

TABLE 1. CALCULATED AND EXPERIMENTAL CRITICAL TEMPERATURES, VOLUMES, AND PRESSURES OF BINARY SYSTEMS

(Critical pressures are calculated from revised Redlich-Kwong equation)

System	Avg. Dev. in T_{cT} , %	$\frac{2\tau_{12}}{T_{c_1} + T_{c_2}}$	Avg. Dev. in v_{cT} , %	$\frac{2\nu_{12}}{v_{c_1} + v_{c_2}}$	k_{12}^*	Avg. Dev. [†] in P_{cT} , %	Ref.
Methane-argon	0.05	0.0044					24
Methane-nitrogen	0.33	0.0198	‡	-0.07	0.03	1.4, 1.7	24, 5, 11
Methane-oxygen	0.51	-0.0400					24
Methane-propane	1.39	0.1237					1a
Methane-propane	0.28	0.1410	1.9	-0.3653	0.02	4.9	61
Methane-propane	0.39	0.1775					50
Methane-n-butane	0.81	0.1826	1.4	-0.6975	0.04	5.5	59
Methane-iso-butane	0.45	0.1444	0.3	-0.6503	0.05	3.1	43
Methane-n-pentane	0.73	0.2378	3.4	-0.7153	0.06	2.3	62
Methane-iso-pentane	0.02	0.1953			0.07	3.7	2
Methane-n-heptane	3.39	0.2773	5.9	-0.9808	0.10	6.8	54
Acetylene-ethane	0.20	-0.0866			0.08	1.8	33
Acetylene-ethylene	0.84	-0.0545			0.06	2.4**	10
Acetylene-propane	0.62	-0.0468			0.09	5.2**	38
Acetylene-propylene	0.17	-0.0304			0.07	5.6**	38
Ethane-propane	0.13	0.0211			0	3.7**	35
Ethane-propylene	0.24	-0.0078	0.4	-0.1057	0	1.3	39
Ethane-n-butane	0.13	0.0267	0.8	-0.2753	0.01	1.7	26
Ethane-n-pentane	0.73	0.0438	1.0	-0.5250	0.02	3.6**	55
Ethane-cyclohexane	0.47	0.0695	2.9	-0.5931	0.03	3.2**	29
Ethane-n-heptane	0.61	0.0743	3.9	-0.6826	0.04	6.0	25
Ethylene-ethane	0.17	0.0006					37
Ethylene-propylene	0.14	0.0241					23
Ethylene-n-heptane	0.69	0.0799	4.8	-0.8327	0.04	10.9	28
Propane-n-butane	0.12	0.0144	1.3	-0.0061	0	1.1	41
Propane-n-pentane	0.14	0.0092			0.01	1.1**	60
Propane-iso-pentane	0.06	0.0088	1.1	-0.2991	0	1.4	65
n-Butane-nitrogen	1.80	0.3500	‡	-0.95	0.12	4.0	57
n-Butane-n-heptane	0.03	0.0192	1.9	-0.3042	0	1.1	27
n-Pentane-neo-pentane	0.02	0.0038					46
n-Pentane-n-hexane	0.06	0.0031					46
n-Pentane-cyclohexane	0.03	0.0201					46
n-Pentane-n-heptane	0.05	0.0076			0	1.4	13
neo-Pentane-n-hexane	0.09	0.0064					46
neo-Pentane-cyclohexane	0.05	0.0047					46
n-Hexane-cyclohexane	0.03	0.0013					46
Benzene-ethane	0.82	0.0526	3.8	-0.5588	0.03	2.6**	31
Benzene-propane	1.16	0.0264			0.02	2.0	20
Benzene-n-pentane	0.71	-0.0066					46
Benzene-neo-pentane	0.44	-0.0258					46
Benzene-n-hexane	0.14	-0.0182					46
Benzene-cyclohexane	0.01	-0.0128					46
Benzene-toluene	0.03	0.0008					46
Toluene-n-pentane	0.14	-0.0302					46
Toluene-n-hexane	0.09	-0.0028	0.0	-0.1141			46, 66
Toluene-cyclohexane	0.04	-0.0061					46
Carbon dioxide-methane	1.61	0.0472			0.07	2.4	15
Carbon dioxide-ethane	0.10	-0.0911					33
Carbon dioxide-propane	0.99	-0.0573			0.10	6.5	48
Carbon dioxide-propane	0.67	-0.0693	3.0	-0.3418			52
Carbon dioxide-n-butane	0.91	-0.0313					48
Carbon dioxide-n-butane	0.74	-0.0707	1.0	-0.4513	0.18	7.0	42
Carbon dioxide-n-pentane	2.42	0.0156					48
Carbon monoxide-argon	0.13	-0.0015					24
Carbon monoxide-oxygen	0.07	-0.0005					24
Carbon monoxide-nitrogen	0.06	-0.0054					24
Carbon monoxide-methane	0.16	0.0220					24
Carbon monoxide-propane	0.20	0.3560					67
Hydrogen sulfide-methane	0.84	0.0577	2.7	-0.6063	0.06	1.6	51
Hydrogen sulfide-ethane	0.36	-0.0683	0.5	-0.1279	0.06	1.7	30
Hydrogen sulfide-propane	0.04	-0.0748	1.0	-0.1746	0.08	1.2	32
Hydrogen sulfide-n-pentane	1.75	-0.0168¶	2.1	-0.5030	0.10	9.1	53
Hydrogen sulfide-carbon dioxide	0.14	-0.0666	0.8	-0.0760	0.08	2.1	4
Nitrogen-argon	0.08	0.0098					24
Nitrogen-oxygen	0.05	0.0163					24
Argon-oxygen	0.03	-0.0090					24

*Values of k_{12} are obtained from second virial coefficient (B_{12}) data or saturated liquid volume data of binary mixtures.†In calculating v_{cT} and T_{cT} values of τ_{12} and ν_{12} were taken from this table unless otherwise noted.‡No critical volumes of mixtures available for these systems. Values of ν_{12} are back-calculated from critical pressure of mixture.**Value of ν_{12} for these systems were taken from the smoothed curves of Figure 4.

¶This parameter does not follow the trend of other hydrogen sulfide-paraffin systems shown in Figure 2.