



RS-53 (R470A)

THERMODYNAMIC TABLES

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RS-53 (R470A)
Saturation Properties



Temp [C]	Pressure (L) [bara] bubble	Pressure (V) [bara] dew	Density (L) [kg/m ³] bubble	Density (V) [kg/m ³] dew	Volume (L) [m ³ /kg] bubble	Volume (V) [m ³ /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	1.1515	0.25481	1397.7	1.229	0.00071547	0.81365	117.24	366.36	0.66131	1.8959
-59	1.207	0.27168	1394.7	1.305	0.00071699	0.76627	118.57	367.02	0.66749	1.8928
-58	1.2645	0.28945	1391.7	1.3848	0.00071853	0.72214	119.89	367.67	0.67365	1.8897
-57	1.3241	0.30816	1388.7	1.4684	0.00072008	0.68102	121.22	368.33	0.67979	1.8866
-56	1.3859	0.32785	1385.8	1.556	0.00072163	0.64266	122.55	368.98	0.6859	1.8836
-55	1.4498	0.34855	1382.8	1.6478	0.0007232	0.60686	123.88	369.64	0.69199	1.8807
-54	1.516	0.37031	1379.7	1.7439	0.00072477	0.57343	125.21	370.29	0.69806	1.8778
-53	1.5845	0.39317	1376.7	1.8444	0.00072636	0.54217	126.55	370.95	0.7041	1.875
-52	1.6553	0.41715	1373.7	1.9495	0.00072796	0.51294	127.88	371.6	0.71013	1.8722
-51	1.7285	0.44231	1370.7	2.0594	0.00072957	0.48558	129.21	372.25	0.71613	1.8695
-50	1.8042	0.46869	1367.6	2.1741	0.00073118	0.45995	130.55	372.91	0.72211	1.8669
-49	1.8824	0.49634	1364.6	2.2939	0.00073282	0.43594	131.89	373.56	0.72807	1.8642
-48	1.9631	0.52528	1361.5	2.4189	0.00073446	0.41341	133.23	374.21	0.734	1.8617
-47	2.0464	0.55557	1358.5	2.5493	0.00073611	0.39227	134.57	374.86	0.73992	1.8591
-46	2.1324	0.58726	1355.4	2.6852	0.00073778	0.37241	135.91	375.51	0.74582	1.8567
-45	2.2211	0.62039	1352.3	2.8268	0.00073946	0.35376	137.26	376.16	0.7517	1.8542
-44	2.3125	0.65501	1349.3	2.9743	0.00074115	0.33622	138.6	376.81	0.75756	1.8519
-43	2.4068	0.69117	1346.2	3.1278	0.00074285	0.31972	139.95	377.46	0.76339	1.8495
-42	2.5039	0.72891	1343.1	3.2875	0.00074457	0.30418	141.3	378.1	0.76921	1.8472
-41	2.604	0.76829	1339.9	3.4537	0.0007463	0.28955	142.65	378.75	0.77501	1.845
-40	2.707	0.80935	1336.8	3.6264	0.00074804	0.27576	144.01	379.4	0.7808	1.8427
-39	2.8131	0.85216	1333.7	3.8059	0.0007498	0.26275	145.36	380.04	0.78656	1.8406
-38	2.9222	0.89675	1330.6	3.9924	0.00075157	0.25048	146.72	380.68	0.79231	1.8384
-37	3.0345	0.94319	1327.4	4.186	0.00075335	0.23889	148.08	381.32	0.79804	1.8363
-36	3.15	0.99152	1324.2	4.387	0.00075515	0.22795	149.44	381.96	0.80375	1.8343
-35	3.2688	1.0418	1321.1	4.5955	0.00075696	0.2176	150.8	382.6	0.80944	1.8323
-34	3.3908	1.0941	1317.9	4.8118	0.00075879	0.20782	152.16	383.24	0.81512	1.8303
-33	3.5162	1.1485	1314.7	5.0361	0.00076063	0.19857	153.53	383.87	0.82078	1.8283
-32	3.6451	1.205	1311.5	5.2685	0.00076249	0.18981	154.9	384.51	0.82643	1.8264

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Temp [C]	Pressure (L) [bara] bubble	Pressure (V) [bara] dew	Density (L) [kg/m^3] bubble	Density (V) [kg/m^3] dew	Volume (L) [m3/kg] bubble	Volume (V) [m3/kg] dew	Enthalpy (L) [kJ/kg] bubble	Enthalpy (V) [kJ/kg] dew	Entropy (L) [kJ/K-kg] bubble	Entropy (V) [kJ/K-kg] dew
-31	3.7774	1.2636	1308.3	5.5093	0.00076436	0.18151	156.27	385.14	0.83206	1.8245
-30	3.9132	1.3245	1305.1	5.7588	0.00076625	0.17365	157.64	385.77	0.83767	1.8227
-29	4.0526	1.3878	1301.8	6.017	0.00076815	0.1662	159.02	386.4	0.84327	1.8208
-28	4.1957	1.4533	1298.6	6.2843	0.00077008	0.15913	160.39	387.03	0.84885	1.819
-27	4.3424	1.5213	1295.3	6.5609	0.00077201	0.15242	161.77	387.66	0.85442	1.8173
-26	4.4929	1.5918	1292	6.847	0.00077397	0.14605	163.15	388.28	0.85997	1.8156
-25	4.6472	1.6648	1288.8	7.1428	0.00077594	0.14	164.54	388.91	0.86551	1.8139
-24	4.8054	1.7405	1285.5	7.4487	0.00077793	0.13425	165.92	389.53	0.87103	1.8122
-23	4.9675	1.8188	1282.1	7.7647	0.00077994	0.12879	167.31	390.15	0.87655	1.8105
-22	5.1336	1.8999	1278.8	8.0913	0.00078197	0.12359	168.7	390.77	0.88204	1.8089
-21	5.3037	1.9837	1275.5	8.4286	0.00078402	0.11864	170.09	391.38	0.88753	1.8073
-20	5.4778	2.0705	1272.1	8.7769	0.00078608	0.11393	171.49	391.99	0.893	1.8058
-19	5.6562	2.1602	1268.8	9.1365	0.00078817	0.10945	172.89	392.61	0.89845	1.8042
-18	5.8387	2.2529	1265.4	9.5077	0.00079027	0.10518	174.29	393.22	0.9039	1.8027
-17	6.0255	2.3487	1262	9.8906	0.0007924	0.10111	175.69	393.82	0.90933	1.8012
-16	6.2166	2.4477	1258.6	10.286	0.00079454	0.097222	177.1	394.43	0.91475	1.7998
-15	6.412	2.5499	1255.2	10.693	0.00079671	0.093518	178.51	395.03	0.92015	1.7983
-14	6.6119	2.6554	1251.7	11.113	0.0007989	0.089983	179.92	395.63	0.92555	1.7969
-13	6.8162	2.7642	1248.3	11.546	0.00080111	0.086607	181.33	396.23	0.93094	1.7955
-12	7.0251	2.8765	1244.8	11.993	0.00080335	0.083384	182.75	396.82	0.93631	1.7941
-11	7.2386	2.9923	1241.3	12.453	0.0008056	0.080304	184.17	397.41	0.94167	1.7928
-10	7.4567	3.1118	1237.8	12.927	0.00080789	0.07736	185.59	398	0.94702	1.7914
-9	7.6795	3.2349	1234.3	13.415	0.00081019	0.074545	187.02	398.59	0.95236	1.7901
-8	7.9071	3.3617	1230.7	13.917	0.00081252	0.071853	188.45	399.17	0.95769	1.7888
-7	8.1395	3.4924	1227.2	14.435	0.00081488	0.069277	189.88	399.76	0.96301	1.7875
-6	8.3767	3.627	1223.6	14.968	0.00081726	0.06681	191.32	400.33	0.96832	1.7862
-5	8.6189	3.7656	1220	15.516	0.00081966	0.064449	192.76	400.91	0.97363	1.785
-4	8.866	3.9082	1216.4	16.081	0.0008221	0.062187	194.2	401.48	0.97892	1.7838
-3	9.1182	4.055	1212.8	16.661	0.00082456	0.06002	195.64	402.05	0.9842	1.7826

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-2	9.3754	4.2061	1209.1	17.259	0.00082705	0.057942	197.09	402.62	0.98948	1.7814
-1	9.6378	4.3614	1205.4	17.873	0.00082957	0.05595	198.54	403.18	0.99474	1.7802
0	9.9053	4.5212	1201.8	18.505	0.00083212	0.054039	200	403.74	1	1.779
1	10.178	4.6854	1198	19.155	0.0008347	0.052205	201.46	404.3	1.0053	1.7778
2	10.456	4.8542	1194.3	19.823	0.00083731	0.050446	202.92	404.85	1.0105	1.7767
3	10.74	5.0277	1190.5	20.51	0.00083995	0.048756	204.39	405.4	1.0157	1.7756
4	11.029	5.206	1186.8	21.217	0.00084263	0.047133	205.86	405.94	1.021	1.7745
5	11.323	5.389	1183	21.942	0.00084534	0.045574	207.33	406.48	1.0262	1.7733
6	11.623	5.577	1179.1	22.688	0.00084808	0.044075	208.81	407.02	1.0314	1.7723
7	11.928	5.7701	1175.3	23.455	0.00085086	0.042635	210.3	407.55	1.0366	1.7712
8	12.239	5.9682	1171.4	24.242	0.00085368	0.04125	211.78	408.08	1.0418	1.7701
9	12.556	6.1716	1167.5	25.052	0.00085653	0.039917	213.27	408.61	1.047	1.769
10	12.878	6.3802	1163.6	25.883	0.00085942	0.038635	214.77	409.13	1.0522	1.768
11	13.206	6.5943	1159.6	26.737	0.00086235	0.037401	216.27	409.65	1.0574	1.7669
12	13.54	6.8138	1155.6	27.614	0.00086532	0.036213	217.77	410.16	1.0626	1.7659
13	13.88	7.039	1151.6	28.515	0.00086834	0.035069	219.28	410.67	1.0677	1.7649
14	14.226	7.2698	1147.6	29.44	0.00087139	0.033967	220.79	411.17	1.0729	1.7638
15	14.577	7.5064	1143.5	30.39	0.00087449	0.032905	222.31	411.67	1.0781	1.7628
16	14.935	7.7489	1139.4	31.366	0.00087764	0.031882	223.83	412.16	1.0832	1.7618
17	15.299	7.9975	1135.3	32.368	0.00088083	0.030895	225.36	412.65	1.0884	1.7608
18	15.668	8.2521	1131.1	33.396	0.00088407	0.029943	226.89	413.13	1.0936	1.7598
19	16.044	8.513	1126.9	34.453	0.00088736	0.029025	228.43	413.61	1.0987	1.7588
20	16.427	8.7801	1122.7	35.537	0.0008907	0.028139	229.97	414.08	1.1039	1.7578
21	16.815	9.0537	1118.5	36.651	0.00089409	0.027285	231.52	414.55	1.109	1.7568
22	17.21	9.3338	1114.2	37.794	0.00089754	0.026459	233.07	415.01	1.1142	1.7558
23	17.611	9.6206	1109.8	38.968	0.00090104	0.025662	234.63	415.47	1.1193	1.7548
24	18.018	9.9142	1105.5	40.173	0.00090461	0.024892	236.19	415.91	1.1245	1.7538
25	18.432	10.215	1101	41.41	0.00090823	0.024149	237.76	416.36	1.1296	1.7529
26	18.852	10.522	1096.6	42.681	0.00091191	0.02343	239.34	416.79	1.1348	1.7519

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Temp [C]	Pressure (L) [bara] bubble	Pressure (V) [bara] dew	Density (L) [kg/m ³] bubble	Density (V) [kg/m ³] dew	Volume (L) [m ³ /kg] bubble	Volume (V) [m ³ /kg] dew	Enthalpy (L) [kJ/kg] bubble	Enthalpy (V) [kJ/kg] dew	Entropy (L) [kJ/K-kg] bubble	Entropy (V) [kJ/K-kg] dew
27	19.279	10.837	1092.1	43.985	0.00091566	0.022735	240.92	417.22	1.1399	1.7509
28	19.713	11.158	1087.6	45.324	0.00091947	0.022063	242.51	417.65	1.1451	1.7499
29	20.153	11.487	1083	46.7	0.00092336	0.021413	244.1	418.06	1.1502	1.7489
30	20.599	11.824	1078.4	48.112	0.00092731	0.020785	245.7	418.47	1.1554	1.7479
31	21.053	12.168	1073.7	49.562	0.00093134	0.020177	247.31	418.88	1.1605	1.7469
32	21.513	12.52	1069	51.051	0.00093544	0.019588	248.92	419.27	1.1657	1.7459
33	21.979	12.88	1064.3	52.581	0.00093962	0.019018	250.54	419.66	1.1708	1.7449
34	22.453	13.248	1059.5	54.152	0.00094388	0.018467	252.17	420.04	1.176	1.7439
35	22.933	13.624	1054.6	55.765	0.00094823	0.017932	253.81	420.41	1.1812	1.7429
36	23.421	14.008	1049.7	57.423	0.00095267	0.017415	255.45	420.77	1.1863	1.7419
37	23.915	14.401	1044.7	59.127	0.0009572	0.016913	257.1	421.12	1.1915	1.7408
38	24.416	14.802	1039.7	60.877	0.00096182	0.016427	258.76	421.47	1.1967	1.7398
39	24.924	15.212	1034.6	62.676	0.00096655	0.015955	260.42	421.81	1.2019	1.7387
40	25.438	15.631	1029.5	64.524	0.00097138	0.015498	262.1	422.13	1.2071	1.7377
41	25.96	16.059	1024.3	66.425	0.00097631	0.015055	263.78	422.45	1.2123	1.7366
42	26.489	16.496	1019	68.379	0.00098136	0.014624	265.47	422.76	1.2175	1.7355
43	27.025	16.942	1013.7	70.388	0.00098653	0.014207	267.18	423.05	1.2227	1.7344
44	27.568	17.398	1008.2	72.455	0.00099182	0.013802	268.89	423.34	1.228	1.7333
45	28.118	17.864	1002.8	74.582	0.00099724	0.013408	270.61	423.62	1.2332	1.7322
46	28.676	18.34	997.21	76.77	0.0010028	0.013026	272.34	423.88	1.2385	1.731
47	29.24	18.825	991.58	79.022	0.0010085	0.012655	274.08	424.13	1.2437	1.7299
48	29.811	19.321	985.86	81.34	0.0010143	0.012294	275.83	424.37	1.249	1.7287
49	30.39	19.827	980.06	83.728	0.0010203	0.011943	277.59	424.6	1.2543	1.7275
50	30.975	20.344	974.17	86.187	0.0010265	0.011603	279.37	424.81	1.2596	1.7262
51	31.568	20.872	968.19	88.722	0.0010329	0.011271	281.15	425.01	1.265	1.725
52	32.168	21.411	962.11	91.335	0.0010394	0.010949	282.95	425.19	1.2703	1.7237
53	32.775	21.961	955.93	94.029	0.0010461	0.010635	284.77	425.36	1.2757	1.7224
54	33.389	22.523	949.64	96.808	0.001053	0.01033	286.59	425.52	1.2811	1.7211
55	34.01	23.096	943.24	99.677	0.0010602	0.010032	288.43	425.66	1.2865	1.7197

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56	34.638	23.681	936.72	102.64	0.0010676	0.0097429	290.29	425.78	1.2919	1.7183
57	35.272	24.279	930.08	105.7	0.0010752	0.0094608	292.16	425.88	1.2974	1.7169
58	35.914	24.889	923.3	108.86	0.0010831	0.0091859	294.05	425.97	1.3029	1.7155
59	36.563	25.512	916.39	112.13	0.0010912	0.0089179	295.96	426.03	1.3084	1.7139
60	37.218	26.149	909.33	115.52	0.0010997	0.0086565	297.88	426.07	1.314	1.7124
61	37.88	26.798	902.12	119.03	0.0011085	0.0084015	299.82	426.1	1.3196	1.7108
62	38.549	27.462	894.74	122.66	0.0011176	0.0081527	301.79	426.1	1.3253	1.7092
63	39.224	28.14	887.19	126.43	0.0011272	0.0079096	303.78	426.07	1.331	1.7075
64	39.905	28.832	879.45	130.34	0.0011371	0.0076722	305.79	426.02	1.3367	1.7057
65	40.593	29.54	871.5	134.41	0.0011474	0.0074402	307.82	425.94	1.3425	1.7039
66	41.286	30.262	863.35	138.63	0.0011583	0.0072133	309.88	425.84	1.3484	1.702
67	41.985	31.001	854.96	143.04	0.0011696	0.0069912	311.98	425.7	1.3543	1.7001
68	42.689	31.757	846.32	147.63	0.0011816	0.0067739	314.1	425.53	1.3603	1.698
69	43.399	32.529	837.42	152.42	0.0011941	0.0065609	316.25	425.32	1.3663	1.6959
70	44.113	33.319	828.22	157.43	0.0012074	0.0063521	318.44	425.07	1.3725	1.6937
71	44.832	34.127	818.71	162.68	0.0012214	0.0061472	320.67	424.79	1.3787	1.6914
72	45.555	34.954	808.86	168.18	0.0012363	0.005946	322.95	424.46	1.385	1.689
73	46.281	35.802	798.62	173.97	0.0012522	0.0057482	325.27	424.07	1.3915	1.6865
74	47.01	36.67	787.97	180.07	0.0012691	0.0055535	327.64	423.64	1.3981	1.6838
75	47.74	37.56	776.86	186.51	0.0012872	0.0053617	330.07	423.14	1.4048	1.681
76	48.471	38.474	765.23	193.34	0.0013068	0.0051723	332.56	422.58	1.4117	1.678
77	49.203	39.412	753.02	200.6	0.001328	0.0049851	335.13	421.95	1.4187	1.6748
78	49.932	40.377	740.16	208.35	0.0013511	0.0047996	337.78	421.23	1.426	1.6714
79	50.657	41.37	726.55	216.67	0.0013764	0.0046154	340.53	420.41	1.4335	1.6678
80	51.377	42.394	712.08	225.64	0.0014043	0.0044319	343.39	419.48	1.4414	1.6638



Sat -60 C [0.25960491 bar]				Sat -50 C [0.47754427 bar]				Sat -40 C [0.82465148 bar]			
Temp	Volume	Enthalpy	Entropy	Temp	Volume	Enthalpy	Entropy	Temp	Volume	Enthalpy	Entropy
[C]	[m3/kg]	[kJ/kg]	[kJ/K-kg]	[C]	[m3/kg]	[kJ/kg]	[kJ/K-kg]	[C]	[m3/kg]	[kJ/kg]	[kJ/K-kg]
-60	0.798378763	365.51	1.89182	-50	0.451197739	372.05	1.86270	-40	0.270419093	378.51	1.83851
-50	0.837595449	372.81	1.92527	-40	0.472891497	379.58	1.89574	-30	0.283272487	386.31	1.87126
-40	0.876570898	380.24	1.95784	-30	0.494392011	387.24	1.92788	-20	0.295967398	394.20	1.90308
-30	0.915365791	387.81	1.98963	-20	0.515746926	395.02	1.95924	-10	0.308542297	402.21	1.93409
-20	0.954021169	395.52	2.02071	-10	0.536988432	402.93	1.98989	0	0.321023164	410.33	1.96440
-10	0.992566577	403.38	2.05115	0	0.558139801	410.98	2.01992	10	0.333428823	418.59	1.99407
0	1.031024012	411.38	2.08100	10	0.579218478	419.17	2.04936	20	0.345773439	426.97	2.02317
10	1.069410211	419.53	2.11030	20	0.600237834	427.50	2.07827	30	0.358067925	435.49	2.05174
20	1.107738106	427.83	2.13910	30	0.62120828	435.97	2.10668	40	0.370320822	444.14	2.07983
30	1.146017825	436.27	2.16742	40	0.642138025	444.59	2.13464	50	0.382538904	452.94	2.10747
40	1.184257379	444.86	2.19529	50	0.663033611	453.34	2.16217	60	0.394727598	461.87	2.13469
50	1.222463175	453.60	2.22275	60	0.683900304	462.25	2.18930	70	0.406891297	470.94	2.16152
60	1.260640379	462.48	2.24983	70	0.704742375	471.29	2.21605	80	0.419033583	480.15	2.18798
70	1.298793193	471.51	2.27653	80	0.725563323	480.48	2.24244	90	0.431157404	489.51	2.21410
80	1.33692506	480.69	2.30288	90	0.746366028	489.81	2.26850	100	0.443265202	499.00	2.23988
90	1.375038823	490.00	2.32890	100	0.767152885	499.29	2.29423	110	0.455359015	508.63	2.26535
100	1.413136846	499.46	2.35460	110	0.787925895	508.90	2.31966	120	0.467440555	518.40	2.29052
110	1.451221106	509.07	2.37999	120	0.80868674	518.65	2.34478	130	0.479511267	528.30	2.31540
120	1.48929327	518.81	2.40510	130	0.829436844	528.54	2.36963	140	0.491572379	538.35	2.34000
130	1.527354747	528.69	2.42992	140	0.850177419	538.57	2.39420	150	0.503624941	548.52	2.36434
140	1.565406738	538.72	2.45447	150	0.8709095	548.74	2.41851	160	0.515669856	558.83	2.38841



Sat -30 C [1.34956917 bar]				Sat -20 C [2.10960882 bar]				Sat -10 C [3.17062672 bar]			
Temp	Volume	Enthalpy	Entropy	Temp	Volume	Enthalpy	Entropy	Temp	Volume	Enthalpy	Entropy
[C]	[m3/kg]	[kJ/kg]	[kJ/K-kg]	[C]	[m3/kg]	[kJ/kg]	[kJ/K-kg]	[C]	[m3/kg]	[kJ/kg]	[kJ/K-kg]
-30	0.170219679	384.85	1.81831	-20	0.111623602	391.02	1.80128	-10	0.075732642	396.96	1.78674
-20	0.178305128	392.93	1.85089	-10	0.116985023	399.42	1.83381	0	0.079458514	405.70	1.81935
-10	0.186257552	401.09	1.88248	0	0.122232093	407.86	1.86528	10	0.08308358	414.45	1.85081
0	0.194108879	409.34	1.91324	10	0.127392096	416.37	1.89588	20	0.086631922	423.25	1.88134
10	0.201880677	417.69	1.94328	20	0.132483463	424.96	1.92573	30	0.090119763	432.11	1.91108
20	0.20958858	426.16	1.97267	30	0.137519531	433.67	1.95491	40	0.093558812	441.06	1.94012
30	0.217244371	434.75	2.00148	40	0.142510349	442.48	1.98350	50	0.096957877	450.11	1.96856
40	0.224857154	443.47	2.02978	50	0.147463691	451.40	2.01157	60	0.100323765	459.26	1.99645
50	0.232434079	452.32	2.05758	60	0.152385675	460.45	2.03915	70	0.10366183	468.53	2.02385
60	0.23998084	461.29	2.08495	70	0.157281181	469.63	2.06628	80	0.106976346	477.91	2.05080
70	0.247502019	470.41	2.11190	80	0.162154148	478.93	2.09301	90	0.11027076	487.41	2.07733
80	0.255001336	479.66	2.13847	90	0.167007782	488.37	2.11935	100	0.113547885	497.04	2.10348
90	0.262481842	489.04	2.16468	100	0.171844719	497.93	2.14533	110	0.116810039	506.79	2.12927
100	0.269946055	498.56	2.19054	110	0.176667144	507.63	2.17097	120	0.120059142	516.67	2.15471
110	0.277396072	508.22	2.21608	120	0.181476878	517.45	2.19629	130	0.123296801	526.67	2.17984
120	0.284833647	518.01	2.24131	130	0.186275454	527.41	2.22130	140	0.126524369	536.80	2.20466
130	0.29226026	527.94	2.26624	140	0.191064165	537.50	2.24602	150	0.129742993	547.06	2.22919
140	0.299677168	538.00	2.29089	150	0.195844113	547.72	2.27046	160	0.132953651	557.44	2.25344
150	0.307085439	548.19	2.31527	160	0.200616241	558.07	2.29463	170	0.136157182	567.94	2.27742
160	0.314485992	558.52	2.33938	170	0.20538136	568.54	2.31854	180	0.139354308	578.57	2.30114
170	0.321879619	568.97	2.36324	180	0.21014017	579.15	2.34219	190	0.142545657	589.33	2.32461



Sat -0 C [4.60712459 bar]				Sat 10 C [6.50283621 bar]				Sat 20 C [8.95211803 bar]			
Temp	Volume	Enthalpy	Entropy	Temp	Volume	Enthalpy	Entropy	Temp	Volume	Enthalpy	Entropy
[C]	[m3/kg]	[kJ/kg]	[kJ/K-kg]	[C]	[m3/kg]	[kJ/kg]	[kJ/K-kg]	[C]	[m3/kg]	[kJ/kg]	[kJ/K-kg]
0	0.052845297	402.60	1.77406	10	0.03772551	407.86	1.76268	20	0.027419639	412.64	1.75203
10	0.05554656	411.73	1.80690	20	0.039761763	417.44	1.79593	30	0.029012102	422.75	1.78592
20	0.058156481	420.83	1.83848	30	0.041712575	426.93	1.82776	40	0.03052157	432.68	1.81817
30	0.060697085	429.94	1.86904	40	0.043599009	436.39	1.85846	50	0.031969408	442.54	1.84916
40	0.06318315	439.10	1.89875	50	0.04543509	445.87	1.88825	60	0.033369603	452.37	1.87911
50	0.06562529	448.32	1.92773	60	0.047230812	455.38	1.91724	70	0.034731932	462.21	1.90821
60	0.068031464	457.62	1.95608	70	0.048993591	464.96	1.94556	80	0.036063533	472.08	1.93658
70	0.070407792	467.01	1.98386	80	0.050729083	474.61	1.97329	90	0.037369784	482.01	1.96431
80	0.072759072	476.50	2.01113	90	0.052441698	484.35	2.00048	100	0.038654838	492.02	1.99148
90	0.075089127	486.10	2.03793	100	0.054134929	494.18	2.02719	110	0.039921961	502.10	2.01814
100	0.077401037	495.82	2.06432	110	0.055811586	504.11	2.05346	120	0.041173767	512.27	2.04435
110	0.079697316	505.65	2.09031	120	0.057473954	514.16	2.07933	130	0.042412373	522.54	2.07014
120	0.081980031	515.59	2.11593	130	0.059123911	524.31	2.10483	140	0.043639513	532.91	2.09554
130	0.084250898	525.66	2.14121	140	0.060763015	534.57	2.12998	150	0.044856625	543.38	2.12058
140	0.086511357	535.84	2.16617	150	0.062392572	544.95	2.15480	160	0.04606491	553.95	2.14529
150	0.088762618	546.15	2.19082	160	0.06401368	555.44	2.17930	170	0.047265377	564.64	2.16968
160	0.091005709	556.58	2.21518	170	0.065627273	566.05	2.20351	180	0.048458887	575.43	2.19376
170	0.093241509	567.13	2.23926	180	0.067234149	576.77	2.22744	190	0.04964617	586.34	2.21756
180	0.095470772	577.80	2.26307	190	0.068834994	587.61	2.25110	200	0.050827857	597.35	2.24108
190	0.097694149	588.59	2.28662	200	0.0704304	598.56	2.27449	210	0.052004493	608.47	2.26434
200	0.099912207	599.49	2.30991	210	0.072020882	609.63	2.29764	220	0.053176551	619.70	2.28735



Sat 30 C [12.0626396 bar]				Sat 40 C [15.96046101 bar]				Sat 50 C [20.80036287 bar]			
Temp	Volume	Enthalpy	Entropy	Temp	Volume	Enthalpy	Entropy	Temp	Volume	Enthalpy	Entropy
[C]	[m3/kg]	[kJ/kg]	[kJ/K-kg]	[C]	[m3/kg]	[kJ/kg]	[kJ/K-kg]	[C]	[m3/kg]	[kJ/kg]	[kJ/K-kg]
30	0.020194614	416.80	1.74149	40	0.014996141	420.14	1.73036	50	0.011159522	422.35	1.71768
40	0.021485363	427.54	1.77636	50	0.016080867	431.69	1.76668	60	0.012107147	434.99	1.75621
50	0.022691899	438.00	1.80925	60	0.017075848	442.79	1.80052	70	0.012953455	446.89	1.79141
60	0.023837515	448.31	1.84067	70	0.018008505	453.63	1.83258	80	0.013733503	458.37	1.82439
70	0.02493689	458.54	1.87093	80	0.018895066	464.32	1.86328	90	0.014466274	469.60	1.85574
80	0.025999974	468.74	1.90023	90	0.019746082	474.93	1.89290	100	0.015163444	480.67	1.88582
90	0.027033869	478.95	1.92873	100	0.02056886	485.50	1.92163	110	0.015832801	491.66	1.91488
100	0.028043835	489.19	1.95653	110	0.021368698	496.07	1.94959	120	0.016479829	502.61	1.94309
110	0.029033884	499.47	1.98374	120	0.022149566	506.67	1.97689	130	0.017108558	513.55	1.97057
120	0.030007139	509.82	2.01041	130	0.022914516	517.31	2.00362	140	0.017722034	524.51	1.99742
130	0.030966079	520.25	2.03659	140	0.023665949	528.01	2.02984	150	0.018322623	535.51	2.02372
140	0.031912703	530.76	2.06234	150	0.024405783	538.78	2.05558	160	0.018912197	546.55	2.04952
150	0.032848639	541.36	2.08768	160	0.025135571	549.62	2.08091	170	0.019492261	557.65	2.07486
160	0.033775233	552.05	2.11265	170	0.025856592	560.54	2.10584	180	0.020064041	568.83	2.09979
170	0.034693604	562.83	2.13728	180	0.026569903	571.55	2.13041	190	0.020628552	580.07	2.12434
180	0.035604695	573.72	2.16157	190	0.027276392	582.65	2.15464	200	0.021186638	591.40	2.14854
190	0.036509303	584.71	2.18556	200	0.027976808	593.85	2.17855	210	0.021739009	602.81	2.17240
200	0.037408108	595.80	2.20925	210	0.02867179	605.14	2.20216	220	0.02228627	614.31	2.19595
210	0.038301695	607.00	2.23266	220	0.029361885	616.52	2.22548	230	0.022828938	625.89	2.21921
220	0.039190569	618.29	2.25580	230	0.030047565	628.00	2.24852	240	0.023367457	637.56	2.24218
230	0.040075168	629.69	2.27869	240	0.03072924	639.58	2.27131	250	0.023902213	649.33	2.26488



Sat 60 C [26.78963148 bar]				Sat 70 C [34.25598393 bar]				Sat 80 C [43.9635094 bar]			
Temp	Volume	Enthalpy	Entropy	Temp	Volume	Enthalpy	Entropy	Temp	Volume	Enthalpy	Entropy
[C]	[m3/kg]	[kJ/kg]	[kJ/K-kg]	[C]	[m3/kg]	[kJ/kg]	[kJ/K-kg]	[C]	[m3/kg]	[kJ/kg]	[kJ/K-kg]
60	0.00824742	422.91	1.70189	70	0.005948075	420.66	1.67976	80	0.003959335	411.76	1.64063
70	0.00911395	437.13	1.74397	80	0.006791604	437.52	1.72823	90	0.004880966	434.55	1.70434
80	0.00985719	450.09	1.78119	90	0.007467604	451.98	1.76862	100	0.005523321	451.50	1.75041
90	0.010526748	462.37	1.81548	100	0.008057036	465.31	1.80483	110	0.006055631	466.38	1.78977
100	0.011146302	474.24	1.84773	110	0.008591743	477.99	1.83838	120	0.006525298	480.19	1.82534
110	0.011729379	485.86	1.87847	120	0.009088182	490.28	1.87004	130	0.006953603	493.35	1.85841
120	0.012284567	497.33	1.90801	130	0.009556164	502.31	1.90026	140	0.007352243	506.11	1.88967
130	0.012817711	508.70	1.93658	140	0.010002086	514.18	1.92934	150	0.007728446	518.59	1.91953
140	0.013332991	520.03	1.96433	150	0.010430383	525.95	1.95749	160	0.00808704	530.90	1.94828
150	0.013833512	531.34	1.99138	160	0.010844272	537.66	1.98484	170	0.008431425	543.10	1.97611
160	0.014321645	542.66	2.01783	170	0.011246164	549.35	2.01152	180	0.008764099	555.22	2.00316
170	0.014799241	554.01	2.04373	180	0.011637919	561.04	2.03760	190	0.009086955	567.30	2.02954
180	0.015267777	565.40	2.06914	190	0.012020998	572.74	2.06314	200	0.00940146	579.37	2.05533
190	0.015728447	576.84	2.09412	200	0.012396575	584.48	2.08822	210	0.009708778	591.45	2.08059
200	0.016182228	588.34	2.11869	210	0.012765603	596.26	2.11286	220	0.010009848	603.55	2.10537
210	0.016629934	599.91	2.14288	220	0.013128867	608.09	2.13710	230	0.010305437	615.68	2.12973
220	0.017072244	611.55	2.16673	230	0.013487024	619.98	2.16097	240	0.010596182	627.86	2.15368
230	0.017509734	623.27	2.19025	240	0.013840625	631.94	2.18449	250	0.010882614	640.08	2.17727
240	0.017942894	635.06	2.21346	250	0.01419014	643.96	2.20769	260	0.011165185	652.35	2.20052
250	0.018372147	646.94	2.23638	260	0.01453597	656.05	2.23059	270	0.01144428	664.69	2.22344
260	0.018797857	658.90	2.25902	270	0.014878461	668.22	2.25320	280	0.011720229	677.09	2.24606