

Refrigeration Components Canada Ltd.

Refrigerant 134a (1,1,1,2-Tetrafluoroethane) Properties of Saturated Liquid and Saturated Vapor

Temp.,* °F	Pres- sure, psia	Density, lb/ft ³		Volume, ft ³ /lb		Enthalpy, Btu/lb		Entropy, Btu/lb·°F		Specific Heat c_p , Btu/lb·°F			Vel. of Sound, ft/s		Viscosity, lb _m /ft·h		Thermal Cond., Btu/h·ft·°F		Surface Tension, Temp., dyne/cm °F	
		Liquid	Vapor	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor	Vapor	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor
-153.94a	0.057	99.33	568.59	-32.992	80.362	-0.09154	0.27923	0.2829	0.1399	1.1637	3674.	416.0	5.262	0.0156	0.0840	0.00178	28.07	-153.94		
-150.00	0.072	98.97	452.12	-31.878	80.907	-0.08791	0.27629	0.2830	0.1411	1.1623	3638.	418.3	4.790	0.0159	0.0832	0.00188	27.69	-150.00		
-140.00	0.129	98.05	260.63	-29.046	82.304	-0.07891	0.26941	0.2834	0.1443	1.1589	3545.	424.2	3.880	0.0164	0.0813	0.00214	26.74	-140.00		
-130.00	0.221	97.13	156.50	-26.208	83.725	-0.07017	0.26329	0.2842	0.1475	1.1559	3452.	429.9	3.238	0.0170	0.0794	0.00240	25.79	-130.00		
-120.00	0.365	96.20	97.481	-23.360	85.168	-0.06166	0.25784	0.2853	0.1508	1.1532	3360.	435.5	2.762	0.0176	0.0775	0.00265	24.85	-120.00		
-110.00	0.583	95.27	62.763	-20.500	86.629	-0.05337	0.25300	0.2866	0.1540	1.1509	3269.	440.8	2.396	0.0182	0.0757	0.00291	23.92	-110.00		
-100.00	0.903	94.33	41.637	-17.626	88.107	-0.04527	0.24871	0.2881	0.1573	1.1490	3178.	446.0	2.105	0.0187	0.0739	0.00317	22.99	-100.00		
-90.00	1.359	93.38	28.381	-14.736	89.599	-0.03734	0.24490	0.2898	0.1607	1.1475	3087.	450.9	1.869	0.0193	0.0722	0.00343	22.07	-90.00		
-80.00	1.993	92.42	19.825	-11.829	91.103	-0.02959	0.24152	0.2916	0.1641	1.1465	2998.	455.6	1.673	0.0199	0.0705	0.00369	21.16	-80.00		
-75.00	2.392	91.94	16.711	-10.368	91.858	-0.02577	0.23998	0.2925	0.1658	1.1462	2954.	457.8	1.587	0.0201	0.0696	0.00382	20.71	-75.00		
-70.00	2.854	91.46	14.161	-8.903	92.614	-0.02198	0.23854	0.2935	0.1676	1.1460	2909.	460.0	1.509	0.0204	0.0688	0.00395	20.26	-70.00		
-65.00	3.389	90.97	12.060	-7.432	93.372	-0.01824	0.23718	0.2945	0.1694	1.1459	2866.	462.1	1.436	0.0207	0.0680	0.00408	19.81	-65.00		
-60.00	4.002	90.49	10.321	-5.957	94.131	-0.01452	0.23590	0.2955	0.1713	1.1460	2822.	464.1	1.369	0.0210	0.0671	0.00420	19.36	-60.00		
-55.00	4.703	90.00	8.8733	-4.476	94.890	-0.01085	0.23470	0.2965	0.1731	1.1462	2778.	466.0	1.306	0.0212	0.0663	0.00433	18.92	-55.00		
-50.00	5.501	89.50	7.6621	-2.989	95.650	-0.00720	0.23358	0.2976	0.1751	1.1466	2735.	467.8	1.248	0.0215	0.0655	0.00446	18.47	-50.00		
-45.00	6.406	89.00	6.6438	-1.498	96.409	-0.00358	0.23252	0.2987	0.1770	1.1471	2691.	469.6	1.193	0.0218	0.0647	0.00460	18.03	-45.00		
-40.00	7.427	88.50	5.7839	0.000	97.167	0.00000	0.23153	0.2999	0.1790	1.1478	2648.	471.2	1.142	0.0221	0.0639	0.00473	17.60	-40.00		
-35.00	8.576	88.00	5.0544	1.503	97.924	0.00356	0.23060	0.3010	0.1811	1.1486	2605.	472.8	1.095	0.0223	0.0632	0.00486	17.16	-35.00		
-30.00	9.862	87.49	4.4330	3.013	98.679	0.00708	0.22973	0.3022	0.1832	1.1496	2563.	474.2	1.050	0.0226	0.0624	0.00499	16.73	-30.00		
-25.00	11.299	86.98	3.9014	4.529	99.433	0.01058	0.22892	0.3035	0.1853	1.1508	2520.	475.6	1.007	0.0229	0.0616	0.00512	16.30	-25.00		
-20.00	12.898	86.47	3.4449	6.051	100.184	0.01406	0.22816	0.3047	0.1875	1.1521	2477.	476.8	0.968	0.0231	0.0608	0.00525	15.87	-20.00		
-15.00	14.671	85.95	3.0514	7.580	100.932	0.01751	0.22744	0.3060	0.1898	1.1537	2435.	477.9	0.930	0.0234	0.0601	0.00538	15.44	-15.00		
-14.93b	14.696	85.94	3.0465	7.600	100.942	0.01755	0.22743	0.3061	0.1898	1.1537	2434.	477.9	0.929	0.0234	0.0601	0.00538	15.44	-14.93		
-10.00	16.632	85.43	2.7109	9.115	101.677	0.02093	0.22678	0.3074	0.1921	1.1554	2393.	478.9	0.894	0.0237	0.0593	0.00552	15.02	-10.00		
-5.00	18.794	84.90	2.4154	10.657	102.419	0.02433	0.22615	0.3088	0.1945	1.1573	2350.	479.8	0.860	0.0240	0.0586	0.00565	14.60	-5.00		
0.00	21.171	84.37	2.1579	12.207	103.156	0.02771	0.22557	0.3102	0.1969	1.1595	2308.	480.5	0.828	0.0242	0.0578	0.00578	14.18	0.00		
5.00	23.777	83.83	1.9330	13.764	103.889	0.03107	0.22502	0.3117	0.1995	1.1619	2266.	481.1	0.798	0.0245	0.0571	0.00592	13.76	5.00		
10.00	26.628	83.29	1.7357	15.328	104.617	0.03440	0.22451	0.3132	0.2021	1.1645	2224.	481.6	0.769	0.0248	0.0564	0.00605	13.35	10.00		
15.00	29.739	82.74	1.5623	16.901	105.339	0.03772	0.22403	0.3147	0.2047	1.1674	2182.	482.0	0.741	0.0250	0.0556	0.00619	12.94	15.00		
20.00	33.124	82.19	1.4094	18.481	106.056	0.04101	0.22359	0.3164	0.2075	1.1705	2140.	482.2	0.715	0.0253	0.0549	0.00632	12.53	20.00		
25.00	36.800	81.63	1.2742	20.070	106.767	0.04429	0.22317	0.3181	0.2103	1.1740	2098.	482.2	0.689	0.0256	0.0542	0.00646	12.12	25.00		
30.00	40.784	81.06	1.1543	21.667	107.471	0.04755	0.22278	0.3198	0.2132	1.1777	2056.	482.2	0.665	0.0258	0.0535	0.00660	11.72	30.00		
35.00	45.092	80.49	1.0478	23.274	108.167	0.05079	0.22241	0.3216	0.2163	1.1818	2014.	481.9	0.642	0.0261	0.0528	0.00674	11.32	35.00		
40.00	49.741	79.90	0.9528	24.890	108.856	0.05402	0.22207	0.3235	0.2194	1.1862	1973.	481.5	0.620	0.0264	0.0521	0.00688	10.92	40.00		
45.00	54.749	79.32	0.8680	26.515	109.537	0.05724	0.22174	0.3255	0.2226	1.1910	1931.	481.0	0.598	0.0267	0.0514	0.00703	10.53	45.00		
50.00	60.134	78.72	0.7920	28.150	110.209	0.06044	0.22144	0.3275	0.2260	1.1961	1889.	480.3	0.578	0.0270	0.0507	0.00717	10.14	50.00		
55.00	65.913	78.11	0.7238	29.796	110.871	0.06362	0.22115	0.3297	0.2294	1.2018	1847.	479.4	0.558	0.0273	0.0500	0.00732	9.75	55.00		
60.00	72.105	77.50	0.6625	31.452	111.524	0.06680	0.22088	0.3319	0.2331	1.2079	1805.	478.3	0.539	0.0275	0.0493	0.00747	9.36	60.00		
65.00	78.729	76.87	0.6072	33.120	112.165	0.06996	0.22062	0.3343	0.2368	1.2145	1763.	477.0	0.520	0.0278	0.0486	0.00762	8.98	65.00		
70.00	85.805	76.24	0.5572	34.799	112.796	0.07311	0.22037	0.3368	0.2408	1.2217	1721.	475.6	0.503	0.0281	0.0479	0.00777	8.60	70.00		
75.00	93.351	75.59	0.5120	36.491	113.414	0.07626	0.22013	0.3394	0.2449	1.2296	1679.	474.0	0.485	0.0284	0.0472	0.00793	8.23	75.00		
80.00	101.39	74.94	0.4710	38.195	114.019	0.07939	0.21989	0.3422	0.2492	1.2382	1636.	472.2	0.469	0.0287	0.0465	0.00809	7.86	80.00		
85.00	109.93	74.27	0.4338	39.913	114.610	0.08252	0.21966	0.3451	0.2537	1.2475	1594.	470.1	0.453	0.0291	0.0458	0.00825	7.49	85.00		
90.00	119.01	73.58	0.3999	41.645	115.186	0.08565	0.21944	0.3482	0.2585	1.2578	1551.	467.9	0.437	0.0294	0.0451	0.00842	7.13	90.00		
95.00	128.65	72.88	0.3690	43.392	115.746	0.08877	0.21921	0.3515	0.2636	1.2690	1509.	465.4	0.422	0.0297	0.0444	0.00860	6.77	95.00		
100.00	138.85	72.17	0.3407	45.155	116.289	0.09188	0.21898	0.3551	0.2690	1.2813	1466.	462.7	0.407	0.0301	0.0437	0.00878	6.41	100.00		
105.00	149.65	71.44	0.3148	46.934	116.813	0.09500	0.21875	0.3589	0.2747	1.2950	1423.	459.8	0.393	0.0304	0.0431	0.00897	6.06	105.00		
110.00	161.07	70.69	0.2911	48.731	117.317	0.09811	0.21851	0.3630	0.2809	1.3101	1380.	456.7	0.378	0.0308	0.0424	0.00916	5.71	110.00		
115.00	173.14	69.93	0.2693	50.546	117.799	0.10123	0.21826	0.3675	0.2875	1.3268	1337.	453.2	0.365	0.0312	0.0417	0.00936	5.36	115.00		
120.00	185.86	69.14	0.2493	52.382	118.258	0.10435	0.21800	0.3723	0.2948	1.3456	1294.	449.6	0.351	0.0316	0.0410	0.00958	5.03	120.00		
125.00	199.28	68.32	0.2308	54.239	118.690	0.10748	0.21772	0.3775	0.3026	1.3666	1250.	445.6	0.338	0.0320	0.0403	0.00981	4.69	125.00		
130.00	213.41	67.49	0.2137	56.119	119.095	0.11062	0.21742	0.3833	0.3112	1.3903	1206.	441.4	0.325	0.0324	0.0396	0.01005	4.36	130.00		
135.00	228.28	66.62	0.1980	58.023	119.468	0.11376	0.21709	0.3897	0.3208	1.4173	1162.	436.8	0.313	0.0329	0.0389	0.01031	4.04	135.00		
140.00	243.92	65.73	0.1833	59.954	119.807	0.11692	0.21673	0.3968	0.3315	1.4481	1117.	432.0	0.301	0.0334	0.0382	0.01058	3.72	140.00		
145.00	260.36	64.80	0.1697	61.915	120.108	0.12010	0.21634	0.4048	0.3435	1.4837	1072.	426.8	0.288	0.0339	0.0375	0.01089	3.40	145.00		
150.00	277.61	63.83	0.1571	63.908	120.366	0.12330	0.21591	0.4138												