



RS-45 (R434A)

THERMODYNAMIC TABLES

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Sat -60 C [0.0.38584 bar]				Sat -50 C [0.67253 bar]				Sat -40 C [1.1070 bar]				Sat -30 C [1.7355 bar]			
Temp	Volume	Enthalpy	Entropy	Temp	Volume	Enthalpy	Entropy	Temp	Volume	Enthalpy	Entropy	Temp	Volume	Enthalpy	Entropy
[C]	[litre/kg]	[kJ/kg]	[kJ/K-kg]	[C]	[litre/kg]	[kJ/kg]	[kJ/K-kg]	[C]	[litre/kg]	[kJ/kg]	[kJ/K-kg]	[C]	[litre/kg]	[kJ/kg]	[kJ/K-kg]
-60	426.560	323.640	1.632	-50	253.440	329.850	1.618	-40	158.610	335.990	1.607	-30	103.680	342.090	1.599
-58	430.920	325.060	1.639	-48	256.020	331.340	1.625	-38	160.250	337.570	1.614	-28	104.760	343.710	1.606
-56	435.270	326.490	1.646	-46	258.580	332.830	1.632	-36	161.860	339.120	1.621	-26	105.830	345.330	1.613
-54	439.610	327.930	1.652	-44	261.140	334.320	1.638	-34	163.470	340.680	1.627	-24	106.900	346.960	1.619
-52	443.940	329.370	1.659	-42	263.680	335.820	1.645	-32	165.070	342.240	1.634	-22	107.960	348.580	1.626
-50	448.260	330.820	1.665	-40	266.220	337.320	1.651	-30	166.660	343.800	1.640	-20	109.010	350.210	1.632
-48	452.570	332.270	1.672	-38	268.750	338.830	1.657	-28	168.240	345.370	1.647	-18	110.060	351.850	1.639
-46	456.870	333.730	1.678	-36	271.280	340.350	1.664	-26	169.820	346.940	1.653	-16	111.100	353.480	1.645
-44	461.160	335.200	1.685	-34	273.800	341.870	1.670	-24	171.390	348.520	1.659	-14	112.140	355.120	1.651
-42	465.440	336.670	1.691	-32	276.310	343.390	1.677	-22	172.960	350.100	1.666	-12	113.180	356.770	1.658
-40	469.720	338.150	1.698	-30	278.810	344.920	1.683	-20	174.520	351.690	1.672	-10	114.210	358.420	1.664
-38	473.990	339.640	1.704	-28	281.310	346.460	1.689	-18	176.080	353.280	1.678	-8	115.230	360.070	1.670
-36	478.250	341.130	1.710	-26	283.810	348.010	1.696	-16	177.640	354.880	1.685	-6	116.250	361.730	1.676
-34	482.510	342.630	1.717	-24	286.300	349.560	1.702	-14	179.190	356.490	1.691	-4	117.270	363.390	1.683
-32	486.760	344.130	1.723	-22	288.780	351.110	1.708	-12	180.730	358.100	1.697	-2	118.280	365.050	1.689
-30	491.010	345.640	1.729	-20	291.260	352.670	1.714	-10	182.270	359.710	1.703	0	119.300	366.720	1.695
-28	495.250	347.160	1.735	-18	293.730	354.240	1.720	-8	183.810	361.330	1.709	2	120.300	368.400	1.701
-26	499.490	348.690	1.741	-16	296.210	355.820	1.727	-6	185.340	362.960	1.715	4	121.310	370.080	1.707
-24	503.720	350.220	1.748	-14	298.670	357.400	1.733	-4	186.870	364.590	1.721	6	122.310	371.770	1.713
-22	507.940	351.760	1.754	-12	301.130	358.990	1.739	-2	188.400	366.230	1.727	8	123.310	373.460	1.719
-20	512.160	353.310	1.760	-10	303.590	360.580	1.745	0	189.920	367.870	1.734	10	124.300	375.160	1.725
-18	516.380	354.860	1.766	-8	306.050	362.180	1.751	2	191.440	369.520	1.740	12	125.300	376.860	1.731
-16	520.590	356.420	1.772	-6	308.500	363.790	1.757	4	192.960	371.180	1.746	14	126.290	378.570	1.737
-14	524.800	357.990	1.778	-4	310.950	365.400	1.763	6	194.480	372.840	1.751	16	127.280	380.280	1.743
-12	529.010	359.560	1.784	-2	313.400	367.020	1.769	8	195.990	374.510	1.757	18	128.260	382.000	1.749
-10	533.210	361.140	1.790	0	315.840	368.650	1.775	10	197.500	376.180	1.763	20	129.250	383.720	1.755
-8	537.410	362.730	1.796	2	318.280	370.280	1.781	12	199.010	377.860	1.769	22	130.230	385.450	1.761
-6	541.600	364.320	1.802	4	320.720	371.920	1.787	14	200.510	379.550	1.775	24	131.210	387.190	1.767
-4	545.800	365.920	1.808	6	323.150	373.560	1.793	16	202.020	381.240	1.781	26	132.190	388.930	1.773
-2	549.980	367.530	1.814	8	325.580	375.220	1.799	18	203.520	382.940	1.787	28	133.170	390.680	1.778
0	554.170	369.150	1.820	10	328.010	376.880	1.805	20	205.020	384.650	1.793	30	134.140	392.430	1.784
2	558.350	370.770	1.826	12	330.440	378.540	1.810	22	206.510	386.360	1.799	32	135.110	394.190	1.790
4	562.540	372.400	1.832	14	332.870	380.220	1.816	24	208.010	388.080	1.804	34	136.080	395.960	1.796
6	566.710	374.030	1.838	16	335.290	381.890	1.822	26	209.500	389.800	1.810	36	137.050	397.730	1.801
8	570.890	375.680	1.844	18	337.710	383.580	1.828	28	210.990	391.530	1.816	38	138.020	399.500	1.807
10	575.060	377.330	1.850	20	340.130	385.270	1.834	30	212.480	393.270	1.822	40	138.990	401.290	1.813
12	579.240	378.980	1.855	22	342.550	386.970	1.839	32	213.970	395.010	1.827	42	139.950	403.080	1.819
14	583.400	380.650	1.861	24	344.960	388.680	1.845	34	215.460	396.760	1.833	44	140.920	404.870	1.824



Sat -60 C [0.0.38584 bar]				Sat -50 C [0.67253 bar]				Sat -40 C [1.1070 bar]				Sat -30 C [1.7355 bar]			
Temp	Volume	Enthalpy	Entropy	Temp	Volume	Enthalpy	Entropy	Temp	Volume	Enthalpy	Entropy	Temp	Volume	Enthalpy	Entropy
[C]	[litre/kg]	[kJ/kg]	[kJ/K-kg]	[C]	[litre/kg]	[kJ/kg]	[kJ/K-kg]	[C]	[litre/kg]	[kJ/kg]	[kJ/K-kg]	[C]	[litre/kg]	[kJ/kg]	[kJ/K-kg]
16	587.570	382.320	1.867	26	347.380	390.390	1.851	36	216.940	398.520	1.839	46	141.880	406.670	1.830
18	591.740	384.000	1.873	28	349.790	392.110	1.857	38	218.420	400.280	1.845	48	142.840	408.480	1.836
20	595.900	385.680	1.879	30	352.200	393.840	1.862	40	219.910	402.050	1.850	50	143.800	410.300	1.841
22	600.060	387.370	1.884	32	354.610	395.570	1.868	42	221.390	403.830	1.856	52	144.760	412.120	1.847
24	604.220	389.070	1.890	34	357.020	397.310	1.874	44	222.870	405.610	1.861	54	145.720	413.940	1.852
26	608.380	390.780	1.896	36	359.420	399.060	1.879	46	224.340	407.400	1.867	56	146.670	415.770	1.858
28	612.530	392.490	1.901	38	361.830	400.810	1.885	48	225.820	409.190	1.873	58	147.630	417.610	1.864
30	616.690	394.210	1.907	40	364.230	402.570	1.891	50	227.300	410.990	1.878	60	148.580	419.460	1.869
32	620.840	395.940	1.913	42	366.630	404.340	1.896	52	228.770	412.800	1.884	62	149.540	421.310	1.875
34	624.990	397.670	1.918	44	369.030	406.110	1.902	54	230.250	414.620	1.889	64	150.490	423.160	1.880
36	629.140	399.410	1.924	46	371.430	407.890	1.908	56	231.720	416.440	1.895	66	151.440	425.030	1.886
38	633.290	401.160	1.930	48	373.830	409.680	1.913	58	233.190	418.270	1.901	68	152.390	426.900	1.891
40	637.440	402.910	1.935	50	376.220	411.470	1.919	60	234.660	420.100	1.906	70	153.340	428.770	1.897
42	641.590	404.670	1.941	52	378.620	413.270	1.924	62	236.130	421.940	1.912	72	154.290	430.650	1.902
44	645.730	406.440	1.947	54	381.020	415.080	1.930	64	237.600	423.790	1.917	74	155.240	432.540	1.908
46	649.870	408.220	1.952	56	383.410	416.890	1.935	66	239.060	425.640	1.923	76	156.185	434.440	1.913
48	654.020	410.000	1.958	58	385.800	418.710	1.941	68	240.530	427.500	1.928	78	157.130	436.340	1.919
50	658.160	411.780	1.963	60	388.190	420.540	1.946	70	242.000	429.370	1.933	80	158.080	438.240	1.924
52	662.300	413.580	1.969	62	390.580	422.370	1.952	72	243.460	431.240	1.939	82	159.020	440.160	1.929
54	666.440	415.380	1.974	64	392.970	424.210	1.957	74	244.930	433.120	1.944	84	159.970	442.070	1.935
56	670.580	417.190	1.980	66	395.360	426.060	1.963	76	246.390	435.010	1.950	86	160.910	444.000	1.940
58	674.710	419.010	1.985	68	397.750	427.910	1.968	78	247.850	436.900	1.955	88	161.850	445.930	1.945
60	678.850	420.830	1.991	70	400.140	429.770	1.974	80	249.310	438.790	1.961	90	162.800	447.870	1.951
62	682.980	422.660	1.996	72	402.520	431.640	1.979	82	250.770	440.700	1.966	92	163.740	449.810	1.956
64	687.120	424.490	2.002	74	404.910	433.510	1.984	84	252.240	442.610	1.971	94	164.680	451.760	1.961
66	691.250	426.340	2.007	76	407.295	435.395	1.990	86	253.700	444.530	1.977	96	165.620	453.720	1.967
68	695.380	428.190	2.013	78	409.680	437.280	1.995	88	255.150	446.450	1.982	98	166.560	455.680	1.972
70	699.520	430.040	2.018	80	412.060	439.170	2.001	90	256.610	448.380	1.987	100	167.500	457.650	1.977
72	703.650	431.900	2.023	82	414.440	441.070	2.006	92	258.070	450.320	1.993	102	168.440	459.630	1.983
74	707.780	433.770	2.029	84	416.820	442.980	2.011	94	259.530	452.260	1.998	104	169.370	461.610	1.988
76	711.905	435.650	2.034	86	419.210	444.890	2.017	96	260.980	454.210	2.003	106	170.310	463.600	1.993
78	716.030	437.530	2.040	88	421.590	446.810	2.022	98	262.440	456.170	2.009	108	171.250	465.590	1.998
80	720.160	439.420	2.045	90	423.970	448.740	2.027	100	263.900	458.130	2.014	110	172.190	467.590	2.004
82	724.290	441.320	2.050	92	426.350	450.670	2.033	102	265.350	460.100	2.019	112	173.120	469.590	2.009
84	728.420	443.220	2.056	94	428.720	452.610	2.038	104	266.810	462.080	2.024	114	174.060	471.610	2.014
86	732.540	445.130	2.061	96	431.100	454.550	2.043	106	268.260	464.060	2.030	116	174.990	473.630	2.019
88	736.670	447.050	2.066	98	433.480	456.510	2.048	108	269.710	466.050	2.035	118	175.930	475.650	2.024
90	740.790	448.970	2.072	100	435.860	458.460	2.054	110	271.170	468.040	2.040	120	176.860	477.680	2.030



Sat -20 C [2.6101 bar]				Sat -10 C [3.7878 bar]				Sat 0 C [5.3301 bar]				Sat 10 C [7.3032 bar]			
Temp	Volume	Enthalpy	Entropy	Temp	Volume	Enthalpy	Entropy	Temp	Volume	Enthalpy	Entropy	Temp	Volume	Enthalpy	Entropy
[C]	[litre/kg]	[kJ/kg]	[kJ/K-kg]	[C]	[litre/kg]	[kJ/kg]	[kJ/K-kg]	[C]	[litre/kg]	[kJ/kg]	[kJ/K-kg]	[C]	[litre/kg]	[kJ/kg]	[kJ/K-kg]
-20	70.226	348.030	1.593	-10	48.990	353.770	1.589	0	35.004	359.270	1.586	10	25.490	364.450	1.583
-18	70.983	349.730	1.600	-8	49.546	355.560	1.596	2	35.431	361.170	1.593	12	25.830	366.460	1.590
-16	71.733	351.420	1.607	-6	50.095	357.350	1.603	4	35.850	363.050	1.600	14	26.163	368.460	1.597
-14	72.478	353.120	1.613	-4	50.639	359.130	1.609	6	36.264	364.920	1.606	16	26.491	370.440	1.604
-12	73.217	354.820	1.620	-2	51.178	360.910	1.616	8	36.673	366.790	1.613	18	26.814	372.420	1.611
-10	73.951	356.520	1.626	0	51.712	362.690	1.622	10	37.078	368.660	1.620	20	27.133	374.380	1.618
-8	74.680	358.230	1.633	2	52.241	364.470	1.629	12	37.478	370.530	1.626	22	27.447	376.350	1.625
-6	75.405	359.930	1.639	4	52.767	366.250	1.635	14	37.875	372.390	1.633	24	27.757	378.310	1.631
-4	76.125	361.640	1.646	6	53.288	368.030	1.642	16	38.268	374.250	1.639	26	28.064	380.260	1.638
-2	76.841	363.350	1.652	8	53.806	369.810	1.648	18	38.657	376.120	1.646	28	28.368	382.210	1.644
0	77.553	365.060	1.658	10	54.320	371.600	1.654	20	39.043	377.980	1.652	30	28.668	384.160	1.651
2	78.261	366.780	1.665	12	54.831	373.380	1.661	22	39.426	379.840	1.658	32	28.965	386.100	1.657
4	78.966	368.500	1.671	14	55.338	375.170	1.667	24	39.805	381.700	1.665	34	29.259	388.050	1.663
6	79.668	370.220	1.677	16	55.843	376.960	1.673	26	40.182	383.560	1.671	36	29.551	389.990	1.670
8	80.367	371.950	1.683	18	56.345	378.750	1.679	28	40.557	385.430	1.677	38	29.840	391.930	1.676
10	81.062	373.680	1.689	20	56.844	380.550	1.685	30	40.929	387.290	1.683	40	30.127	393.880	1.682
12	81.755	375.420	1.695	22	57.340	382.350	1.692	32	41.298	389.160	1.689	42	30.411	395.820	1.688
14	82.445	377.160	1.701	24	57.834	384.150	1.698	34	41.665	391.030	1.695	44	30.693	397.760	1.695
16	83.132	378.900	1.707	26	58.326	385.960	1.704	36	42.030	392.900	1.702	46	30.974	399.710	1.701
18	83.817	380.650	1.713	28	58.815	387.770	1.710	38	42.393	394.780	1.708	48	31.252	401.650	1.707
20	84.499	382.400	1.719	30	59.303	389.580	1.716	40	42.754	396.650	1.714	50	31.528	403.600	1.713
22	85.179	384.160	1.725	32	59.788	391.400	1.722	42	43.113	398.530	1.720	52	31.803	405.540	1.719
24	85.857	385.920	1.731	34	60.271	393.220	1.728	44	43.470	400.420	1.726	54	32.076	407.490	1.725
26	86.533	387.690	1.737	36	60.752	395.040	1.734	46	43.826	402.300	1.731	56	32.347	409.450	1.731
28	87.207	389.460	1.743	38	61.232	396.870	1.739	48	44.180	404.190	1.737	58	32.617	411.400	1.737
30	87.879	391.240	1.749	40	61.710	398.700	1.745	50	44.532	406.090	1.743	60	32.885	413.360	1.743
32	88.549	393.020	1.755	42	62.186	400.540	1.751	52	44.883	407.980	1.749	62	33.152	415.320	1.748
34	89.217	394.810	1.761	44	62.660	402.380	1.757	54	45.232	409.880	1.755	64	33.417	417.280	1.754
36	89.884	396.600	1.767	46	63.133	404.230	1.763	56	45.580	411.790	1.761	66	33.682	419.240	1.760
38	90.549	398.400	1.772	48	63.605	406.080	1.769	58	45.927	413.690	1.767	68	33.945	421.210	1.766
40	91.212	400.200	1.778	50	64.075	407.940	1.774	60	46.272	415.610	1.772	70	34.206	423.180	1.772
42	91.874	402.010	1.784	52	64.544	409.800	1.780	62	46.616	417.520	1.778	72	34.467	425.160	1.777
44	92.535	403.830	1.790	54	65.011	411.670	1.786	64	46.959	419.440	1.784	74	34.726	427.140	1.783
46	93.194	405.650	1.795	56	65.478	413.540	1.792	66	47.300	421.370	1.789	76	34.984	429.125	1.789
48	93.851	407.470	1.801	58	65.943	415.410	1.797	68	47.641	423.300	1.795	78	35.242	431.110	1.794
50	94.508	409.310	1.807	60	66.406	417.300	1.803	70	47.981	425.230	1.801	80	35.499	433.100	1.800
52	95.163	411.140	1.813	62	66.869	419.180	1.809	72	48.319	427.170	1.806	82	35.754	435.090	1.806
54	95.817	412.980	1.818	64	67.331	421.070	1.814	74	48.656	429.120	1.812	84	36.009	437.090	1.811



Sat -20 C [2.6101 bar]				Sat -10 C [3.7878 bar]				Sat 0 C [5.3301 bar]				Sat 10 C [7.3032 bar]			
Temp	Volume	Enthalpy	Entropy	Temp	Volume	Enthalpy	Entropy	Temp	Volume	Enthalpy	Entropy	Temp	Volume	Enthalpy	Entropy
[C]	[litre/kg]	[kJ/kg]	[kJ/K-kg]	[C]	[litre/kg]	[kJ/kg]	[kJ/K-kg]	[C]	[litre/kg]	[kJ/kg]	[kJ/K-kg]	[C]	[litre/kg]	[kJ/kg]	[kJ/K-kg]
56	96.469	414.830	1.824	66	67.791	422.970	1.820	76	48.993	431.070	1.818	86	36.262	439.090	1.817
58	97.121	416.690	1.829	68	68.251	424.870	1.825	78	49.329	433.020	1.823	88	36.515	441.090	1.822
60	97.771	418.550	1.835	70	68.709	426.780	1.831	80	49.663	434.970	1.829	90	36.767	443.110	1.828
62	98.421	420.410	1.841	72	69.167	428.690	1.837	82	49.997	436.940	1.834	92	37.018	445.120	1.834
64	99.069	422.280	1.846	74	69.624	430.610	1.842	84	50.330	438.900	1.840	94	37.269	447.140	1.839
66	99.717	424.160	1.852	76	70.079	432.535	1.848	86	50.662	440.880	1.845	96	37.518	449.160	1.845
68	100.360	426.040	1.857	78	70.534	434.460	1.853	88	50.994	442.850	1.851	98	37.767	451.190	1.850
70	101.010	427.930	1.863	80	70.988	436.400	1.859	90	51.325	444.840	1.856	100	38.015	453.220	1.855
72	101.650	429.830	1.868	82	71.442	438.340	1.864	92	51.654	446.830	1.862	102	38.263	455.260	1.861
74	102.300	431.730	1.874	84	71.894	440.290	1.870	94	51.984	448.820	1.867	104	38.510	457.300	1.866
76	102.940	433.640	1.879	86	72.346	442.240	1.875	96	52.312	450.820	1.873	106	38.756	459.350	1.872
78	103.580	435.550	1.885	88	72.797	444.190	1.880	98	52.640	452.820	1.878	108	39.002	461.400	1.877
80	104.220	437.460	1.890	90	73.247	446.160	1.886	100	52.967	454.830	1.883	110	39.247	463.460	1.883
82	104.860	439.390	1.896	92	73.697	448.130	1.891	102	53.294	456.840	1.889	112	39.492	465.520	1.888
84	105.500	441.320	1.901	94	74.146	450.100	1.897	104	53.620	458.860	1.894	114	39.736	467.580	1.893
86	106.140	443.260	1.906	96	74.594	452.080	1.902	106	53.945	460.890	1.900	116	39.979	469.650	1.899
88	106.780	445.200	1.912	98	75.042	454.060	1.907	108	54.270	462.910	1.905	118	40.222	471.730	1.904
90	107.420	447.150	1.917	100	75.489	456.050	1.913	110	54.595	464.950	1.910	120	40.464	473.810	1.909
92	108.060	449.100	1.923	102	75.936	458.050	1.918	112	54.918	466.990	1.915	122	40.706	475.900	1.915
94	108.690	451.060	1.928	104	76.382	460.050	1.923	114	55.242	469.040	1.921	124	40.948	477.990	1.920
96	109.330	453.030	1.933	106	76.827	462.060	1.929	116	55.564	471.090	1.926	126	41.189	480.080	1.925
98	109.960	455.000	1.939	108	77.272	464.080	1.934	118	55.887	473.140	1.931	128	41.429	482.190	1.930
100	110.600	456.980	1.944	110	77.716	466.090	1.939	120	56.209	475.210	1.937	130	41.669	484.290	1.936
102	111.230	458.960	1.949	112	78.160	468.120	1.945	122	56.530	477.270	1.942	132	41.909	486.400	1.941
104	111.870	460.950	1.954	114	78.604	470.150	1.950	124	56.851	479.350	1.947	134	42.148	488.520	1.946
106	112.500	462.950	1.960	116	79.046	472.190	1.955	126	57.171	481.420	1.952	136	42.387	490.640	1.951
108	113.130	464.950	1.965	118	79.489	474.230	1.960	128	57.491	483.510	1.958	138	42.625	492.770	1.956
110	113.760	466.960	1.970	120	79.931	476.280	1.966	130	57.811	485.600	1.963	140	42.863	494.900	1.962
112	114.400	468.970	1.976	122	80.372	478.330	1.971	132	58.130	487.690	1.968	142	43.101	497.040	1.967
114	115.030	470.990	1.981	124	80.813	480.390	1.976	134	58.449	489.790	1.973	144	43.338	499.180	1.972
116	115.660	473.020	1.986	126	81.254	482.460	1.981	136	58.767	491.900	1.978	146	43.575	501.330	1.977
118	116.290	475.050	1.991	128	81.694	484.530	1.986	138	59.085	494.010	1.983	148	43.812	503.480	1.982
120	116.920	477.090	1.996	130	82.134	486.600	1.991	140	59.403	496.130	1.989	150	44.048	505.640	1.987
122	117.550	479.130	2.002	132	82.574	488.690	1.997	142	59.720	498.250	1.994	152	44.284	507.800	1.992
124	118.180	481.180	2.007	134	83.013	490.780	2.002	144	60.037	500.380	1.999	154	44.520	509.970	1.997
126	118.800	483.240	2.012	136	83.451	492.870	2.007	146	60.354	502.510	2.004	156	44.755	512.140	2.002
128	119.430	485.300	2.017	138	83.890	494.970	2.012	148	60.670	504.650	2.009	158	44.990	514.320	2.008
130	120.060	487.370	2.022	140	84.328	497.080	2.017	150	60.986	506.790	2.014	160	45.225	516.510	2.013



Sat 20 C [9.7784 bar]				Sat 30 C [12.834 bar]				Sat 40 C [16.556 bar]				Sat 50 C [21.049 bar]			
Temp	Volume	Enthalpy	Entropy	Temp	Volume	Enthalpy	Entropy	Temp	Volume	Enthalpy	Entropy	Temp	Volume	Enthalpy	Entropy
[C]	[litre/kg]	[kJ/kg]	[kJ/K-kg]	[C]	[litre/kg]	[kJ/kg]	[kJ/K-kg]	[C]	[litre/kg]	[kJ/kg]	[kJ/K-kg]	[C]	[litre/kg]	[kJ/kg]	[kJ/K-kg]
20	18.825	369.200	1.581	30	14.115	373.490	1.579	40	10.479	376.660	1.575	50	7.778	378.660	1.568
22	19.107	371.350	1.588	32	14.359	375.820	1.587	42	10.704	379.260	1.583	52	7.999	381.690	1.577
24	19.383	373.480	1.596	34	14.597	378.110	1.594	44	10.919	381.800	1.591	54	8.207	384.600	1.586
26	19.652	375.590	1.603	36	14.828	380.380	1.602	46	11.126	384.300	1.599	56	8.403	387.420	1.595
28	19.917	377.690	1.610	38	15.054	382.630	1.609	48	11.327	386.750	1.606	58	8.590	390.160	1.603
30	20.177	379.780	1.617	40	15.274	384.860	1.616	50	11.521	389.170	1.614	60	8.769	392.840	1.611
32	20.433	381.860	1.623	42	15.490	387.070	1.623	52	11.710	391.560	1.621	62	8.940	395.460	1.619
34	20.685	383.930	1.630	44	15.702	389.270	1.630	54	11.894	393.920	1.628	64	9.106	398.040	1.627
36	20.933	385.980	1.637	46	15.910	391.450	1.637	56	12.073	396.260	1.636	66	9.267	400.570	1.634
38	21.178	388.040	1.643	48	16.114	393.610	1.644	58	12.249	398.580	1.643	68	9.423	403.080	1.642
40	21.419	390.080	1.650	50	16.314	395.770	1.650	60	12.420	400.880	1.650	70	9.575	405.550	1.649
42	21.658	392.120	1.657	52	16.512	397.920	1.657	62	12.589	403.160	1.656	72	9.723	407.990	1.656
44	21.893	394.160	1.663	54	16.707	400.060	1.664	64	12.754	405.430	1.663	74	9.867	410.420	1.663
46	22.126	396.190	1.669	56	16.899	402.200	1.670	66	12.916	407.690	1.670	76	10.008	412.820	1.670
48	22.357	398.220	1.676	58	17.089	404.320	1.676	68	13.076	409.930	1.676	78	10.147	415.200	1.677
50	22.585	400.250	1.682	60	17.276	406.450	1.683	70	13.233	412.170	1.683	80	10.283	417.570	1.683
52	22.811	402.280	1.688	62	17.461	408.560	1.689	72	13.388	414.390	1.689	82	10.416	419.920	1.690
54	23.034	404.300	1.694	64	17.644	410.680	1.695	74	13.541	416.610	1.696	84	10.547	422.260	1.697
56	23.256	406.320	1.701	66	17.825	412.780	1.702	76	13.692	418.820	1.702	86	10.676	424.590	1.703
58	23.476	408.350	1.707	68	18.004	414.890	1.708	78	13.841	421.030	1.708	88	10.803	426.910	1.710
60	23.694	410.370	1.713	70	18.181	417.000	1.714	80	13.988	423.230	1.715	90	10.928	429.220	1.716
62	23.910	412.390	1.719	72	18.357	419.100	1.720	82	14.133	425.430	1.721	92	11.051	431.520	1.722
64	24.125	414.410	1.725	74	18.531	421.200	1.726	84	14.277	427.620	1.727	94	11.173	433.810	1.729
66	24.338	416.440	1.731	76	18.703	423.300	1.732	86	14.419	429.810	1.733	96	11.293	436.100	1.735
68	24.550	418.460	1.737	78	18.874	425.400	1.738	88	14.560	431.990	1.739	98	11.412	438.380	1.741
70	24.760	420.490	1.743	80	19.044	427.500	1.744	90	14.700	434.180	1.745	100	11.529	440.650	1.747
72	24.969	422.510	1.749	82	19.213	429.600	1.750	92	14.838	436.360	1.751	102	11.645	442.920	1.753
74	25.177	424.540	1.755	84	19.380	431.700	1.756	94	14.975	438.540	1.757	104	11.760	445.190	1.759
76	25.383	426.575	1.760	86	19.546	433.800	1.762	96	15.111	440.720	1.763	106	11.874	447.450	1.765
78	25.589	428.610	1.766	88	19.711	435.900	1.768	98	15.245	442.890	1.769	108	11.986	449.720	1.771
80	25.793	430.640	1.772	90	19.874	438.000	1.774	100	15.379	445.070	1.775	110	12.098	451.980	1.777
82	25.996	432.680	1.778	92	20.037	440.100	1.779	102	15.511	447.250	1.781	112	12.208	454.230	1.783
84	26.198	434.720	1.783	94	20.199	442.210	1.785	104	15.643	449.430	1.786	114	12.318	456.490	1.789
86	26.399	436.760	1.789	96	20.360	444.320	1.791	106	15.774	451.600	1.792	116	12.427	458.740	1.794
88	26.599	438.810	1.795	98	20.519	446.430	1.797	108	15.904	453.780	1.798	118	12.534	461.000	1.800
90	26.798	440.860	1.800	100	20.678	448.540	1.802	110	16.033	455.960	1.804	120	12.641	463.250	1.806
92	26.996	442.910	1.806	102	20.837	450.650	1.808	112	16.161	458.140	1.809	122	12.748	465.500	1.812
94	27.194	444.960	1.812	104	20.994	452.770	1.813	114	16.288	460.330	1.815	124	12.853	467.750	1.817



Sat 20 C [9.7784 bar]				Sat 30 C [12.834 bar]				Sat 40 C [16.556 bar]				Sat 50 C [21.049 bar]			
Temp	Volume	Enthalpy	Entropy	Temp	Volume	Enthalpy	Entropy	Temp	Volume	Enthalpy	Entropy	Temp	Volume	Enthalpy	Entropy
[C]	[litre/kg]	[kJ/kg]	[kJ/K-kg]	[C]	[litre/kg]	[kJ/kg]	[kJ/K-kg]	[C]	[litre/kg]	[kJ/kg]	[kJ/K-kg]	[C]	[litre/kg]	[kJ/kg]	[kJ/K-kg]
96	27.390	447.020	1.817	106	21.150	454.880	1.819	116	16.415	462.510	1.821	126	12.958	470.010	1.823
98	27.586	449.080	1.823	108	21.306	457.000	1.825	118	16.541	464.690	1.826	128	13.062	472.260	1.829
100	27.781	451.150	1.828	110	21.461	459.130	1.830	120	16.666	466.880	1.832	130	13.165	474.510	1.834
102	27.975	453.220	1.834	112	21.616	461.250	1.836	122	16.790	469.070	1.837	132	13.268	476.770	1.840
104	28.169	455.290	1.839	114	21.769	463.380	1.841	124	16.914	471.260	1.843	134	13.370	479.030	1.845
106	28.361	457.370	1.845	116	21.922	465.520	1.847	126	17.037	473.460	1.848	136	13.471	481.280	1.851
108	28.554	459.450	1.850	118	22.075	467.650	1.852	128	17.160	475.650	1.854	138	13.572	483.540	1.856
110	28.745	461.540	1.856	120	22.227	469.790	1.858	130	17.282	477.850	1.859	140	13.672	485.800	1.862
112	28.936	463.620	1.861	122	22.378	471.940	1.863	132	17.403	480.050	1.865	142	13.772	488.070	1.867
114	29.126	465.720	1.867	124	22.528	474.080	1.869	134	17.524	482.260	1.870	144	13.871	490.330	1.873
116	29.316	467.820	1.872	126	22.678	476.230	1.874	136	17.645	484.460	1.876	146	13.970	492.600	1.878
118	29.505	469.920	1.878	128	22.828	478.390	1.879	138	17.765	486.670	1.881	148	14.068	494.870	1.884
120	29.693	472.020	1.883	130	22.977	480.550	1.885	140	17.884	488.890	1.886	150	14.166	497.140	1.889
122	29.881	474.130	1.888	132	23.125	482.710	1.890	142	18.003	491.100	1.892	152	14.263	499.410	1.894
124	30.069	476.250	1.894	134	23.273	484.870	1.895	144	18.122	493.320	1.897	154	14.360	501.690	1.900
126	30.256	478.370	1.899	136	23.421	487.040	1.901	146	18.240	495.550	1.902	156	14.456	503.970	1.905
128	30.442	480.490	1.904	138	23.568	489.220	1.906	148	18.357	497.770	1.908	158	14.552	506.250	1.910
130	30.628	482.620	1.910	140	23.715	491.390	1.911	150	18.474	500.000	1.913	160	14.648	508.540	1.916
132	30.814	484.750	1.915	142	23.861	493.580	1.917	152	18.591	502.240	1.918	162	14.743	510.830	1.921
134	30.999	486.890	1.920	144	24.007	495.760	1.922	154	18.708	504.480	1.924	164	14.838	513.120	1.926
136	31.184	489.030	1.925	146	24.152	497.950	1.927	156	18.824	506.720	1.929	166	14.933	515.410	1.931
138	31.368	491.180	1.931	148	24.297	500.150	1.932	158	18.939	508.960	1.934	168	15.027	517.710	1.937
140	31.552	493.330	1.936	150	24.442	502.340	1.937	160	19.055	511.210	1.939	170	15.121	520.010	1.942
142	31.735	495.490	1.941	152	24.586	504.550	1.943	162	19.169	513.460	1.944	172	15.214	522.310	1.947
144	31.919	497.650	1.946	154	24.730	506.760	1.948	164	19.284	515.720	1.950	174	15.307	524.620	1.952
146	32.101	499.820	1.951	156	24.874	508.970	1.953	166	19.398	517.980	1.955	176	15.400	526.930	1.957
148	32.284	501.990	1.957	158	25.017	511.180	1.958	168	19.512	520.250	1.960	178	15.493	529.250	1.963
150	32.466	504.160	1.962	160	25.160	513.410	1.963	170	19.626	522.510	1.965	180	15.585	531.570	1.968
152	32.647	506.340	1.967	162	25.302	515.630	1.968	172	19.739	524.790	1.970	182	15.677	533.890	1.973
154	32.829	508.530	1.972	164	25.445	517.860	1.974	174	19.852	527.060	1.975	184	15.769	536.210	1.978
156	33.010	510.720	1.977	166	25.587	520.100	1.979	176	19.965	529.350	1.980	186	15.860	538.540	1.983
158	33.190	512.920	1.982	168	25.728	522.330	1.984	178	20.077	531.630	1.985	188	15.951	540.880	1.988
160	33.371	515.120	1.987	170	25.869	524.580	1.989	180	20.190	533.920	1.990	190	16.042	543.210	1.993
162	33.551	517.320	1.992	172	26.011	526.830	1.994	182	20.301	536.210	1.995	192	16.133	545.550	1.998
164	33.730	519.530	1.997	174	26.151	529.080	1.999	184	20.413	538.510	2.001	194	16.223	547.900	2.003
166	33.910	521.750	2.002	176	26.292	531.340	2.004	186	20.524	540.810	2.006	196	16.313	550.250	2.008
168	34.089	523.970	2.008	178	26.432	533.600	2.009	188	20.636	543.120	2.011	198	16.403	552.600	2.013
170	34.268	526.190	2.013	180	26.572	535.870	2.014	190	20.746	545.430	2.016	200	16.493	554.960	2.018



Sat 60 C [26.446 bar]				Sat 70 C [32.965 bar]			
Temp	Volume	Enthalpy	Entropy	Temp	Volume	Enthalpy	Entropy
[C]	[litre/kg]	[kJ/kg]	[kJ/K-kg]	[C]	[litre/kg]	[kJ/kg]	[kJ/K-kg]
60	5.633	378.320	1.556	70	3.753	372.280	1.529
62	5.881	382.250	1.568	72	4.124	379.120	1.549
64	6.100	385.830	1.579	74	4.396	384.320	1.564
66	6.299	389.190	1.588	76	4.608	388.550	1.576
68	6.484	392.380	1.598	78	4.819	392.780	1.589
70	6.657	395.450	1.607	80	4.997	396.490	1.599
72	6.821	398.410	1.615	82	5.160	399.980	1.609
74	6.977	401.290	1.624	84	5.312	403.310	1.618
76	7.126	404.100	1.632	86	5.454	406.510	1.627
78	7.269	406.840	1.640	88	5.590	409.600	1.636
80	7.407	409.540	1.647	90	5.719	412.600	1.644
82	7.540	412.200	1.655	92	5.842	415.530	1.652
84	7.670	414.810	1.662	94	5.961	418.400	1.660
86	7.796	417.390	1.669	96	6.076	421.220	1.668
88	7.919	419.950	1.676	98	6.187	423.980	1.675
90	8.039	422.480	1.683	100	6.295	426.710	1.682
92	8.156	424.980	1.690	102	6.400	429.400	1.690
94	8.271	427.460	1.697	104	6.502	432.060	1.697
96	8.383	429.930	1.704	106	6.602	434.690	1.704
98	8.494	432.380	1.710	108	6.699	437.300	1.710
100	8.602	434.810	1.717	110	6.794	439.880	1.717
102	8.709	437.230	1.723	112	6.888	442.440	1.724
104	8.814	439.640	1.730	114	6.980	444.990	1.730
106	8.917	442.040	1.736	116	7.070	447.520	1.737
108	9.019	444.430	1.742	118	7.159	450.030	1.743
110	9.119	446.810	1.749	120	7.246	452.530	1.750
112	9.219	449.180	1.755	122	7.332	455.020	1.756
114	9.317	451.550	1.761	124	7.416	457.500	1.762
116	9.413	453.910	1.767	126	7.500	459.970	1.769
118	9.509	456.260	1.773	128	7.582	462.430	1.775
120	9.604	458.610	1.779	130	7.664	464.880	1.781
122	9.697	460.950	1.785	132	7.744	467.320	1.787
124	9.790	463.300	1.791	134	7.823	469.760	1.793
126	9.882	465.630	1.797	136	7.902	472.190	1.799
128	9.973	467.970	1.803	138	7.980	474.620	1.805
130	10.063	470.300	1.808	140	8.056	477.040	1.811
132	10.152	472.630	1.814	142	8.132	479.460	1.816
134	10.241	474.960	1.820	144	8.208	481.880	1.822



Sat 60 C [26.446 bar]					Sat 70 C [32.965 bar]			
Temp	Volume	Enthalpy	Entropy		Temp	Volume	Enthalpy	Entropy
[C]	[litre/kg]	[kJ/kg]	[kJ/K-kg]		[C]	[litre/kg]	[kJ/kg]	[kJ/K-kg]
136	10.329	477.290	1.826		146	8.283	484.290	1.828
138	10.416	479.620	1.831		148	8.357	486.700	1.834
140	10.503	481.950	1.837		150	8.430	489.100	1.839
142	10.589	484.270	1.843		152	8.503	491.510	1.845
144	10.674	486.600	1.848		154	8.575	493.910	1.851
146	10.759	488.930	1.854		156	8.647	496.310	1.856
148	10.843	491.250	1.859		158	8.718	498.710	1.862
150	10.926	493.580	1.865		160	8.788	501.110	1.868
152	11.010	495.910	1.870		162	8.858	503.510	1.873
154	11.092	498.240	1.876		164	8.928	505.910	1.879
156	11.174	500.570	1.881		166	8.997	508.310	1.884
158	11.256	502.900	1.887		168	9.066	510.710	1.889
160	11.337	505.240	1.892		170	9.134	513.110	1.895
162	11.418	507.570	1.897		172	9.202	515.510	1.900
164	11.499	509.910	1.903		174	9.269	517.920	1.906
166	11.579	512.250	1.908		176	9.336	520.320	1.911
168	11.658	514.590	1.913		178	9.403	522.720	1.916
170	11.737	516.930	1.919		180	9.469	525.130	1.922
172	11.816	519.280	1.924		182	9.535	527.530	1.927
174	11.895	521.620	1.929		184	9.601	529.940	1.932
176	11.973	523.980	1.935		186	9.666	532.350	1.938
178	12.051	526.330	1.940		188	9.731	534.760	1.943
180	12.128	528.680	1.945		190	9.796	537.180	1.948
182	12.205	531.040	1.950		192	9.860	539.590	1.953
184	12.282	533.400	1.955		194	9.924	542.010	1.958
186	12.359	535.770	1.960		196	9.988	544.430	1.964
188	12.435	538.130	1.966		198	10.052	546.860	1.969
190	12.511	540.500	1.971		200	10.115	549.280	1.974
192	12.587	542.880	1.976		202	10.178	551.710	1.979
194	12.662	545.250	1.981		204	10.241	554.140	1.984
196	12.737	547.630	1.986		206	10.303	556.570	1.989
198	12.812	550.020	1.991		208	10.365	559.010	1.994
200	12.887	552.400	1.996		210	10.427	561.450	1.999
202	12.962	554.790	2.001		212	10.489	563.890	2.004
204	13.036	557.190	2.006		214	10.551	566.330	2.009
206	13.110	559.580	2.011		216	10.612	568.780	2.014
208	13.184	561.980	2.016		218	10.673	571.230	2.019
210	13.257	564.390	2.021		220	10.734	573.680	2.024



Temp [C]	Pressure (L) [bara] bubble	Pressure (V) [bara] dew	Density (L) [kg/m ³] bubble	Density (V) [kg/m ³] dew	Volume (L) [litre/kg] bubble	Volume (V) [litre/kg] dew	Enthalpy (L) [kJ/kg] bubble	Enthalpy (V) [kJ/kg] dew	Entropy (L) [kJ/K-kg] bubble	Entropy (V) [kJ/K-kg] dew
-60	0.45747	0.38584	1401.9	2.344	0.713	426.560	124.71	323.64	0.6912	1.6324
-58	0.51108	0.43338	1396.0	2.614	0.716	382.600	127.07	324.88	0.7023	1.6293
-56	0.56961	0.48550	1389.9	2.907	0.719	343.990	129.45	326.13	0.7132	1.6263
-54	0.63336	0.54251	1383.9	3.226	0.723	310.000	131.83	327.37	0.7241	1.6235
-52	0.70268	0.60474	1377.8	3.571	0.726	280.000	134.22	328.61	0.7350	1.6208
-50	0.77788	0.67253	1371.7	3.946	0.729	253.440	136.62	329.85	0.7458	1.6183
-48	0.85932	0.74620	1365.6	4.350	0.732	229.890	139.03	331.09	0.7565	1.6158
-46	0.94736	0.82611	1359.4	4.786	0.736	208.930	141.45	332.33	0.7671	1.6136
-44	1.0423	0.91263	1353.1	5.256	0.739	190.260	143.87	333.56	0.7777	1.6114
-42	1.1446	1.0061	1346.9	5.761	0.742	173.570	146.31	334.79	0.7883	1.6094
-40	1.2547	1.1070	1340.6	6.304	0.746	158.630	148.75	336.02	0.7988	1.6075
-38	1.3728	1.2156	1334.2	6.886	0.750	145.230	151.21	337.24	0.8092	1.6057
-36	1.4994	1.3323	1327.8	7.509	0.753	133.180	153.67	338.46	0.8196	1.6039
-34	1.6349	1.4576	1321.4	8.175	0.757	122.330	156.15	339.67	0.8300	1.6023
-32	1.7797	1.5919	1314.9	8.886	0.761	112.530	158.63	340.89	0.8403	1.6008
-30	1.9342	1.7355	1308.3	9.646	0.764	103.670	161.13	342.09	0.8505	1.5994
-28	2.0989	1.8890	1301.7	10.46	0.768	95.650	163.63	343.29	0.8607	1.5980
-26	2.2741	2.0528	1295.0	11.32	0.772	88.368	166.15	344.48	0.8709	1.5968
-24	2.4604	2.2272	1288.3	12.23	0.776	81.749	168.68	345.67	0.8810	1.5956
-22	2.6582	2.4129	1281.6	13.21	0.780	75.722	171.22	346.85	0.8911	1.5945
-20	2.8679	2.6101	1274.7	14.24	0.784	70.225	173.77	348.03	0.9012	1.5934
-18	3.0900	2.8195	1267.8	15.34	0.789	65.204	176.33	349.19	0.9112	1.5924
-16	3.3250	3.0415	1260.8	16.50	0.793	60.610	178.91	350.35	0.9212	1.5915
-14	3.5733	3.2765	1253.8	17.73	0.798	56.401	181.50	351.50	0.9311	1.5907
-12	3.8355	3.5251	1246.7	19.03	0.802	52.539	184.10	352.64	0.9411	1.5898
-10	4.1119	3.7878	1239.5	20.41	0.807	48.991	186.71	353.78	0.9509	1.5891
-8	4.4031	4.0650	1232.2	21.87	0.812	45.726	189.34	354.90	0.9608	1.5884
-6	4.7097	4.3573	1224.8	23.41	0.816	42.717	191.98	356.01	0.9706	1.5877
-4	5.0320	4.6653	1217.4	25.04	0.821	39.942	194.64	357.11	0.9805	1.5871



Temp [C]	Pressure (L) [bara] bubble	Pressure (V) [bara] dew	Density (L) [kg/m ³] bubble	Density (V) [kg/m ³] dew	Volume (L) [litre/kg] bubble	Volume (V) [litre/kg] dew	Enthalpy (L) [kJ/kg] bubble	Enthalpy (V) [kJ/kg] dew	Entropy (L) [kJ/K-kg] bubble	Entropy (V) [kJ/K-kg] dew
-2	5.3706	4.9893	1209.9	26.75	0.827	37.378	197.31	358.20	0.9902	1.5864
0	5.7261	5.3301	1202.2	28.57	0.832	35.006	200.00	359.28	1.0000	1.5859
2	6.0989	5.6880	1194.5	30.48	0.837	32.810	202.70	360.35	1.0097	1.5853
4	6.4896	6.0637	1186.6	32.50	0.843	30.773	205.42	361.40	1.0195	1.5848
6	6.8988	6.4578	1178.7	34.62	0.848	28.883	208.16	362.43	1.0292	1.5843
8	7.3268	6.8707	1170.6	36.87	0.854	27.126	210.91	363.45	1.0389	1.5838
10	7.7745	7.3032	1162.4	39.23	0.860	25.491	213.69	364.46	1.0486	1.5834
12	8.2421	7.7557	1154.0	41.72	0.867	23.969	216.48	365.45	1.0583	1.5829
14	8.7305	8.2288	1145.6	44.35	0.873	22.549	219.29	366.42	1.0679	1.5825
16	9.2400	8.7232	1136.9	47.12	0.880	21.223	222.12	367.37	1.0776	1.5820
18	9.7714	9.2395	1128.2	50.04	0.886	19.984	224.97	368.30	1.0873	1.5815
20	10.325	9.7784	1119.2	53.12	0.893	18.826	227.85	369.20	1.0969	1.5811
22	10.902	10.340	1110.1	56.37	0.901	17.740	230.74	370.09	1.1066	1.5806
24	11.502	10.926	1100.8	59.80	0.908	16.723	233.67	370.95	1.1163	1.5801
26	12.127	11.537	1091.3	63.42	0.916	15.768	236.61	371.78	1.1260	1.5796
28	12.776	12.172	1081.6	67.25	0.925	14.871	239.59	372.58	1.1357	1.5790
30	13.451	12.834	1071.7	71.29	0.933	14.027	242.59	373.36	1.1454	1.5784
32	14.153	13.522	1061.5	75.57	0.942	13.233	245.62	374.10	1.1552	1.5777
34	14.881	14.237	1051.0	80.10	0.951	12.484	248.68	374.80	1.1650	1.5770
36	15.636	14.981	1040.3	84.91	0.961	11.778	251.78	375.46	1.1748	1.5763
38	16.420	15.754	1029.3	90.01	0.972	11.110	254.91	376.09	1.1846	1.5754
40	17.233	16.556	1017.9	95.43	0.982	10.479	258.07	376.66	1.1945	1.5745
42	18.076	17.389	1006.2	101.20	0.994	9.882	261.28	377.19	1.2045	1.5735
44	18.950	18.254	994.04	107.35	1.006	9.315	264.54	377.65	1.2145	1.5723
46	19.855	19.152	981.48	113.93	1.019	8.777	267.84	378.06	1.2246	1.5710
48	20.792	20.083	968.41	120.99	1.033	8.265	271.19	378.40	1.2347	1.5696
50	21.762	21.049	954.80	128.57	1.047	7.778	274.61	378.66	1.2450	1.5680
52	22.767	22.051	940.57	136.75	1.063	7.313	278.08	378.83	1.2554	1.5662
54	23.807	23.090	925.62	145.61	1.080	6.868	281.63	378.90	1.2660	1.5642



Temp [C]	Pressure (L) [bara] bubble	Pressure (V) [bara] dew	Density (L) [kg/m ³] bubble	Density (V) [kg/m ³] dew	Volume (L) [litre/kg] bubble	Volume (V) [litre/kg] dew	Enthalpy (L) [kJ/kg] bubble	Enthalpy (V) [kJ/kg] dew	Entropy (L) [kJ/K-kg] bubble	Entropy (V) [kJ/K-kg] dew
56	24.883	24.168	909.85	155.25	1.099	6.441	285.26	378.86	1.2767	1.5619
58	25.996	25.286	893.11	165.82	1.120	6.031	288.99	378.69	1.2876	1.5592
60	27.147	26.446	875.20	177.49	1.143	5.634	292.83	378.35	1.2988	1.5562
62	28.339	27.650	855.87	190.49	1.168	5.250	296.82	377.82	1.3103	1.5526
64	29.572	28.900	834.73	205.18	1.198	4.874	300.97	377.04	1.3222	1.5484
66	30.847	30.200	811.20	222.06	1.233	4.503	305.34	375.95	1.3347	1.5434
68	32.166	31.553	784.35	241.98	1.275	4.133	310.03	374.43	1.3480	1.5372
70	33.531	32.965	752.43	266.45	1.329	3.753	315.19	372.28	1.3625	1.5293
72	34.942	34.447	711.49	298.84	1.405	3.346	321.19	369.04	1.3794	1.5184
74	36.673	36.023	671.96	350.31	1.488	2.855	327.16	363.27	1.3959	1.5003
76	38.156	39.432	600.60	686.52	1.665	1.457	336.23	328.36	1.4213	1.3982