15	6.12	1293	65.0+003	HARRISON 1973	*
573.16	6.80			BEATTIE 1942	
	6.06	1282	70.0+003	DOUSLIN 1964	*
	5.98	1360	57.0+003	DOUSLIN 1964	
598.15	8.05	1275	66.0+003	HARRISON 1973	*
598.16	7.97	1267	77.0+003	DOUSLIN 1964	*
	7.88	1345	58.0+003	DOUSLIN 1964	
623.15	9.89	1241	68.0+003	HARRISON 1973	*
623.16	9.76	1243	81.0+003	DOUSLIN 1964	*
	9.66	1330	59.0+003	DOUSLIN 1964	

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VIRIAL COEFFICIENTS FOR ETHANE

T	B	C	D	REF. YEAR	
K	3 -1 CM MOL	6 -2 CM MOL	9 -3 CM MOL		
191.86	-498.00			EUCKEN 1933	
193.65	-487.00			EUCKEN 1933	
201.61	-446.00			EUCKEN 1933	
202.17	-443.00			EUCKEN 1933	
209.53	-368.66	-58700		POPE 1973	
211.33	-404.00			EUCKEN 1933	
213.34	-395.00			EUCKEN 1933	
215.00	-340.63	-71100		HOOVER 1968	
222.58	-360.00			EUCKEN 1933	
224.50	-354.00			EUCKEN 1933	
233.41	-325.00			EUCKEN 1933	
236.67	-316.00			EUCKEN 1933	
238.77	-287.05	3704		POPE 1973	
240.00	-276.50	-2570		HOOVER 1968	
244.70	-293.00			EUCKEN 1933	
247.00	-287.00			EUCKEN 1933	
254.81	-252.27	8504		POPE 1973	
257.09	-262.00			EUCKEN 1933	
259.03	-258.00			EUCKEN 1933	
273.15	-222.00	10467	53.0+003	DOUSLIN 1973	*
	-222.20	10360		DOUSLIN 1973	
	-223.41	11373		HOOVER 1968	
	-219.38	10360		POPE 1973	
273.16	-222.84	11710		MICHELS 1939	*
	-223.00	11710		MICHELS 1939	
	-222.17	11847	-52.0+004	MICHELS 1954	*
	-221.46	10607		MICHELS 1954	
	-221.00			RIGBY 1963	
273.20	-227.50			EUCKEN 1933	
	-222.20			GUNN 1958	
	-221.46	10607		MICHELS 1954	
291.96	-220.00			LAMBERT 1949	
293.16	-191.00			RIGBY 1963	
294.27	-203.99	46782	-14.0+006	SAGE 1937	*
298.15	-185.42	10312	13.0+004	DOUSLIN 1973	*
	-185.80	10600		DOUSLIN 1973	
	-185.61	10738		MICHELS 1954	
298.16	-191.00			BEATTIE 1935	
	-190.46	14247	-60.0+004	BEATTIE 35/39	*
	-187.13	11830	-18.0+004	MICHELS 1939	*
	-187.00	11070		MICHELS 1939	
	-184.88	10377	-12.0+004	MICHELS 1954	*
298.20	-186.90			GUNN 1958	

VIRIAL COEFFICIENTS FOR ETHANE

T K	B 3 -1 CM MOL	C 6 -2 CM MOL	D 9 -3 CM MOL	REF. YEAR
298.20	-184.65	9852	26.0+004	MICHELS 1954
299.83	-195.03	34254	-67.0+005	SAGE 1937 *
303.15	-178.91	9921	18.0+004	DOUSLIN 1973 *
	-179.40	10400		DOUSLIN 1973
303.16	-175.80			HAMANN 1953
305.38	-185.33	23479	-25.0+005	SAGE 1937 *
306.06	-175.27	10030	90.0+003	POPE 1973
308.16	-170.00			RIGBY 1963
310.94	-165.80	8486	29.0+004	REAMER 1944 *
	-164.90	9100		REAMER 1944
	-180.06	28873	-47.0+005	SAGE 1937 *
311.10	-171.37	9811	61.0+004	BESSERER 1973 *
316.49	-176.29	26554	-33.0+005	SAGE 1937 *
319.26	-190.00			LAMBERT 1949
322.76	-156.91	9671		MICHELS 1954
323.15	-156.15	9070	24.0+004	DOUSLIN 1973 *
	-156.70	9650		DOUSLIN 1973
323.16	-160.00			BEATTIE 1935
	-159.29	11377	-56.0+004	BEATTIE 35/39 *
	-144.80			HAMANN 1953
	-146.40			HAMANN 1953
	-158.27	10678	-15.0+004	MICHELS 1939 *
	-157.00	9660		MICHELS 1939
	-157.76	10212	-28.0+003	MICHELS 1954 *
	-152.00			RIGBY 1963
323.20	-157.50			GUNN 1958
	-157.67	10123	-68.0+002	MICHELS 1954
327.60	-162.82	29159	-52.0+005	SAGE 1937 *
329.46	-140.00			LAMBERT 1949
333.16	-139.90			HAMANN 1953
341.36	-170.00			LAMBERT 1949
343.16	-135.30			HAMANN 1953
344.27	-134.18	7649	23.0+004	REAMER 1944 *
	-132.50	8300		REAMER 1944
	-144.22	22733	-32.0+005	SAGE 1937 *
344.49	-136.96	9061	-11.0+004	BESSERER 1973 *
347.66	-133.29	8576		MICHELS 1954
348.15	-132.51	7907	28.0+004	DOUSLIN 1973 *
	-133.00	8660	10.0+002	DOUSLIN 1973
348.16	-139.00			BEATTIE 1935
	-136.90	10509	-26.0+004	BEATTIE 35/39 *
	-125.00			HAMANN 1953
	-135.01	9918	-28.0+004	MICHELS 1954 *
348.20	-134.92	9832	-26.0+004	MICHELS 1954
350.76	-140.00			LAMBERT 1949
358.16	-121.50			HAMANN 1953
360.94	-125.02	15340	-16.0+005	SAGE 1937 *
363.16	-115.80			HAMANN 1953
372.38	-107.12	6508	65.0+003	BESSERER 1973 *
372.53	-114.06	7709		MICHELS 1954
373.15	-113.09	6989	30.0+004	DOUSLIN 1973 *
	-113.60	7720	-70.0+002	DOUSLIN 1973
373.16	-122.00			BEATTIE 1935
	-118.58	9649	-22.0+004	BEATTIE 35/39 *
	-111.00			HAMANN 1953
	-115.53	9053	-34.0+004	MICHELS 1954 *
373.20	-115.45	8985	-32.0+004	MICHELS 1954
377.60	-109.40			GUNN 1958
	-109.83	7347	16.0+004	REAMER 1944 *
	-110.00	7400		REAMER 1944
	-110.91	10243	-43.0+004	SAGE 1937 *
383.16	-105.30			HAMANN 1953
393.16	-98.30			HAMANN 1953
394.05	-99.63	6218	60.0+004	BESSERER 1973 *
394.27	-93.03	4777	-12.0+004	SAGE 1937 *
397.85	-97.72	7001		MICHELS 1954
398.15	-96.75	6119	33.0+004	DOUSLIN 1973 *
	-97.30	6960	40.0+002	DOUSLIN 1973
398.16	-108.00			BEATTIE 1935
	-102.27	8727	-17.0+004	BEATTIE 35/39 *
	-103.30			HAMANN 1953
	-99.69	8695	-40.0+004	MICHELS 1954 *
398.20	-99.28	8248	-33.0+004	MICHELS 1954
410.90	-89.60			GUNN 1958
410.94	-89.94	6634	10.0+004	REAMER 1944 *
	-90.40	6600		REAMER 1944
413.16	-89.10			HAMANN 1953
422.71	-83.91	6376		MICHELS 1954
423.15	-83.05	5506	37.0+004	DOUSLIN 1973 *
	-83.60	6260	60.0+002	DOUSLIN 1973
423.16	-94.00			BEATTIE 1935
	-88.62	7268	-17.0+002	BEATTIE 35/39 *
	-83.50			HAMANN 1953
	-85.46	7953	-42.0+004	MICHELS 1954 *
423.20	-84.92	7279	-26.0+004	MICHELS 1954
444.27	-72.99	5881	81.0+003	REAMER 1944 *

VIRIAL COEFFICIENTS FOR ETHANE

T K	B 3 -1 CM MOL	C 6 -2 CM MOL	D 9 -3 CM MOL	REF. YEAR	
444.27	-74.20	6000		REAMER 1944	
444.30	-74.00			GUNN 1958	
448.15	-71.11	4902	39.0+004	DOUSLIN 1973	*
	-71.70	5680	31.0+003	DOUSLIN 1973	
448.16	-86.00			BEATTIE 1935	
	-78.04	7066	71.0+003	BEATTIE 35/39	*
473.15	-60.66	4174	54.0+004	DOUSLIN 1973	*
	-61.50	5290	44.0+003	DOUSLIN 1973	
473.16	-77.00			BEATTIE 1935	
	-71.09	8138	-12.0+004	BEATTIE 35/39	*
477.60	-61.60			GUNN 1958	
	-58.67	5070	75.0+003	REAMER 1944	*
	-59.90	5400		REAMER 1944	
498.15	-51.67	3776	60.0+004	DOUSLIN 1973	*
	-52.40	4840	80.0+003	DOUSLIN 1973	
498.16	-71.00			BEATTIE 1935	
	-63.55	8406	-17.0+004	BEATTIE 35/39	*
510.90	-51.00			GUNN 1958	
510.94	-46.17	4773	52.0+003	REAMER 1944	*
	-47.40	4700		REAMER 1944	
523.15	-43.46	3125	66.0+004	DOUSLIN 1973	*
	-44.50	4500	11.0+004	DOUSLIN 1973	
523.16	-60.00			BEATTIE 1935	
	-56.46	8712	-25.0+004	BEATTIE 35/39	*
548.15	-36.32	2797	73.0+004	DOUSLIN 1973	*
	-37.30	4130	15.0+004	DOUSLIN 1973	
573.15	-29.59	1969	11.0+005	DOUSLIN 1973	*
	-30.90	3860	17.0+004	DOUSLIN 1973	
598.15	-23.40	1040	15.0+005	DOUSLIN 1973	*
	-25.00	3540	21.0+004	DOUSLIN 1973	
623.15	-17.87	479	18.0+005	DOUSLIN 1973	*
	-19.60	3270	23.0+004	DOUSLIN 1973	

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VIRIAL COEFFICIENTS FOR PROPANE

T K	B 3 -1 CM MOL	C 6 -2 CM MOL	D 9 -3 CM MOL	REF. YEAR	
244.00	-610.00			KAPALLO 1963	
273.00	-477.00			KAPALLO 1963	
273.16	-470.00			JESSEN 1938	
294.27	-417.56	-10509		SAGE 1934	*
295.21	-407.90			BOTTOMLEY 1950	
295.40	-399.00			MCGLASHAN 1962	
297.00	-394.00			KAPALLO 1963	
303.16	-382.04	62760	55.0+006	DESCHNER 1940	*
	-384.00			DESCHNER 1940	
	-395.00			KRETSCHMER 1951	
306.50	-369.00			MCGLASHAN 1962	
310.90	-335.80			GUNN 1958	
310.94	-335.49	-54120	44.0+006	REAMER 1949	*
	-330.00	-65000		REAMER 1949	
	-381.80	861	69.0+006	SAGE 1934	*
317.60	-339.00			MCGLASHAN 1962	
321.00	-340.00			KAPALLO 1963	
323.16	-329.62	22474		CHERNEY 1949	*
	-325.00			JESSEN 1938	
327.60	-324.00			MCGLASHAN 1962	
	-305.44	-23530	37.0+006	REAMER 1949	*
	-306.00	-14000		REAMER 1949	
	-353.45	59714	31.0+006	SAGE 1934	*
337.80	-299.00			MCGLASHAN 1962	
344.27	-280.15	-1725	14.0+006	REAMER 1949	*
	-280.60	2000		REAMER 1949	
	-316.71	42546		SAGE 1934	*
344.30	-280.40			GUNN 1958	
347.90	-274.00			MCGLASHAN 1962	
348.16	-289.13	29978		DESCHNER 1940	*
	-293.00			DESCHNER 1940	
357.90	-265.00			MCGLASHAN 1962	
360.94	-256.06	7413	63.0+005	REAMER 1949	*
	-256.80	13000		REAMER 1949	
	-283.74	28277	28.0+005	SAGE 1934	*
368.20	-244.00			MCGLASHAN 1962	
369.97	-245.58	19450		BEATTIE 1937	*
	-260.00			BEATTIE 1937	
373.16	-241.82	15892	33.0+005	BEATTIE 1937	*
	-247.00			BEATTIE 1937	
	-240.15	19119	29.0+004	CHERNEY 1949	*
	-245.98	19257		DESCHNER 1940	*
	-256.00			DESCHNER 1940	
377.60	-235.90			GUNN 1958	
	-234.95	12434	45.0+005	REAMER 1949	*
	-234.60	9000		REAMER 1949	
	-254.72	14521	58.0+005	SAGE 1934	*
377.70	-229.00			MCGLASHAN 1962	
380.96	-225.18	18289	47.0+004	DESCHNER 1940	*
388.50	-213.00			MCGLASHAN 1962	
398.16	-208.26	15554	19.0+005	BEATTIE 1937	*
	-211.00			BEATTIE 1937	
	-207.21	16920	21.0+004	CHERNEY 1949	*
	-209.79	17156		DESCHNER 1940	*
	-224.00			DESCHNER 1940	
400.10	-201.00			MCGLASHAN 1962	
410.94	-199.07	20004	43.0+005	REAMER 1949	*
	-199.60	25000		REAMER 1949	
412.90	-182.00			MCGLASHAN 1962	
423.16	-181.48	14963	12.0+005	BEATTIE 1937	*
	-183.00			BEATTIE 1937	
	-187.36	16799		DESCHNER 1940	*
	-197.00			DESCHNER 1940	
444.27	-167.93	19188	39.0+005	REAMER 1949	*
	-168.40	23000		REAMER 1949	
444.30	-167.00			GUNN 1958	
448.16	-159.30	14619	61.0+004	BEATTIE 1937	*
	-160.00			BEATTIE 1937	
473.16	-140.04	14368	97.0+003	BEATTIE 1937	*
	-139.00			BEATTIE 1937	
	-147.44	15428		DESCHNER 1940	*
	-155.00			DESCHNER 1940	
477.60	-141.40	18124	76.0+004	REAMER 1949	*
	-142.00	21000		REAMER 1949	
498.16	-122.45	13091	22.0+003	BEATTIE 1937	*
	-121.00			BEATTIE 1937	
510.90	-117.20			GUNN 1958	
510.94	-118.19	16365	84.0+004	REAMER 1949	*
	-119.00	23000		REAMER 1949	
523.16	-109.57	12776		BEATTIE 1937	*
	-109.00			BEATTIE 1937	
526.38	-110.70	13839	55.0+004	DESCHNER 1940	*
	-108.00			DESCHNER 1940	
548.16	-97.55	12631		BEATTIE 1937	*
	-96.00			BEATTIE 1937	
570.46	-91.89	12539	11.0+005	DESCHNER 1940	*

VIRIAL COEFFICIENTS FOR PROPANE

T	B	C	D	REF. YEAR
	3 -1	6 -2	9 -3	
K	CM MOL	CM MOL	CM MOL	
570.46	-89.00			DESCHNER 1940
609.32	-85.19	9373	14.0+006	DESCHNER 1940 *

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I. E. C., 32, 836, 1940.

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I. E. C., 41, 482, 1949.

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VIRIAL COEFFICIENTS FOR N-BUTANE.

T K	B 3 -1 CM MOL	C 6 -2 CM MOL	D 9 -3 CM MOL	REF.	YEAR	
244.00	-1230.00			KAPALLO	1963	
273.06	-897.00			BOTTOMLEY	1964	
273.40	-923.00			KAPALLO	1963	
282.30	-862.00			KAPALLO	1963	
283.16	-881.00			TRIPP	1962	
	-846.00			TRIPP	1962	
	-862.00			TRIPP	1962	
	-862.00			TRIPP	1962	
296.40	-720.00			MCGLASHAN	1962	
297.00	-758.00			KAPALLO	1963	
297.14	-735.00			BOTTOMLEY	1964	
303.04	-745.00			TRIPP	1962	
	-715.00			TRIPP	1962	
	-691.00			TRIPP	1962	
	-695.00			TRIPP	1962	
303.16	-761.00			KRETSCHMER	1951	
305.60	-718.00			KAPALLO	1963	
307.50	-667.00			MCGLASHAN	1962	
310.94	-742.80	610761		KAY	1940	*
	-707.60	243389	73.0+007	OLDS	1944	*
	-660.61	346169	-21.0+008	SAGE	1937	*
312.00	-674.00			KAPALLO	1963	
318.20	-619.00			MCGLASHAN	1962	
321.00	-635.00			KAPALLO	1963	
323.16	-606.00			BOTTOMLEY	1964	
323.21	-641.00			TRIPP	1962	
	-619.00			TRIPP	1962	
	-599.00			TRIPP	1962	
	-602.00			TRIPP	1962	
325.68	-595.00			BOTTOMLEY	1964	
327.60	-616.33	382167	-10.0+008	SAGE	1937	*
328.90	-568.00			MCGLASHAN	1962	
337.80	-533.00			MCGLASHAN	1962	
338.72	-585.19	303558		KAY	1940	*
344.27	-544.20	141233	13.0+007	OLDS	1944	*
	-567.57	361492	-64.0+007	SAGE	1937	*
344.30	-505.70			GUNN	1958	
346.46	-522.00			BOTTOMLEY	1964	
348.40	-501.00			MCGLASHAN	1962	
358.40	-466.00			MCGLASHAN	1962	
360.94	-532.67	378400	-45.0+007	SAGE	1937	*
366.49	-502.69	258767		KAY	1940	*
368.25	-443.49	37238	42.0+005	JONES	1967	*

T K	B 3 -1 CM MOL	C 6 -2 CM MOL	D 9 -3 CM MOL	REF.	YEAR	
368.25	-444.20			JONES	1967	
368.40	-440.00			MCGLASHAN	1962	
370.86	-449.00			BOTTOMLEY	1964	
373.22	-427.53	37269	-11.0+005	JONES	1967	*
	-429.50			JONES	1967	
377.60	-424.90			GUNN	1958	
	-433.21	72643	20.0+006	OLDS	1944	*
	-501.54	383208	-35.0+007	SAGE	1937	*
377.90	-410.00			MCGLASHAN	1962	
378.18	-418.30	42833	-28.0+005	JONES	1967	*
	-418.00			JONES	1967	
387.60	-383.00			MCGLASHAN	1962	
394.27	-421.99	188944		KAY	1940	*
	-472.28	345077	-25.0+007	SAGE	1937	*
397.34	-389.00			BOTTOMLEY	1964	
398.14	-370.02	33446	58.0+005	JONES	1967	*
	-376.00			JONES	1967	
400.40	-353.00			MCGLASHAN	1962	
410.90	-353.60			GUNN	1958	
410.94	-358.02	37795	27.0+006	OLDS	1944	*
413.40	-322.00			MCGLASHAN	1962	
422.05	-333.38	40553		KAY	1940	*
423.14	-325.61	28754	21.0+006	JONES	1967	*
	-326.10			JONES	1967	
423.16	-328.75	40395	-11.0+005	BEATTIE	1939	*
	-328.70			BEATTIE	1942	
426.37	-331.00			BOTTOMLEY	1964	
427.60	-322.10			GUNN	1958	
444.27	-289.98	26128	11.0+006	OLDS	1944	*
444.30	-293.40			GUNN	1958	
448.16	-286.14	32903	16.0+005	BEATTIE	1939	*
	-287.30			BEATTIE	1942	
448.18	-286.24	44337	-13.0+006	JONES	1967	*
	-284.80			JONES	1967	
449.83	-294.38	41325		KAY	1940	*
460.90	-272.20			GUNN	1958	
473.16	-252.71	30957	86.0+004	BEATTIE	1939	*
	-254.20			BEATTIE	1942	
473.21	-255.50	40315	27.0+005	JONES	1967	*
	-256.30			JONES	1967	
477.60	-245.90			GUNN	1958	
	-257.05	38523		KAY	1940	*
	-237.28	14967	89.0+005	OLDS	1944	*

VIRIAL COEFFICIENTS FOR N-BUTANE.

T	B	C	D	REF. YEAR
K	3 -1 CM MOL	6 -2 CM MOL	9 -3 CM MOL	
498.16	-223.37	28416	51.0+004	BEATTIE 1939 *
	-224.50			BEATTIE 1942
498.20	-228.48	37256		JONES 1967 *
	-228.70			JONES 1967
505.38	-223.67	34557		KAY 1940 *
510.90	-199.90			GUNN 1958
510.94	-198.83	11890	71.0+005	OLDS 1944 *
523.16	-198.19	26522	33.0+004	BEATTIE 1939 *
	-198.10			BEATTIE 1942
533.16	-201.37	35401		KAY 1940 *
560.94	-182.51	36206		KAY 1940 *
573.16	-154.09	20132	23.0+004	BEATTIE 1939 *
	-157.40			BEATTIE 1942
588.72	-168.29	39449		KAY 1940 *

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I. E. C., 36, 282, 1944.

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I. E. C., 29, 1188, 1937.

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VIRIAL COEFFICIENTS FOR I-BUTANE.

T	B	C	D	REF. YEAR	
K	3 -1 CM MOL	6 -2 CM MOL	9 -3 CM MOL		
273.16	-889.00			JESSEN 1938	
294.27	-620.77	448379	-60.0+008	SAGE 1938	*
303.16	-699.00			JESSEN 1938	
	-644.00			KRETSCHMER 1951	
310.94	-585.29	1022790	-13.0+009	SAGE 1938	*
327.60	-541.34	52632	-16.0+007	SAGE 1938	*
344.27	-524.24	189874	-16.0+007	SAGE 1938	*
344.30	-414.00			GUNN 1958	
360.94	-502.65	240904	-14.0+007	SAGE 1938	*
377.60	-358.00			GUNN 1958	
	-488.54	317893	-19.0+007	SAGE 1938	*
394.27	-466.83	293315	-13.0+007	SAGE 1938	*
410.90	-310.60			GUNN 1958	
410.94	-329.72	60629	40.0+005	MORRIS 1940	*
423.16	-289.38	26415	42.0+005	BEATTIE 1950	*
444.27	-256.50	23863	30.0+005	MORRIS 1940	*
444.30	-267.80			GUNN 1958	
448.16	-253.65	25043	32.0+005	BEATTIE 1950	*
473.16	-223.20	23080	27.0+005	BEATTIE 1950	*
477.60	-230.20			GUNN 1958	
	-223.06	27481	-20.0+004	MORRIS 1940	*
498.16	-197.06	22355	16.0+005	BEATTIE 1950	*
510.90	-191.60			GUNN 1958	
510.94	-191.28	26264	-30.0+004	MORRIS 1940	*
523.16	-174.14	21195	10.0+005	BEATTIE 1950	*
548.16	-153.27	19656	68.0+004	BEATTIE 1950	*
573.16	-133.76	16415	77.0+004	BEATTIE 1950	*

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TRANS. A. I. M. M. E., 136, 158, 1940

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I. E. C., 30, 673, 1938.

VIRIAL COEFFICIENTS FOR N-PENTANE

T K	B 3^{-1} CM MOL	C 6^{-2} CM MOL	D 9^{-3} CM MOL	REF. YEAR
273.40	-1680.00			KAPALLO 1963
283.00	-1533.00			KAPALLO 1963
293.10	-1386.00			RATZSCH 1965
297.00	-1363.00			KAPALLO 1963
298.20	-1194.00			MCGLASHAN 1962
306.10	-1117.00			MCGLASHAN 1962
307.60	-1082.00			GARNER 1959
312.70	-1205.00			KAPALLO 1963
313.20	-1187.00			RATZSCH 1965
318.10	-1011.00			MCGLASHAN 1962
321.40	-1121.00			KAPALLO 1963
329.00	-923.00			MCGLASHAN 1962
329.30	-896.00			GARNER 1959
337.70	-851.00			GARNER 1959
339.00	-863.00			MCGLASHAN 1962
344.27	-1186.81	2682575		SAGE 1935 *
349.00	-800.00			MCGLASHAN 1962
351.20	-783.00			GARNER 1959
353.00	-747.00			GARNER 1959
358.00	-758.00			MCGLASHAN 1962
360.94	-862.02	581292		SAGE 1935 *
368.60	-701.00			MCGLASHAN 1962
372.10	-662.00			GARNER 1959
377.60	-766.07	326392		SAGE 1935 *
378.90	-652.00			MCGLASHAN 1962
383.70	-623.00			GARNER 1959
388.40	-612.00			MCGLASHAN 1962
401.00	-578.00			MCGLASHAN 1962
410.94	-554.97	135623	73.0+006	SAGE 1942 *
413.60	-517.00			MCGLASHAN 1962
444.27	-449.20	52247	16.0+006	SAGE 1942 *
448.16	-442.53	50956	42.0+005	LI 1953 *
473.16	-392.82	53059	26.0+005	BEATTIE 1952 *
	-405.00			BEATTIE 1952
	-388.20	46260	70.0+005	LI 1953 *
477.60	-373.03	15999	61.0+006	SAGE 1942 *
498.16	-344.86	44893	47.0+005	BEATTIE 1952 *
	-350.00			BEATTIE 1952
	-339.34	37939	94.0+005	LI 1953 *
510.94	-306.00	28612	45.0+006	SAGE 1942 *
523.16	-305.46	39785	56.0+005	BEATTIE 1952 *
	-311.00			BEATTIE 1952
	-298.73	31248	10.0+006	LI 1953 *
548.16	-271.06	36635	43.0+005	BEATTIE 1952 *
	-274.00			BEATTIE 1952
	-265.12	28596	10.0+006	LI 1953 *
573.16	-241.87	34713	31.0+005	BEATTIE 1952 *
	-244.00			BEATTIE 1952
	-236.29	25981	15.0+006	LI 1953 *

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I. E. C., 27, 48, 1935.

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I. E. C., 34, 730, 1942.

VIRIAL COEFFICIENTS FOR I-PENTANE

T K	B 3 -1 CM MOL	C 6 -2 CM MOL	D 9 -3 CM MOL	REF. YEAR	
273.16	-1370.60			SILBERBERG 1967	
279.48	-1313.00			SCOTT 1951	
298.16	-1155.00			SCOTT 1951	
	-1149.70			SILBERBERG 1967	
301.01	-1114.00			SCOTT 1951	
323.16	-965.41	504502		SILBERBERG 1959	*
	-960.00			SILBERBERG 1959	
	-954.00	506000		SILBERBERG 1967	
348.16	-766.79	445514	-21.0+008	SILBERBERG 1959	*
	-763.00			SILBERBERG 1959	
	-775.20	364000		SILBERBERG 1967	
373.16	-650.74	273101	-63.0+007	SILBERBERG 1959	*
	-645.00			SILBERBERG 1959	
	-642.90	239000	-74.8+007	SILBERBERG 1967	
398.16	-564.49	188857	-21.0+007	SILBERBERG 1959	*
	-570.00			SILBERBERG 1959	
	-555.70	151000	-20.9+007	SILBERBERG 1967	
423.16	-489.55	135007	-83.0+006	SILBERBERG 1959	*
	-494.00			SILBERBERG 1959	
	-482.50	97000	-54.0+006	SILBERBERG 1967	
448.16	-449.10	61199	16.0+006	ISAAC 1954	*
	-431.09	109795	-42.0+006	SILBERBERG 1959	*
	-434.00			SILBERBERG 1959	
	-419.10	67000	-15.0+006	SILBERBERG 1967	
461.66	-400.65	86765	-27.0+006	SILBERBERG 1959	*
	-407.00			SILBERBERG 1959	
	-388.40	56000	13.0+005	SILBERBERG 1967	
473.16	-347.23	33465	17.0+005	ISAAC 1954	*
	-372.57	70802	-14.0+006	SILBERBERG 1959	*
	-376.00			SILBERBERG 1959	
	-366.40	49000	23.0+005	SILBERBERG 1967	
477.60	-364.15	43492	56.0+004	ISAAC 1954	*
498.16	-315.94	32609	15.0+005	ISAAC 1954	*
505.38	-336.80	46363		ISAAC 1954	*
523.16	-292.99	34493	11.0+005	ISAAC 1954	*
533.16	-306.97	44832		ISAAC 1954	*
548.16	-273.47	37089	57.0+004	ISAAC 1954	*
560.94	-282.30	43905		ISAAC 1954	*
573.16	-256.31	39477	82.0+003	ISAAC 1954	*
588.72	-268.16	45266		ISAAC 1954	*

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I. E. C., 46, 199, 1954.

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J. CHEM. ENG. DATA, 12, 226, 1967.

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J.CHEM. ENG. DATA, 4, 323, 1959.

VIRIAL COEFFICIENTS FOR NEO-PENTANE

T K	B 3 -1 CM MOL	C 6 -2 CM MOL	D 9 -3 CM MOL	REF. YEAR
300.36	-940.00			ASHTON 1958
303.16	-842.00			HAMANN 54/55
	-932.23	652094		HEICHELHEIM 1962 *
	-1027.64	7486991	-91.0+009	HEICHELHEIM 1963 *
	-933.00			HEICHELHEIM 1963
	-900.40	282000		SILBERBERG 1967
303.23	-881.00	8600		PEREZ MASIA 1964
313.58	-902.00			ASHTON 1958
322.70	-776.00			ASHTON 1958
323.16	-734.00			HAMANN 54/55
	-805.43	447656		HEICHELHEIM 1962 *
	-867.63	2412696	-14.0+009	HEICHELHEIM 1963 *
	-809.00			HEICHELHEIM 1963
	-764.00	151000		SILBERBERG 1967
323.24	-737.00	1300		PEREZ MASIA 1964
333.16	-686.00			HAMANN 54/55
342.30	-679.00			ASHTON 1958
343.16	-643.00			HAMANN 54/55
348.12	-618.00	-1500		PEREZ MASIA 1964
348.16	-624.16	37532		DAWSON 1973 *
	-615.00	13000		DAWSON 1973
	-626.00			HAMANN 54/55
	-671.10	304563		HEICHELHEIM 1962 *
	-666.22	447110	-13.0+008	HEICHELHEIM 1963 *
	-676.00			HEICHELHEIM 1963
	-637.20	108000		SILBERBERG 1967
353.16	-602.00			HAMANN 54/55
363.16	-566.00			HAMANN 54/55
373.16	-531.00	42133		DAWSON 1973 *
	-530.00	41300		DAWSON 1973
	-536.00			HAMANN 54/55
	-569.21	284334		HEICHELHEIM 1962 *
	-579.92	338020	-46.0+007	HEICHELHEIM 1963 *
	-566.00			HEICHELHEIM 1963
	-548.70	91000		SILBERBERG 1967
373.22	-552.00	4400		PEREZ MASIA 1964
383.16	-507.00			HAMANN 54/55
397.71	-476.00	1500		PEREZ MASIA 1964
398.16	-459.73	44480	36.0+005	DAWSON 1973 *
	-460.00	46200		DAWSON 1973
	-472.00			HAMANN 54/55
	-502.86	190238	-13.0+007	HEICHELHEIM 1962 *
	-490.45	132747	-71.0+006	HEICHELHEIM 1963 *
398.16	-503.00			HEICHELHEIM 1963
	-477.50	77000		SILBERBERG 1967
403.16	-452.00			HAMANN 54/55
423.16	-400.27	41955	43.0+005	DAWSON 1973 *
	-401.00	47100		DAWSON 1973
	-434.49	106146	-26.0+006	HEICHELHEIM 1962 *
	-431.04	94054	-18.0+006	HEICHELHEIM 1963 *
	-444.00			HEICHELHEIM 1963
	-413.50	65000		SILBERBERG 1967
433.76	-382.51	47376	24.0+005	BEATTIE 1952 *
	-383.00			BEATTIE 1952
	-377.61	38089	71.0+005	DAWSON 1973 *
	-383.00	49800		DAWSON 1973
434.66	-381.00	49800		DAWSON 1973
	-409.44	73205	-44.0+005	HEICHELHEIM 1962 *
	-392.15	64198	-61.0+005	HEICHELHEIM 1963 *
	-417.00			HEICHELHEIM 1963
	-386.40	59000		SILBERBERG 1967
448.16	-350.58	39120	48.0+005	BEATTIE 1952 *
	-354.00			BEATTIE 1952
	-349.23	34362	84.0+005	DAWSON 1973 *
	-354.00	46400		DAWSON 1973
	-369.13	59572	-28.0+005	HEICHELHEIM 1962 *
	-363.26	58194	-47.0+005	HEICHELHEIM 1963 *
	-379.00			HEICHELHEIM 1963
	-357.70	54000		SILBERBERG 1967
473.16	-308.94	34420	69.0+005	BEATTIE 1952 *
	-312.00			BEATTIE 1952
	-308.98	32765	90.0+005	DAWSON 1973 *
	-311.00	41500		DAWSON 1973
	-329.63	45787		HEICHELHEIM 1962 *
	-320.51	42145		HEICHELHEIM 1963 *
	-349.00			HEICHELHEIM 1963
	-318.00	44000		SILBERBERG 1967
498.16	-271.49	31330	53.0+005	BEATTIE 1952 *
	-273.00			BEATTIE 1952
	-272.99	30063	10.0+006	DAWSON 1973 *
	-275.00	37600		DAWSON 1973
523.16	-241.67	29248	52.0+005	BEATTIE 1952 *
	-243.00			BEATTIE 1952
548.16	-213.90	27049	44.0+005	BEATTIE 1952 *
	-216.00			BEATTIE 1952

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J. CHEM. ENG. DATA, 12, 226, 1967.

VIRIAL COEFFICIENTS FOR N-HEXANE

T K	B 3 -1 CM MOL	C 6 -2 CM MOL	D 9 -3 CM MOL	REF. YEAR
298.20	-1984.00			BOTTOMLEY 1958
303.00	-1600.00			LAMBERT 1949
313.20	-1620.00			BOTTOMLEY 1958
313.50	-1676.00			MCGLASHAN 1962
318.00	-1598.00			MCGLASHAN 1962
318.10	-1637.00			MCGLASHAN 1962
318.16	-1600.00			DI ZIO 1966
320.00	-1560.00			LAMBERT 1949
322.00	-1500.00			LAMBERT 1949
324.00	-1496.00			MCGLASHAN 1962
328.20	-1406.00			BOTTOMLEY 1958
329.00	-1419.00			MCGLASHAN 1962
332.10	-1419.00			MCGLASHAN 1962
333.16	-1400.00			DI ZIO 1966
335.00	-1265.00			LAMBERT 1949
337.70	-1338.00			MCGLASHAN 1962
338.50	-1326.00			MCGLASHAN 1962
339.40	-1310.00			MCGLASHAN 1962
342.40	-1289.00			MCGLASHAN 1962
347.30	-1239.00			MCGLASHAN 1962
348.00	-1235.00			MCGLASHAN 1962
348.16	-1240.00			DI ZIO 1966
350.00	-1135.00			LAMBERT 1949
	-1130.00			LAMBERT 1949
354.00	-1194.00			MCGLASHAN 1962
358.50	-1144.00			MCGLASHAN 1962
360.20	-1147.00			MCGLASHAN 1962
363.16	-1120.00			DI ZIO 1966
364.00	-1000.00			LAMBERT 1949
368.00	-1075.00			MCGLASHAN 1962
370.60	-1050.00			MCGLASHAN 1962
377.70	-992.00			MCGLASHAN 1962
378.40	-981.00			MCGLASHAN 1962
386.70	-928.00			MCGLASHAN 1962
387.20	-913.00			MCGLASHAN 1962
395.00	-865.00			LAMBERT 1949
395.90	-880.00			MCGLASHAN 1962
398.30	-895.00			MCGLASHAN 1962
410.10	-800.00			MCGLASHAN 1962
413.10	-771.00			MCGLASHAN 1962
513.16	-446.21	64308	11.0+004	GRISKEY 1959 *
523.16	-443.77	49103	32.0+006	KELSO 1940 *
	-457.73	69765		WATSON 1952 *
525.16	-417.54	56071	13.0+005	GRISKEY 1959 *
537.16	-391.21	49586	21.0+005	GRISKEY 1959 *
548.16	-389.10	53582	15.0+006	KELSO 1940 *
	-406.59	64670		WATSON 1952 *
549.16	-366.00	42999	29.0+005	GRISKEY 1959 *
561.16	-348.50	42384	28.0+005	GRISKEY 1959 *
573.16	-338.74	47955	15.0+005	GRISKEY 1959 *
	-375.05	65128		WATSON 1952 *

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J. CHEM. SOC., 3794, 1958.

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I. E. C. FUNDAMENTALS, 5, 569, 1966.

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J. AM. CHEM. SOC., 62, 3132, 1940.

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CHEM. ENG. PROG., SYMP. SER., 48, 73, 1952.

VIRIAL COEFFICIENTS FOR 2-METHYL PENTANE

T	B	C	D	REF. YEAR
K	$CM^3\ MOL^{-1}$	$CM^6\ MOL^{-2}$	$CM^9\ MOL^{-3}$	
298.16	-1792.00			OSBORNE 1947
	-1712.00			WADDINGTON 1949
318.16	-1487.00			WADDINGTON 1949
333.43	-1332.00			WADDINGTON 1949
523.16	-415.12	57497	15.0+006	KELSO 1940 *
548.16	-371.36	57156	97.0+005	KELSO 1940 *

REFERENCES FOR 2-METHYL PENTANE

KELSO, E.A. AND FELSING, W.A.,
J. AM. CHEM. SOC., 62, 3132, 1940.

OSBORNE, D.W. AND GINNINGS, D.C.,
J. RES. NAT. BUR. STAND., 39, 453, 1947.

WADDINGTON, G., SMITH, J.C., SCOTT, D.W. AND HUFFMAN, H.M.,
J. AM. CHEM. SOC., 71, 3902, 1949.

VIRIAL COEFFICIENTS FOR 3-METHYL PENTANE

T	B	C	D	REF. YEAR
K	$CM^3\ MOL^{-1}$	$CM^6\ MOL^{-2}$	$CM^9\ MOL^{-3}$	
298.16	-1718.00			OSBORNE 1947
303.26	-1592.00			WADDINGTON 1949
323.71	-1418.00			WADDINGTON 1949
336.45	-1285.00			WADDINGTON 1949
523.16	-346.14	31216	26.0+005	DAY 1952 *
548.16	-300.53	20149	43.0+005	DAY 1952 *

REFERENCES FOR 3-METHYL PENTANE

DAY, H.O. AND FELSING, W.A.,
J. AM. CHEM. SOC., 74, 1951, 1952.

OSBORNE, D.W. AND GINNINGS, D.C.,
J. RES. NAT. BUR. STAND., 39, 453, 1947.

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J. AM. CHEM. SOC., 71, 3902, 1949.

VIRIAL COEFFICIENTS FOR 2,2-DIMETHYL BUTANE

T K	B $CM^3\ MOL^{-1}$	C $CM^6\ MOL^{-2}$	D $CM^9\ MOL^{-3}$	REF. YEAR
498.16	-394.89	52072		FELSING 1943 *
	-324.44	12660	53.0+005	FELSING 1943 *
523.16	-364.84	51540		FELSING 1943 *
	-323.26	20610	53.0+005	FELSING 1943 *
548.16	-339.57	54052		FELSING 1943 *
	-296.97	25028	43.0+005	FELSING 1943 *

REFERENCES FOR 2,2-DIMETHYL BUTANE

FELSING, W.A. AND WATSON, G.M.,
J. AM. CHEM. SOC., 65, 1889, 1943.

VIRIAL COEFFICIENTS FOR 2,3-DIMETHYL BUTANE

T K	B $CM^3\ MOL^{-1}$	C $CM^6\ MOL^{-2}$	D $CM^9\ MOL^{-3}$	REF. YEAR
295.96	-1554.00			WADDINGTON 1949
298.16	-1569.00			OSBORNE 1947
303.03	-1496.00			WADDINGTON 1949
313.13	-1400.00			WADDINGTON 1949
331.15	-1256.00			WADDINGTON 1949
523.16	-398.78	43888	20.0+006	KELSO 1942 *
548.16	-350.01	34732	19.0+006	KELSO 1942 *

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I. E. C., 34, 161, 1942.

OSBORNE, D.W. AND GINNINGS, D.C.,
J. RES. NAT. BUR. STAND., 39, 453, 1947.

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J. AM. CHEM. SOC., 71, 3902, 1949.

VIRIAL COEFFICIENTS FOR N-HEPTANE

T K	B 3 -1 CM MOL	C 6 -2 CM MOL	D 9 -3 CM MOL	REF. YEAR
349.40	-1819.00			MCGLASHAN 1962
358.30	-1691.00			MCGLASHAN 1962
368.50	-1560.00			MCGLASHAN 1962
370.80	-1520.00			MCGLASHAN 1962
378.10	-1446.00			MCGLASHAN 1962
378.20	-1436.00			MCGLASHAN 1962
389.10	-1325.00			MCGLASHAN 1962
389.20	-1334.00			MCGLASHAN 1962
400.80	-1212.00			MCGLASHAN 1962
413.70	-1108.00			MCGLASHAN 1962
548.16	-551.51	96505	28.0+006	SMITH 1937 *
	-569.00			SMITH 1937
573.16	-491.74	92812	19.0+006	SMITH 1937 *
	-503.00			SMITH 1937
598.16	-441.47	90459	11.0+006	SMITH 1937 *
	-449.00			SMITH 1937
623.16	-391.76	79721	87.0+005	SMITH 1937 *
	-399.00			SMITH 1937

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PROC. ROY. SOC., A267, 478, 1962.

SMITH, L.B., BEATTIE, J.A. AND KAY, W.C.,
J. AM. CHEM. SOC., 59, 1587, 1937.

VIRIAL COEFFICIENTS FOR N-OCTANE

T K	B 3 -1 CM MOL	C 6 -2 CM MOL	D 9 -3 CM MOL	REF. YEAR
373.00	-2122.00			MCGLASHAN 1962
378.20	-2048.00			MCGLASHAN 1962
383.20	-1939.00			MCGLASHAN 1962
384.30	-1905.00			MCGLASHAN 1962
388.10	-1869.00			MCGLASHAN 1962
389.20	-1828.00			MCGLASHAN 1962
393.50	-1778.00			MCGLASHAN 1962
394.20	-1764.00			MCGLASHAN 1962
403.50	-1641.00			MCGLASHAN 1962
413.50	-1518.00			MCGLASHAN 1962
493.20	-971.00	170000		CONNOLLY 1960
513.20	-876.00	180000		CONNOLLY 1960
533.20	-793.00	179000		CONNOLLY 1960
553.20	-719.00	170000		CONNOLLY 1960
573.20	-653.00	156000		CONNOLLY 1960

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PHYS. FLUIDS, 3, 463, 1960.

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PROC. ROY. SOC., A267, 478, 1962.

VIRIAL COEFFICIENTS FOR ETHYNE

T	B	C	D	REF. YEAR
	3 -1	6 -2	9 -3	
K	CM MOL	CM MOL	CM MOL	
199.63	-572.00			SCHAEFER 1937
201.66	-566.00			SCHAEFER 1937
203.09	-550.00			SCHAEFER 1937
205.04	-532.00			SCHAEFER 1937
206.98	-518.00			SCHAEFER 1937
209.56	-503.00			SCHAEFER 1937
211.71	-479.00			SCHAEFER 1937
218.15	-454.00			SCHAEFER 1937
219.42	-446.00			SCHAEFER 1937
221.45	-436.00			SCHAEFER 1937
222.90	-426.00			SCHAEFER 1937
224.21	-414.00			SCHAEFER 1937
225.98	-406.00			SCHAEFER 1937
230.57	-390.00			SCHAEFER 1937
232.96	-381.00			SCHAEFER 1937
235.68	-369.00			SCHAEFER 1937
237.07	-361.00			SCHAEFER 1937
237.64	-358.00			SCHAEFER 1937
238.92	-352.00			SCHAEFER 1937
240.24	-343.00			SCHAEFER 1937
242.71	-334.00			SCHAEFER 1937
245.27	-328.00			SCHAEFER 1937
248.96	-320.00			SCHAEFER 1937
273.15	-258.00			SCHAEFER 1937
273.20	-191.00			BOTTOMLEY 1958
293.20	-158.00			BOTTOMLEY 1958
313.20	-133.00			BOTTOMLEY 1958

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SCHAEFER, K.,
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VIRIAL COEFFICIENTS FOR ETHENE

T K	B 3 -1 CM MOL	C 6 -2 CM MOL	D 9 -3 CM MOL	REF. YEAR
181.13	-428.00			EUCKEN 1933
183.20	-430.00			LAMBERT 1949
191.32	-381.00			EUCKEN 1933
193.01	-374.00			EUCKEN 1933
198.78	-314.60			ROPER 1940
201.88	-339.00			EUCKEN 1933
203.20	-345.00			LAMBERT 1949
203.46	-333.00			EUCKEN 1933
209.92	-312.00			EUCKEN 1933
212.22	-305.00			EUCKEN 1933
220.13	-280.00			EUCKEN 1933
223.12	-275.00			EUCKEN 1933
223.20	-280.00			LAMBERT 1949
223.23	-250.90			ROPER 1940
223.24	-250.50			ROPER 1940
230.30	-255.00			EUCKEN 1933
232.38	-250.00			EUCKEN 1933
240.87	-232.00			EUCKEN 1933
242.86	-229.00			EUCKEN 1933
243.20	-230.00			LAMBERT 1949
250.57	-212.00			EUCKEN 1933
252.99	-207.00			EUCKEN 1933
262.08	-192.00			EUCKEN 1933
263.15	-172.80	7500	12.0+004	BUTCHER 1964
263.20	-190.00			LAMBERT 1949
271.80	-176.34	10337		CROMMELIN 1927
273.06	-170.09	8363		CROMMELIN 1927
273.15	-161.40	7400	11.0+004	BUTCHER 1964
273.16	-162.90			CAWOOD 1933
	-162.39	1690		MICHELS 1936
	-166.43	5784	11.0+005	MICHELS 36/42 *
	-167.84	8091		MICHELS 1942
	-166.56	4906	19.0+005	MICHELS 1942
	-181.10			ROPER 1940
	-170.70			ROPER 1940
	-156.30	-7250		THOMAS 1966
273.20	-176.00			EUCKEN 1933
283.15	-150.90	7350	85.0+003	BUTCHER 1964
283.16	-144.90	-4780		THOMAS 1966
283.33	-165.40	11023		CROMMELIN 1927
293.16	-136.70	-860		THOMAS 1966
293.34	-152.54	9439		CROMMELIN 1927
294.16	-153.50			CAWOOD 1933

T K	B 3 -1 CM MOL	C 6 -2 CM MOL	D 9 -3 CM MOL	REF. YEAR
294.16	-147.70			CAWOOD 1937
295.21	-147.00			BOTTOMLEY 1950
298.16	-135.79	2535		MICHELS 1936
	-138.34	5404	74.0+004	MICHELS 36/42 *
	-140.33	7453		MICHELS 1942
	-140.55	7644		MICHELS 1942
	-134.21	2173	17.0+005	MICHELS 1942
299.65	-134.80	7150	80.0+003	BUTCHER 1964
299.81	-145.00			ASHTON 1958
303.16	-128.50	1680		THOMAS 1966
313.15	-123.30	6950	75.0+003	BUTCHER 1964
313.16	-120.51	5134	10.0+004	SASS 1967 *
	120.00	2187	14.0+005	SASS 1967
	-120.70	3320		THOMAS 1966
323.15	-115.10	6750	55.0+003	BUTCHER 1964
323.16	-113.65	1832		MICHELS 1936
	-116.89	5169	64.0+004	MICHELS 36/42 *
	-117.97	6658		MICHELS 1942
	-118.07	6743		MICHELS 1942
	-112.69	2747	12.0+005	MICHELS 1942
	-113.60	4460		THOMAS 1966
323.40	-124.00			ASHTON 1958
333.15	-108.00	6450	40.0+003	BUTCHER 1964
337.00	-108.00			ASHTON 1958
343.11	-109.50			ROPER 1940
343.15	-101.20	6150	25.0+003	BUTCHER 1964
348.16	-95.48	739		MICHELS 1936
	-98.97	4830	45.0+004	MICHELS 36/42 *
	-99.74	5883		MICHELS 1942
	-99.90	5999		MICHELS 1942
	-94.11	2347	96.0+004	MICHELS 1942
353.15	-95.00	5800		BUTCHER 1964
363.15	-88.60	5400		BUTCHER 1964
373.15	-83.20	5150		BUTCHER 1964
373.16	-83.61	4385	10.0+004	KU 1967 *
	-87.30	4456		KU 1967
	-80.57	4		MICHELS 1936
	-84.64	4751	38.0+004	MICHELS 36/42 *
	-84.92	5302		MICHELS 1942
	-85.11	5464		MICHELS 1942
	-80.77	2767	70.0+004	MICHELS 1942
	-83.81	4169	16.0+004	SASS 1967 *
	-84.40	5158	11.0+004	SASS 1967

VIRIAL COEFFICIENTS FOR ETHENE

T	B	C	D	REF. YEAR
K	3 -1 CM MOL	6 -2 CM MOL	9 -3 CM MOL	
398.16	-69.20	1096		MICHELS 1936
	-72.21	4347	34.0+004	MICHELS 36/42 *
	-72.34	4703		MICHELS 1942
	-72.61	4990		MICHELS 1942
	-66.53	1769	75.0+004	MICHELS 1942
423.15	-59.80	2650		BUTCHER 1964
423.16	-59.58	1831		MICHELS 1936
	-60.97	3813	12.0+004	MICHELS 36/42 *
	-62.29	4827		MICHELS 1942
	-62.07	4670		MICHELS 1942
	-57.71	2309	56.0+004	MICHELS 1942
473.15	-42.90	-200		BUTCHER 1964

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VIRIAL COEFFICIENTS FOR DIMETHYLENEMETHANE

T K	B 3 -1 CM MOL	C 6 -2 CM MOL	D 9 -3 CM MOL	REF. YEAR
222.66	-710.50			ROPER 1940
237.16	-616.10			ROPER 1940
273.16	-443.50			ROPER 1940
	-447.00			ROPER 1940
293.16	-396.80			HAMANN 1950
303.16	-371.80			HAMANN 1950
313.16	-351.40			HAMANN 1950
323.16	-324.80			HAMANN 1950
333.16	-306.80			HAMANN 1950
343.16	-283.70			HAMANN 1950
	-260.90			ROPER 1940
353.16	-266.90			HAMANN 1950

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ROPER, E.E.,
J. PHYS. CHEM., 44, 835, 1940.

VIRIAL COEFFICIENTS FOR PROPYNE

T K	B 3 -1 CM MOL	C 6 -2 CM MOL	D 9 -3 CM MOL	REF. YEAR
348.16	-288.21	15859		VOHRA 1962 *
	-287.80	15120		VOHRA 62/65
373.16	-243.09	14307	33.0+004	VOHRA 1962 *
	-244.00	15700		VOHRA 62/65
398.16	-208.44	12985	43.0+004	VOHRA 1962 *
	-210.00	14750		VOHRA 62/65
402.41	-201.58	12109	45.0+004	VOHRA 1962 *
	-203.60	14230		VOHRA 62/65
408.16	-195.61	12257	22.0+004	VOHRA 1962 *
	-196.00	13500		VOHRA 62/65
413.16	-191.70	13256	27.0+003	VOHRA 1962 *
	-191.10	13420		VOHRA 62/65
418.16	-186.94	13676	-68.0+003	VOHRA 1962 *
	-186.00	13150		VOHRA 62/65
423.16	-182.51	13904	-21.0+004	VOHRA 1962 *
	-182.80	13900		VOHRA 62/65
448.16	-162.79	14072	-33.0+004	VOHRA 1962 *
	-161.30	13350		VOHRA 62/65
473.16	-148.26	15443	-57.0+004	VOHRA 1962 *
	-144.00	13040		VOHRA 62/65

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VIRIAL COEFFICIENTS FOR CYCLO PROPANE

T	B	C	D	REF. YEAR
K	$CM^3\ MOL^{-1}$	$CM^6\ MOL^{-2}$	$CM^9\ MOL^{-3}$	
303.16	-375.00			DAVID 1959
	-363.90			HAMANN 1952
	-366.10			HAMANN 1952
313.16	-345.00			DAVID 1959
323.16	-325.00			DAVID 1959
	-321.60			HAMANN 1952
	-323.50			HAMANN 1952
333.16	-307.00			DAVID 1959
343.16	-281.50			DAVID 1959
	-281.80			HAMANN 1952
	-283.00			HAMANN 1952
	-281.90			HAMANN 1952
352.00	-320.00			LAMBERT 1953
353.16	-266.00			DAVID 1959
363.16	-251.40			DAVID 1959
	-253.70			HAMANN 1952
373.16	-238.20			DAVID 1959
383.16	-223.20			DAVID 1959
393.16	-210.40			DAVID 1959
403.16	-200.50			DAVID 1959

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AUST. J. CHEM., 12, 309, 1959.

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LAMBERT, J.D. AND ROWLINSON, J.S.,
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VIRIAL COEFFICIENTS FOR PROPENE

T K	B 3 -1 CM MOL	C 6 -2 CM MOL	D 9 -3 CM MOL	REF. YEAR	
223.21	-664.60			ROPER 1940	
226.99	-630.50			ROPER 1940	
273.16	-433.50			ROPER 1940	
	-418.60			ROPER 1940	
	-423.20			ROPER 1940	
	-411.90			ROPER 1940	
277.60	-398.00	-74122	34.0+007	FARRINGTON 1949	*
	-401.10	-1000		FARRINGTON 1949	
294.27	-362.22	34368	-43.0+006	FARRINGTON 1949	*
	-362.20	33000		FARRINGTON 1949	
298.15	-346.31	13355	88.0+004	MICHELS 1953	*
	-346.43	14040		MICHELS 1953	
298.16	-353.00	17098		VAUGHAN 1940	*
303.70	-329.00			MCGLASHAN 1964	
308.18	-324.90			ROPER 1940	
310.94	-321.51	26757	58.0+006	FARRINGTON 1949	*
	-322.40	44000		FARRINGTON 1949	
313.10	-308.00			MCGLASHAN 1964	
318.15	-300.91	12920	34.0+005	MICHELS 1953	*
	-301.61	15768		MICHELS 1953	
323.15	-290.43	9941	72.0+005	MICHELS 1953	*
	-291.83	16097		MICHELS 1953	
323.16	-303.03	30177		MARCHMAN 1949	*
	-308.30	49000		MARCHMAN 1949	
	-293.38	17146		VAUGHAN 1940	*
323.50	-282.00			MCGLASHAN 1964	
327.60	-282.85	19039	17.0+006	FARRINGTON 1949	*
	-283.30	26000		FARRINGTON 1949	
328.40	-280.00			MCGLASHAN 1964	
333.60	-257.00			MCGLASHAN 1964	
338.20	-266.00			MCGLASHAN 1964	
343.12	-257.10			ROPER 1940	
343.30	-262.00			MCGLASHAN 1964	
344.27	-255.07	18003	78.0+004	FARRINGTON 1949	*
	-255.50	24000		FARRINGTON 1949	
348.15	-246.39	7797	10.0+006	MICHELS 1953	*
	-247.47	13718		MICHELS 1953	
348.16	-259.78	25715		MARCHMAN 1949	*
	-260.30	31000		MARCHMAN 1949	
	-244.46	9793	27.0+005	VAUGHAN 1940	*
349.10	-244.00			MCGLASHAN 1964	
353.50	-243.00			MCGLASHAN 1964	
355.38	-237.76	16555	22.0+004	FARRINGTON 1949	*
355.38	-238.80	25000		FARRINGTON 1949	
360.94	-229.41	14525	87.0+004	FARRINGTON 1949	*
	-229.60	17000		FARRINGTON 1949	
363.60	-232.00			MCGLASHAN 1964	
364.56	-222.98	14876		VAUGHAN 1940	*
373.15	-211.38	6349	11.0+006	MICHELS 1953	*
	-212.49	12488		MICHELS 1953	
	-215.00	17840	14.0+005	MICHELS 1953	
373.16	-216.11	15081	16.0+005	MARCHMAN 1949	*
	-218.70	19000		MARCHMAN 1949	
	-208.80	11993	10.0+005	VAUGHAN 1940	*
373.40	-213.00			MCGLASHAN 1964	
377.60	-207.41	13806	14.0+004	FARRINGTON 1949	*
	-207.20	6000		FARRINGTON 1949	
	-207.90			GUNN 1958	
384.10	-195.00			MCGLASHAN 1964	
393.50	-186.00			MCGLASHAN 1964	
398.15	-182.88	5731	10.0+006	MICHELS 1953	*
	-183.86	11245		MICHELS 1953	
	-186.46	16275	93.0+004	MICHELS 1953	
398.16	-185.33	13408	10.0+004	MARCHMAN 1949	*
	-189.60	18000		MARCHMAN 1949	
	-180.22	10587	68.0+004	VAUGHAN 1940	*
403.20	-174.00			MCGLASHAN 1964	
410.90	-170.90			GUNN 1958	
410.94	-170.75	12176	15.0+004	FARRINGTON 1949	*
	-170.80	10000		FARRINGTON 1949	
413.60	-166.00			MCGLASHAN 1964	
423.15	-159.16	4895	11.0+006	MICHELS 1953	*
	-160.20	10831		MICHELS 1953	
	-162.59	15558	13.0+005	MICHELS 1953	
423.16	-161.67	12697	54.0+003	MARCHMAN 1949	*
	-164.50	16000		MARCHMAN 1949	
	-151.02	3993	17.0+004	VAUGHAN 1940	*
444.27	-141.06	10393	19.0+004	FARRINGTON 1949	*
	-140.60	9000		FARRINGTON 1949	
444.30	-143.90			GUNN 1958	
448.16	-140.80	11830	24.0+003	MARCHMAN 1949	*
	-141.50	12000		MARCHMAN 1949	
	-132.48	8359		VAUGHAN 1940	*
473.16	-122.71	10858	15.0+003	MARCHMAN 1949	*
	-120.40	8000		MARCHMAN 1949	
	-122.24	5567		VAUGHAN 1940	*

VIRIAL COEFFICIENTS FOR PROPENE

T K	B 3 -1 CM MOL	C 6 -2 CM MOL	D 9 -3 CM MOL	REF. YEAR	
477.60	-117.39	7219	52.0+004	FARRINGTON 1949	*
	-117.60	11000		FARRINGTON 1949	
	-121.60			GUNN 1958	
498.16	-108.57	10329	42.0+003	MARCHMAN 1949	*
	-109.50	12000		MARCHMAN 1949	
	-97.46	4554		VAUGHAN 1940	*
510.94	-98.53	6448	85.0+004	FARRINGTON 1949	*
	-98.80	11000		FARRINGTON 1949	
523.16	-96.19	10036	21.0+003	MARCHMAN 1949	*
	-78.00	12000		MARCHMAN 1949	
	-84.14	3216		VAUGHAN 1940	*
548.16	-78.28	5747		VAUGHAN 1940	*
573.16	-71.55	6061		VAUGHAN 1940	*

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M.S. THESIS, UNIV. OF CAL., BERKELEY, 1958

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I. E. C., 41, 2658, 1949.

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MICHELS, A. ET AL.,
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ROPER, E.E.,
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VAUGHAN, W.E. AND GRAVES, N.R.,
I. E. C., 32, 1252 1940.

VIRIAL COEFFICIENTS FOR 1-BUTYNE

T	B	C	D	REF. YEAR
K	3 -1 CM MOL	6 -2 CM MOL	9 -3 CM MOL	
262.00	-980.00			ASTON 1950
266.00	-1001.00			ASTON 1950
270.00	-1100.00			ASTON 1950
274.00	-1000.00			ASTON 1950
278.00	-980.00			ASTON 1950
282.00	-940.00			ASTON 1950
298.00	-748.00			ASTON 1950

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ASTON, J.G., MASTRANGELO, S.V.R. AND MOESSEN, G.W.,
J. AM. CHEM. SOC., 72, 5287, 1950.

VIRIAL COEFFICIENTS FOR 1-BUTENE

T	B	C	D	REF. YEAR
K	3 -1 CM MOL	6 -2 CM MOL	9 -3 CM MOL	
243.38	-1188.60			ROPER 1940
273.16	-793.40			ROPER 1940
	-793.80			ROPER 1940
294.26	-669.00			ROPER 1940
304.20	-606.00			MCGLASHAN 1964
313.50	-559.00			MCGLASHAN 1964
323.20	-533.00			MCGLASHAN 1964
333.10	-494.00			MCGLASHAN 1964
333.17	-507.70			ROPER 1940
343.80	-457.00			MCGLASHAN 1964
353.50	-432.00			MCGLASHAN 1964
363.50	-400.00			MCGLASHAN 1964
373.70	-381.00			MCGLASHAN 1964
377.60	-368.84	21328	13.0+005	OLDS 1946 *
383.60	-363.00			MCGLASHAN 1964
392.70	-334.00			MCGLASHAN 1964
403.50	-321.00			MCGLASHAN 1964
410.94	-299.08	19459	10.0+005	OLDS 1946 *
420.10	-295.00			MCGLASHAN 1964
423.16	-290.42	25191	31.0+005	BEATTIE 1950 *
444.27	-247.16	18463	82.0+004	OLDS 1946 *
448.16	-255.37	24793	21.0+005	BEATTIE 1950 *
473.16	-224.51	22907	11.0+005	BEATTIE 1950 *
498.16	-198.77	21365	84.0+004	BEATTIE 1950 *
523.16	-177.65	20607	63.0+004	BEATTIE 1950 *

REFERENCES FOR 1-BUTENE

BEATTIE, J.A. AND MARPLE, S.,
J. AM. CHEM. SOC., 72, 4143, 1950.

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U. E. C., 38, 301, 1946.

ROPER, E.E.,
J. PHYS. CHEM., 44, 835, 1940.

VIRIAL COEFFICIENTS FOR 2-METHYL PROPENE

T K	B 3 -1 CM MOL	C 6 -2 CM MOL	D 9 -3 CM MOL	REF. YEAR
243.29	-1190.60			ROPER 1940
273.16	-803.70			ROPER 1940
	-815.70			ROPER 1940
333.15	-508.40			ROPER 1940

REFERENCES FOR 2-METHYL PROPENE

ROPER, E.E.,
J. PHYS. CHEM., 44, 835, 1940.

VIRIAL COEFFICIENTS FOR CIS-2-BUTENE

T K	B 3 -1 CM MOL	C 6 -2 CM MOL	D 9 -3 CM MOL	REF. YEAR
250.93	-1243.20			ROPER 1940
259.94	-1069.10			ROPER 1940
273.16	-869.60			ROPER 1940
	-902.50			ROPER 1940
	-936.20			ROPER 1940
	-968.50			ROPER 1940
308.17	-656.00			ROPER 1940
333.14	-557.80			ROPER 1940
343.10	-503.20			ROPER 1940

REFERENCES FOR CIS-2-BUTENE

ROPER, E.E.,
J. PHYS. CHEM., 44, 835, 1940.

VIRIAL COEFFICIENTS FOR TRANS-2-BUTENE

T K	B 3 -1 CM MOL	C 6 -2 CM MOL	D 9 -3 CM MOL	REF. YEAR
243.30	-1230.20			ROPER 1940
250.92	-1130.40			ROPER 1940
273.16	-885.00			ROPER 1940
	-900.00			ROPER 1940
	-908.30			ROPER 1940
	-911.40			ROPER 1940
	-943.90			ROPER 1940
308.17	-665.90			ROPER 1940
	-656.80			ROPER 1940
	-665.20			ROPER 1940
333.15	-593.20			ROPER 1940
	-545.20			ROPER 1940

REFERENCES FOR TRANS-2-BUTENE

ROPER, E.E.,
J. PHYS. CHEM., 44, 835, 1940.

VIRIAL COEFFICIENTS FOR SPIROPENTANE

T K	B 3 -1 CM MOL	C 6 -2 CM MOL	D 9 -3 CM MOL	REF. YEAR
283.16	-1217.00			SCOTT 50/52
398.16	-1042.00			SCOTT 50/52
312.14	-943.00			SCOTT 50/52

REFERENCES FOR SPIROPENTANE

SCOTT, D.W. ET AL.,
J. AM. CHEM. SOC., 72, 4664, 1950.

SCOTT, D.W. ET AL.,
J. AM. CHEM. SOC., 74, 6313, 1952.

VIRIAL COEFFICIENTS FOR CYCLOPENTANE

T K	B 3 -1 CM MOL	C 6 -2 CM MOL	D 9 -3 CM MOL	REF. YEAR
298.16	-1066.00			MCCULLOUGH 1959
310.16	-972.00			MCCULLOUGH 1959
322.42	-907.00			MCCULLOUGH 1959

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MCCULLOUGH, J.P. ET AL.,
J. AM. CHEM. SOC., 81, 5880, 1959.

VIRIAL COEFFICIENTS FOR PENT-1-ENE

T K	B 3 -1 CM MOL	C 6 -2 CM MOL	D 9 -3 CM MOL	REF. YEAR
283.96	-1265.00			SCOTT 1949
298.16	-1143.00			SCOTT 1949
303.13	-1099.00			SCOTT 1949
308.00	-982.00			MCGLASHAN 1964
315.30	-930.00			MCGLASHAN 1964
324.10	-870.00			MCGLASHAN 1964
334.10	-810.00			MCGLASHAN 1964
344.30	-756.00			MCGLASHAN 1964
353.30	-712.00			MCGLASHAN 1964
363.90	-662.00			MCGLASHAN 1964
374.00	-628.00			MCGLASHAN 1964
383.20	-585.00			MCGLASHAN 1964
393.80	-552.00			MCGLASHAN 1964
403.40	-519.00			MCGLASHAN 1964
410.40	-486.00			MCGLASHAN 1964

REFERENCES FOR PENT-1-ENE

MCGLASHAN, M.L. AND WORMALD, C.J.,
TRANS. FAR. SOC., 60, 646, 1964.

SCOTT, D.W., WADDINGTON, G., SMITH, J.C. AND HUFFMAN, H.M.,
J. AM. CHEM. SOC., 71, 2767, 1949.

VIRIAL COEFFICIENTS FOR 2-METHYL-1-BUTENE

T	B	C	D	REF. YEAR
	3 -1	6 -2	9 -3	
K	CM MOL	CM MOL	CM MOL	
277.96	-1258.00			SCOTT 1949
298.16	-1163.00			SCOTT 1949
304.32	-1117.00			SCOTT 1949

REFERENCES FOR 2-METHYL-1-BUTENE

SCOTT, D.W., WADDINGTON, G., SMITH, J.C. AND HUFFMAN, H.M.,
J. AM. CHEM. SOC., 71, 2767, 1949.

VIRIAL COEFFICIENTS FOR 2-METHYL-2-BUTENE

T	B	C	D	REF. YEAR
	3 -1	6 -2	9 -3	
K	CM MOL	CM MOL	CM MOL	
289.90	-1365.00			SCOTT 1949
298.16	-1276.00			SCOTT 1949
311.73	-1143.00			SCOTT 1949

REFERENCES FOR 2-METHYL-2-BUTENE

SCOTT, D.W., WADDINGTON, G., SMITH, J.C. AND HUFFMAN, H.M.,
J. AM. CHEM. SOC., 71, 2767, 1949.

VIRIAL COEFFICIENTS FOR BENZENE

T	B	C	D	REF. YEAR
	3 -1	6 -2	9 -3	
K	CM MOL	CM MOL	CM MOL	
280.00	-1614.00			EVERETT 1952
290.00	-1500.00			EVERETT 1952
295.16	-1465.00			CASADO 1951
295.20	-1525.00			BOTTOMLEY 1958
	-1528.00			BOTTOMLEY 1958'
	-1525.00			WHYTLAWGRAY 1957
	-1537.00			WHYTLAWGRAY 1957
298.16	-1570.00			SCOTT 1947
298.20	-1440.00			EVERETT 1952
300.00	-1397.00			EVERETT 1952
303.16	-1880.00			BAXENDALE 1950
	-2170.00			BAXENDALE 1950
308.20	-1349.00			BOTTOMLEY 1958
	-1352.00			BOTTOMLEY 1958'
	-1280.00			EVERETT 1952
308.37	-1394.00			BOTTOMLEY 1966
310.00	-1303.00			EVERETT 1952
313.00	-1440.00			YOUNG 10/52
313.16	-1540.00			BAXENDALE 1950
	-1885.00			BAXENDALE 1950
314.80	-1272.00			SCOTT 1947
316.26	-1300.00			FRANCIS 1952
318.20	-1230.00			EVERETT 1952
319.10	-1208.90			LAMBERT 1949
320.00	-1219.00			EVERETT 1952
323.00	-1400.00			YOUNG 10/52
323.10	-1213.00			SCOTT 1947
323.16	-1370.00			BAXENDALE 1950
	-1660.00			BAXENDALE 1950
323.20	-1202.00			BOTTOMLEY 1958
325.06	-1198.00			FRANCIS 1952
326.90	-1109.40			LAMBERT 1949
328.20	-1170.00			EVERETT 1952
330.00	-1142.00			EVERETT 1952
331.12	-1123.00			BOTTOMLEY 1966
331.16	-1125.00			WAELBROEK 1955
331.26	-1137.00			FRANCIS 1952
333.00	-1260.00			YOUNG 10/52
333.16	-1220.00			BAXENDALE 1950
	-1430.00			BAXENDALE 1950
	-1064.00			FRANCIS 1952
	-1117.00			WAELBROEK 1955
334.10	-1138.00			SCOTT 1947
334.80	-1071.60			LAMBERT 1949
335.00	-1295.00			EUCKEN 1929
335.16	-1103.00			WAELBROEK 1955
336.06	-1112.00			FRANCIS 1952
337.64	-1065.00			BOTTOMLEY 1966
338.16	-1088.00			WAELBROEK 1955
338.20	-1110.00			EVERETT 1952
338.86	-1099.00			FRANCIS 1952
340.00	-1072.00			EVERETT 1952
340.30	-1046.00			ANDON 1957
341.16	-1054.00			WAELBROEK 1955
342.00	-1135.00			EUCKEN 1929
343.00	-1250.00			YOUNG 10/52
343.16	-1110.00			BAXENDALE 1950
	-1250.00			BAXENDALE 1950
	-1023.00			BOTTOMLEY 1966
	-1035.00			FRANCIS 1952
	-1035.00			WAELBROEK 1955
343.20	-1035.00			BOTTOMLEY 1958
344.90	-1048.10			LAMBERT 1949
345.26	-1075.00			FRANCIS 1952
348.00	-1128.00			EUCKEN 1929
348.16	-1011.00			WAELBROEK 1955
348.20	-1020.00			EVERETT 1952
348.26	-1090.00			FRANCIS 1952
349.10	-969.00			ANDON 1957
350.00	-1007.00			EVERETT 1952
350.70	-980.30			LAMBERT 1949
353.00	-1040.00			YOUNG 10/52
353.16	-1020.00			BAXENDALE 1950
	-1095.00			BAXENDALE 1950
	-971.00			FRANCIS 1952
353.20	-991.00			ZAALISHVILI 1964
	-944.00			ZAALISHVILI 1965
353.30	-994.00			SCOTT 1947
354.00	-1052.00			EUCKEN 1929
354.48	-938.00			BOTTOMLEY 1966
354.96	-939.00			BOTTOMLEY 1966
357.00	-1010.00			EUCKEN 1929
359.06	-1004.00			FRANCIS 1952
359.10	-936.00			LAMBERT 1949
	-923.40			LAMBERT 1949
360.00	-949.00			EVERETT 1952

VIRIAL COEFFICIENTS FOR BENZENE

T K	B 3 -1 CM MOL	C 6 -2 CM MOL	D 9 -3 CM MOL	REF. YEAR	
362.00	-981.00			EUCKEN 1929	
363.00	-900.00			ANDON 1957	
363.20	-897.00			ZAALISHVILI 1964	
	-891.00			ZAALISHVILI 1965	
364.96	-1006.00			FRANCIS 1952	
366.00	-893.00			EUCKEN 1929	
367.36	-947.00			FRANCIS 1952	
370.00	-896.00			EVERETT 1952	
372.00	-836.00			EUCKEN 1929	
372.26	-916.00			FRANCIS 1952	
373.16	-852.00			FRANCIS 1952	
	-839.00			FRANCIS 1952	
373.20	-814.00			COX 1960	
	-840.00			ZAALISHVILI 1964	
	-833.00			ZAALISHVILI 1965	
375.00	-807.00			EUCKEN 1929	
376.90	-830.00			ANDON 1957	
380.00	-844.00			EVERETT 1952	
380.47	-785.00			BOTTOMLEY 1966	
383.20	-847.00			SCOTT 1947	
	-814.00			ZAALISHVILI 1964	
	-808.00			ZAALISHVILI 1965	
390.00	-798.00			EVERETT 1952	
393.10	-729.00			ANDON 1957	
398.16	-733.00			FRANCIS 1952	
400.00	-755.00			EVERETT 1952	
405.00	-724.00			BOTTOMLEY 1966	
409.00	-668.00			COX 1958	
416.08	-641.00			BOTTOMLEY 1966	
416.50	-638.00			BOTTOMLEY 1966	
424.20	-572.00			COX 1958	
429.70	-599.00			BOTTOMLEY 1966	
437.80	-516.00			COX 1958	
457.67	-521.00			BOTTOMLEY 1966	
493.20	-442.00	39000		CONNOLLY 1960	
513.20	-405.00	41000		CONNOLLY 1960	
533.20	-372.00	40500		CONNOLLY 1960	
553.20	-341.00	39200		CONNOLLY 1960	
562.66	-316.15	28440	17.0+005	GORNOWSKI 1947	*
563.16	-314.88	27830	18.0+005	GORNOWSKI 1947	*
573.16	-302.83	26734	20.0+005	GORNOWSKI 1947	*
573.20	-315.00	36800		CONNOLLY 1960	
583.16	-294.46	27983	29.0+005	GORNOWSKI 1947	*

T K	B 3 -1 CM MOL	C 6 -2 CM MOL	D 9 -3 CM MOL	REF. YEAR	
593.16	-287.44	31896	15.0+005	GORNOWSKI 1947	*
603.16	-279.86	34714	96.0+004	GORNOWSKI 1947	*
613.16	-267.73	32625		GORNOWSKI 1947	*
623.16	-256.78	31269		GORNOWSKI 1947	*
628.16	-251.77	30505		GORNOWSKI 1947	*

REFERENCES FOR BENZENE

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ANDON, R.J.L., COX, J.D., HERINGTON, E.F.G. AND MARTIN,J.F.,
TRANS. FAR. SOC., 53, 1074, 1957.

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BOTTOMLEY, G.A., REEVES, C.G. AND WHYTLAW-GRAY, R.,
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AUST. J. CHEM., 19, 1331, 1966.

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PROC. ROY. SOC., A207, 483, 1951.

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PHYS. FLUIDS, 3, 463, 1960.

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TRANS. FAR. SOC., 54, 1622, 1958.

COX, J.D. AND STUBLEY, D.,
TRANS. FAR. SOC., 56, 484, 1960.

REFERENCES FOR BENZENE

EUCKEN, A. AND MAYER, L.,
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FRANCIS, P.G. ET AL.,
J. CHEM. PHYS., 20, 1341, 1952.

GORNOWSKI, E.J., AMICK, E.H. AND HIXSON, A.N.,
I. E. C., 39, 1348, 1947.

LAMBERT, J.D. ET AL.,
PROC. ROY. SOC., A196, 113, 1949.

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J. CHEM. PHYS., 15, 565, 1947.

WAELBROEK, F.G.,
J. CHEM. PHYS., 23, 710, 1957.

WHYTLAW-GRAY, R. AND BOTTOMLEY, G.A.,
NATURE, LOND., 180, 1252, 1957.

YOUNG, S.,
PROC. ROY. IR. ACAD., 12, 374, 1910.

ZAALISHVILI, SH.D. AND BELOUSOVA, Z.S.,
RUSS. J. PHYS. CHEM., 38, 269, 1964.

ZH. FIZ. KHIM., 38, 503, 1964.

ZAALISHVILI, SH.D., BELOUSOVA, Z.S. AND KOLYSKO, L.E.,
RUSS. J. PHYS. CHEM., 39, 232, 1965.

ZH. FIZ. KHIM., 39, 447, 1965.

VIRIAL COEFFICIENTS FOR DIHYDROBENZENE

T	B	C	D	REF. YEAR
	3^{-1}	6^{-2}	9^{-3}	
K	CM MOL	CM MOL	CM MOL	
329.20	-1560.00			LAMBERT 1950
351.80	-1310.00			LAMBERT 1950

REFERENCES FOR DIHYDROBENZENE

LAMBERT, J.D. AND ROWLINSON, J.S.,
COMMUNICATED, 1950.

VIRIAL COEFFICIENTS FOR CYCLOHEXANE

T	B	C	D	REF. YEAR
K	$CM^3 MOL^{-1}$	$CM^6 MOL^{-2}$	$CM^9 MOL^{-3}$	
295.20	-1600.00			BOTTOMLEY 1958
	-1663.00			BOTTOMLEY 1958
308.20	-1515.00			BOTTOMLEY 1958
	-1523.00			BOTTOMLEY 1958
	-1457.00			BOTTOMLEY 1962
315.16	-1518.00			WAELBROEK 55/57
320.16	-1435.00			WAELBROEK 55/57
323.16	-1382.00			WAELBROEK 55/57
323.20	-1309.00			BOTTOMLEY 1962
324.30	-1320.00			LAMBERT 1949
327.20	-1540.00			ROWLINSON 1950
328.16	-1355.00			WAELBROEK 55/57
331.16	-1301.00			WAELBROEK 55/57
331.20	-1250.00			LAMBERT 1949
333.16	-1268.00			WAELBROEK 55/57
334.20	-1270.00			LAMBERT 1949
337.50	-1120.00			LAMBERT 1949
338.16	-1236.00			WAELBROEK 55/57
338.40	-1460.00			ROWLINSON 1950
341.60	-1140.00			LAMBERT 1949
343.16	-1180.00			WAELBROEK 55/57
343.20	-1121.00			BOTTOMLEY 1962
344.00	-1080.00			LAMBERT 1949
348.16	-1171.00			WAELBROEK 55/57
350.90	-1100.00			LAMBERT 1949
351.70	-1190.00			ROWLINSON 1950
362.20	-930.00			LAMBERT 1949
370.30	-840.00			LAMBERT 1949
373.20	-910.00			COX 1960
374.80	-1020.00			ROWLINSON 1950
380.40	-900.00			LAMBERT 1949
393.40	-750.00			LAMBERT 1949
404.20	-800.00			LAMBERT 1949
405.30	-830.00			ROWLINSON 1950

REFERENCES FOR CYCLOHEXANE

BOTTOMLEY, G.A. AND REMMINGTON, T.A.,
J. CHEM. SOC., 3800, 1958.

BOTTOMLEY, G.A. AND COOPES, I.H.,
NATURE, LOND., 193, 268, 1962.

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TRANS. FAR. SOC., 56, 484, 1960.

LAMBERT, J.D. ET AL.,
PROC. ROY. SOC., A196, 113, 1949.

ROWLINSON, J.S.,
COMMUNICATED, 1950.

WAELBROEK, F.G.,
J. CHEM. PHYS., 23, 749, 1955.

J. CHIM. PHYS., 54, 710, 1957.

VIRIAL COEFFICIENTS FOR METHYL CYCLOPENTANE

T	B	C	D	REF. YEAR
	3 -1	6 -2	9 -3	
K	CM MOL	CM MOL	CM MOL	
304.09	-1456.00			MCCULLOUGH 1959
325.98	-1263.00			MCCULLOUGH 1959
344.97	-1118.00			MCCULLOUGH 1959

REFERENCES FOR METHYL CYCLOPENTANE

MCCULLOUGH, J.P. ET AL.,
J. AM. CHEM. SOC., 81, 5880, 1959.

VIRIAL COEFFICIENTS FOR 2,3-DIMETHYL 2-BUTENE

T	B	C	D	REF. YEAR
	3 -1	6 -2	9 -3	
K	CM MOL	CM MOL	CM MOL	
292.13	-2179.00			SCOTT 1955
307.87	-1818.00			SCOTT 1955
325.79	-1596.00			SCOTT 1955
346.37	-1362.00			SCOTT 1955

REFERENCES FOR 2,3-DIMETHYL 2-BUTENE

SCOTT, D.W. ET AL.,
J. AM. CHEM. SOC., 77, 4993, 1955.

VIRIAL COEFFICIENTS FOR HEX-1-ENE

T	B	C	D	REF. YEAR
	3 -1	6 -2	9 -3	
K	CM MOL	CM MOL	CM MOL	
313.80	-1493.00			MCGLASHAN 1964
325.70	-1340.00			MCGLASHAN 1964
333.70	-1262.00			MCGLASHAN 1964
342.60	-1194.00			MCGLASHAN 1964
353.80	-1087.00			MCGLASHAN 1964
364.30	-1009.00			MCGLASHAN 1964
373.10	-947.00			MCGLASHAN 1964
383.40	-886.00			MCGLASHAN 1964
392.60	-845.00			MCGLASHAN 1964
403.20	-779.00			MCGLASHAN 1964
410.30	-763.00			MCGLASHAN 1964

REFERENCES FOR HEX-1-ENE

MCGLASHAN, M.L. AND WORMALD, C.J.,
TRANS. FAR. SOC., 60, 646, 1964.

VIRIAL COEFFICIENTS FOR TOLUENE

T	B	C	D	REF. YEAR
	3 -1	6 -2	9 -3	
K	CM MOL	CM MOL	CM MOL	
341.27	-1718.00			SCOTT 1962
349.10	-1660.00			ANDON 1957
361.06	-1497.00			SCOTT 1962
363.00	-1453.00			ANDON 1957
373.16	-1449.00			HUGGETT 1953
	-1532.00			HUGGETT 1953
	-1506.00			HUGGETT 1953
376.90	-1335.00			ANDON 1957
383.16	-1364.00			HUGGETT 1953
	-1297.00			HUGGETT 1953
	-1284.00			HUGGETT 1953
383.77	-1280.00			SCOTT 1962
393.16	-1189.00			ANDON 1957
	-1249.00			HUGGETT 1953
	-1273.00			HUGGETT 1953
409.00	-1013.00			COX 1958
410.11	-1057.00			SCOTT 1962
424.20	-940.00			COX 1958
437.80	-864.00			COX 1958

REFERENCES FOR TOLUENE

ANDON, R.J.L., COX, J.D., HERINGTON, E.F.G. AND MARTIN, J.F.,
TRANS. FAR. SOC., 53, 1074, 1957.

COX, J.D. AND ANDON, R.J.L.,
TRANS. FAR. SOC., 54, 1622, 1958.

HUGGETT AND MCGLASHAN, M.L.,
COMMUNICATED, 1953.

SCOTT, D.W. ET AL.,
J. PHYS. CHEM., 66, 911, 1962.

VIRIAL COEFFICIENTS FOR C-HEPTATRIENE

T	B	C	D	REF. YEAR
	3 -1	6 -2	9 -3	
K	CM MOL	CM MOL	CM MOL	
298.16	-2300.00			FINKE 50/56

REFERENCES FOR C-HEPTATRIENE

FINKE, H.L. ET AL.,
J. AM. CHEM. SOC., 78, 5469, 1956.

SCOTT, D.W. ET AL.,
J. AM. CHEM. SOC., 72, 2424, 1950.

VIRIAL COEFFICIENTS FOR HEPT-1-ENE

T	B	C	D	REF. YEAR
	$CM^3\ MOL^{-1}$	$CM^6\ MOL^{-2}$	$CM^9\ MOL^{-3}$	
K				
333.80	-1847.00			MCGLASHAN 1964
338.20	-1809.00			MCGLASHAN 1964
343.60	-1760.00			MCGLASHAN 1964
353.80	-1614.00			MCGLASHAN 1964
364.00	-1482.00			MCGLASHAN 1964
374.20	-1370.00			MCGLASHAN 1964
383.80	-1288.00			MCGLASHAN 1964
393.30	-1196.00			MCGLASHAN 1964
404.30	-1120.00			MCGLASHAN 1964
411.40	-1069.00			MCGLASHAN 1964

REFERENCES FOR HEPT-1-ENE

MCGLASHAN, M.L. AND WORMALD, C.J.,
TRANS. FAR. SOC., 60, 646, 1964.

VIRIAL COEFFICIENTS FOR CYCLOHEPTANE

T	B	C	D	REF. YEAR
	$CM^3\ MOL^{-1}$	$CM^6\ MOL^{-2}$	$CM^9\ MOL^{-3}$	
K				
298.16	-2700.00			FINKE 50/56

REFERENCES FOR CYCLOHEPTANE

FINKE, H.L. ET AL.,
J. AM. CHEM. SOC., 78, 5469, 1956.

SCOTT, D.W. ET AL.,
J. AM. CHEM. SOC., 72, 2424, 1950.

VIRIAL COEFFICIENTS FOR 1-CIS-3-DIMETHYL CYCLOPENTANE

T	B	C	D	REF. YEAR
	$CM^3\ MOL^{-1}$	$CM^6\ MOL^{-2}$	$CM^9\ MOL^{-3}$	
K				
322.62	-1826.00			MCCULLOUGH 1959
341.82	-1590.00			MCCULLOUGH 1959
363.93	-1351.00			MCCULLOUGH 1959

REFERENCES FOR 1-CIS-3-DIMETHYL CYCLOPENTANE

MCCULLOUGH, J.P. ET AL.,
J. AM. CHEM. SOC., 81, 5880, 1959.

VIRIAL COEFFICIENTS FOR O-XYLENE

T K	B $CM^3 MOL^{-1}$	C $CM^6 MOL^{-2}$	D $CM^9 MOL^{-3}$	REF.	YEAR
376.90	-2128.00			ANDON	57/58
393.10	-1769.00			ANDON	57/58
409.00	-1547.00			ANDON	57/58
424.20	-1437.00			ANDON	57/58
437.80	-1252.00			ANDON	57/58

REFERENCES FOR O-XYLENE

ANDON, R.J.L., COX, J.D., HERINGTON, E.F.G. AND MARTIN, J.F.
TRANS. FAR. SOC., 53, 1074, 1957.

COX, J.D. AND ANDON, R.J.L.,
TRANS. FAR. SOC., 54, 1622, 1958.

VIRIAL COEFFICIENTS FOR M-XYLENE

T K	B $CM^3 MOL^{-1}$	C $CM^6 MOL^{-2}$	D $CM^9 MOL^{-3}$	REF.	YEAR
376.90	-2167.00			COX	57/58
393.10	-1781.00			COX	57/58
409.00	-1559.00			COX	57/58
424.20	-1343.00			COX	57/58
437.80	-1200.00			COX	57/58

REFERENCES FOR M-XYLENE

ANDON, R.J.L., COX, J.D., HERINGTON, E.F.G. AND MARTIN, J.F.
TRANS. FAR. SOC., 53, 1074, 1957.

COX, J.D. AND ANDON, R.J.L.,
TRANS. FAR. SOC., 54, 1622, 1958.

VIRIAL COEFFICIENTS FOR P-XYLENE

T K	B $CM^3 MOL^{-1}$	C $CM^6 MOL^{-2}$	D $CM^9 MOL^{-3}$	REF.	YEAR
376.90	-2117.00			COX	57/58
393.10	-1777.00			COX	57/58
409.00	-1543.00			COX	57/58
434.20	-1371.00			COX	57/58
437.80	-1178.00			COX	57/58

REFERENCES FOR P-XYLENE

ANDON, R.J.L., COX, J.D., HERINGTON, E.F.G. AND MARTIN, J.F.
TRANS. FAR. SOC., 53, 1074, 1957.

COX, J.D. AND ANDON, R.J.L.,
TRANS. FAR. SOC., 54, 1622, 1958.

VIRIAL COEFFICIENTS FOR OCT-1-ENE

T	B	C	D	REF. YEAR
	3 -1	6 -2	9 -3	
K	CM MOL	CM MOL	CM MOL	
358.80	-2162.00			MCGLASHAN 1964
363.20	-2100.00			MCGLASHAN 1964
368.10	-2000.00			MCGLASHAN 1964
374.50	-1941.00			MCGLASHAN 1964
375.30	-1914.00			MCGLASHAN 1964
383.30	-1823.00			MCGLASHAN 1964
383.80	-1818.00			MCGLASHAN 1964
389.90	-1728.00			MCGLASHAN 1964
395.40	-1666.00			MCGLASHAN 1964
403.70	-1552.00			MCGLASHAN 1964
411.60	-1465.00			MCGLASHAN 1964

REFERENCES FOR OCT-1-ENE

MCGLASHAN, M.L. AND WORMALD, C.J.,
TRANS. FAR. SOC., 60, 646, 1964.

VIRIAL COEFFICIENTS FOR C-OCTANE

T	B	C	D	REF. YEAR
	3 -1	6 -2	9 -3	
K	CM MOL	CM MOL	CM MOL	
298.16	-4200.00			FINKE 50/56

REFERENCES FOR C-OCTANE

FINKE, H.L. ET AL.,
J. AM. CHEM. SOC., 78, 5469, 1956.

SCOTT, D.W. ET AL.,
J. AM. CHEM. SOC., 72, 2424, 1950.