Honeywell

THE POWER OF **CONNECTED**

Solstice® ze (R-1234ze) Thermodynamic Properties chart

Liquid Temperature	Liquid Pressure	Liquid Density	Vapor Density	Liquid Enthalpy	Vapor Enthalpy	Liquid Cp	Vapor Cp	Liquid Thermal Conductivity	Vapor Thermal Conductivity	Liquid Viscosity	Vapor Viscosity
(°C)	(kPa)	(kg/m³)	(kg/m³)	(kJ/kg)	(kJ/kg)	(kJ/kg*K)	(kJ/kg*K)	(mW/m*K)	(mW/m*K)	(μ Pa*s)	(μ Pa*s)
-30	61.1	1323.27	3.55	161.25	363.09	1.2648	0.8012	94.453	9.266	399.36	9.99
-29	64.1	1320.61	3.71	162.52	363.8	1.2663	0.8036	94.061	9.344	393.7	10.03
-28	67.2	1317.95	3.88	163.79	364.51	1.2678	0.8061	93.669	9.422	388.16	10.07
-27	70.5	1315.28	4.06	165.06	365.23	1.2693	0.8086	93.279	9.5	382.73	10.11
-26	73.9	1312.6	4.24	166.33	365.94	1.2708	0.8111	92.889	9.577	377.42	10.15
-25	77.4	1309.92	4.43	167.6	366.65	1.2723	0.8136	92.501	9.655	372.2	10.19
-24	81	1307.23	4.62	168.88	367.36	1.2739	0.8161	92.113	9.732	367.1	10.23
-23	84.7	1304.53	4.82	170.15	368.07	1.2755	0.8187	91.725	9.809	362.09	10.27
-22	88.6	1301.82	5.03	171.43	368.78	1.2771	0.8213	91.339	9.887	357.18	10.31
-21	92.7	1299.11	5.25	172.71	369.49	1.2787	0.8239	90.953	9.964	352.36	10.35
-20	96.9	1296.39	5.47	173.99	370.2	1.2803	0.8265	90.569	10.041	347.64	10.39
-19	101.2	1293.66	5.7	175.27	370.91	1.282	0.8291	90.185	10.119	343	10.43
-18	105.7	1290.92	5.94	176.56	371.62	1.2837	0.8318	89.802	10.196	338.45	10.47
-17	110.3	1288.18	6.18	177.84	372.32	1.2854	0.8344	89.42	10.273	333.99	10.51
-16	115.1	1285.43	6.44	179.13	373.03	1.2872	0.8371	89.038	10.35	329.61	10.55
-15	120.1	1282.67	6.7	180.42	373.74	1.2889	0.8398	88.658	10.427	325.3	10.59
-14	125.2	1279.9	6.97	181.71	374.44	1.2907	0.8426	88.278	10.504	321.08	10.63
-13	130.5	1277.12	7.24	183.01	375.14	1.2925	0.8453	87.9	10.581	316.93	10.67
-12	136	1274.33	7.53	184.3	375.85	1.2944	0.8481	87.522	10.658	312.85	10.71
-11	141.6	1271.53	7.82	185.6	376.55	1.2962	0.8509	87.145	10.735	308.84	10.75
-10	147.4	1268.73	8.13	186.9	377.25	1.2981	0.8538	86.769	10.812	304.9	10.79
-9	153.4	1265.91	8.44	188.2	377.95	1.3	0.8566	86.393	10.889	301.03	10.83
-8	159.6	1263.09	8.77	189.5	378.64	1.302	0.8595	86.019	10.966	297.23	10.87
-7	166	1260.25	9.1	190.81	379.34	1.3039	0.8625	85.646	11.043	293.49	10.91
-6	172.6	1257.41	9.44	192.11	380.04	1.3059	0.8654	85.273	11.12	289.81	10.95
-5	179.4	1254.56	9.79	193.42	380.73	1.3079	0.8684	84.902	11.198	286.19	10.99
-4	186.4	1251.69	10.16	194.73	381.42	1.31	0.8714	84.531	11.275	282.63	11.04
-3	193.6	1248.81	10.53	196.05	382.11	1.3121	0.8744	84.161	11.352	279.12	11.08
-2	201	1245.93	10.91	197.36	382.8	1.3142	0.8775	83.793	11.429	275.68	11.12
-1	208.7	1243.03	11.31	198.68	383.49	1.3163	0.8806	83.425	11.507	272.29	11.16
0	216.6	1240.12	11.71	200	384.18	1.3185	0.8837	83.058	11.584	268.95	11.2
1	224.6	1237.2	12.13	201.32	384.87	1.3207	0.8869	82.692	11.662	265.66	11.24
2	233	1234.27	12.56	202.65	385.55	1.3229	0.8901	82.327	11.739	262.42	11.28
3	241.5	1231.33	13	203.97	386.23	1.3252	0.8933	81.963	11.817	259.23	11.32
4	250.3	1228.37	13.46	205.3	386.91	1.3275	0.8966	81.6	11.895	256.09	11.36
5	259.3	1225.41	13.92	206.63	387.59	1.3298	0.8999	81.238	11.973	253	11.4
6	268.6	1222.43	14.4	207.97	388.27	1.3322	0.9032	80.877	12.051	249.95	11.44
7	278.2	1219.43	14.89	209.3	388.94	1.3346	0.9066	80.517	12.13	246.95	11.48
8	288	1216.43	15.4	210.64	389.62	1.337	0.91	80.157	12.208	243.98	11.52
9	298	1213.41	15.92	211.98	390.29	1.3395	0.9135	79.799	12.287	241.07	11.56
10	308.4	1210.38	16.45	213.32	390.96	1.342	0.917	79.442	12.366	238.19	11.6
11	319	1207.33	17	214.67	391.62	1.3446	0.9206	79.086	12.445	235.35	11.64
12	329.8	1204.27	17.56	216.02	392.29	1.3472	0.9242	78.731	12.525	232.56	11.69
13	341	1201.2	18.13	217.37	392.95	1.3499	0.9278	78.377	12.604	229.8	11.73
14	352.4	1198.11	18.73	218.72	393.61	1.3526	0.9315	78.023	12.684	227.08	11.77
15	364.2	1195.01	19.33	220.08	394.27	1.3553	0.9353	77.671	12.765	224.39	11.81
16	376.2	1191.89	19.95	221.44	394.93	1.3581	0.9391	77.32	12.845	221.74	11.85
17	388.5	1188.76	20.59	222.8	395.58	1.3609	0.9429	76.97	12.926	219.13	11.89
18	401.1	1185.61	21.25	224.16	396.23	1.3638	0.9468	76.621	13.008	216.55	11.94
19	414.1	1182.44	21.92	225.53	396.88	1.3668	0.9508	76.272	13.089	214	11.98
20	427.3	1179.26	22.61	226.9	397.53	1.3698	0.9548	75.925	13.172	211.49	12.02
21	440.9	1176.06	23.31	228.28	398.17	1.3728	0.9589	75.579	13.254	209.01	12.06
22	454.8	1172.85	24.04	229.65	398.81	1.3759	0.963	75.234	13.337	206.56	12.11
23	469.1	1169.61	24.78	231.03	399.45	1.3791	0.9672	74.89	13.421	204.13	12.15
24	483.6	1166.36	25.54	232.41	400.09	1.3823	0.9715	74.547	13.505	201.74	12.19
25	498.5	1163.09	26.32	233.8	400.72	1.3856	0.9758	74.204	13.59	199.38	12.24
26	513.8	1159.8	27.12	235.19	401.35	1.3889	0.9802	73.863	13.675	197.05	12.28
27	529.4	1156.49	27.94	236.58	401.97	1.3923	0.9847	73.523	13.761	194.74	12.32
28	545.3	1153.17	28.78	237.98	402.6	1.3958	0.9892	73.184	13.847	192.46	12.37
29	561.6	1149.82	29.64	239.38	403.22	1.3993	0.9939	72.845	13.935	190.21	12.41
30	578.3	1146.45	30.52	240.78	403.83	1.4029	0.9986	72.508	14.023	187.98	12.46
31	595.4	1143.06	31.43	242.18	404.45	1.4066	1.0034	72.172	14.111	185.78	12.5
32	612.8	1139.65	32.35	243.59	405.06	1.4103	1.0082	71.836	14.201	183.6	12.55
33	630.6	1136.21	33.3	245.01	405.66	1.4141	1.0132	71.502	14.291	181.45	12.6
34	648.8	1132.76	34.28	246.42	406.27	1.418	1.0182	71.168	14.383	179.32	12.64
35	667.4	1129.28	35.27	247.84	406.87	1.422	1.0234	70.836	14.475	177.21	12.69
36	686.4	1125.78	36.29	249.27	407.46	1.4261	1.0286	70.504	14.568	175.13	12.74
37	705.8	1122.25	37.34	250.69	408.05	1.4302	1.034	70.174	14.663	173.07	12.78
38	725.6	1118.69	38.41	252.13	408.64	1.4344	1.0395	69.844	14.758	171.02	12.83
39	745.8	1115.11	39.51	253.56	409.22	1.4387	1.045	69.515	14.855	169	12.88
40	766.5	1111.51	40.64	255	409.8	1.4431	1.0507	69.187	14.952	167	12.93
41	787.5	1107.88	41.79	256.45	410.38	1.4476	1.0566	68.86	15.051	165.02	12.98
42	809	1104.21	42.97	257.9	410.95	1.4522	1.0625	68.534	15.152	163.06	13.03
43	830.9	1100.52	44.18	259.35	411.51	1.457	1.0686	68.208	15.254	161.12	13.08

Liquid Temperature	Liquid Pressure	Liquid Density	Vapor Density	Liquid Enthalpy	Vapor Enthalpy	Liquid Cp	Vapor Cp	Liquid Thermal Conductivity	Vapor Thermal Conductivity	Liquid Viscosity	Vapor Viscosity
(°C)	(kPa)	(kg/m³)	(kg/m³)	(kJ/kg)	(kJ/kg)	(kJ/kg*K)	(kJ/kg*K)	(mW/m*K)	(mW/m*K)	(μ Pa*s)	(μ Pa*s)
44	853.3	1096.81	45.42	260.8	412.07	1.4618	1.0749	67.884	15.357	159.2	13.13
45	876.1	1093.06	46.69	262.27	412.63	1.4667	1.0813	67.561	15.462	157.3	13.18
46	899.4	1089.28	48	263.73	413.18	1.4717	1.0878	67.238	15.568	155.41	13.24
47	923.2	1085.46	49.33	265.2	413.72	1.4769	1.0945	66.916	15.676	153.54	13.29
48	947.4	1081.62	50.7	266.68	414.26	1.4822	1.1015	66.595	15.787	151.69	13.35
49	972.1	1077.74	52.1	268.16	414.8	1.4876	1.1086	66.275	15.898	149.85	13.4
50	997.2	1073.82	53.54	269.64	415.33	1.4932	1.1159	65.956	16.012	148.03	13.46
51	1022.9	1069.87	55.01	271.13	415.85	1.4989	1.1234	65.637	16.128	146.22	13.51
52	1049	1065.89	56.52	272.63	416.37	1.5048	1.1312	65.319	16.247	144.43	13.57
53	1075.6	1061.86	58.07	274.13	416.88	1.5108	1.1392	65.002	16.367	142.66	13.63
54	1102.8	1057.8	59.66	275.63	417.38	1.517	1.1475	64.686	16.49	140.9	13.69
55	1130.4	1053.69	61.29	277.14	417.88	1.5234	1.156	64.371	16.616	139.15	13.75
56	1158.6	1049.54	62.96	278.66	418.37	1.53	1.1649	64.056	16.744	137.42	13.81
57	1187.3	1045.35	64.67	280.18	418.86	1.5367	1.1741	63.743	16.875	135.7	13.87
58	1216.5	1041.12	66.43	281.71	419.33	1.5437	1.1836	63.43	17.009	133.99	13.94
59	1246.3	1036.84	68.23	283.24	419.8	1.5509	1.1934	63.117	17.147	132.3	14
60	1276.6	1032.51	70.08	284.78	420.26	1.5583	1.2036	62.806	17.287	130.61	14.07
61	1307.4	1028.13	71.98	286.33	420.72	1.566	1.2143	62.495	17.432	128.94	14.14
62	1338.8	1023.71	73.93	287.88	421.16	1.5739	1.2253	62.185	17.579	127.28	14.21
63	1370.8	1019.23	75.93	289.44	421.6	1.5821	1.2368	61.876	17.731	125.63	14.28
64	1403.3	1014.69	77.98	291.01	422.03	1.5907	1.2488	61.567	17.887	123.99	14.35
65	1436.5	1010.1	80.09	292.58	422.45	1.5995	1.2613	61.259	18.048	122.37	14.42
66	1470.2	1005.45	82.26	294.16	422.86	1.6087	1.2744	60.952	18.213	120.75	14.5
67	1504.5	1000.74	84.49	295.75	423.26	1.6182	1.288	60.645	18.383	119.14	14.58
68	1539.3	995.97	86.78	297.34	423.65	1.6281	1.3023	60.339	18.558	117.54	14.66
69	1574.9	991.13	89.14	298.94	424.03	1.6385	1.3172	60.034	18.739	115.94	14.74
70	1611	986.22	91.56	300.56	424.4	1.6493	1.3329	59.73	18.925	114.36	14.82
71	1647.7	981.24	94.06	302.18	424.76	1.6605	1.3493	59.426	19.118	112.78	14.91
72	1685.1	976.19	96.62	303.8	425.1	1.6723	1.3666	59.123	19.317	111.21	15
73	1723.1	971.06	99.27	305.44	425.44	1.6847	1.3847	58.82	19.524	109.65	15.09
74	1761.7	965.85	101.99	307.09	425.76	1.6976	1.4039	58.518	19.738	108.09	15.19
75	1801.1	960.56	104.8	308.74	426.07	1.7113	1.4241	58.217	19.96	106.54	15.28
76	1841	955.17	107.69	310.41	426.36	1.7256	1.4454	57.917	20.19	104.99	15.38
77	1881.7	949.7	110.68	312.09	426.64	1.7407	1.468	57.617	20.43	103.45	15.49
78	1923	944.12	113.76	313.78	426.9	1.7567	1.492	57.318	20.679	101.91	15.59
79	1965	938.45	116.94	315.47	427.15	1.7736	1.5175	57.019	20.939	100.38	15.71
80	2007.7	932.66	120.23	317.19	427.38	1.7916	1.5446	56.722	21.21	98.84	15.82
81	2051.1	926.76	123.63	318.91	427.6	1.8107	1.5736	56.425	21.494	97.31	15.94
82	2095.3	920.74	127.14	320.65	427.79	1.831	1.6046	56.13	21.79	95.78	16.07
83	2140.2	914.6	130.79	322.4	427.97	1.8528	1.6378	55.835	22.101	94.25	16.2
84	2185.8	908.31	134.57	324.16	428.12	1.8761	1.6736	55.541	22.427	92.72	16.33
85	2232.1	901.89	138.48	325.95	428.25	1.9012	1.7122	55.249	22.769	91.19	16.47
86	2279.2	895.31	142.55	327.74	428.36	1.9282	1.7541	54.958	23.13	89.65	16.62
87	2327.1	888.56	146.78	329.56	428.44	1.9575	1.7995	54.669	23.51	88.12	16.77
88	2375.8	881.64	151.19	331.39	428.5	1.9894	1.8491	54.381	23.913	86.57	16.93
89	2425.3	874.53	155.78	333.25	428.53	2.0241	1.9035	54.096	24.339	85.02	17.1
90	2475.5	867.22	160.57	335.12	428.52	2.0622	1.9634	53.814	24.791	83.46	17.28
91	2526.6	859.68	165.58	337.02	428.49	2.1042	2.0298	53.534	25.272	81.9	17.47
92	2578.6	851.9	170.82	338.94	428.41	2.1508	2.1036	53.259	25.786	80.32	17.67
93	2631.3	843.86	176.33	340.9	428.3	2.2027	2.1864	52.989	26.337	78.73	17.89
94	2685	835.53	182.12	342.88	428.14	2.261	2.2799	52.725	26.929	77.12	18.11
95	2739.5	826.88	188.22	344.89	427.93	2.3271	2.3864	52.468	27.567	75.49	18.35
96	2794.9	817.87	194.68	346.94	427.67	2.4027	2.5086	52.222	28.259	73.84	18.61
97	2851.3	808.46	201.52	349.03	427.35	2.4899	2.6506	51.989	29.013	72.16	18.89
98	2908.5	798.6	208.82	351.16	426.97	2.592	2.8175	51.774	29.839	70.45	19.19
99	2966.8	788.22	216.62	353.35	426.5	2.7131	3.0166	51.581	30.752	68.71	19.52
100	3026	777.25	225.01	355.59	425.95	2.8593	3.2581	51.42	31.768	66.92	19.88
101	3086.2	765.57	234.09	357.91	425.3	3.0396	3.5573	51.303	32.912	65.07	20.28
102	3147.5	753.06	244	360.31	424.52	3.2679	3.9377	51.249	34.219	63.16	20.72
103	3209.8	739.51	254.92	362.81	423.59	3.567	4.4375	51.285	35.736	61.16	21.22
104	3273.2	724.66	267.12	365.44	422.48	3.9765	5.1231	51.458	37.543	59.06	21.79
105	3337.8	708.09	281.02	368.23	421.12	4.5733	6.1217	51.843	39.769	56.81	22.47

Reference state: enthalpy=200kJ/kg, entropy=1kJ/kg*K for the saturated liquid at 0 °C.
The information in this document is based on Genetron Properties V1.3 and
is subject to change without notice.
For more information, please visit our website http://www.honeywell-refrigerants.com/
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