

**Table C.2aSI Saturation Temperature Table for Refrigerant-12 in SI Units**

<b>T</b> °C	<b>P<sub>sat</sub></b> MPa	<b>v<sub>f</sub></b> m <sup>3</sup> /kg	<b>v<sub>g</sub></b> m <sup>3</sup> /kg	<b>v<sub>fg</sub></b> m <sup>3</sup> /kg	<b>h<sub>f</sub></b> kJ/kg	<b>h<sub>g</sub></b> kJ/kg	<b>h<sub>fg</sub></b> kJ/kg	<b>u<sub>f</sub></b> kJ/kg	<b>u<sub>g</sub></b> kJ/kg	<b>u<sub>fg</sub></b> kJ/kg	<b>s<sub>f</sub></b> kJ/(kg K)	<b>s<sub>g</sub></b> kJ/(kg K)	<b>s<sub>fg</sub></b> kJ/(kg K)
-80	0.0062	0.000617	1.9929999	1.992383	-22.96	150.09	173.05	-22.96	137.80	160.76	-0.1024	0.7935	0.8959
-70	0.0123	0.000627	1.1277311	1.127105	-26.15	155.63	181.79	-26.16	141.80	167.96	-0.1199	0.7749	0.8948
-60	0.0226	0.000637	0.6381381	0.637501	-17.51	160.28	177.80	-17.53	145.85	163.38	-0.0784	0.7557	0.8341
-50	0.0391	0.000648	0.3832275	0.382580	-8.81	164.94	173.75	-8.83	149.95	158.78	-0.0385	0.7401	0.7786
-40	0.0642	0.000659	0.2419801	0.241321	-0.03	169.59	169.62	-0.07	154.06	154.13	-0.0001	0.7274	0.7275
-30	0.1004	0.000672	0.1594167	0.158745	8.84	174.19	165.36	8.77	158.19	149.42	0.0370	0.7170	0.6800
-20	0.1509	0.000685	0.1088738	0.108188	17.79	178.73	160.94	17.69	162.30	144.61	0.0730	0.7087	0.6357
-10	0.2191	0.000700	0.0766638	0.075964	26.85	183.18	156.33	26.69	166.39	139.69	0.1079	0.7019	0.5941
0	0.3085	0.000716	0.0554012	0.054685	36.03	187.53	151.50	35.80	170.43	134.63	0.1419	0.6965	0.5546
10	0.4232	0.000733	0.0409223	0.040189	45.35	191.73	146.39	45.04	174.41	129.38	0.1751	0.6921	0.5170
20	0.5672	0.000752	0.0307869	0.030035	54.84	195.78	140.93	54.42	178.32	123.90	0.2077	0.6884	0.4807
30	0.7448	0.000774	0.0235136	0.022740	64.56	199.62	135.06	63.98	182.10	118.12	0.2398	0.6853	0.4455
40	0.9605	0.000798	0.0181755	0.017378	74.55	203.20	128.65	73.78	185.74	111.95	0.2717	0.6825	0.4108
50	1.2191	0.000826	0.014175	0.013350	84.89	206.45	121.56	83.89	189.17	105.28	0.3035	0.6797	0.3762
60	1.5257	0.000858	0.011117	0.010259	95.68	209.27	113.58	94.38	192.31	97.93	0.3356	0.6766	0.3409
70	1.8855	0.000897	0.0087323	0.007835	107.07	211.50	104.43	105.38	195.03	89.65	0.3684	0.6727	0.3043
80	2.3043	0.000946	0.0068321	0.005886	119.27	212.88	93.61	117.09	197.13	80.05	0.4023	0.6674	0.2651
90	2.7882	0.001011	0.0052763	0.004265	132.61	212.93	80.32	129.79	198.22	68.43	0.4382	0.6594	0.2212
100	3.3437	0.001113	0.0039477	0.002835	147.79	210.61	62.82	144.07	197.41	53.34	0.4779	0.6462	0.1683
110	3.9780	0.001363	0.0027566	0.001393	167.47	203.58	36.11	162.04	192.61	30.57	0.5279	0.6222	0.0942

**Table C.2aSI Saturation Pressure Table for Refrigerant-12 in SI Units**

<b>P<sub>sat</sub></b> MPa	<b>T</b> °C	<b>v<sub>f</sub></b> m <sup>3</sup> /kg	<b>v<sub>g</sub></b> m <sup>3</sup> /kg	<b>v<sub>fg</sub></b> m <sup>3</sup> /kg	<b>h<sub>f</sub></b> kJ/kg	<b>h<sub>g</sub></b> kJ/kg	<b>h<sub>fg</sub></b> kJ/kg	<b>u<sub>f</sub></b> kJ/kg	<b>u<sub>g</sub></b> kJ/kg	<b>u<sub>fg</sub></b> kJ/kg	<b>S<sub>f</sub></b> kJ/(kg K)	<b>S<sub>g</sub></b> kJ/(kg K)	<b>S<sub>fg</sub></b> kJ/(kg K)
0.005	-72.91	0.000624	1.348004	1.347380	-28.66	154.28	182.94	-28.66	147.54	176.20	-0.1323	0.7813	0.9136
0.010	-72.91	0.000624	1.348004	1.347380	-28.66	154.28	182.94	-28.67	140.80	169.47	-0.1323	0.7813	0.9136
0.015	-66.58	0.000630	0.921409	0.920779	-23.21	157.22	180.42	-23.22	143.40	166.61	-0.1055	0.7679	0.8734
0.020	-61.88	0.000635	0.706761	0.706126	-19.14	159.41	178.55	-19.15	145.27	164.43	-0.0861	0.7590	0.8451
0.025	-58.08	0.000639	0.576185	0.575546	-15.85	161.18	177.03	-15.86	146.77	162.64	-0.0706	0.7525	0.8231
0.030	-54.83	0.000642	0.486849	0.486207	-13.02	162.70	175.71	-13.04	148.09	161.13	-0.0576	0.7472	0.8048
0.035	-51.93	0.000646	0.421170	0.420525	-10.49	164.04	174.54	-10.52	149.30	159.82	-0.0461	0.7429	0.7890
0.040	-49.40	0.000648	0.372335	0.371686	-8.28	165.22	173.51	-8.31	150.33	158.64	-0.0362	0.7392	0.7754
0.045	-47.05	0.000651	0.333018	0.332367	-6.23	166.32	172.54	-6.25	151.33	157.59	-0.0270	0.7360	0.7631
0.050	-45.06	0.000653	0.303635	0.302982	-4.48	167.24	171.72	-4.51	152.06	156.57	-0.0194	0.7335	0.7528
0.055	-43.07	0.000656	0.277350	0.276694	-2.73	168.16	170.90	-2.77	152.91	155.68	-0.0118	0.7310	0.7428
0.060	-41.26	0.000658	0.255826	0.255168	-1.14	169.00	170.14	-1.18	153.65	154.83	-0.0049	0.7288	0.7337
0.065	-39.64	0.000660	0.238174	0.237514	0.29	169.76	169.46	0.25	154.28	154.02	0.0013	0.7269	0.7257
0.070	-38.01	0.000662	0.221987	0.221325	1.73	170.51	168.78	1.68	154.97	153.29	0.0074	0.7251	0.7177
0.075	-36.38	0.000664	0.207125	0.206461	3.17	171.26	168.09	3.12	155.73	152.61	0.0135	0.7234	0.7099
0.080	-35.12	0.000665	0.196401	0.195735	4.29	171.84	167.55	4.24	156.13	151.89	0.0182	0.7221	0.7039
0.085	-33.67	0.000667	0.184964	0.184297	5.57	172.51	166.93	5.52	156.79	151.27	0.0235	0.7206	0.6970
0.090	-32.40	0.000669	0.175620	0.174951	6.70	173.09	166.39	6.64	157.28	150.65	0.0282	0.7193	0.6911
0.095	-31.14	0.000670	0.166848	0.166177	7.82	173.67	165.85	7.76	157.82	150.06	0.0329	0.7181	0.6853
0.100	-29.87	0.000672	0.158607	0.157934	8.95	174.25	165.30	8.88	158.39	149.51	0.0375	0.7169	0.6794
0.150	-19.93	0.000685	0.108582	0.107896	17.86	178.76	160.91	17.75	162.48	144.72	0.0732	0.7086	0.6354
0.200	-12.33	0.000696	0.082991	0.082295	24.73	182.15	157.43	24.59	165.55	140.97	0.0998	0.7034	0.6036
0.250	-6.00	0.000706	0.067135	0.066429	30.50	184.93	154.43	30.32	168.15	137.82	0.1216	0.6996	0.5781
0.300	-0.76	0.000715	0.056737	0.056022	35.32	187.20	151.88	35.11	170.18	135.07	0.1393	0.6969	0.5575
0.350	4.12	0.000723	0.048776	0.048053	39.85	189.28	149.43	39.60	172.21	132.61	0.1557	0.6946	0.5389
0.400	8.28	0.000730	0.043047	0.042317	43.74	191.02	147.29	43.44	173.80	130.36	0.1694	0.6928	0.5233
0.450	12.26	0.000737	0.038315	0.037577	47.48	192.66	145.19	47.15	175.42	128.28	0.1825	0.6912	0.5087
0.500	15.70	0.000744	0.034727	0.033983	50.73	194.06	143.33	50.36	176.70	126.33	0.1937	0.6899	0.4962
0.550	19.13	0.000751	0.031536	0.030785	54.01	195.43	141.42	53.60	178.09	124.49	0.2049	0.6887	0.4838
0.600	22.21	0.000757	0.028975	0.028218	56.97	196.64	139.68	56.51	179.26	122.74	0.2148	0.6877	0.4729
0.650	25.10	0.000763	0.026788	0.026025	59.77	197.76	137.99	59.27	180.35	121.08	0.2241	0.6868	0.4627

$P_{\text{sat}}$ MPa	$T$ °C	$v_f$ m <sup>3</sup> /kg	$v_g$ m <sup>3</sup> /kg	$v_{fg}$ m <sup>3</sup> /kg	$h_f$ kJ/kg	$h_g$ kJ/kg	$h_{fg}$ kJ/kg	$u_f$ kJ/kg	$u_g$ kJ/kg	$u_{fg}$ kJ/kg	$S_f$ kJ/(kg K)	$S_g$ kJ/(kg K)	$S_{fg}$ kJ/(kg K)
0.700	27.81	0.000769	0.024913	0.024144	62.41	198.80	136.38	61.88	181.36	119.48	0.2328	0.6860	0.4531
0.750	30.34	0.000774	0.023302	0.022527	64.90	199.74	134.84	64.32	182.27	117.95	0.2409	0.6852	0.4443
0.800	32.88	0.000780	0.021811	0.021031	67.40	200.67	133.27	66.78	183.23	116.45	0.2490	0.6845	0.4355
0.850	35.23	0.000786	0.020526	0.019740	69.74	201.52	131.78	69.08	184.08	115.00	0.2565	0.6838	0.4273
0.900	37.58	0.000792	0.019327	0.018536	72.10	202.36	130.25	71.39	184.96	113.57	0.2640	0.6832	0.4192
0.950	39.75	0.000797	0.018292	0.017495	74.29	203.11	128.82	73.54	185.73	112.20	0.2709	0.6826	0.4117
1.000	41.74	0.000802	0.017398	0.016596	76.32	203.79	127.47	75.52	186.39	110.87	0.2772	0.6820	0.4048
1.500	59.46	0.000856	0.011263	0.010407	95.09	209.13	114.04	93.80	192.23	98.43	0.3339	0.6768	0.3429
2.000	73.02	0.000910	0.008114	0.007204	110.66	212.02	101.36	108.84	195.79	86.95	0.3785	0.6713	0.2928
2.500	84.41	0.000972	0.006110	0.005138	124.98	213.11	88.12	122.55	197.83	75.28	0.4178	0.6643	0.2464
3.000	94.18	0.001047	0.004700	0.003653	138.67	212.35	73.68	135.52	198.25	62.72	0.4542	0.6548	0.2006
3.500	102.68	0.001152	0.003616	0.002463	152.36	209.31	56.95	148.32	196.65	48.33	0.4896	0.6411	0.1515
4.000	110.45	0.001393	0.002709	0.001317	168.79	203.16	34.37	163.22	192.32	29.10	0.5313	0.6209	0.0896

**Table C.2cSI Superheated Vapor Table for Refrigerant-12 in SI Units**

P=0.05 MPa					P=01 MPa					P=0.15 MPa				
T	v	h	u	s	T	v	h	u	s	T	v	h	u	s
°C	m <sup>3</sup> /kg	kJ/kg	kJ/kg	kJ/(kg·K)	°C	m <sup>3</sup> /kg	kJ/kg	kJ/kg	kJ/(kg·K)	°C	m <sup>3</sup> /kg	kJ/kg	kJ/kg	kJ/(kg·K)
-45.06	0.303635	167.24	152.06	0.7335	-29.87	0.158607	174.25	158.39	0.7169	-19.93	0.108582	178.76	162.48	0.7086
-40	0.312760	170.01	154.37	0.7458	-20	0.167697	179.98	163.21	0.7406	-10	0.114823	184.75	167.52	0.7324
-30	0.327371	175.54	159.17	0.7690	-10	0.175218	185.83	168.31	0.7633	0	0.119977	190.79	172.80	0.7549
-20	0.341849	181.16	164.07	0.7917	0	0.182643	191.76	173.49	0.7854	10	0.125048	196.90	178.14	0.7769
-10	0.356218	186.88	169.07	0.8139	10	0.189990	197.76	178.76	0.8070	20	0.130050	203.07	183.56	0.7983
0	0.370499	192.70	174.17	0.8356	20	0.197272	203.85	184.12	0.8281	30	0.134996	209.31	189.06	0.8192
10	0.384707	198.61	179.37	0.8568	30	0.204502	210.01	189.56	0.8488	40	0.139896	215.61	194.63	0.8397
20	0.398854	204.61	184.67	0.8776	40	0.211687	216.25	195.09	0.8690	50	0.144757	221.99	200.28	0.8597
30	0.412950	210.70	190.05	0.8981	50	0.218834	222.58	200.69	0.8889	60	0.149586	228.44	206.00	0.8794
40	0.427004	216.88	195.53	0.9181	60	0.225951	228.97	206.38	0.9084	70	0.154387	234.95	211.80	0.8987
50	0.441021	223.15	201.10	0.9378	70	0.233040	235.45	212.15	0.9276	80	0.159165	241.54	217.67	0.9176
60	0.455008	229.50	206.75	0.9572	80	0.240107	242.00	217.99	0.9464	90	0.163923	248.20	223.61	0.9362
70	0.468970	235.94	212.49	0.9762	90	0.247155	248.62	223.91	0.9649	100	0.168664	254.92	229.62	0.9544
80	0.482909	242.45	218.31	0.9949	100	0.254185	255.31	229.90	0.9830	110	0.173390	261.70	235.70	0.9724
90	0.496829	249.04	224.20	1.0133	110	0.261202	262.08	235.95	1.0009	120	0.178104	268.56	241.84	0.9900
100	0.510733	255.71	230.17	1.0314	120	0.268206	268.90	242.08	1.0185	130	0.182806	275.47	248.05	1.0074
110	0.524623	262.44	236.21	1.0492	130	0.275199	275.80	248.28	1.0358	140	0.187499	282.44	254.32	1.0245
120	0.538501	269.25	242.32	1.0668	140	0.282183	282.75	254.53	1.0529	150	0.192184	289.48	260.65	1.0413
130	0.552368	276.12	248.50	1.0840	150	0.289158	289.77	260.85	1.0696	160	0.196861	296.57	267.04	1.0578
140	0.566226	283.06	254.75	1.1010	160	0.296127	296.84	267.23	1.0862	170	0.201532	303.71	273.48	1.0742
150	0.580076	290.06	261.06	1.1178	170	0.303088	303.98	273.67	1.1024	180	0.206196	310.91	279.98	1.0902
160	0.593918	297.12	267.43	1.1343	180	0.310044	311.16	280.16	1.1185	190	0.210856	318.16	286.53	1.1060
170	0.607754	304.24	273.85	1.1505	190	0.316995	318.40	286.70	1.1343	200	0.215511	325.46	293.14	1.1216
180	0.621584	311.41	280.34	1.1665	200	0.323941	325.69	293.30	1.1499	210	0.220161	332.81	299.79	1.1370
190	0.635410	318.64	286.87	1.1823	210	0.330883	333.03	299.95	1.1652	220	0.224808	340.21	306.49	1.1522
200	0.649230	325.92	293.46	1.1979	220	0.337822	340.42	306.64	1.1803	230	0.229452	347.65	313.23	1.1671
210	0.663047	333.26	300.10	1.2132	230	0.344757	347.86	313.38	1.1953					
220	0.676860	340.64	306.79	1.2283										
230	0.690669	348.06	313.53	1.2432										

P=0.2 MPa					P=0.25 MPa					P=0.3 MPa				
T °C	v m <sup>3</sup> /kg	h kJ/kg	u kJ/kg	s kJ/(kg·K)	T °C	v m <sup>3</sup> /kg	h kJ/kg	u kJ/kg	s kJ/(kg·K)	T °C	v m <sup>3</sup> /kg	h kJ/kg	u kJ/kg	s kJ/(kg·K)
-12.33	0.082991	182.15	165.55	0.7034										
-10	0.084574	183.62	166.71	0.7094	-6.00	0.067135	184.93	168.15	0.6996	-0.76	0.056737	187.20	170.18	0.6969
0	0.088606	189.80	172.08	0.7325	0	0.069750	188.77	171.33	0.7144	0	0.057149	187.71	170.57	0.6989
10	0.092547	196.01	177.50	0.7548	10	0.073022	195.10	176.85	0.7371	10	0.059983	194.17	176.17	0.7221
20	0.096416	202.27	182.99	0.7766	20	0.076217	201.46	182.41	0.7592	20	0.062733	200.63	181.81	0.7446
30	0.100226	208.59	188.54	0.7977	30	0.079349	207.86	188.02	0.7806	30	0.065417	207.11	187.49	0.7663
40	0.103987	214.96	194.17	0.8184	40	0.082430	214.30	193.69	0.8016	40	0.068048	213.63	193.21	0.7875
50	0.107708	221.40	199.86	0.8386	50	0.085468	220.80	199.43	0.8220	50	0.070634	220.18	198.99	0.8081
60	0.111395	227.89	205.62	0.8584	60	0.088472	227.34	205.23	0.8419	60	0.073184	226.79	204.83	0.8282
70	0.115053	234.45	211.44	0.8778	70	0.091447	233.95	211.09	0.8615	70	0.075704	233.44	210.73	0.8479
80	0.118688	241.08	217.34	0.8969	80	0.094397	240.61	217.01	0.8806	80	0.078198	240.14	216.68	0.8671
90	0.122302	247.77	223.31	0.9155	90	0.097326	247.33	223.00	0.8994	90	0.080671	246.90	222.69	0.8860
100	0.125899	254.52	229.34	0.9339	100	0.100237	254.11	229.06	0.9178	100	0.083126	253.71	228.77	0.9045
110	0.129481	261.33	235.43	0.9519	110	0.103133	260.95	235.17	0.9359	110	0.085565	260.57	234.90	0.9226
120	0.133050	268.20	241.59	0.9696	120	0.106015	267.85	241.35	0.9536	120	0.087990	267.50	241.10	0.9405
130	0.136608	275.14	247.82	0.9870	130	0.108887	274.81	247.58	0.9711	130	0.090404	274.47	247.35	0.9580
140	0.140156	282.13	254.10	1.0042	140	0.111748	281.82	253.88	0.9883	140	0.092808	281.50	253.66	0.9752
150	0.143695	289.18	260.44	1.0210	150	0.114601	288.88	260.23	1.0052	150	0.095203	288.59	260.03	0.9922
160	0.147227	296.29	266.84	1.0376	160	0.117445	296.00	266.64	1.0218	160	0.097590	295.72	266.44	1.0088
170	0.150752	303.44	273.29	1.0540	170	0.120284	303.18	273.11	1.0382	170	0.099971	302.91	272.92	1.0252
180	0.154271	310.66	279.80	1.0700	180	0.123116	310.40	279.62	1.0543	180	0.102345	310.14	279.44	1.0414
190	0.157786	317.92	286.36	1.0859	190	0.125943	317.67	286.19	1.0702	190	0.104714	317.43	286.02	1.0573
200	0.161295	325.23	292.97	1.1015	200	0.128765	325.00	292.81	1.0858	200	0.107078	324.76	292.64	1.0729
210	0.164800	332.59	299.63	1.1169	210	0.131583	332.37	299.47	1.1012	210	0.109438	332.14	299.31	1.0884
220	0.168302	339.99	306.33	1.1321	220	0.134397	339.78	306.18	1.1164	220	0.111794	339.57	306.03	1.1036
230	0.171799	347.45	313.09	1.1470	230	0.137208	347.24	312.94	1.1314	230	0.114147	347.03	312.79	1.1186

P=0.4 MPa					P=0.5 MPa					P=0.6 MPa				
T °C	v m <sup>3</sup> /kg	h kJ/kg	u kJ/kg	s kJ/(kg·K)	T °C	v m <sup>3</sup> /kg	h kJ/kg	u kJ/kg	s kJ/(kg·K)	T °C	v m <sup>3</sup> /kg	h kJ/kg	u kJ/kg	s kJ/(kg·K)
8.28	0.043047	191.02	173.80	0.6928										
10	0.043625	192.21	174.76	0.6972	15.70	0.034727	194.06	176.70	0.6899					
20	0.045836	198.90	180.56	0.7204	20	0.035645	197.07	179.25	0.7004	22.21	0.028975	196.64	179.26	0.6877
30	0.047970	205.57	186.38	0.7428	30	0.037463	203.95	185.22	0.7235	30	0.030422	202.26	184.00	0.7068
40	0.050045	212.24	192.22	0.7645	40	0.039214	210.80	191.19	0.7457	40	0.031966	209.30	190.12	0.7296
50	0.052071	218.93	198.10	0.7855	50	0.040911	217.64	197.18	0.7672	50	0.033450	216.29	196.22	0.7516
60	0.054058	225.65	204.02	0.8059	60	0.042565	224.47	203.19	0.7880	60	0.034886	223.26	202.33	0.7729
70	0.056013	232.39	209.99	0.8259	70	0.044184	231.32	209.23	0.8083	70	0.036285	230.22	208.45	0.7934
80	0.057940	239.18	216.00	0.8454	80	0.045774	238.20	215.31	0.8281	80	0.037653	237.19	214.60	0.8135
90	0.059845	246.01	222.07	0.8645	90	0.047340	245.10	221.43	0.8473	90	0.038995	244.18	220.78	0.8330
100	0.061730	252.88	228.19	0.8831	100	0.048886	252.05	227.60	0.8662	100	0.040316	251.19	227.00	0.8520
110	0.063599	259.81	234.37	0.9014	110	0.050414	259.03	233.82	0.8847	110	0.041619	258.23	233.26	0.8706
120	0.065455	266.78	240.60	0.9194	120	0.051928	266.05	240.09	0.9027	120	0.042906	265.31	239.57	0.8889
130	0.067298	273.80	246.88	0.9370	130	0.053430	273.11	246.40	0.9205	130	0.044181	272.42	245.91	0.9067
140	0.069130	280.87	253.22	0.9544	140	0.054920	280.22	252.76	0.9379	140	0.045444	279.57	252.31	0.9243
150	0.070954	287.99	259.60	0.9714	150	0.056401	287.38	259.18	0.9550	150	0.046698	286.77	258.75	0.9415
160	0.072769	295.15	266.05	0.9881	160	0.057874	294.58	265.64	0.9718	160	0.047943	294.00	265.23	0.9584
170	0.074578	302.37	272.54	1.0046	170	0.059340	301.82	272.15	0.9884	170	0.049180	301.27	271.77	0.9750
180	0.076380	309.63	279.08	1.0208	180	0.060800	309.11	278.71	1.0046	180	0.050412	308.59	278.34	0.9913
190	0.078177	316.94	285.67	1.0367	190	0.062253	316.44	285.32	1.0206	190	0.051637	315.95	284.96	1.0073
200	0.079969	324.29	292.31	1.0525	200	0.063702	323.82	291.97	1.0364	200	0.052857	323.35	291.63	1.0231
210	0.081756	331.69	298.99	1.0679	210	0.065147	331.24	298.67	1.0519	210	0.054073	330.78	298.34	1.0387
220	0.083540	339.13	305.72	1.0832	220	0.066587	338.70	305.41	1.0672	220	0.055284	338.26	305.09	1.0540
230	0.085320	346.62	312.49	1.0982	230	0.068023	346.20	312.19	1.0823	230	0.056492	345.78	311.89	1.0691

P=0.7 MPa					P=0.8 MPa					P=0.9 MPa				
T	v	h	u	s	T	v	h	u	s	T	v	h	u	s
°C	m <sup>3</sup> /kg	kJ/kg	kJ/kg	kJ/(kg·K)	°C	m <sup>3</sup> /kg	kJ/kg	kJ/kg	kJ/(kg·K)	°C	m <sup>3</sup> /kg	kJ/kg	kJ/kg	kJ/(kg·K)
27.81	0.024913	198.80	181.36	0.6860										
30	0.025354	200.46	182.71	0.6917	32.88	0.021811	200.67	183.23	0.6845	37.58	0.019327	202.36	184.96	0.6832
40	0.026761	207.72	188.99	0.7153	40	0.022831	206.07	187.80	0.7021	40	0.019745	204.31	186.54	0.6897
50	0.028100	214.90	195.23	0.7378	50	0.024068	213.44	194.18	0.7253	50	0.020912	211.91	193.09	0.7136
60	0.029387	222.01	201.44	0.7595	60	0.025247	220.71	200.51	0.7474	60	0.022013	219.37	199.55	0.7363
70	0.030632	229.09	207.65	0.7804	70	0.026380	227.93	206.82	0.7688	70	0.023063	226.72	205.97	0.7581
80	0.031843	236.16	213.87	0.8008	80	0.027477	235.11	213.12	0.7894	80	0.024073	234.02	212.35	0.7790
90	0.033027	243.24	220.12	0.8205	90	0.028545	242.27	219.44	0.8094	90	0.025052	241.28	218.74	0.7993
100	0.034189	250.32	226.39	0.8398	100	0.029588	249.44	225.76	0.8289	100	0.026005	248.53	225.13	0.8190
110	0.035332	257.43	232.70	0.8585	110	0.030612	256.61	232.12	0.8478	110	0.026937	255.77	231.53	0.8382
120	0.036458	264.56	239.04	0.8769	120	0.031619	263.80	238.50	0.8664	120	0.027852	263.02	237.96	0.8568
130	0.037571	271.72	245.42	0.8949	130	0.032612	271.01	244.92	0.8845	130	0.028751	270.29	244.41	0.8751
140	0.038673	278.92	251.85	0.9125	140	0.033592	278.25	251.38	0.9022	140	0.029639	277.58	250.90	0.8929
150	0.039764	286.15	258.31	0.9298	150	0.034563	285.52	257.87	0.9196	150	0.030515	284.89	257.42	0.9104
160	0.040847	293.41	264.82	0.9468	160	0.035524	292.82	264.40	0.9366	160	0.031382	292.23	263.98	0.9276
170	0.041922	300.72	271.37	0.9635	170	0.036477	300.16	270.98	0.9534	170	0.032241	299.60	270.58	0.9444
180	0.042990	308.06	277.97	0.9799	180	0.037424	307.53	277.59	0.9698	180	0.033093	307.00	277.21	0.9609
190	0.044053	315.45	284.61	0.9960	190	0.038364	314.94	284.25	0.9860	190	0.033939	314.43	283.89	0.9771
200	0.045110	322.87	291.29	1.0118	200	0.039299	322.39	290.95	1.0019	200	0.034779	321.90	290.60	0.9931
210	0.046163	330.33	298.01	1.0274	210	0.040230	329.87	297.68	1.0176	210	0.035615	329.40	297.35	1.0088
220	0.047211	337.82	304.78	1.0428	220	0.041156	337.38	304.46	1.0330	220	0.036446	336.94	304.14	1.0242
230	0.048256	345.36	311.58	1.0579	230	0.042078	344.94	311.28	1.0481	230	0.037273	344.51	310.97	1.0394

P=1 MPa					P=1.5 MPa					P=2 MPa				
T	v	h	u	s	T	v	h	u	s	T	v	h	u	s
°C	m <sup>3</sup> /kg	kJ/kg	kJ/kg	kJ/(kg·K)	°C	m <sup>3</sup> /kg	kJ/kg	kJ/kg	kJ/(kg·K)	°C	m <sup>3</sup> /kg	kJ/kg	kJ/kg	kJ/(kg·K)
41.74	0.017398	203.79	186.39	0.6820										
50	0.018367	210.31	191.94	0.7026	59.46	0.011263	209.13	192.23	0.6768					
60	0.019411	217.96	198.55	0.7259	60	0.011400	209.77	192.67	0.6789					
70	0.020398	225.48	205.08	0.7481	70	0.012263	218.44	200.04	0.7046	73.02	0.008114	212.02	195.79	0.6713
80	0.021341	232.90	211.56	0.7695	80	0.013047	226.73	207.16	0.7284	80	0.008709	219.03	201.62	0.6915
90	0.022251	240.27	218.02	0.7900	90	0.013776	234.77	214.10	0.7508	90	0.009410	228.23	209.41	0.7172
100	0.023133	247.60	224.47	0.8100	100	0.014463	242.64	220.95	0.7722	100	0.010038	236.94	216.86	0.7408
110	0.023993	254.92	230.93	0.8293	110	0.015120	250.41	227.73	0.7928	110	0.010617	245.34	224.10	0.7630
120	0.024835	262.24	237.40	0.8482	120	0.015752	258.10	234.47	0.8126	120	0.011161	253.53	231.20	0.7841
130	0.025661	269.56	243.90	0.8665	130	0.016364	265.73	241.19	0.8318	130	0.011678	261.57	238.22	0.8043
140	0.026474	276.89	250.42	0.8845	140	0.016959	273.34	247.90	0.8504	140	0.012174	269.52	245.18	0.8238
150	0.027276	284.25	256.97	0.9021	150	0.017541	280.93	254.62	0.8686	150	0.012652	277.40	252.10	0.8426
160	0.028068	291.62	263.56	0.9193	160	0.018112	288.52	261.35	0.8863	160	0.013117	285.23	259.00	0.8609
170	0.028851	299.03	270.18	0.9362	170	0.018673	296.10	268.09	0.9036	170	0.013571	293.03	265.89	0.8787
180	0.029628	306.46	276.83	0.9528	180	0.019225	303.70	274.86	0.9205	180	0.014014	300.81	272.78	0.8961
190	0.030398	313.92	283.52	0.9691	190	0.019771	311.30	281.65	0.9371	190	0.014450	308.59	279.69	0.9131
200	0.031163	321.41	290.25	0.9851	200	0.020309	318.93	288.46	0.9534	200	0.014878	316.36	286.60	0.9297
210	0.031922	328.94	297.02	1.0008	210	0.020843	326.57	295.31	0.9694	210	0.015300	324.13	293.53	0.9459
220	0.032678	336.50	303.82	1.0163	220	0.021371	334.24	302.18	0.9851	220	0.015716	331.92	300.48	0.9619
230	0.033429	344.09	310.66	1.0316	230	0.021895	341.92	309.08	1.0005	230	0.016128	339.71	307.46	0.9775



P=2.5 MPa					P=3 MPa					P=3.5 MPa				
T	v	h	u	s	T	v	h	u	s	T	v	h	u	s
°C	m <sup>3</sup> /kg	kJ/kg	kJ/kg	kJ/(kg·K)	°C	m <sup>3</sup> /kg	kJ/kg	kJ/kg	kJ/(kg·K)	°C	m <sup>3</sup> /kg	kJ/kg	kJ/kg	kJ/(kg·K)
84.41	0.006110	213.11	197.83	0.6643										
90	0.006604	219.77	203.26	0.6830	94.18	0.004700	212.35	198.25	0.6548					
100	0.007270	230.05	211.87	0.7109	100	0.005245	220.82	205.09	0.6778	102.68	0.003616	209.31	196.65	0.6411
110	0.007841	239.46	219.86	0.7358	110	0.005894	232.30	214.62	0.7082	110	0.004345	222.56	207.35	0.6761
120	0.008355	248.39	227.50	0.7588	120	0.006425	242.43	223.15	0.7343	120	0.004971	235.17	217.78	0.7086
130	0.008830	256.99	234.92	0.7804	130	0.006892	251.84	231.17	0.7579	130	0.005464	245.92	226.79	0.7356
140	0.009276	265.38	242.19	0.8009	140	0.007317	260.83	238.88	0.7800	140	0.005891	255.76	235.15	0.7597
150	0.009700	273.62	249.37	0.8206	150	0.007712	269.53	246.39	0.8008	150	0.006275	265.08	243.11	0.7820
160	0.010106	281.75	256.48	0.8396	160	0.008086	278.03	253.77	0.8206	160	0.006631	274.04	250.84	0.8030
170	0.010499	289.80	263.55	0.8580	170	0.008442	286.39	261.06	0.8397	170	0.006965	282.77	258.40	0.8229
180	0.010880	297.80	270.60	0.8758	180	0.008784	294.64	268.29	0.8581	180	0.007282	291.33	265.84	0.8420
190	0.011252	305.76	277.63	0.8932	190	0.009116	302.82	275.47	0.8760	190	0.007587	299.76	273.21	0.8604
200	0.011615	313.70	284.66	0.9102	200	0.009438	310.95	282.63	0.8933	200	0.007880	308.10	280.52	0.8782
210	0.011972	321.62	291.69	0.9267	210	0.009752	319.03	289.78	0.9102	210	0.008165	316.37	287.79	0.8955
220	0.012322	329.53	298.73	0.9430	220	0.010059	327.09	296.92	0.9267	220	0.008443	324.59	295.04	0.9123
230	0.012667	337.45	305.78	0.9588	230	0.010360	335.13	304.05	0.9429	230	0.008713	332.77	302.27	0.9287

P=4 MPa					P=4.5 MPa					P=5 MPa				
T °C	v m <sup>3</sup> /kg	h kJ/kg	u kJ/kg	s kJ/(kg·K)	T °C	v m <sup>3</sup> /kg	h kJ/kg	u kJ/kg	s kJ/(kg·K)	T °C	v m <sup>3</sup> /kg	h kJ/kg	u kJ/kg	s kJ/(kg·K)
110.45	0.002709	203.16	192.32	0.6209										
120	0.003763	225.49	210.44	0.6785	120	0.002598	209.60	197.91	0.6341	120	0.001701	188.37	179.87	0.5777
130	0.004340	238.83	221.47	0.7120	130	0.003398	229.86	214.57	0.6850	130	0.002573	217.90	205.03	0.6517
140	0.004791	250.01	230.84	0.7394	140	0.003906	243.33	225.76	0.7180	140	0.003168	235.43	219.59	0.6946
150	0.005180	260.18	239.46	0.7637	150	0.004311	254.73	235.33	0.7453	150	0.003603	248.63	230.62	0.7262
160	0.005529	269.75	247.63	0.7861	160	0.004662	265.09	244.11	0.7695	160	0.003962	260.04	240.23	0.7529
170	0.005850	278.93	255.53	0.8070	170	0.004978	274.84	252.44	0.7917	170	0.004277	270.49	249.11	0.7767
180	0.006152	287.85	263.24	0.8269	180	0.005270	284.19	260.47	0.8126	180	0.004563	280.34	257.53	0.7987
190	0.006438	296.57	270.82	0.8459	190	0.005543	293.25	268.30	0.8323	190	0.004828	289.79	265.65	0.8193
200	0.006712	305.15	278.30	0.8643	200	0.005803	302.10	275.99	0.8512	200	0.005077	298.96	273.57	0.8389
210	0.006975	313.62	285.72	0.8820	210	0.006051	310.81	283.58	0.8694	210	0.005313	307.91	281.35	0.8576
220	0.007231	322.02	293.10	0.8992	220	0.006290	319.40	291.09	0.8870	220	0.005539	316.72	289.02	0.8756
230	0.007480	330.36	300.44	0.9159	230	0.006521	327.90	298.55	0.9041	230	0.005757	325.40	296.62	0.8931

**Table C.2dSI Compressed Liquid Table for Refrigerant-12 in SI Units**

P=0.5 MPa					P=1 MPa					P=2 MPa				
T	v	h	u	s	T	v	h	u	s	T	v	h	u	s
°C	m <sup>3</sup> /kg	kJ/kg	kJ/kg	kJ/(kg·K)	°C	m <sup>3</sup> /kg	kJ/kg	kJ/kg	kJ/(kg·K)	°C	m <sup>3</sup> /kg	kJ/kg	kJ/kg	kJ/(kg·K)
-50	0.000648	-8.81	-9.13	-0.0385	-50	0.000648	-8.81	-9.45	-0.0385	-50	0.000648	-8.80	-10.10	-0.0385
-40	0.000659	-0.03	-0.36	-0.0001	-40	0.000659	-0.03	-0.69	-0.0001	-40	0.000659	-0.03	-1.34	-0.0001
-30	0.000672	8.84	8.50	0.0370	-30	0.000672	8.84	8.16	0.0370	-30	0.000672	8.84	7.49	0.0370
-20	0.000685	17.79	17.45	0.0730	-20	0.000685	17.79	17.10	0.0730	-20	0.000685	17.79	16.42	0.0730
-10	0.000700	26.85	26.50	0.1079	-10	0.000700	26.85	26.15	0.1079	-10	0.000700	26.85	25.45	0.1079
0	0.000716	36.03	35.67	0.1419	0	0.000716	36.03	35.31	0.1419	0	0.000716	36.03	34.59	0.1419
10	0.000733	45.35	44.98	0.1751	10	0.000733	45.35	44.61	0.1751	10	0.000733	45.35	43.88	0.1751
					20	0.000752	54.84	54.09	0.2077	20	0.000752	54.85	53.34	0.2077
					30	0.000774	64.56	63.79	0.2398	30	0.000774	64.56	63.01	0.2398
					40	0.000798	74.55	73.75	0.2717	40	0.000798	74.55	72.96	0.2717
										50	0.000826	84.89	83.24	0.3035
										60	0.000858	95.69	93.97	0.3356
										70	0.000897	107.07	105.28	0.3684
15.70	0.000744	50.73	50.36	0.1937	41.74	0.000802	76.32	75.52	0.2772	73.02	0.000910	110.66	108.84	0.3785

P=3 MPa					P=4 MPa					P=5 MPa				
T	v	h	u	s	T	v	h	u	s	T	v	h	u	s
°C	m <sup>3</sup> /kg	kJ/kg	kJ/kg	kJ/(kg·K)	°C	m <sup>3</sup> /kg	kJ/kg	kJ/kg	kJ/(kg·K)	°C	m <sup>3</sup> /kg	kJ/kg	kJ/kg	kJ/(kg·K)
-50	0.000648	-8.80	-10.75	-0.0385	-50	0.000648	-8.80	-11.39	-0.0385	-50	0.000648	-8.80	-12.04	-0.0385
-40	0.000659	-0.02	-2.00	-0.0001	-40	0.000659	-0.02	-2.66	-0.0001	-40	0.000659	-0.02	-3.32	-0.0001
-30	0.000672	8.84	6.82	0.0370	-30	0.000672	8.84	6.15	0.0370	-30	0.000672	8.84	5.48	0.0370
-20	0.000685	17.79	15.74	0.0730	-20	0.000685	17.79	15.05	0.0730	-20	0.000685	17.79	14.37	0.0730
-10	0.000700	26.85	24.75	0.1079	-10	0.000700	26.85	24.05	0.1079	-10	0.000700	26.85	23.35	0.1079
0	0.000716	36.03	33.88	0.1419	0	0.000716	36.03	33.16	0.1419	0	0.000716	36.03	32.45	0.1419
10	0.000733	45.35	43.15	0.1751	10	0.000733	45.35	42.42	0.1751	10	0.000733	45.35	41.68	0.1751
20	0.000752	54.85	52.59	0.2077	20	0.000752	54.85	51.84	0.2077	20	0.000752	54.85	51.09	0.2077
30	0.000774	64.56	62.24	0.2398	30	0.000774	64.56	61.47	0.2398	30	0.000774	64.56	60.70	0.2398
40	0.000798	74.55	72.16	0.2717	40	0.000798	74.55	71.36	0.2717	40	0.000798	74.55	70.56	0.2717
50	0.000826	84.89	82.42	0.3035	50	0.000826	84.89	81.59	0.3035	50	0.000826	84.90	80.77	0.3035
60	0.000858	95.69	93.11	0.3356	60	0.000858	95.69	92.26	0.3356	60	0.000858	95.69	91.40	0.3356
70	0.000897	107.07	104.38	0.3684	70	0.000897	107.07	103.49	0.3684	70	0.000897	107.07	102.59	0.3684
80	0.000946	119.27	116.43	0.4023	80	0.000946	119.27	115.48	0.4023	80	0.000946	119.27	114.54	0.4023
90	0.001011	132.61	129.58	0.4382	90	0.001011	132.61	128.57	0.4382	90	0.001011	132.61	127.55	0.4382
					100	0.001113	147.80	143.34	0.4779	100	0.001113	147.80	142.23	0.4779
					110	0.001363	167.47	162.01	0.5279	110	0.001363	167.47	160.65	0.5279
94.18	0.001047	138.67	135.52	0.4542	110.45	0.001393	168.79	163.22	0.5313	112.08	0.001706	179.09	170.55	0.5576