

Table 1. Hydrogen (H) + n-Eicosane VLE DATA

t, °C	p, atm	x_H	y_H	K_H
100.2	9.96	0.0113	-	-
	19.87	0.0229	-	-
	30.04	0.0348	-	-
	40.24	0.0464	-	-
	50.15	0.0563	-	-
200.4	9.89	0.0182	0.9985	54.9
	19.90	0.0362	0.9992	27.6
	30.04	0.0539	0.9994	18.5
	39.83	0.0715	0.9995	14.0
	49.69	0.0866	0.9996	11.5
300.1	9.81	0.0241	0.9617	39.8
	19.89	0.0501	0.9815	19.6
	29.93	0.0742	0.9878	13.3
	40.04	0.0965	0.9911	10.3
	49.99	0.117	0.9926	8.49

Table 2. Hydrogen (H) + n-Octacosane VLE Data

t, °C	p, atm	x_H	y_H	K_H
100.1	9.73	0.0149	-	-
	19.87	0.0296	-	-
	30.05	0.0428	-	-
	40.29	0.0597	-	-
	49.88	0.0715	-	-
200.1	10.01	0.0206	-	-
	19.75	0.0402	-	-
	30.01	0.0608	-	-
	39.97	0.0807	-	-
	50.01	0.0993	-	-
300.0	10.04	0.0288	0.9965	34.6
	19.83	0.0577	0.9982	17.3
	30.08	0.0850	0.9988	11.8
	40.03	0.110	0.9991	9.05
	50.04	0.136	0.9993	7.36

Table 3. Hydrogen (H) + n-Hexatriacontane VLE Data

t, °C	p, atm	x_H	y_H	K_H
100.0	10.09	0.0154	-	-
	20.02	0.0323	-	-
	30.04	0.0487	-	-
	40.00	0.0641	-	-
	50.00	0.0809	-	-
199.9	10.17	0.0227	-	-
	20.10	0.0476	-	-
	30.01	0.0704	-	-
	40.14	0.0926	-	-
	50.00	0.116	-	-
300.0	10.09	0.0314	-	-
	20.12	0.0636	-	-
	30.10	0.0946	-	-
	40.04	0.123	-	-
	50.00	0.150	-	-

Table 4. Carbon Monoxide + n-Eicosane VLE Data

$t, ^\circ\text{C}$	p, atm	x_{CO}	y_{CO}	K_{CO}
100.2	10.07	0.0187	-	-
	19.77	0.0380	-	-
	30.07	0.0571	-	-
	40.28	0.0761	-	-
	49.97	0.0922	-	-
200.3	9.89	0.0230	-	-
	19.78	0.0469	-	-
	29.91	0.0708	-	-
	40.16	0.0949	-	-
	49.90	0.117	-	-
300.0	9.94	0.0289	-	-
	19.84	0.0586	-	-
	29.89	0.0891	-	-
	40.25	0.117	-	-
	49.71	0.139	-	-

Table 5. Carbon Monoxide + n-Octacosane VLE Data

t, °C	p, atm	x _{CO}	y _{CO}	K _{CO}
100.3	9.95	0.0227	-	-
	19.73	0.0452	-	-
	29.98	0.0696	-	-
	40.21	0.0916	-	-
	50.03	0.112	-	-
200.0	10.07	0.0275	-	-
	19.65	0.0555	-	-
	30.14	0.0830	-	-
	39.92	0.109	-	-
	49.96	0.131	-	-
300.3	9.94	0.0336	-	-
	19.74	0.0669	-	-
	30.02	0.0993	-	-
	40.18	0.131	-	-
	50.06	0.156	-	-

Table 6. Carbon Monoxide + n-Hexatriacontane VLE Data

t, °C	p, atm	x _{CO}	y _{CO}	K _{CO}
100.0	10.02	0.0257	-	-
	20.06	0.0514	-	-
	30.01	0.0764	-	-
	40.00	0.101	-	-
	49.91	0.123	-	-
199.9	10.13	0.0307	-	-
	20.05	0.0614	-	-
	29.99	0.0917	-	-
	40.08	0.119	-	-
	50.14	0.146	-	-
299.8	10.07	0.0382	-	-
	20.11	0.0754	-	-
	30.02	0.110	-	-
	40.03	0.144	-	-
	50.04	0.173	-	-

Table 7. Methane (M) + n-Eicosane VLE Data

t, °C	p, atm	x_M	y_M	K_M
100.2	9.95	0.0472	-	-
	19.73	0.0903	-	-
	29.78	0.132	-	-
	39.84	0.172	-	-
	49.85	0.209	-	-
200.3	9.93	0.0427	0.9984	23.4
	19.69	0.0845	0.9990	11.8
	30.00	0.125	0.9992	7.97
	39.86	0.159	0.9993	6.27
	49.86	0.194	0.9993	5.16
300.0	9.96	0.0440	0.9595	21.8
	19.89	0.0869	0.9772	11.2
	29.84	0.127	0.9830	7.76
	39.96	0.165	0.9858	5.98
	49.74	0.203	0.9876	4.86

Table 8. Methane (M) + n-Octacosane VLE Data

$t, ^\circ\text{C}$	p, atm	x_M	y_M	K_M
100.1	9.77	0.0566	-	-
	19.90	0.113	-	-
	30.04	0.163	-	-
	40.19	0.204	-	-
	49.97	0.244	-	-
200.2	9.78	0.0496	-	-
	19.81	0.100	-	-
	29.88	0.143	-	-
	40.36	0.189	-	-
	49.95	0.224	-	-
300.1	9.48	0.0493	0.9962	20.2
	19.74	0.102	0.9979	9.78
	30.21	0.152	0.9985	6.57
	40.17	0.195	0.9986	5.12
	50.11	0.230	0.9986	4.34

Table 9. Methane (M) + n-Hexatriacontane VLE Data

$t, ^\circ\text{C}$	p, atm	x_M	y_M	K_M
100.0	10.11	0.0673	-	-
	20.07	0.130	-	-
	30.03	0.182	-	-
	40.06	0.230	-	-
	49.94	0.271	-	-
200.0	10.06	0.0605	-	-
	20.02	0.118	-	-
	30.06	0.171	-	-
	39.93	0.211	-	-
	49.93	0.255	-	-
300.0	10.08	0.0587	-	-
	20.12	0.114	-	-
	30.03	0.166	-	-
	40.08	0.212	-	-
	50.05	0.250	-	-

Table 10. Ethane (E) + n-Eicosane VLE Data

t, °C	p, atm	x_E	y_E	K_E
100.6	9.69	0.159	-	-
	19.91	0.284	-	-
	29.90	0.387	-	-
	39.91	0.463	-	-
200.5	9.83	0.0960	0.9978	10.4
	19.86	0.175	0.9986	5.69
	29.99	0.251	0.9988	3.97
	40.18	0.314	0.9988	3.18
299.7	9.83	0.0731	0.9499	13.0
	19.64	0.139	0.9682	6.97
	29.90	0.206	0.9768	4.75
	39.85	0.262	0.9810	3.74

Table 11. Ethane (E) + n-Octacosane VLE Data

$t, ^\circ\text{C}$	p, atm	x_E	y_E	K_E
100.1	9.76	0.180	-	-
	19.90	0.322	-	-
	28.82	0.425	-	-
	40.18	0.504	-	-
200.1	9.82	0.113	-	-
	19.87	0.207	-	-
	29.81	0.287	-	-
	37.46	0.335	-	-
300.0	9.62	0.0840	0.9957	11.9
	19.76	0.166	0.9973	6.00
	29.83	0.236	0.9976	4.24
	39.87	0.297	0.9977	3.36

Table 12. Ethane (E) + n-Hexatriacontane VLE Data

t, °C	p, atm	x_E	y_E	K_E
100.0	10.07	0.212	-	-
	20.01	0.362	-	-
	30.00	0.466	-	-
	39.80	0.532	-	-
199.9	10.01	0.126	-	-
	20.04	0.234	-	-
	29.98	0.321	-	-
	39.96	0.390	-	-
299.9	10.06	0.101	-	-
	20.07	0.190	-	-
	30.00	0.263	-	-
	39.99	0.327	-	-

Table 13. Ethylene Solubility in n-Eicosane

$t, ^\circ\text{C}$	p, atm	$x_{\text{C}_2\text{H}_4}$
100.1	10.10	0.122
	20.06	0.227
	29.94	0.319
	40.04	0.394
	49.95	0.454
200.0	10.18	0.0816
	20.03	0.154
	29.91	0.220
	39.96	0.280
	49.91	0.334
300.0	10.12	0.0656
	20.06	0.131
	29.95	0.190
	39.98	0.244
	49.93	0.295

Table 14. Ethylene Solubility in n-Octacosane

t, °C	p, atm	$x_{C_2H_4}$
99.9	10.04	0.145
	20.06	0.254
	30.02	0.343
	39.98	0.421
	49.94	0.487
199.9	10.03	0.0974
	20.00	0.180
	29.97	0.250
	39.99	0.310
	49.89	0.368
299.9	9.99	0.0799
	20.07	0.150
	30.01	0.213
	40.00	0.272
	49.98	0.320

Table 15. Ethylene Solubility in n-Hexatriacontane

t, °C	p, atm	$x_{C_2H_4}$
100.1	10.13	0.172
	19.99	0.291
	29.97	0.392
	39.97	0.466
	49.93	0.526
199.9	10.09	0.112
	20.06	0.204
	29.95	0.279
	40.01	0.350
	49.97	0.402
300.1	10.10	0.0932
	20.07	0.176
	29.99	0.241
	39.97	0.305
	50.01	0.360

Table 16. Carbon Dioxide (CD) + n-Eicosane VLE Data

t, °C	p, atm	x_{CD}	y_{CD}	K_{CD}
50.1	9.79	0.114	-	-
	19.89	0.217	-	-
	30.21	0.305	-	-
	39.97	0.379	-	-
	49.48	0.446	-	-
100.3	10.04	0.0842	-	-
	19.83	0.157	-	-
	30.02	0.228	-	-
	39.63	0.286	-	-
	49.90	0.342	-	-
200.0	9.85	0.0593	0.9979	16.8
	19.71	0.114	0.9989	8.75
	30.24	0.170	0.9991	5.88
	40.12	0.216	0.9992	4.62
	49.50	0.259	0.9992	3.86
300.2	9.76	0.0528	0.9563	18.11
	19.93	0.104	0.9748	9.33
	29.64	0.151	0.9812	6.52
	40.64	0.201	0.9846	4.91
	49.97	0.237	0.9861	4.17

Table 17. Carbon Dioxide (CD) + n-Octacosane VLE Data

t, °C	p, atm	x_{CD}	y_{CD}	K_{CD}
100.2	10.05	0.102	-	-
	20.14	0.184	-	-
	30.01	0.254	-	-
	40.15	0.324	-	-
	49.90	0.379	-	-
200.3	9.87	0.0688	-	-
	20.04	0.135	-	-
	30.18	0.194	-	-
	39.89	0.247	-	-
	49.95	0.293	-	-
300.3	9.81	0.0596	0.9957	16.7
	20.06	0.122	0.9975	8.16
	30.08	0.176	0.9981	5.69
	39.92	0.226	0.9983	4.42
	49.91	0.270	0.9983	3.69

Table 18. Carbon Dioxide (CD) + n-Hexatriacontane VLE Data

t, °C	p, atm	x _{CD}	y _{CD}	K _{CD}
100.0	10.08	0.110	-	-
	20.10	0.209	-	-
	29.97	0.289	-	-
	39.99	0.357	-	-
	49.99	0.415	-	-
200.2	10.09	0.0803	-	-
	19.75	0.155	-	-
	29.95	0.220	-	-
	39.90	0.274	-	-
	49.92	0.324	-	-
300.1	10.06	0.0706	-	-
	19.94	0.138	-	-
	29.97	0.198	-	-
	40.03	0.250	-	-
	50.00	0.297	-	-

Table 19. Solubility Data of Synthesis Gas Mixtures in n-C₂₈

t, °C	p, atm	x _H	x _{CO}	K _H	K _{CO}
Equilibrium Gas Composition: 40.01 mol % H ₂ , 59.99 mol % CO					
200.1	19.74	0.0164	0.0326	24.5	18.4
	29.98	0.0247	0.0495	16.2	12.1
	40.23	0.0330	0.0657	12.1	9.14
	49.89	0.0401	0.0791	9.97	7.59
299.8	19.94	0.0227	0.0417	17.6	14.4
	30.01	0.0336	0.0618	11.9	9.71
	40.18	0.0442	0.0811	9.06	7.39
	49.81	0.0525	0.0964	7.63	6.23
Equilibrium Gas Composition: 50.01 mol % H ₂ , 49.99 mol % CO					
199.7	19.70	0.0201	0.0275	24.9	18.2
	29.94	0.0303	0.0407	16.5	12.3
	39.99	0.0415	0.0544	12.0	9.20
	49.90	0.0494	0.0653	10.1	7.66
300.0	19.79	0.0281	0.0340	17.8	14.7
	29.87	0.0412	0.0506	12.1	9.88
	40.17	0.0552	0.0661	9.06	7.56
	49.78	0.0656	0.0785	7.63	6.37
Equilibrium Gas Composition: 66.64 mol % H ₂ , 33.36 mol % CO					
200.1	19.94	0.0275	0.0181	24.2	18.4
	30.14	0.0417	0.0276	16.0	12.1
	40.17	0.0543	0.0359	12.3	9.29
	49.91	0.0657	0.0434	10.1	7.69
299.9	19.93	0.0378	0.0228	17.6	14.6
	30.07	0.0562	0.0340	11.8	9.83
	40.22	0.0743	0.0448	8.97	7.44
	49.80	0.0887	0.0535	7.51	6.23

Table 20. Hydrogen Solubility in Mobil Wax

t, °C	p, atm	Solubility, mole/Kg wax
200.1	10.23	0.0397
	20.12	0.0826
	30.05	0.129
	39.96	0.172
	50.09	0.219
270.1	17.02	0.0931
	27.26	0.152
	37.49	0.208
	47.67	0.269
300.0	10.11	0.0519
	20.16	0.111
	30.05	0.170
	40.09	0.231
	50.04	0.289

Table 21. Carbon Monoxide Solubility in Mobil Wax

t, °C	p, atm	Solubility, mole/Kg wax
200.0	10.06	0.0522
	20.06	0.108
	29.98	0.165
	39.99	0.222
	49.94	0.285
270.0	17.06	0.111
	27.31	0.179
	37.39	0.248
	47.57	0.316
300.2	10.05	0.0619
	20.11	0.130
	29.99	0.197
	39.96	0.268
	49.63	0.336

Table 22. Methane Solubility in Mobil Wax

t, °C	p, atm	Solubility, mole/Kg wax
200.1	9.97	0.105
	20.12	0.226
	30.00	0.349
	40.04	0.475
	50.00	0.596
270.0	17.08	0.183
	27.15	0.304
	37.47	0.423
300.0	10.08	0.0954
	20.06	0.208
	29.99	0.317
	40.12	0.429
	50.00	0.550

Table 23. Ethane Solubility in Mobil Wax

t, °C	p, atm	Solubility, mole/Kg wax
200.0	10.00	0.223
	20.04	0.503
	29.93	0.774
	40.00	1.060
270.1	17.00	0.325
	27.09	0.548
	37.40	0.789
300.1	10.07	0.154
	20.13	0.350
	30.02	0.556
	39.95	0.760

Table 24. Carbon Dioxide Solubility in Mobil Wax

t, °C	p, atm	Solubility, mole/Kg wax
200.1	10.15	0.142
	20.03	0.309
	30.00	0.486
	39.95	0.657
	49.92	0.829
270.0	16.92	0.232
	27.10	0.386
	37.22	0.556
300.1	9.97	0.122
	20.11	0.271
	29.91	0.415
	39.95	0.553
	50.02	0.711

Table 25. Hydrogen Solubility in SASOL Wax

t, °C	p, atm	Solubility mole/Kg wax
200.0	10.02	0.0432
	19.98	0.0923
	29.96	0.141
	40.01	0.191
	49.95	0.241
260.1	10.04	0.0585
	20.02	0.119
	29.96	0.179
	39.98	0.240
	49.93	0.299
300	10.07	0.0644
	19.99	0.0130
	29.94	0.202
	39.94	0.269
	49.96	0.334

Table 26. Carbon Monoxide Solubility in SASOL Wax

t, °C	p, atm	Solubility mole/Kg wax
199.9	10.05	0.0701
	20.08	0.135
	29.95	0.198
	39.98	0.261
	50.00	0.322
260.0	10.07	0.0774
	20.04	0.146
	30.05	0.225
	39.96	0.300
	49.96	0.373
299.9	10.02	0.0810
	20.03	0.161
	30.03	0.242
	39.98	0.320
	50.01	0.400

Table 27. Methane Solubility in SASOL Wax

t, °C	p, atm	Solubility, mole/Kg wax
200.0	10.00	0.122
	20.02	0.246
	29.96	0.372
	39.94	0.497
	49.95	0.619
259.9	10.02	0.119
	20.05	0.242
	29.99	0.364
	39.99	0.491
	50.02	0.613
300.2	9.99	0.122
	20.03	0.247
	29.95	0.369
	39.94	0.497
	50.00	0.621

Table 28. Ethane Solubility in SASOL Wax

t, °C	p, atm	Solubility mole/Kg wax
200.1	10.06	0.281
	20.06	0.553
	29.95	0.861
	39.97	1.17
260.0	10.10	0.232
	20.05	0.470
	29.99	0.713
	40.00	0.985
300.0	10.04	0.203
	20.03	0.409
	29.96	0.610
	39.97	0.874

Table 29. Ethylene Solubility in SASOL Wax

t, °C	p, atm	Solubility, mole/Kg wax
200.0	10.03	0.237
	20.12	0.488
	29.99	0.742
	39.97	1.01
	49.90	1.25
259.9	10.04	0.199
	20.12	0.415
	30.90	0.630
	40.04	0.848
	50.95	1.07

Table 30. Carbon Dioxide Solubility in SASOL Wax

t, °C	p, atm	Solubility mole/Kg wax
260.1	20.06	0.305
	29.96	0.466
	39.99	0.626
	49.95	0.793
300.2	19.97	0.305
	29.95	0.460
	39.95	0.625
	49.97	0.777

Table 31. Henry's Constants (H) and Partial Molar Volumes at Infinite Dilution (\bar{v}^∞) of Gases in n-C₂₀, n-C₂₈, and n-C₃₆

Solvent	100°C		200°C		300°C	
	H atm	\bar{v}^∞ , mL/mole	H, atm	\bar{v}^∞ , mL/mole	H, atm	\bar{v}^∞ , mL/mole
hydrogen						
n-C ₂₀	868(12)*	**	536(4)	33(9)	377(5)	103(19)
n-C ₂₈	653(15)	**	482(2)	32(5)	337(5)	80(19)
n-C ₃₆	619(6)	**	432(5)	34(11)	313(5)	47(21)
carbon monoxide						
n-C ₂₀	526(11)	15(9)	425(4)	34(6)	334(7)	63(23)
n-C ₂₈	431(6)	21(9)	354(8)	62(22)	286(4)	116(15)
n-C ₃₆	383(3)	35(8)	321(5)	88(13)	256(2)	124(14)
methane						
n-C ₂₀	205(1)	75(3)	223(3)	119(16)	212(2)	139(11)
n-C ₂₈	163(2)	125(13)	189(2)	141(14)	183(3)	152(24)
n-C ₃₆	141(2)	142(9)	157(3)	166(19)	164(2)	180(19)
carbon dioxide						
n-C ₂₀	114(1)	82(5)	160(1)	104(4)	171(1)	167(9)
n-C ₂₈	94(2)	115(6)	137(1)	133(8)	156(2)	169(10)
n-C ₃₆	84(1)	143(7)	117(2)	175(20)	134(2)	189(20)
ethane						
n-C ₂₀	55(1)	237(28)	96(2)	228(25)	123(2)	215(21)
n-C ₂₈	48(1)	274(22)	80(1)	289(15)	107(1)	261(19)
n-C ₃₆	41(1)	348(8)	73(1)	306(19)	93(1)	298(13)
ethylene						
n-C ₂₀	77(1)	129(6)	119(1)	139(3)	143(1)	144(2)
n-C ₂₈	64(1)	207(19)	96(1)	236(10)	119(1)	236(8)
n-C ₃₆	53(1)	274(13)	84(1)	271(10)	101(1)	282(16)

* Numbers in parentheses are standard deviations.

** too small to be determined with any reasonable accuracy.

Table 32. Physical Properties and van der Waal's Volumes of Substances

Substance	T_c , K	p_c , atm	V_i , mL/mole	ω
He	5.19	2.24	4.80	-0.387
H ₂	33.2	12.8	10.51	-0.22
CO	132.9	34.5	13.01	0.049
CO ₂	304.2	72.8	19.68	0.225
CH ₄	190.6	45.4	17.09	0.008
C ₂ H ₄	282.4	49.7	23.88	0.085
C ₂ H ₆	305.4	48.2	27.34	0.098
n-C ₁₀	617.1	20.7	109.18	-
n-C ₁₆	719.8	13.6	170.56	-
n-C ₂₀	768.8	11.0	211.48	-
n-C ₂₈	843.7	8.15	293.32	-
n-C ₃₆	900.8	6.73	375.16	-
n-C ₄₃	941.5	6.03	446.77	-
n-C ₄₄	946.7	5.96	457.00	-
n-C ₆₀	1016.6	5.25	620.68	-
n-C ₆₁	1020.3	5.23	630.91	-
n-C ₁₀₀	1116.8	4.87	1029.88	-

Table 33. Comparison of the Modified Soave Equation Calculated Gas Solubilities in n-Eicosane with Experimental Data

Gas	t, °C	Data Pts	A _{ij} mole/ml	Optimal A _{ij}			Correlated A _{ij}			
				RMS	Deviations in p, % AAD	BIAS	RMS	Deviations in p, % AAD	BIAS	
H ₂	100	5	0.238	3.3	2.9	-0.2	0.235	4.9	3.8	-3.8
	200	5	0.217	3.0	2.7	-0.2	0.219	3.7	3.0	2.0
	300	5	0.216	3.4	2.8	-0.3	0.214	3.6	2.6	-1.6
CO	100	5	0.160	4.3	3.3	-0.9	0.160	4.3	3.3	-0.9
	200	5	0.148	5.3	4.4	-0.5	0.149	5.4	4.7	0.9
	300	5	0.150	5.4	4.7	-0.6	0.148	5.8	4.2	-2.8
CH ₄	100	5	0.0879	3.2	2.8	-0.2	0.0882	3.2	2.7	0.3
	200	5	0.0863	2.8	2.4	0.0	0.0863	2.8	2.4	0.0
	300	5	0.0900	3.2	2.7	-0.2	0.0898	3.2	2.8	-0.7
CO ₂	100	5	0.0969	3.9	34	-0.3	0.0978	4.4	3.9	1.6
	200	5	0.0838	3.0	2.7	-0.2	0.0848	3.5	3.1	1.5
	300	5	0.0806	2.0	1.9	-0.1	0.0806	2.0	1.9	-0.1
C ₂ H ₆	100	4	0.0385	0.8	0.8	0.0	0.0392	2.0	1.8	1.8
	200	4	0.0388	1.1	0.9	0.0	0.0386	1.1	0.7	-0.3
	300	4	0.0419	1.3	1.2	0.0	0.0410	2.4	2.0	-2.0
C ₂ H ₄	100	5	0.0475	4.1	3.7	-0.2	0.0491	5.6	4.9	3.5
	200	5	0.0474	3.3	2.7	-0.2	0.0482	3.7	3.2	1.5
	300	5	0.0520	4.7	3.8	-0.2	0.0509	5.2	3.8	-2.5

Table 34. Comparison of the Modified Soave Equation Calculated Gas Solubilities in n-Octacosane with Experimental Data

Gas	t, °C	Data Pts	A _{ij} mole/ml	Optimal A _{ij}			Correlated A _{ij}			
				RMS	Deviations in p, % AAD	BIAS	RMS	Deviations in p, % AAD	BIAS	
H ₂	100	5	0.246	2.9	2.7	-0.1	0.251	6.6	5.8	5.8
	200	5	0.235	4.1	3.7	-0.6	0.235	4.1	3.7	-0.6
	300	5	0.228	4.7	3.7	-0.4	0.230	5.2	4.3	1.9
CO	100	5	0.171	4.8	4.3	-0.4	0.173	5.6	5.1	2.6
	200	5	0.160	4.6	3.6	-0.3	0.162	4.9	4.3	1.6
	300	5	0.160	4.4	3.8	0.0	0.160	4.4	3.8	0.0
CH ₄	100	5	0.0956	2.9	2.3	-0.2	0.0962	3.1	2.7	0.8
	200	5	0.0950	3.9	3.2	-0.3	0.0941	4.0	3.4	-1.5
	300	5	0.0965	4.5	3.9	-0.1	0.0979	5.1	4.5	2.1
CO ₂	100	5	0.106	3.8	3.6	0.0	0.106	3.8	3.6	0.0
	200	5	0.0919	4.1	3.5	-0.3	0.0917	4.1	3.4	-0.8
	300	5	0.0873	5.2	4.2	-0.4	0.0872	5.2	4.2	-0.6
C ₂ H ₆	100	4	0.0446	2.7	2.2	-0.1	0.0443	2.8	2.5	-0.9
	200	4	0.0438	0.8	0.7	0.0	0.0436	0.9	0.9	-0.5
	300	4	0.0460	2.9	2.3	-0.1	0.0463	2.9	2.5	0.4
C ₂ H ₄	100	5	0.0557	3.3	3.0	-0.3	0.0544	4.6	4.1	-3.4
	200	5	0.0538	2.0	1.5	0.0	0.0535	2.1	1.8	-0.7
	300	5	0.0566	2.6	2.4	-0.1	0.0565	2.6	2.4	-0.3

Table 35. Comparison of the Modified Soave Equation Calculated Gas Solubilities in n-Hexatriacontane with Experimental Data

Gas	t, °C	Data Pts	A _{ij} mole/ml	Optimal A _{ij}			Correlated A _{ij}			
				RMS	AAAD	BIAS	RMS	AAAD	BIAS	
H ₂	100	5	0.260	6.1	4.9	-0.4	0.258	6.3	4.7	-2.0
	200	5	0.243	7.0	5.3	-0.8	0.241	6.9	5.2	-2.4
	300	5	0.237	6.2	5.2	-0.7	0.236	6.2	5.1	-1.4
CO	100	5	0.181	4.6	3.9	-0.2	0.179	4.8	4.0	-2.0
	200	5	0.170	5.0	4.3	-0.4	0.168	5.6	4.1	-3.0
	300	5	0.166	4.7	4.1	-0.4	0.166	4.7	4.1	-0.4
CH ₄	100	5	0.101	3.1	2.4	-0.2	0.100	3.5	2.5	-1.9
	200	5	0.0981	3.6	2.9	-0.2	0.0978	3.5	2.7	-0.6
	300	5	0.102	4.6	4.0	-0.6	0.102	4.6	4.0	-0.6
CO ₂	100	5	0.110	5.7	4.7	-0.6	0.109	6.1	4.8	-2.7
	200	5	0.0960	4.7	3.6	-0.3	0.0947	4.9	3.5	-2.6
	300	5	0.0908	4.9	4.1	-0.4	0.0901	5.0	3.8	-1.7
C ₂ H ₆	100	4	0.0475	2.0	1.9	-0.1	0.0470	2.4	1.8	-1.5
	200	4	0.0468	3.4	2.8	-0.2	0.0463	3.7	2.8	-1.2
	300	4	0.0483	2.8	2.2	-0.1	0.0492	3.6	3.3	2.2
C ₂ H ₄	100	5	0.0577	2.6	2.4	0.0	0.0571	2.9	2.3	-1.5
	200	5	0.0568	2.9	2.7	-0.1	0.0561	3.3	2.9	-1.8
	300	5	0.0579	3.4	2.9	-0.2	0.0593	4.6	4.0	2.9

Table 36. Correlation of A_{ij} by Molecular Weight of n-Paraffins

Solute	M_0	A_{ij}^{∞} , mole/ML		
		100°C	200°C	300°C
H ₂	127.30	0.2632	0.2456	0.2406
CO	140.75	0.1842	0.1723	0.1707
CH ₄	146.06	0.1032	0.1009	0.1050
C ₂ H ₆	188.16	0.05046	0.04967	0.05277
CO ₂	137.02	0.1121	0.09710	0.09240
C ₂ H ₄	164.89	0.05991	0.05884	0.06214

Table 37. Comparison of Calculated Gas Solubilities of Synthesis Gas Mixtures in n-Octacosane with Experimental Data

p, atm	-Experimental-		-Optimal A_{ij} -		-Correlated A_{ij} -	
	x_H	x_{CO}	x_H	x_{CO}	x_H	x_{CO}
Equilibrium Gas Composition: 40.01 % H ₂ + 59.99 % CO						
200.1°C						
19.74	0.0164	0.0326	0.0166	0.0339	0.0167	0.0333
29.98	0.0247	0.0495	0.0243	0.0495	0.0244	0.0487
40.23	0.0330	0.0657	0.0314	0.0640	0.0316	0.0629
49.89	0.0401	0.0791	0.0376	0.0766	0.0379	0.0753
		AAD %	3.4	2.4	3.1	3.2
299.8°C						
19.94	0.0227	0.0417	0.0237	0.0415	0.0232	0.0411
30.01	0.0336	0.0618	0.0339	0.0595	0.0332	0.0590
40.18	0.0442	0.0811	0.0434	0.0761	0.0425	0.0754
49.81	0.0525	0.0964	0.0516	0.0904	0.0505	0.0897
		AAD %	2.2	4.1	2.7	4.9
Equilibrium Gas Composition: 50.01 % H ₂ + 49.99 % CO						
199.7°C						
19.70	0.0201	0.0275	0.0207	0.0282	0.0208	0.0277
29.94	0.0303	0.0407	0.0303	0.0412	0.0305	0.0405
39.99	0.0415	0.0544	0.0390	0.0531	0.0393	0.0522
49.90	0.0494	0.0653	0.0471	0.0639	0.0474	0.0628
		AAD %	3.4	2.0	3.3	2.2
300.0°C						
19.79	0.0281	0.0340	0.0294	0.0344	0.0288	0.0341
29.87	0.0412	0.0506	0.0423	0.0494	0.0414	0.0490
40.17	0.0552	0.0661	0.0543	0.0634	0.0532	0.0629
49.78	0.0656	0.0785	0.0645	0.0754	0.0632	0.0748
		AAD %	2.6	2.9	2.5	3.2
Equilibrium Gas Composition: 66.64 % H ₂ + 33.36 % CO						
200.1°C						
19.94	0.0275	0.0181	0.0279	0.0192	0.0281	0.0187
30.14	0.0417	0.0276	0.0407	0.0279	0.0410	0.0273
40.17	0.0543	0.0359	0.0524	0.0359	0.0527	0.0350
49.91	0.0657	0.0434	0.0629	0.0431	0.0634	0.0421
		AAD %	2.9	1.9	2.5	2.4
299.9°C						
19.93	0.0378	0.0228	0.0394	0.0232	0.0386	0.0229
30.07	0.0562	0.0340	0.0567	0.0334	0.0556	0.0329
40.22	0.0743	0.0448	0.0724	0.0427	0.0710	0.0421
49.80	0.0887	0.0535	0.0860	0.0507	0.0843	0.0500
		AAD %	2.6	3.3	3.1	4.0

Table 38. Comparison of the Modified Soave Equation Calculated Gas Solubilities in Mobil Wax with Experimental Data

Gas	t, °C	Data Pts	A _{ij} [*] mole/mL	Deviations in P, %		
				RMS	AAD	BIAS
H ₂	200	5	0.243	6.6	5.0	-2.8
	270	4	0.239	6.2	5.2	5.2
	300	5	0.237	7.8	5.8	-4.6
CO	200	5	0.170	6.5	5.4	-4.3
	270	4	0.167	3.1	2.7	1.5
	300	5	0.166	7.8	6.2	-6.0
CH ₄	200	5	0.0981	6.0	4.9	-1.1
	270	3	0.101	3.1	2.8	-0.1
	300	5	0.102	8.6	6.7	-6.0
CO ₂	200	5	0.0960	7.5	6.1	-1.5
	270	3	0.0924	4.8	4.1	1.7
	300	5	0.0908	6.4	4.7	-1.6
C ₂ H ₆	200	4	0.0468	7.7	5.3	-4.3
	270	3	0.0478	4.9	4.5	2.1
	300	4	0.0483	13.2	10.8	-10.8

* A_{ij} values are taken from those of n-C₃₆.

Table 39. Comparison of the Modified Soave Equation Calculated Gas Solubilities in SASOL Wax with Experimental Data

Gas	t, °C	Data pts	A _{ij} [*] mole/mL	Deviations in p, %		
				RMS	AAD	BIAS
H ₂	200	5	0.243	6.5	5.0	-3.1
	260	5	0.239	5.4	4.7	3.9
	300	5	0.237	5.1	4.8	1.6
CO	200	5	0.170	5.6	5.5	5.5
	260	5	0.168	6.4	5.8	5.8
	300	5	0.166	3.9	3.2	3.2
CH ₄	200	5	0.0981	4.4	4.0	-4.0
	260	5	0.100	3.3	2.5	-2.1
	300	5	0.102	2.1	1.9	-0.6
CO ₂	260	4	0.0929	2.7	2.1	-1.1
	300	4	0.0908	1.8	1.7	0.4
C ₂ H ₆	200	4	0.0468	3.6	2.9	-2.9
	260	4	0.0477	2.8	2.5	-1.3
	300	4	0.0483	7.2	6.6	-6.6
C ₂ H ₄	200	5	0.0568	2.8	2.2	-1.2
	260	5	0.0575	4.6	3.9	-3.9

* A_{ij} values are taken from those of n-C₃₆.