Opteon™ XL20
Refrigerant (R-454C)

Product Information

Pressure Temperature Tables for Opteon™ XL20 (R-454C)

Physical Property Summary

Molecular Weight	90.78 g/mol
Saturated Liquid Temperature at One Atmosphere	-45.6 °C
Saturated Vapor Temperature at One Atmosphere	-37.8 °C
Critical Temperature	85.7 °C
Critical Pressure	43.188 bar
Critical Density	461.60 kg/m³
Critical Volume	0.00217 m³/kg
Ozone Depletion Potential	0
Global Warming Potential (AR4)	148
ASHRAE Standard 34 / ISO 817 Safety Rating	A2L
Lower Flammable Limit	0.293 kg/m³

Opteon™ XL20 (R-454C) is a mildly flammable refrigerant with global warming potential (GWP) less than 150 for replacement of R-404A and R-22 in new equipment designs. Opteon™ XL20 is a low GWP hydrofluoro-olefin (HFO) based refrigerant with the optimal balance of properties to replace R-404A and R-22 in positive displacement, direct expansion low- and medium temperature commercial and industrial applications.

Opteon™ XL20 offers similar performance to the refrigerants it is designed to replace which makes it easy and cost-effective to apply in new equipment without major modifications. Classified as mildly flammable (ISO/ASHRAE Class 2L), Opteon™ XL20 allows much higher charge sizes than other more highly flammable refrigerants and can be safely used by following the applicable codes and standards. With a GWP of 148, Opteon™ XL20 falls under the 150-threshold value in the F-Gas regulation 517/2014 and Eco-design, making it particularly suited for hermetically-sealed and multi compressor retail systems.

Since Opteon™ XL20 is a mildly flammable class 2L refrigerant, please check your local regulations and Standards such as PED, EN378 or ISO5149 to verify the allowable filling charge, new equipment design and safe handling requirements for the intended application.

Opteon™ XL20 (R-454C)

Temperature Pressure Tables

Units: Temperature = °C, Pressure = bar gauge (Torr for <0 bar gauge)

Temperature (ºC)	Saturated Pressure (bar)	
	Liquid (Bubble)	Vapor (Dew)
-60	396 Torr	525 Torr
-59	375 Torr	510 Torr
-58	354 Torr	495 Torr
-57	332 Torr	480 Torr
-56	308 Torr	463 Torr
-55	284 Torr	446 Torr
-54	259 Torr	428 Torr
-53	232 Torr	409 Torr
-52	205 Torr	390 Torr
-51	176 Torr	369 Torr
-50	147 Torr	348 Torr
-49	116 Torr	325 Torr
-48	84 Torr	302 Torr
-47	50 Torr	278 Torr
-46	16 Torr	252 Torr
-45	0.027	226 Torr
-44	0.077	198 Torr
-43	0.129	170 Torr
-42	0.182	140 Torr
-41	0.238	109 Torr
-40	0.295	77 Torr
-39	0.355	43 Torr
-38	0.416	9 Torr
-37	0.480	0.037
-36	0.546	0.086
-35	0.614	0.138
-34	0.685	0.192
-33	0.757	0.247
-32	0.833	0.305
-31	0.910	0.364
-30	0.990	0.426
-29	1.073	0.490
-28	1.158	0.556
-27	1.246	0.624
-26	1.337	0.695
-25	1.430	0.768
-24	1.526	0.843
-23	1.625	0.921
-22	1.727	1.001
-21	1.832	1.084
-20	1.940	1.170
-19	2.051	1.258
-18	2.165	1.349
-17	2.283	1.443
-16	2.403	1.540
-15	2.527	1.639
-14	2.655	1.742

Temperature (ºC)	Saturated Pressure (bar)	
	Liquid (Bubble)	Vapor (Dew)
-13	2.785	1.847
-12	2.920	1.956
-11	3.057	2.068
-10	3.199	2.183
-9	3.344	2.301
-8	3.493	2.423
-7	3.645	2.548
-6	3.802	2.676
-5	3.962	2.808
-4	4.126	2.944
-3	4.295	3.083
-2	4.467	3.226
-1	4.644	3.373
0	4.824	3.524
1	5.009	3.679
2	5.199	3.837
3	5.392	4.000
4	5.591	4.167
5	5.793	4.338
6	6.001	4.513
7	6.213	4.693
8	6.429	4.877
9	6.650	5.065
10	6.877	5.258
11	7.108	5.456
12	7.344	5.659
13	7.585	5.866
14	7.831	6.078
15	8.082	6.295
16	8.339	6.517
17	8.600	6.745
18	8.868	6.977
19	9.140	7.215
20	9.418	7.458
21	9.701	7.706
22	9.990	7.960
23	10.285	8.219
24	10.586	8.485
25	10.892	8.756
26	11.204	9.032
27	11.522	9.315
28	11.846	9.604
29	12.176	9.899
30	12.512	10.200
31	12.855	10.508
32	13.203	10.822
33	13.558	11.142

Temperature (ºC)	Saturated Pressure (bar)	
	Liquid (Bubble)	Vapor (Dew)
34	13.920	11.469
35	14.288	11.803
36	14.662	12.143
37	15.043	12.491
38	15.431	12.845
39	15.825	13.207
40	16.226	13.576
41	16.634	13.952
42	17.049	14.336
43	17.471	14.727
44	17.900	15.126
45	18.336	15.533
46	18.780	15.948
47	19.231	16.370
48	19.689	16.802
49	20.154	17.241
50	20.627	17.689
51	21.108	18.146
52	21.596	18.611
53	22.091	19.086
54	22.595	19.569
55	23.106	20.062
56	23.626	20.564
57	24.153	21.076
58	24.688	21.598
59	25.231	22.129
60	25.783	22.671
61	26.342	23.224
62	26.910	23.787
63	27.486	24.361
64	28.071	24.946
65	28.664	25.542
66	29.265	26.151
67	29.875	26.771
68	30.493	27.404
69	31.119	28.050
70	31.755	28.709
71	32.398	29.381
72	33.050	30.068
73	33.711	30.770
74	34.379	31.487
75	35.056	32.221
76	-	-
77	-	-
78	-	-
79	-	-
80	-	-

Pressure Temperature Tables

Units: Pressure = bar gauge (Torr for <0 bar gauge), Temperature = °C

Pressure (bar)	Saturated Temperature (°C)	
	Liquid (Bubble)	Vapor (Dew)
385 Torr	-59.5	-51.8
374 Torr	-58.9	-51.2
364 Torr	-58.5	-50.7
353 Torr	-57.9	-50.2
341 Torr	-57.4	-49.7
329 Torr	-56.9	-49.2
317 Torr	-56.4	-48.7
305 Torr	-55.8	-48.1
292 Torr	-55.3	-47.6
278 Torr	-54.8	-47.0
265 Torr	-54.2	-46.5
251 Torr	-53.7	-45.9
236 Torr	-53.1	-45.4
221 Torr	-52.6	-44.8
206 Torr	-52.0	-44.3
191 Torr	-51.5	-43.7
175 Torr	-50.9	-43.2
158 Torr	-50.4	-42.6
141 Torr	-49.8	-42.0
124 Torr	-49.3	-41.5
106 Torr	-48.7	-40.9
87 Torr	-48.1	-40.3
68 Torr	-47.5	-39.7
49 Torr	-47.0	-39.2
29 Torr	-46.4	-38.6
8 Torr	-45.8	-38.0
0.017	-45.2	-37.4
0.046	-44.6	-36.8
0.076	-44.0	-36.2
0.107	-43.4	-35.6
0.139	-42.8	-35.0
0.171	-42.2	-34.4
0.204	-41.6	-33.8
0.238	-41.0	-33.2
0.273	-40.4	-32.5
0.309	-39.8	-31.9
0.346	-39.1	-31.3
0.384	-38.5	-30.7
0.423	-37.9	-30.1
0.463	-37.3	-29.4
0.505	-36.6	-28.8
0.548	-36.0	-28.1
0.592	-35.3	-27.5
0.637	-34.7	-26.8
0.683	-34.0	-26.2
0.731	-33.4	-25.5
0.78	-32.7	-24.8
0.83	-32.0	-24.2
0.882	-31.4	-23.5
0.935	-30.7	-22.8
0.99	-30.0	-22.1

Pressure (bar)	Saturated Temperature (°C)	
	Liquid (Bubble)	Vapor (Dew)
1.046	-29.3	-21.5
1.104	-28.6	-20.8
1.164	-27.9	-20.1
1.225	-27.2	-19.4
1.288	-26.5	-18.7
1.353	-25.8	-18.0
1.42	-25.1	-17.2
1.489	-24.4	-16.5
1.559	-23.7	-15.8
1.631	-22.9	-15.1
1.705	-22.2	-14.4
1.782	-21.5	-13.6
1.861	-20.7	-12.9
1.942	-20.0	-12.1
2.025	-19.2	-11.4
2.111	-18.5	-10.6
2.199	-17.7	-9.9
2.289	-16.9	-9.1
2.382	-16.2	-8.3
2.478	-15.4	-7.6
2.576	-14.6	-6.8
2.677	-13.8	-6.0
2.781	-13.0	-5.2
2.888	-12.2	-4.4
2.998	-11.4	-3.6
3.111	-10.6	-2.8
3.227	-9.8	-2.0
3.346	-9.0	-1.2
3.469	-8.2	-0.4
3.595	-7.3	0.5
3.725	-6.5	1.3
3.858	-5.6	2.1
3.995	-4.8	3.0
4.136	-3.9	3.8
4.281	-3.1	4.7
4.43	-2.2	5.5
4.583	-1.3	6.4
4.741	-0.5	7.3
4.903	0.4	8.1
5.07	1.3	9.0
5.241	2.2	9.9
5.417	3.1	10.8
5.598	4.0	11.7
5.784	5.0	12.6
5.975	5.9	13.5
6.172	6.8	14.4
6.374	7.7	15.4
6.582	8.7	16.3
6.796	9.6	17.2
7.016	10.6	18.2
7.242	11.6	19.1

Pressure (bar)	Saturated Temperature (°C)	
	Liquid (Bubble)	Vapor (Dew)
7.474	12.5	20.1
7.713	13.5	21.0
7.959	14.5	22.0
8.212	15.5	23.0
8.472	16.5	24.0
8.739	17.5	24.9
9.014	18.5	25.9
9.296	19.6	26.9
9.586	20.6	27.9
9.884	21.6	28.9
10.191	22.7	30.0
10.507	23.7	31.0
10.831	24.8	32.0
11.165	25.9	33.1
11.508	27.0	34.1
11.861	28.0	35.2
12.224	29.1	36.2
12.597	30.2	37.3
12.98	31.4	38.4
13.374	32.5	39.5
13.779	33.6	40.5
14.196	34.8	41.6
14.624	35.9	42.7
15.064	37.1	43.8
15.517	38.2	45.0
15.982	39.4	46.1
16.461	40.6	47.2
16.953	41.8	48.3
17.459	43.0	49.5
17.979	44.2	50.6
18.514	45.4	51.8
19.064	46.6	53.0
19.629	47.9	54.1
20.21	49.1	55.3
20.808	50.4	56.5
21.422	51.6	57.7
22.054	52.9	58.9
22.704	54.2	60.1
23.372	55.5	61.3
24.059	56.8	62.5
24.765	58.1	63.7
25.491	59.5	64.9
26.237	60.8	66.1
27.004	62.2	67.4
27.793	63.5	68.6
28.604	64.9	69.8
29.438	66.3	71.1
30.295	67.7	72.3
31.177	69.1	73.6
32.083	70.5	74.8
33.015	71.9	76.1
33.973	73.4	77.3

Opteon™ XL20 (R-454C)

Temperature Pressure Tables

Units: Temperature = °C, Pressure = bar absolute

Temperature (ºC)	Saturated Pressure (bar)	
	Liquid (Bubble)	Vapor (Dew)
-60	0.485	0.314
-59	0.512	0.333
-58	0.541	0.353
-57	0.571	0.373
-56	0.602	0.395
-55	0.634	0.418
-54	0.668	0.442
-53	0.703	0.467
-52	0.740	0.493
-51	0.778	0.521
-50	0.817	0.549
-49	0.859	0.579
-48	0.902	0.610
-47	0.946	0.643
-46	0.992	0.677
-45	1.040	0.712
-44	1.090	0.749
-43	1.142	0.787
-42	1.195	0.826
-41	1.251	0.868
-40	1.308	0.911
-39	1.368	0.955
-38	1.429	1.002
-37	1.493	1.050
-36	1.559	1.099
-35	1.627	1.151
-34	1.698	1.205
-33	1.770	1.260
-32	1.846	1.318
-31	1.923	1.377
-30	2.003	1.439
-29	2.086	1.503
-28	2.171	1.569
-27	2.259	1.637
-26	2.350	1.708
-25	2.443	1.781
-24	2.539	1.856
-23	2.638	1.934
-22	2.740	2.014
-21	2.845	2.097
-20	2.953	2.183
-19	3.064	2.271
-18	3.178	2.362
-17	3.296	2.456
-16	3.416	2.553
-15	3.540	2.652
-14	3.668	2.755

Temperature (ºC)	Saturated Pressure (bar)	
	Liquid (Bubble)	Vapor (Dew)
-13	3.798	2.860
-12	3.933	2.969
-11	4.070	3.081
-10	4.212	3.196
-9	4.357	3.314
-8	4.506	3.436
-7	4.658	3.561
-6	4.815	3.689
-5	4.975	3.821
-4	5.139	3.957
-3	5.308	4.096
-2	5.480	4.239
-1	5.657	4.386
0	5.837	4.537
1	6.022	4.692
2	6.212	4.850
3	6.405	5.013
4	6.604	5.180
5	6.806	5.351
6	7.014	5.526
7	7.226	5.706
8	7.442	5.890
9	7.663	6.078
10	7.890	6.271
11	8.121	6.469
12	8.357	6.672
13	8.598	6.879
14	8.844	7.091
15	9.095	7.308
16	9.352	7.530
17	9.613	7.758
18	9.881	7.990
19	10.153	8.228
20	10.431	8.471
21	10.714	8.719
22	11.003	8.973
23	11.298	9.232
24	11.599	9.498
25	11.905	9.769
26	12.217	10.045
27	12.535	10.328
28	12.859	10.617
29	13.189	10.912
30	13.525	11.213
31	13.868	11.521
32	14.216	11.835
33	14.571	12.155

Temperature (ºC)	Saturated Pressure (bar)	
	Liquid (Bubble)	Vapor (Dew)
34	14.933	12.482
35	15.301	12.816
36	15.675	13.156
37	16.056	13.504
38	16.444	13.858
39	16.838	14.220
40	17.239	14.589
41	17.647	14.965
42	18.062	15.349
43	18.484	15.740
44	18.913	16.139
45	19.349	16.546
46	19.793	16.961
47	20.244	17.383
48	20.702	17.815
49	21.167	18.254
50	21.640	18.702
51	22.121	19.159
52	22.609	19.624
53	23.104	20.099
54	23.608	20.582
55	24.119	21.075
56	24.639	21.577
57	25.166	22.089
58	25.701	22.611
59	26.244	23.142
60	26.796	23.684
61	27.355	24.237
62	27.923	24.800
63	28.499	25.374
64	29.084	25.959
65	29.677	26.555
66	30.278	27.164
67	30.888	27.784
68	31.506	28.417
69	32.132	29.063
70	32.768	29.722
71	33.411	30.394
72	34.063	31.081
73	34.724	31.783
74	35.392	32.500
75	36.069	33.234
76	-	-
77	-	-
78	-	-
79	-	-
80	-	-

Pressure Temperature Tables

Units: Pressure = bar absolute , Temperature = °C

Pressure (bar)	Saturated Temperature (°C)	
	Liquid (Bubble)	Vapor (Dew)
0.5	-59.5	-51.8
0.514	-58.9	-51.2
0.528	-58.5	-50.7
0.543	-57.9	-50.2
0.558	-57.4	-49.7
0.574	-56.9	-49.2
0.59	-56.4	-48.7
0.607	-55.8	-48.1
0.624	-55.3	-47.6
0.642	-54.8	-47.0
0.66	-54.2	-46.5
0.679	-53.7	-45.9
0.698	-53.1	-45.4
0.718	-52.6	-44.8
0.738	-52.0	-44.3
0.759	-51.5	-43.7
0.78	-50.9	-43.2
0.802	-50.4	-42.6
0.825	-49.8	-42.0
0.848	-49.3	-41.5
0.872	-48.7	-40.9
0.897	-48.1	-40.3
0.922	-47.5	-39.7
0.948	-47.0	-39.2
0.975	-46.4	-38.6
1.002	-45.8	-38.0
1.03	-45.2	-37.4
1.059	-44.6	-36.8
1.089	-44.0	-36.2
1.12	-43.4	-35.6
1.152	-42.8	-35.0
1.184	-42.2	-34.4
1.217	-41.6	-33.8
1.251	-41.0	-33.2
1.286	-40.4	-32.5
1.322	-39.8	-31.9
1.359	-39.1	-31.3
1.397	-38.5	-30.7
1.436	-37.9	-30.1
1.476	-37.3	-29.4
1.518	-36.6	-28.8
1.561	-36.0	-28.1
1.605	-35.3	-27.5
1.65	-34.7	-26.8
1.696	-34.0	-26.2
1.744	-33.4	-25.5
1.793	-32.7	-24.8
1.843	-32.0	-24.2
1.895	-31.4	-23.5
1.948	-30.7	-22.8
2.003	-30.0	-22.1

Pressure (bar)	Saturated Temperature (°C)	
	Liquid (Bubble)	Vapor (Dew)
2.059	-29.3	-21.5
2.117	-28.6	-20.8
2.177	-27.9	-20.1
2.238	-27.2	-19.4
2.301	-26.5	-18.7
2.366	-25.8	-18.0
2.433	-25.1	-17.2
2.502	-24.4	-16.5
2.572	-23.7	-15.8
2.644	-22.9	-15.1
2.718	-22.2	-14.4
2.795	-21.5	-13.6
2.874	-20.7	-12.9
2.955	-20.0	-12.1
3.038	-19.2	-11.4
3.124	-18.5	-10.6
3.212	-17.7	-9.9
3.302	-16.9	-9.1
3.395	-16.2	-8.3
3.491	-15.4	-7.6
3.589	-14.6	-6.8
3.69	-13.8	-6.0
3.794	-13.0	-5.2
3.901	-12.2	-4.4
4.011	-11.4	-3.6
4.124	-10.6	-2.8
4.24	-9.8	-2.0
4.359	-9.0	-1.2
4.482	-8.2	-0.4
4.608	-7.3	0.5
4.738	-6.5	1.3
4.871	-5.6	2.1
5.008	-4.8	3.0
5.149	-3.9	3.8
5.294	-3.1	4.7
5.443	-2.2	5.5
5.596	-1.3	6.4
5.754	-0.5	7.3
5.916	0.4	8.1
6.083	1.3	9.0
6.254	2.2	9.9
6.43	3.1	10.8
6.611	4.0	11.7
6.797	5.0	12.6
6.988	5.9	13.5
7.185	6.8	14.4
7.387	7.7	15.4
7.595	8.7	16.3
7.809	9.6	17.2
8.029	10.6	18.2
8.255	11.6	19.1

Pressure (bar)	Saturated Temperature (°C)	
	Liquid (Bubble)	Vapor (Dew)
8.487	12.5	20.1
8.726	13.5	21.0
8.972	14.5	22.0
9.225	15.5	23.0
9.485	16.5	24.0
9.752	17.5	24.9
10.027	18.5	25.9
10.309	19.6	26.9
10.599	20.6	27.9
10.897	21.6	28.9
11.204	22.7	30.0
11.52	23.7	31.0
11.844	24.8	32.0
12.178	25.9	33.1
12.521	27.0	34.1
12.874	28.0	35.2
13.237	29.1	36.2
13.61	30.2	37.3
13.993	31.4	38.4
14.387	32.5	39.5
14.792	33.6	40.5
15.209	34.8	41.6
15.637	35.9	42.7
16.077	37.1	43.8
16.53	38.2	45.0
16.995	39.4	46.1
17.474	40.6	47.2
17.966	41.8	48.3
18.472	43.0	49.5
18.992	44.2	50.6
19.527	45.4	51.8
20.077	46.6	53.0
20.642	47.9	54.1
21.223	49.1	55.3
21.821	50.4	56.5
22.435	51.6	57.7
23.067	52.9	58.9
23.717	54.2	60.1
24.385	55.5	61.3
25.072	56.8	62.5
25.778	58.1	63.7
26.504	59.5	64.9
27.25	60.8	66.1
28.017	62.2	67.4
28.806	63.5	68.6
29.617	64.9	69.8
30.451	66.3	71.1
31.308	67.7	72.3
32.19	69.1	73.6
33.096	70.5	74.8
34.028	71.9	76.1
34.986	73.4	77.3

Opteon™ XL20 (R-454C)

Temperature Pressure Tables

Units: Temperature = °C, Pressure = kPa

Temperature (ºC)	Saturated Pressure (kPa)	
	Liquid (Bubble)	Vapor (Dew)
-60	49	31
-59	51	33
-58	54	35
-57	57	37
-56	60	40
-55	63	42
-54	67	44
-53	70	47
-52	74	49
-51	78	52
-50	82	55
-49	86	58
-48	90	61
-47	95	64
-46	99	68
-45	104	71
-44	109	75
-43	114	79
-42	120	83
-41	125	87
-40	131	91
-39	137	96
-38	143	100
-37	149	105
-36	156	110
-35	163	115
-34	170	120
-33	177	126
-32	185	132
-31	192	138
-30	200	144
-29	209	150
-28	217	157
-27	226	164
-26	235	171
-25	244	178
-24	254	186
-23	264	193
-22	274	201
-21	285	210
-20	295	218
-19	306	227
-18	318	236
-17	330	246
-16	342	255
-15	354	265
-14	367	275

Temperature (ºC)	Saturated Pressure (kPa)	
	Liquid (Bubble)	Vapor (Dew)
-13	380	286
-12	393	297
-11	407	308
-10	421	320
-9	436	331
-8	451	344
-7	466	356
-6	481	369
-5	498	382
-4	514	396
-3	531	410
-2	548	424
-1	566	439
0	584	454
1	602	469
2	621	485
3	641	501
4	660	518
5	681	535
6	701	553
7	723	571
8	744	589
9	766	608
10	789	627
11	812	647
12	836	667
13	860	688
14	884	709
15	910	731
16	935	753
17	961	776
18	988	799
19	1015	823
20	1043	847
21	1071	872
22	1100	897
23	1130	923
24	1160	950
25	1190	977
26	1222	1005
27	1254	1033
28	1286	1062
29	1319	1091
30	1353	1121
31	1387	1152
32	1422	1183
33	1457	1215

Temperature (ºC)	Saturated Pressure (kPa)	
	Liquid (Bubble)	Vapor (Dew)
34	1493	1248
35	1530	1282
36	1568	1316
37	1606	1350
38	1644	1386
39	1684	1422
40	1724	1459
41	1765	1496
42	1806	1535
43	1848	1574
44	1891	1614
45	1935	1655
46	1979	1696
47	2024	1738
48	2070	1781
49	2117	1825
50	2164	1870
51	2212	1916
52	2261	1962
53	2310	2010
54	2361	2058
55	2412	2107
56	2464	2158
57	2517	2209
58	2570	2261
59	2624	2314
60	2680	2368
61	2736	2424
62	2792	2480
63	2850	2537
64	2908	2596
65	2968	2656
66	3028	2716
67	3089	2778
68	3151	2842
69	3213	2906
70	3277	2972
71	3341	3039
72	3406	3108
73	3472	3178
74	3539	3250
75	3607	3323
76	-	-
77	-	-
78	-	-
79	-	-
80	-	-

Pressure Temperature Tables

Units: Pressure = bar kPa, Temperature = °C

Pressure (kPa)	Saturated Temperature (ºC)	
	Liquid (Bubble)	Vapor (Dew)
50	-59.5	-51.8
51	-59.1	-51.4
52	-58.7	-51.0
53	-58.4	-50.7
54	-58.0	-50.3
55	-57.7	-50.0
56	-57.4	-49.6
57	-57.0	-49.3
58	-56.7	-49.0
59	-56.4	-48.7
60	-56.1	-48.3
61	-55.7	-48.0
62	-55.4	-47.7
63	-55.1	-47.4
64	-54.8	-47.1
65	-54.5	-46.8
67	-53.9	-46.2
69	-53.4	-45.6
71	-52.8	-45.1
73	-52.3	-44.5
75	-51.7	-44.0
77	-51.2	-43.4
79	-50.7	-42.9
81	-50.2	-42.4
83	-49.7	-41.9
85	-49.2	-41.4
87	-48.7	-40.9
89	-48.3	-40.5
91	-47.8	-40.0
93	-47.4	-39.6
95	-46.9	-39.1
97	-46.5	-38.7
100	-45.8	-38.0
103	-45.2	-37.4
106	-44.6	-36.8
109	-44.0	-36.2
112	-43.4	-35.6
115	-42.8	-35.0
118	-42.3	-34.5
121	-41.7	-33.9
124	-41.2	-33.4
127	-40.7	-32.8
130	-40.1	-32.3
134	-39.5	-31.6
138	-38.8	-31.0
142	-38.1	-30.3
146	-37.5	-29.7
150	-36.9	-29.0
154	-36.3	-28.4
158	-35.7	-27.8
162	-35.1	-27.3

Pressure (kPa)	Saturated Temperature (ºC)	
	Liquid (Bubble)	Vapor (Dew)
167	-34.4	-26.5
172	-33.7	-25.8
177	-33.0	-25.1
182	-32.3	-24.5
187	-31.7	-23.8
192	-31.0	-23.2
197	-30.4	-22.5
203	-29.7	-21.8
209	-29.0	-21.1
215	-28.2	-20.4
221	-27.6	-19.7
227	-26.9	-19.0
234	-26.1	-18.2
241	-25.3	-17.5
248	-24.6	-16.7
255	-23.9	-16.0
262	-23.2	-15.3
270	-22.4	-14.5
278	-21.6	-13.8
286	-20.9	-13.0
294	-20.1	-12.3
303	-19.3	-11.5
312	-18.5	-10.7
321	-17.7	-9.9
330	-17.0	-9.1
340	-16.1	-8.3
350	-15.3	-7.5
360	-14.5	-6.7
371	-13.7	-5.8
382	-12.8	-5.0
393	-12.0	-4.2
405	-11.1	-3.3
417	-10.3	-2.5
429	-9.5	-1.7
442	-8.6	-0.8
455	-7.7	0.1
469	-6.8	1.0
483	-5.9	1.9
498	-5.0	2.8
513	-4.1	3.7
528	-3.2	4.6
544	-2.2	5.5
560	-1.3	6.4
577	-0.4	7.4
594	0.6	8.3
612	1.5	9.2
631	2.5	10.2
650	3.5	11.2
670	4.5	12.1
690	5.5	13.1
711	6.5	14.1

Pressure (kPa)	Saturated Temperature (ºC)	
	Liquid (Bubble)	Vapor (Dew)
733	7.5	15.1
755	8.5	16.1
778	9.5	17.1
802	10.6	18.1
826	11.6	19.1
851	12.6	20.2
877	13.7	21.2
904	14.8	22.3
932	15.9	23.3
961	17.0	24.4
990	18.1	25.5
1020	19.2	26.5
1051	20.3	27.6
1083	21.4	28.7
1116	22.5	29.8
1150	23.7	30.9
1185	24.8	32.0
1221	26.0	33.2
1258	27.1	34.3
1297	28.3	35.5
1337	29.5	36.6
1378	30.7	37.8
1420	32.0	38.9
1464	33.2	40.1
1509	34.4	41.3
1555	35.7	42.5
1603	36.9	43.7
1652	38.2	44.9
1703	39.5	46.2
1755	40.8	47.4
1809	42.1	48.6
1865	43.4	49.9
1923	44.7	51.2
1982	46.1	52.4
2043	47.4	53.7
2106	48.8	55.0
2171	50.1	56.3
2238	51.5	57.6
2307	52.9	58.9
2378	54.3	60.2
2452	55.8	61.5
2528	57.2	62.8
2606	58.7	64.2
2687	60.1	65.5
2770	61.6	66.9
2856	63.1	68.2
2944	64.6	69.6
3035	66.1	70.9
3129	67.7	72.3
3226	69.2	73.7
3326	70.8	75.0
3429	72.3	76.4

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