

R-22 Thermodynamic Properties

R-22 thermodynamic properties (temperature standard)-1

Temperature (°C)	Pressure (kPa)	Density (kg/m ³)		Specific volume (m ³ /kg)		Specific enthalpy (kJ/kg)			Specific entropy (kJ/kgK)		Constant pressure specific heat (kJ/kgK)	
		Liquid	Vapor	Liquid	Vapor	Liquid	Vapor	Latent heat	Liquid	Vapor	Liquid	Vapor
-70	20.47	1491	1.06	0.00067	0.9434	122.6	373.7	251.1	0.6747	1.911	1.065	0.5447
-68	23.23	1486	1.193	0.00067	0.8384	124.7	374.7	250	0.6851	1.904	1.066	0.5484
-66	26.29	1480	1.338	0.00068	0.7471	126.8	375.7	248.9	0.6955	1.897	1.067	0.5521
-64	29.68	1475	1.498	0.00068	0.6675	129	376.6	247.6	0.7057	1.89	1.068	0.5558
-62	33.41	1469	1.673	0.00068	0.5979	131.1	377.6	246.5	0.7159	1.883	1.07	0.5597
-60	37.5	1464	1.863	0.00068	0.5368	133.3	378.6	245.3	0.726	1.877	1.071	0.5637
-58	42	1458	2.07	0.00069	0.4831	135.4	379.6	244.2	0.736	1.871	1.072	0.5677
-56	46.92	1453	2.295	0.00069	0.4357	137.6	380.5	242.9	0.7459	1.865	1.074	0.5718
-54	52.3	1447	2.539	0.00069	0.3939	139.7	381.5	241.8	0.7558	1.859	1.076	0.576
-52	58.16	1441	2.803	0.00069	0.3568	141.9	382.5	240.6	0.7655	1.853	1.077	0.5803
-50	64.53	1436	3.088	0.0007	0.3238	144	383.4	239.4	0.7752	1.848	1.079	0.5847
-48	71.45	1430	3.395	0.0007	0.2945	146.2	384.4	238.2	0.7849	1.843	1.081	0.5892
-46	78.94	1424	3.726	0.0007	0.2684	148.4	385.3	236.9	0.7944	1.838	1.083	0.5938
-44	87.05	1418	4.082	0.00071	0.245	150.5	386.3	235.8	0.8039	1.833	1.086	0.5985
-42	95.8	1413	4.464	0.00071	0.224	152.7	387.2	234.5	0.8134	1.828	1.088	0.6034
-40.81	101.325	1409	4.704	0.00071	0.2126	154	387.8	233.8	0.8189	1.825	1.09	0.6063
-40	105.2	1407	4.873	0.00071	0.2052	154.9	388.1	233.2	0.8227	1.823	1.091	0.6083
-38	115.4	1401	5.311	0.00071	0.1883	157.1	389.1	232	0.832	1.819	1.093	0.6134
-36	126.3	1395	5.779	0.00072	0.173	159.3	390	230.7	0.8413	1.814	1.096	0.6186
-34	138	1389	6.279	0.00072	0.1593	161.5	390.9	229.4	0.8505	1.81	1.099	0.6239
-32	150.5	1383	6.811	0.00072	0.1468	163.7	391.8	228.1	0.8596	1.806	1.102	0.6293
-30	163.9	1377	7.379	0.00073	0.1355	165.9	392.7	226.8	0.8687	1.802	1.105	0.6349
-28	178.2	1371	7.982	0.00073	0.1253	168.1	393.6	225.5	0.8778	1.798	1.108	0.6406
-26	193.4	1365	8.623	0.00073	0.116	170.3	394.5	224.2	0.8868	1.794	1.112	0.6465
-24	209.7	1359	9.304	0.00074	0.1075	172.6	395.3	222.7	0.8957	1.79	1.115	0.6525
-22	227	1353	10.03	0.00074	0.09975	174.8	396.2	221.4	0.9046	1.786	1.119	0.6587
-20	245.3	1347	10.79	0.00074	0.09268	177	397.1	220.1	0.9135	1.783	1.123	0.665
-18	264.8	1340	11.6	0.00075	0.08621	179.3	397.9	218.6	0.9223	1.779	1.127	0.6715
-16	285.4	1334	12.45	0.00075	0.08029	181.6	398.7	217.1	0.9311	1.776	1.131	0.6782
-14	307.3	1328	13.36	0.00075	0.07485	183.8	399.6	215.8	0.9398	1.772	1.135	0.6851
-12	330.4	1321	14.31	0.00076	0.06986	186.1	400.4	214.3	0.9485	1.769	1.139	0.6921
-10	354.8	1315	15.32	0.00076	0.06527	188.4	401.2	212.8	0.9572	1.766	1.144	0.6994
-8	380.5	1308	16.38	0.00076	0.06103	190.7	402	211.3	0.9658	1.763	1.149	0.7068
-6	407.7	1302	17.5	0.00077	0.05713	193	402.8	209.8	0.9744	1.76	1.154	0.7145
-4	436.3	1295	18.68	0.00077	0.05352	195.3	403.5	208.2	0.983	1.757	1.159	0.7224
-2	466.4	1288	19.92	0.00078	0.05019	197.7	404.3	206.6	0.9915	1.754	1.164	0.7306
0	498	1282	21.23	0.00078	0.0471	200	405	205	1	1.751	1.169	0.739
2	531.2	1275	22.6	0.00078	0.04424	202.4	405.8	203.4	1.008	1.748	1.175	0.7476
4	566.1	1268	24.04	0.00079	0.04159	204.7	406.5	201.8	1.017	1.745	1.181	0.7566
6	602.6	1261	25.56	0.00079	0.03913	207.1	407.2	200.1	1.025	1.742	1.187	0.7658
8	640.9	1254	27.15	0.0008	0.03683	209.5	407.9	198.4	1.034	1.739	1.193	0.7753

R-22 thermodynamic properties (temperature standard)-2

Temperature (°C)	Pressure (kPa)	Density (kg/m³)		Specific volume (m³/kg)		Specific enthalpy (kJ/kg)			Specific entropy (kJ/kgK)		Constant pressure specific heat (kJ/kgK)	
		Liquid	Steam	Liquid	Steam	Liquid	Steam	Latent heat	Liquid	Steam	Liquid	Steam
10	680.9	1247	28.82	0.0008	0.0347	211.9	408.6	196.7	1.042	1.737	1.199	0.7852
12	722.9	1239	30.57	0.00081	0.03271	214.3	409.2	194.9	1.051	1.734	1.206	0.7954
14	766.7	1232	32.41	0.00081	0.03086	216.7	409.9	193.2	1.059	1.732	1.213	0.8061
16	812.4	1225	34.34	0.00082	0.02912	219.1	410.5	191.4	1.067	1.729	1.22	0.8171
18	860.2	1217	36.36	0.00082	0.0275	221.6	411.1	189.5	1.076	1.726	1.228	0.8285
20	910	1210	38.48	0.00083	0.02599	224.1	411.7	187.6	1.084	1.724	1.236	0.8404
22	961.9	1202	40.7	0.00083	0.02457	226.5	412.2	185.7	1.092	1.721	1.244	0.8528
24	1016	1195	43.03	0.00084	0.02324	229	412.8	183.8	1.1	1.719	1.252	0.8657
26	1072	1187	45.47	0.00084	0.02199	231.5	413.3	181.8	1.109	1.716	1.261	0.8792
28	1131	1179	48.02	0.00085	0.02082	234.1	413.8	179.7	1.117	1.714	1.271	0.8933
30	1192	1171	50.7	0.00085	0.01972	236.6	414.3	177.7	1.125	1.711	1.281	0.9081
32	1255	1163	53.52	0.00086	0.01869	239.2	414.7	175.5	1.133	1.709	1.291	0.9237
34	1321	1154	56.46	0.00087	0.01771	241.8	415.1	173.3	1.142	1.706	1.302	0.94
36	1389	1146	59.55	0.00087	0.01679	244.4	415.5	171.1	1.15	1.704	1.314	0.9573
38	1460	1137	62.79	0.00088	0.01593	247	415.9	168.9	1.158	1.701	1.326	0.9755
40	1534	1129	66.19	0.00089	0.01511	249.6	416.2	166.6	1.166	1.698	1.339	0.9948
42	1610	1120	69.76	0.00089	0.01433	252.3	416.6	164.3	1.175	1.696	1.353	1.015
44	1689	1111	73.51	0.0009	0.0136	255	416.8	161.8	1.183	1.693	1.368	1.037
46	1770	1101	77.45	0.00091	0.01291	257.7	417.1	159.4	1.191	1.691	1.384	1.061
48	1855	1092	81.59	0.00092	0.01226	260.5	417.3	156.8	1.2	1.688	1.401	1.086
50	1943	1082	85.95	0.00092	0.01163	263.2	417.4	154.2	1.208	1.685	1.419	1.113
52	2033	1072	90.54	0.00093	0.01104	266	417.6	151.6	1.216	1.682	1.439	1.142
54	2127	1062	95.38	0.00094	0.01048	268.9	417.6	148.7	1.225	1.68	1.461	1.173
56	2224	1052	100.5	0.00095	0.00995	271.8	417.7	145.9	1.233	1.677	1.485	1.208
58	2324	1041	105.9	0.00096	0.00944	274.7	417.6	142.9	1.242	1.674	1.511	1.246
60	2427	1030	111.6	0.00097	0.00896	277.6	417.5	139.9	1.25	1.67	1.539	1.287
62	2534	1019	117.6	0.00098	0.0085	280.6	417.4	136.8	1.259	1.667	1.571	1.333
64	2645	1007	124.1	0.00099	0.00806	283.6	417.2	133.6	1.268	1.664	1.607	1.385
66	2759	995.3	130.9	0.001	0.00764	286.7	416.9	130.2	1.277	1.66	1.646	1.443
68	2876	982.8	138.2	0.00102	0.00724	289.9	416.5	126.6	1.285	1.657	1.692	1.508
70	2997	969.7	146	0.00103	0.00685	293.1	416.1	123	1.295	1.653	1.743	1.584
72	3123	956.1	154.4	0.00105	0.00648	296.4	415.5	119.1	1.304	1.649	1.803	1.671
74	3252	941.8	163.4	0.00106	0.00612	299.7	414.9	115.2	1.313	1.645	1.873	1.774
76	3385	926.7	173.1	0.00108	0.00578	303.2	414.1	110.9	1.323	1.64	1.956	1.896
78	3522	910.8	183.8	0.0011	0.00544	306.8	413.1	106.3	1.332	1.635	2.057	2.045
80	3664	893.7	195.4	0.00112	0.00512	310.4	412	101.6	1.342	1.63	2.181	2.231
82	3810	875.4	208.3	0.00114	0.0048	314.3	410.7	96.4	1.353	1.624	2.34	2.468
84	3961	855.5	222.7	0.00117	0.00449	318.3	409.1	90.8	1.363	1.618	2.55	2.784
86	4116	833.5	239	0.0012	0.00418	322.5	407.2	84.7	1.375	1.61	2.84	3.224
88	4277	808.8	257.9	0.00124	0.00388	327.1	404.8	77.7	1.387	1.602	3.272	3.882
90	4442	780.1	280.6	0.00128	0.00356	332.1	401.9	69.8	1.4	1.592	3.981	4.975
92	4614	745.1	309.3	0.00134	0.00323	337.8	397.9	60.1	1.415	1.58	5.377	7.142
94	4791	697.8	350.2	0.00143	0.00286	344.8	392	47.2	1.434	1.562	9.47	13.47
96	4976	590.2	453.7	0.00169	0.0022	358.7	376.6	17.9	1.47	1.519	164.6	225.9

R-22 thermodynamic properties (pressure standard)

Pressure (kPa)	Temperature (°C)	Density (kg/m ³)		Specific volume (m ³ /kg)		Specific enthalpy (kJ/kg)			Specific entropy (kJ/kgK)		Constant pressure specific heat (kJ/kgK)	
		Liquid	Steam	Liquid	Steam	Liquid	Steam	Latent heat	Liquid	Steam	Liquid	Steam
20	-70.36	1492	1.037	0.00067	0.964	122.2	373.5	251.3	0.6728	1.912	1.065	0.5441
40	-58.87	1461	1.978	0.00068	0.5056	134.5	379.1	244.6	0.7317	1.873	1.072	0.5659
60	-51.4	1440	2.885	0.00069	0.3466	142.5	382.7	240.2	0.7684	1.852	1.078	0.5816
80	-45.73	1423	3.773	0.0007	0.2651	148.6	385.4	236.8	0.7957	1.837	1.084	0.5945
100	-41.09	1410	4.646	0.00071	0.2152	153.7	387.6	233.9	0.8176	1.826	1.089	0.6056
101.325	-40.81	1409	4.704	0.00071	0.2126	154	387.8	233.8	0.8189	1.825	1.09	0.6063
150	-32.08	1383	6.79	0.00072	0.1473	163.6	391.8	228.2	0.8593	1.806	1.102	0.6291
200	-25.18	1363	8.898	0.00073	0.1124	171.2	394.8	223.6	0.8905	1.792	1.113	0.6489
250	-19.51	1345	10.98	0.00074	0.09104	177.6	397.3	219.7	0.9156	1.782	1.124	0.6666
300	-14.65	1330	13.06	0.00075	0.07658	183.1	399.3	216.2	0.937	1.773	1.134	0.6828
350	-10.38	1316	15.12	0.00076	0.06612	188	401	213	0.9555	1.766	1.143	0.698
400	-6.56	1303	17.19	0.00077	0.05818	192.4	402.6	210.2	0.972	1.76	1.152	0.7124
450	-3.08	1292	19.25	0.00077	0.05195	196.4	403.9	207.5	0.9869	1.755	1.161	0.7262
500	0.12	1281	21.31	0.00078	0.04692	200.1	405.1	205	1.001	1.75	1.17	0.7395
550	3.09	1271	23.38	0.00079	0.04277	203.6	406.2	202.6	1.013	1.746	1.178	0.7525
600	5.86	1261	25.45	0.00079	0.03929	206.9	407.2	200.3	1.025	1.742	1.186	0.7651
650	8.46	1252	27.53	0.0008	0.03632	210	408	198	1.036	1.739	1.194	0.7776
700	10.92	1243	29.62	0.0008	0.03377	213	408.9	195.9	1.046	1.736	1.202	0.7899
750	13.25	1235	31.71	0.00081	0.03154	215.8	409.6	193.8	1.056	1.732	1.21	0.802
800	15.46	1227	33.81	0.00082	0.02957	218.5	410.3	191.8	1.065	1.73	1.218	0.8141
850	17.58	1219	35.93	0.00082	0.02784	221.1	410.9	189.8	1.074	1.727	1.226	0.8261
900	19.6	1211	38.05	0.00083	0.02628	223.6	411.5	187.9	1.082	1.724	1.234	0.838
950	21.55	1204	40.19	0.00083	0.02488	226	412.1	186.1	1.09	1.722	1.242	0.8499
1000	23.42	1197	42.33	0.00084	0.02362	228.3	412.6	184.3	1.098	1.719	1.25	0.8619
1200	30.26	1170	51.06	0.00085	0.01958	237	414.3	177.3	1.126	1.711	1.282	0.9101
1400	36.31	1145	60.04	0.00087	0.01666	244.8	415.6	170.8	1.151	1.703	1.315	0.96
1600	41.75	1121	69.3	0.00089	0.01443	252	416.5	164.5	1.174	1.696	1.351	1.013
1800	46.71	1098	78.89	0.00091	0.01268	258.7	417.1	158.4	1.194	1.69	1.389	1.069
2000	51.27	1076	88.84	0.00093	0.01126	265	417.5	152.5	1.213	1.683	1.432	1.131
2200	55.51	1055	99.22	0.00095	0.01008	271.1	417.7	146.6	1.231	1.677	1.479	1.199
2400	59.47	1033	110.1	0.00097	0.00909	276.8	417.6	140.8	1.248	1.671	1.531	1.276
2600	63.2	1012	121.4	0.00099	0.00823	282.4	417.3	134.9	1.264	1.665	1.592	1.363
2800	66.71	990.9	133.4	0.00101	0.00749	287.9	416.8	128.9	1.28	1.659	1.662	1.465
3000	70.04	969.5	146.2	0.00103	0.00684	293.2	416.1	122.9	1.295	1.653	1.745	1.585
3200	73.21	947.5	159.7	0.00106	0.00626	298.4	415.2	116.8	1.309	1.646	1.844	1.731
3400	76.22	925	174.3	0.00108	0.00574	303.6	414	110.4	1.324	1.64	1.967	1.912
3600	79.11	901.5	190.1	0.00111	0.00526	308.8	412.5	103.7	1.338	1.632	2.122	2.143
3800	81.87	876.7	207.4	0.00114	0.00482	314	410.8	96.8	1.352	1.624	2.328	2.45
4000	84.51	850.1	226.6	0.00118	0.00441	319.4	408.6	89.2	1.366	1.616	2.615	2.882
4200	87.05	820.9	248.6	0.00122	0.00402	324.9	406	81.1	1.381	1.606	3.044	3.534
4400	89.5	787.8	274.5	0.00127	0.00364	330.8	402.7	71.9	1.397	1.595	3.762	4.636
4600	91.84	748.2	306.8	0.00134	0.00326	337.3	398.3	61	1.414	1.581	5.221	6.899
4800	94.1	694.9	352.8	0.00144	0.00283	345.2	391.6	46.4	1.435	1.561	9.89	14.12