

R-227ea

1,1,1,2,3,3,3 - HEPTAFLUOROPROPANE $CF_3-CHF-CF_3$

Molecular weight (g/mol)	170.03
Melting point (°C)	-126.8
Boiling point (at 1.013 bar)	-16.35
Temperature glide at 1.013 bar (K)	0
Critical temperature (°C)	101.8
Critical pressure (bar absolute)	29.25
Specific heat (liquid) at + 25°C (kJ/kg.K)	1.182
Specific heat (vapour) at 1.013 bar and + 25°C (kJ/kg.K)	0.813
Thermal capacity ratio (Cp/Cv) at + 25°C and 1.013 bar	1.075
Viscosity (liquid) at + 25°C in Centipoise (10 ⁻³ Pa.s)	0.239
Surface tension at + 25°C in dyne per centimetre (10 ⁻³ N/m)	7.04
Classification NF-EN 378	A1
GWP (IPCC 4)	3220

◆ Main applications

R-227ea is a hydrofluorocarbon (HFC) which can in some applications replace R-114 (CFC) whose production was stopped in the European Union on 31.12.1994.

It is particularly suitable for air conditioning systems which work in high temperature environments, high temperature heat pumps, and thermal collectors. Today, it is replaced in some applications in new installations by R-1234ze. R-227ea is also used as an extinguishing agent replacing "bromofluorocarbon" compound R-13B1 whose production was stopped in the European Union as of 31.12.1993.

◆ Commercial specifications

Purity: ≥ 99.5 % weight.

Water content: ≤ 10 ppm weight.

Chloride ion test: negative.

Total acidity (HCl): ≤ 1 ppm weight.

High-boiling residues: ≤ 0.01 % volume.

Non-condensable content (gas phase): ≤ 1.5 % volume.

◆ Oils

Use a polyol ester (POE) oil.

Check with **Climalife** regarding the viscosity of the oil selected for your application, and the miscibility with the fluid under consideration.

◆ Regulation

The use and implementation of R-227ea are governed by EU Regulation n° 517/2014.

The recovery of R-227ea is mandatory under EU Regulation n° 517/2014.

(Refer to the regulations enforced in each country).

Thermodynamic properties of R-227ea - Saturated state

Absolute pressure P (bar)	LIQUID					VAPOUR					Latent heat Lv (kJ/kg)
	Bubble point t' (°C)	Volume v' (dm ³ /kg)	Density ρ' (kg/dm ³)	Enthalpy h' (kJ/kg)	Entropy s' (kJ/kg.K)	Dew point t'' (°C)	Volume v'' (m ³ /kg)	Density ρ'' (kg/m ³)	Enthalpy h'' (kJ/kg)	Entropy s'' (kJ/kg.K)	
0.003	-100	0.555	1.803	97.440	0.536	-100.0	29.301	0.034	261.702	1.484	164.262
0.005	-95	0.559	1.789	102.218	0.563	-95.0	17.531	0.057	264.564	1.474	162.346
0.008	-90	0.563	1.775	107.027	0.590	-90.0	10.857	0.092	267.472	1.466	160.445
0.013	-85	0.568	1.760	111.870	0.616	-85.0	6.938	0.144	270.425	1.458	158.555
0.021	-80	0.573	1.746	116.746	0.641	-80.0	4.562	0.219	273.419	1.452	156.673
0.031	-75	0.578	1.731	121.656	0.666	-75.0	3.079	0.325	276.451	1.447	154.795
0.046	-70	0.583	1.716	126.599	0.691	-70.0	2.129	0.470	279.518	1.444	152.919
0.067	-65	0.588	1.701	131.578	0.715	-65.0	1.504	0.665	282.617	1.441	151.039
0.095	-60	0.593	1.686	136.592	0.739	-60.0	1.084	0.922	285.746	1.439	149.154
0.132	-55	0.599	1.670	141.643	0.762	-55.0	0.796	1.256	288.900	1.437	147.257
0.181	-50	0.604	1.655	146.731	0.785	-50.0	0.595	1.682	292.077	1.437	145.346
0.243	-45	0.610	1.639	151.859	0.808	-45.0	0.451	2.218	295.274	1.437	143.416
0.321	-40	0.616	1.623	157.026	0.830	-40.0	0.347	2.882	298.488	1.437	141.463
0.419	-35	0.622	1.607	162.234	0.853	-35.0	0.270	3.698	301.716	1.438	139.482
0.540	-30	0.629	1.591	167.485	0.874	-30.0	0.213	4.687	304.955	1.440	137.470
0.686	-25	0.635	1.574	172.781	0.896	-25.0	0.170	5.875	308.202	1.442	135.421
0.863	-20	0.642	1.557	178.124	0.917	-20.0	0.137	7.290	311.454	1.444	133.330
1.013	-16.35	0.648	1.544	182.058	0.933	-16.35	0.118	8.484	313.830	1.446	131.773
1.073	-15	0.649	1.540	183.515	0.938	-15.0	0.112	8.961	314.706	1.446	131.192
1.322	-10	0.657	1.522	188.956	0.959	-10.0	0.092	10.921	317.957	1.449	129.001
1.614	-5	0.665	1.504	194.450	0.980	-5.0	0.076	13.205	321.201	1.452	126.751
1.954	0	0.673	1.486	200.000	1.000	-0.0	0.063	15.853	324.435	1.456	124.435
2.346	5	0.682	1.467	205.608	1.020	5.0	0.053	18.905	327.655	1.459	122.047
2.796	10	0.691	1.448	211.277	1.040	10.0	0.045	22.411	330.855	1.463	119.578
3.309	15	0.700	1.429	217.010	1.060	15.0	0.038	26.421	334.031	1.466	117.021
3.891	20	0.710	1.408	222.812	1.080	20.0	0.032	30.996	337.177	1.470	114.366
4.547	25	0.721	1.388	228.685	1.100	25.0	0.028	36.202	340.287	1.474	111.601
5.284	30	0.732	1.366	234.636	1.119	30.0	0.024	42.118	343.353	1.478	108.716
6.108	35	0.744	1.344	240.670	1.139	35.0	0.020	48.833	346.366	1.482	105.696
7.025	40	0.757	1.321	246.793	1.158	40.0	0.018	56.454	349.316	1.486	102.523
8.041	45	0.771	1.297	253.011	1.178	45.0	0.015	65.109	352.191	1.490	99.179
9.164	50	0.787	1.271	259.336	1.197	50.0	0.013	74.956	354.975	1.493	95.639
10.401	55	0.803	1.245	265.777	1.217	55.0	0.012	86.189	357.651	1.497	91.874
11.759	60	0.822	1.216	272.349	1.236	60.0	0.010	99.062	360.195	1.500	87.846
13.247	65	0.843	1.186	279.071	1.256	65.0	0.009	113.904	362.577	1.503	83.506
14.874	70	0.867	1.154	285.966	1.276	70.0	0.008	131.169	364.755	1.505	78.789
16.649	75	0.895	1.118	293.071	1.296	75.0	0.007	151.500	366.675	1.507	73.603
18.583	80	0.927	1.078	300.439	1.316	80.0	0.006	175.865	368.252	1.509	67.813
20.688	85	0.968	1.033	308.161	1.338	85.0	0.005	205.839	369.357	1.509	61.196
22.981	90	1.022	0.979	316.407	1.360	90.0	0.004	244.309	369.755	1.507	53.348
25.479	95	1.102	0.908	325.689	1.384	95.0	0.003	298.003	368.902	1.502	43.313
28.216	100	1.271	0.787	337.515	1.416	100.0	0.003	397.240	364.317	1.487	26.802

Thermodynamic properties of R-227ea - (superheated vapour) - Volume (dm³/kg)

Sat. Temp. °C	Sat. Pressure bar	Superheat (°C)																				
		0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
-100	0.003	29300.882	30148.920	30996.826	31844.614	32692.297	33539.883	34387.383	35234.805	36082.156	36929.443	37776.672	38623.849	39470.979	40318.066	41165.114	42012.128	42859.114	43706.065	44552.994	45399.901	46246.786
-95	0.005	17531.225	18025.002	18518.660	19012.213	19505.669	19999.039	20492.330	20985.551	21478.707	21971.806	22464.852	22957.850	23450.807	23943.724	24436.607	24929.459	25422.283	25915.081	26407.856	26900.611	27393.347
-90	0.008	10856.718	11154.685	11452.544	11750.308	12047.985	12345.583	12643.110	12940.573	13237.978	13535.331	13832.636	14129.898	14427.122	14724.311	15021.469	15318.599	15615.704	15912.785	16209.846	16506.888	16803.913
-85	0.013	6937.531	7123.325	7309.022	7494.631	7680.162	7865.622	8051.017	8236.354	8421.639	8606.876	8792.070	8977.226	9162.347	9347.437	9532.498	9717.534	9902.547	10087.539	10272.513	10457.470	10642.411
-80	0.021	4561.793	4681.184	4800.487	4919.711	5038.863	5157.951	5276.980	5395.957	5514.886	5633.772	5752.619	5871.431	5990.213	6108.965	6227.693	6346.397	6465.081	6583.746	6702.393	6821.026	6939.645
-75	0.031	3079.042	3157.922	3236.721	3315.449	3394.112	3472.715	3551.266	3629.769	3708.229	3786.651	3865.037	3943.391	4021.718	4100.019	4178.296	4256.553	4334.791	4413.013	4491.218	4569.410	4647.590
-70	0.046	2128.512	2181.980	2235.375	2288.705	2341.976	2395.193	2448.362	2501.488	2554.574	2607.626	2660.646	2713.637	2766.603	2819.546	2872.467	2925.370	2978.256	3031.127	3083.984	3136.828	3189.660
-65	0.067	1503.977	1541.091	1578.139	1615.127	1652.061	1688.947	1725.789	1762.591	1799.358	1836.094	1872.800	1909.481	1946.139	1982.775	2019.393	2055.994	2092.579	2129.150	2165.709	2202.256	2238.793
-60	0.095	1084.220	1110.556	1136.833	1163.054	1189.226	1215.354	1241.443	1267.495	1293.516	1319.507	1345.473	1371.415	1397.336	1423.238	1449.123	1474.993	1500.848	1526.691	1552.522	1578.342	1604.153
-55	0.132	796.130	815.206	834.227	853.197	872.123	891.009	909.858	928.675	947.462	966.223	984.961	1003.677	1022.375	1041.054	1059.719	1078.369	1097.006	1115.632	1134.247	1152.853	1171.450
-50	0.181	594.547	608.631	622.663	636.650	650.596	664.505	678.382	692.228	706.048	719.844	733.619	747.374	761.111	774.833	788.541	802.236	815.919	829.591	843.254	856.908	870.554
-45	0.243	450.947	461.532	472.070	482.567	493.025	503.450	513.845	524.213	534.556	544.878	555.180	565.464	575.733	585.987	596.228	606.457	616.675	626.884	637.084	647.276	657.460
-40	0.321	346.942	355.031	363.078	371.085	379.059	387.001	394.915	402.805	410.673	418.521	426.350	434.164	441.963	449.749	457.522	465.285	473.038	480.783	488.519	496.247	503.969
-35	0.419	270.445	276.425	282.365	289.169	295.342	301.486	307.605	313.700	319.776	325.833	331.874	337.900	343.912	349.912	355.901	361.881	367.851	373.813	379.767	385.715	391.656
-30	0.540	213.371	218.318	223.228	228.106	232.953	237.775	242.573	247.350	252.109	256.850	261.576	266.289	270.989	275.678	280.357	285.027	289.688	294.342	298.988	303.629	308.263
-25	0.686	170.217	174.169	178.086	181.973	185.832	189.667	193.481	197.274	201.051	204.812	208.559	212.293	216.016	219.728	223.431	227.125	230.812	234.492	238.165	241.832	245.494
-20	0.863	137.181	140.379	143.545	146.683	149.794	152.884	155.953	159.004	162.039	165.059	168.066	171.062	174.047	177.022	179.988	182.947	185.898	188.843	191.782	194.715	197.643
-16.35	1.013	117.873	120.635	123.366	126.069	128.749	131.406	134.045	136.667	139.273	141.865	144.445	147.014	149.572	152.122	154.663	157.197	159.723	162.244	164.759	167.268	169.773
-15	1.073	111.596	114.217	116.807	119.371	121.910	124.429	126.928	129.411	131.879	134.333	136.774	139.205	141.626	144.038	146.442	148.839	151.229	153.612	155.990	158.363	160.731
-10	1.322	91.567	93.740	95.884	98.003	100.099	102.175	104.234	106.277	108.305	110.321	112.326	114.320	116.305	118.282	120.251	122.213	124.169	126.119	128.064	130.004	131.939
-5	1.614	75.727	77.549	79.344	81.114	82.863	84.594	86.307	88.006	89.691	91.365	93.027	94.680	96.325	97.961	99.590	101.213	102.830	104.442	106.048	107.650	109.247
0	1.954	63.081	64.626	66.139	67.639	69.113	70.570	72.010	73.437	74.851	76.254	77.647	79.030	80.405	81.773	83.135	84.490	85.839	87.183	88.523	89.858	91.189
5	2.346	52.895	54.218	55.515	56.790	58.045	59.283	60.506	61.716	62.914	64.100	65.278	66.446	67.607	68.761	69.909	71.052	72.187	73.318	74.445	75.568	76.687
10	2.796	44.622	45.766	46.885	47.983	49.062	50.124	51.171	52.206	53.230	54.243	55.247	56.243	57.231	58.213	59.188	60.159	61.124	62.084	63.040	63.989	64.941
15	3.309	37.848	38.848	39.823	40.777	41.712	42.631	43.537	44.430	45.312	46.184	47.047	47.903	48.751	49.593	50.430	51.261	52.087	52.909	53.726	54.540	55.351
20	3.891	32.262	33.144	34.001	34.837	35.655	36.457	37.246	38.029	38.799	39.546	40.295	41.036	41.770	42.498	43.220	43.937	44.650	45.358	46.063	46.764	47.461
25	4.547	27.622	28.407	29.167	29.906	30.628	31.334	32.027	32.708	33.379	34.041	34.695	35.341	35.981	36.615	37.244	37.867	38.486	39.102	39.713	40.321	40.925
30	5.284	23.743	24.448	25.128	25.787	26.429	27.055	27.668	28.270	28.862	29.445	30.020	30.588	31.150	31.706	32.256	32.802	33.344	33.882	34.416	34.947	35.474
35	6.108	20.478	21.177	21.851	22.324	22.899	23.458	24.005	24.541	25.067	25.584	26.094	26.596	27.092	27.583	28.069	28.550	29.027	29.500	29.970	30.436	30.900
40	7.025	17.714	18.299	18.858	19.395	19.914	20.418	20.910	21.390	21.860	22.322	22.776	23.224	23.665	24.101	24.532	24.959	25.381	25.800	26.216	26.628	27.037
45	8.041	15.359	15.900	16.413	16.904	17.377	17.834	18.278	18.712	19.135	19.550	19.958	20.359	20.754	21.144	21.529	21.909	22.286	22.659	23.028	23.395	23.758
50	9.164	13.341	13.846	14.322	14.774	15.208	15.626	16.031	16.424	16.808	17.183	17.551	17.913	18.268	18.619	18.964	19.306	19.643	19.977	20.307	20.635	20.960
55	10.401	11.602	12.079	12.524	12.944	13.345	13.730	14.101	14.460	14.810	15.152	15.486	15.814	16.135	16.452	16.764	17.072	17.376	17.676	17.973	18.268	18.559
60	11.759	10.095	10.550	10.971	11.373	11.737	12.094	12.436	12.767	13.088	13.400	13.705	14.004	14.297	14.584	14.867	15.146	15.421	15.693	15.962	16.227	16.490
65	13.247	8.779	9.221	9.622	9.994	10.344	10.676	10.994	11.300	11.596	11.883	12.163	12.437	12.704	12.967	13.225	13.479	13.729	13.976	14.220	14.461	14.699
70	14.874	7.624	8.025	8.445	8.799	9.130	9.442	9.739	10.024	10.298	10.564	10.822	11.074	11.320	11.561	11.797	12.029	12.258	12.485	12.709	12.925	13.141
75	16.649	6.601	7.035	7.413	7.754	8.069	8.364	8.643	8.909	9.165	9.412	9.651	9.884	10.111	10.332	10.550	10.763	10.973	11.179	11.382	11.583	11.781
80	18.583	5.686	6.131	6.505	6.836	7.138	7.418	7.682	7.932	8.172	8.402	8.624	8.840	9.051	9.256	9.456	9.654	9.850	10.045	10.238	10.406	10.588
85	20.688	4.858	5.327	5.701	6.026	6.317	6.585	6.836	7.072	7.297	7.513	7.721	7.922	8.118	8.308	8.494	8.675	8.854	9.029	9.201	9.370	9.537
90	22.981	4.093	4.607	4.989	5.309	5.592	5.850	6.089	6.313	6.525	6.728	6.923	7.111	7.293	7.470	7.643	7.811	7.976	8.138	8.297	8.454	8.608
95	25.479	3.356	3.960	4.354	4.673	4.949	5.198	5.426	5.639	5.840	6.031	6.214	6.391	6.561	6.726	6.887	7.044	7.197	7.347	7.495	7.639	7.782
100	28.216	2.517	3.372	3.785	4.104	4.375	4.615	4.834	5.037	5.228	5.408	5.581	5.746	5.906	6.060	6.210	6.356	6.499	6.638	6.775	6.909	7.041

Thermodynamic properties of R-227ea - (superheated vapour) - Enthalpy (kJ/kg)

Sat. Temp. °C	Sat. Pressure bar	Superheat (°C)																				
		0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
-100	0.003	261.702	264.577	267.504	270.483	273.511	276.589	279.715	282.889	286.110	289.378	292.693	296.053	299.460	302.911	306.407	309.943	313.534	317.164	320.837	324.554	328.314
-95	0.005	264.564	267.492	270.471	273.500	276.579	279.705	282.880	286.102	289.371	292.686	296.047	299.453	302.905	306.402	309.943	313.529	317.159	320.833	324.550	328.310	332.114
-90	0.008	267.472	270.451	273.483	276.562	279.691	282.866	286.089	289.359	292.675	296.036	299.444	302.896	306.393	309.935	313.522	317.152	320.826	324.544	328.304	332.108	335.954
-85	0.013	270.425	273.457	276.539	279.668	282.846	286.070	289.341	292.658	296.021	299.429	302.882	306.380	309.923	313.510	317.141	320.816	324.534	328.295	332.100	335.946	339.835
-80	0.021	273.419	276.503	279.653	282.814	286.041	289.314	292.632	295.997	299.407	302.862	306.361	309.905	313.493	317.125	320.801	324.520	328.282	332.087	335.934	339.824	343.755
-75	0.031	276.451	279.587	282.769	285.999	289.274	292.596	295.963	299.375	302.832	306.333	309.879	313.469	317.102	320.779	324.499	328.263	332.069	335.917	339.807	343.739	347.713
-70	0.046	279.518	282.706	285.939	289.219	292.544	295.915	299.330	302.790	306.294	309.842	313.434	317.070	320.749	324.471	328.235	332.041	335.892	339.784	343.717	347.692	351.707
-65	0.067	282.617	285.857	289.143	292.473	295.848	299.268	302.732	306.239	309.791	313.386	317.025	320.706	324.431	328.198	332.007	335.859	339.752	343.687	347.663	351.680	355.737
-60	0.095	285.746	289.039	292.376	295.758	299.183	302.653	306.166	309.722	313.321	316.964	320.649	324.377	328.147	331.959	335.813	339.709	343.646	347.624	351.642	355.701	359.801
-55	0.132	288.900	292.247	295.637	299.071	302.548	306.068	309.630	313.235	316.883	320.573	324.305	328.079	331.895	335.752	339.651	343.591	347.572	351.593	355.654	359.755	363.896
-50	0.181	292.077	295.479	298.924	302.410	305.939	309.510	313.122	316.777	320.473	324.211	327.990	331.811	335.673	339.576	343.520	347.504	351.528	355.593	359.697	363.840	368.022
-45	0.243	295.274	298.733	302.232	305.772	309.354	312.976	316.640	320.344	324.090	327.876	331.703	335.571	339.479	343.428	347.417	351.445	355.513	359.621	363.767	367.953	372.176
-40	0.321	298.488	302.004	305.560	309.155	312.790	316.466	320.181	323.936	327.731	331.566	335.441	339.357	343.312	347.306	351.340	355.413	359.525	363.676	367.865	372.092	376.357
-35	0.419	301.716	305.292	308.905	312.556	316.246	319.975	323.742	327.549	331.394	335.279	339.203	343.165	347.167	351.208	355.287	359.405	363.561	367.755	371.987	376.256	380.562
-30	0.540	304.955	308.591	312.263	315.972	319.718	323.501	327.322	331.180	335.077	339.011	342.984	346.995	351.044	355.131	359.256	363.419	367.619	371.856	376.131	380.442	384.789
-25	0.686	308.202	311.901	315.633	319.400	323.203	327.042	330.917	334.828	338.776	342.762	346.784	350.844	354.940	359.074	363.245	367.453	371.697	375.978	380.295	384.648	389.037
-20	0.863	311.454	315.216	319.011	322.838	326.699	330.595	334.525	338.490	342.491	346.527	350.600	354.708	358.853	363.034	367.251	371.504	375.793	380.117	384.474	388.872	393.302
-16.35	1.013	313.830	317.641	321.482	325.355	329.259	333.197	337.167	341.173	345.212	349.286	353.396	357.541	361.721	365.936	370.187	374.474	378.795	383.151	387.543	391.969	396.429
-15	1.073	314.706	318.535	322.394	326.283	330.204	334.157	338.143	342.163	346.217	350.305	354.428	358.586	362.780	367.008	371.271	375.570	379.904	384.272	388.675	393.112	397.584
-10	1.322	317.957	321.854	325.779	329.731	333.713	337.725	341.769	345.844	349.952	354.093	358.268	362.476	366.718	370.994	375.305	379.649	384.028	388.440	392.886	397.366	401.879
-5	1.614	321.201	325.170	329.162	333.180	337.224	341.297	345.399	349.531	353.694	357.889	362.115	366.374	370.666	374.990	379.348	383.739	388.162	392.619	397.109	401.631	406.186
0	1.954	324.435	328.478	332.540	336.625	340.734	344.869	349.031	353.221	357.440	361.689	365.968	370.278	374.620	378.994	383.399	387.836	392.305	396.807	401.340	405.905	410.502
5	2.346	327.655	331.775	335.910	340.065	344.241	348.439	352.662	356.911	361.187	365.491	369.824	374.186	378.579	383.001	387.455	391.939	396.455	401.001	405.578	410.186	414.825
10	2.796	330.855	335.056	339.268	343.495	347.739	352.003	356.288	360.597	364.932	369.292	373.679	378.095	382.539	387.012	391.514	396.046	400.607	405.199	409.820	414.472	419.153
15	3.309	334.031	338.317	342.609	346.911	351.226	355.557	359.907	364.278	368.672	373.089	377.532	382.002	386.498	391.021	395.573	400.153	404.762	409.399	414.065	418.760	423.484
20	3.891	337.177	341.554	345.929	350.309	354.697	359.098	363.514	367.949	372.404	376.880	381.380	385.904	390.453	395.028	399.630	404.259	408.915	413.599	418.310	423.049	427.815
25	4.547	340.287	344.759	349.223	353.684	358.149	362.622	367.107	371.607	376.125	380.661	385.219	389.799	394.402	399.030	403.683	408.361	413.065	417.796	422.552	427.336	432.146
30	5.284	343.353	347.928	352.485	357.032	361.577	366.126	370.682	375.249	379.831	384.430	389.047	393.684	398.343	403.024	407.728	412.457	421.217	425.982	430.779	435.607	440.467
35	6.108	346.366	351.052	355.708	360.347	364.976	369.604	374.234	378.871	383.520	388.182	392.860	397.564	402.272	407.007	411.765	416.544	421.347	426.173	431.025	435.897	440.795
40	7.025	349.316	354.123	358.887	363.623	368.342	373.051	377.759	382.470	387.187	391.916	396.657	401.413	406.186	410.978	415.789	420.621	425.474	430.349	435.246	440.167	445.110
45	8.041	352.191	357.132	362.013	366.853	371.667	376.464	381.253	386.040	390.830	395.626	400.432	405.251	410.084	414.932	419.799	424.684	429.598	434.541	439.504	444.427	449.416
50	9.164	354.975	360.067	365.077	370.030	374.946	379.837	384.712	389.579	394.444	399.311	404.185	409.067	413.961	418.869	423.792	428.732	433.689	438.665	443.660	448.675	453.711
55	10.401	357.651	362.914	368.068	373.146	378.173	383.163	388.130	393.081	398.025	402.966	407.910	412.859	417.817	422.785	427.766	432.762	437.773	442.801	447.846	452.910	457.992
60	11.759	360.195	365.659	370.975	376.192	381.339	386.437	391.501	396.542	401.569	406.588	411.605	416.623	421.646	426.677	431.718	436.771	441.837	446.915	452.015	457.129	462.260
65	13.247	362.577	368.280	373.784	379.156	384.436	389.651	394.820	399.957	405.072	410.173	415.266	420.356	425.447	430.543	435.646	440.758	445.881	451.017	456.166	461.330	466.510
70	14.874	364.755	370.754	376.478	382.026	387.455	392.798	398.081	403.320	408.529	413.716	418.889	424.054	429.217	434.380	439.546	444.719	449.901	455.092	460.296	465.512	470.742
75	16.649	366.675	373.050	379.038	384.790	390.385	395.870	401.277	406.626	411.934	417.213	422.471	427.715	432.951	438.184	443.417	448.653	453.895	459.144	464.402	469.672	474.953
80	18.583	368.252	375.130	381.442	387.432	393.216	398.858	404.400	409.869	415.284	420.659	426.006	431.333	436.647	441.953	447.254	452.556	457.859	463.168	468.483	473.807	479.141
85	20.688	369.357	376.945	383.662	389.934	395.934	401.752	407.443	413.041	418.570	424.050	429.491	434.906	440.300	445.682	451.055	456.424	461.792	467.162	472.536	477.916	483.304
90	22.981	369.755	378.432	385.669	392.278	398.526	404.542	410.396	416.135	421.788	427.378	428.920	434.426	439.906	445.367	450.815	456.254	461.688	471.122	476.556	481.994	487.437
95	25.479	368.902	379.510	387.428	394.442	400.977	407.214	413.249	419.141	424.928	430.636	436.284	441.888	447.457	453.002	458.527	464.039	469.543	475.042	480.539	486.036	491.537
100	28.216	364.317	380.055	388.887	396.391	403.257	409.744	415.979	422.039	427.970	433.806	439.568	445.275	450.940	456.572	462.179	467.768	473.344	478.911	484.473	490.032	495.592

Thermodynamic properties of R-227ea - (superheated vapour) - Entropy (kJ/kg.K)

Sat. Temp. °C	Sat. Pressure bar	Superheat (°C)																				
		0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
-100	0.003	1.484	1.501	1.517	1.533	1.549	1.565	1.580	1.596	1.611	1.626	1.641	1.656	1.671	1.685	1.700	1.714	1.729	1.743	1.757	1.771	1.785
-95	0.005	1.474	1.490	1.506	1.522	1.538	1.554	1.569	1.584	1.600	1.615	1.629	1.644	1.659	1.673	1.688	1.702	1.716	1.730	1.744	1.758	1.772
-90	0.008	1.466	1.482	1.498	1.513	1.529	1.544	1.560	1.575	1.590	1.605	1.619	1.634	1.649	1.663	1.677	1.692	1.706	1.720	1.734	1.747	1.761
-85	0.013	1.458	1.474	1.490	1.506	1.521	1.536	1.551	1.567	1.581	1.596	1.611	1.625	1.640	1.654	1.668	1.682	1.696	1.710	1.724	1.738	1.751
-80	0.021	1.452	1.468	1.484	1.499	1.514	1.530	1.545	1.560	1.574	1.589	1.604	1.618	1.632	1.647	1.661	1.675	1.689	1.702	1.716	1.730	1.743
-75	0.031	1.447	1.463	1.479	1.494	1.509	1.524	1.539	1.554	1.569	1.583	1.598	1.612	1.626	1.640	1.654	1.668	1.682	1.696	1.709	1.723	1.736
-70	0.046	1.444	1.459	1.475	1.490	1.505	1.520	1.535	1.549	1.564	1.578	1.593	1.607	1.621	1.635	1.649	1.663	1.676	1.690	1.703	1.717	1.730
-65	0.067	1.441	1.456	1.471	1.486	1.501	1.516	1.531	1.546	1.560	1.574	1.589	1.603	1.617	1.631	1.644	1.658	1.672	1.685	1.699	1.712	1.725
-60	0.095	1.439	1.454	1.469	1.484	1.499	1.514	1.528	1.543	1.557	1.571	1.585	1.599	1.613	1.627	1.641	1.655	1.668	1.682	1.695	1.708	1.721
-55	0.132	1.437	1.453	1.468	1.482	1.497	1.512	1.526	1.541	1.555	1.569	1.583	1.597	1.611	1.625	1.638	1.652	1.665	1.679	1.692	1.705	1.718
-50	0.181	1.437	1.452	1.467	1.482	1.496	1.511	1.525	1.539	1.554	1.568	1.582	1.596	1.609	1.623	1.636	1.650	1.663	1.677	1.690	1.703	1.716
-45	0.243	1.437	1.452	1.467	1.481	1.496	1.510	1.525	1.539	1.553	1.567	1.581	1.595	1.608	1.622	1.635	1.649	1.662	1.675	1.688	1.701	1.714
-40	0.321	1.437	1.452	1.467	1.482	1.496	1.510	1.525	1.539	1.553	1.567	1.581	1.594	1.608	1.621	1.635	1.648	1.661	1.675	1.688	1.701	1.713
-35	0.419	1.438	1.453	1.468	1.482	1.497	1.511	1.525	1.539	1.553	1.567	1.581	1.595	1.608	1.621	1.635	1.648	1.661	1.674	1.687	1.700	1.713
-30	0.540	1.440	1.455	1.469	1.484	1.498	1.512	1.526	1.540	1.554	1.568	1.582	1.595	1.609	1.622	1.635	1.649	1.662	1.675	1.688	1.701	1.713
-25	0.686	1.442	1.456	1.471	1.485	1.500	1.514	1.528	1.542	1.556	1.569	1.583	1.597	1.610	1.623	1.636	1.650	1.663	1.676	1.688	1.701	1.714
-20	0.863	1.444	1.459	1.473	1.487	1.502	1.516	1.530	1.544	1.558	1.571	1.585	1.598	1.612	1.625	1.638	1.651	1.664	1.677	1.690	1.702	1.715
-16.35	1.013	1.446	1.460	1.475	1.489	1.503	1.518	1.532	1.545	1.559	1.573	1.586	1.600	1.613	1.626	1.639	1.652	1.665	1.678	1.691	1.703	1.716
-15	1.073	1.446	1.461	1.476	1.490	1.504	1.518	1.532	1.546	1.560	1.573	1.587	1.600	1.614	1.627	1.640	1.653	1.666	1.679	1.691	1.704	1.716
-10	1.322	1.449	1.464	1.478	1.493	1.507	1.521	1.535	1.549	1.562	1.576	1.589	1.603	1.616	1.629	1.642	1.655	1.668	1.681	1.693	1.706	1.718
-5	1.614	1.452	1.467	1.481	1.496	1.510	1.524	1.538	1.552	1.565	1.579	1.592	1.605	1.618	1.632	1.645	1.657	1.670	1.683	1.696	1.708	1.721
0	1.954	1.456	1.470	1.485	1.499	1.513	1.527	1.541	1.555	1.568	1.582	1.595	1.608	1.621	1.634	1.647	1.660	1.673	1.686	1.698	1.711	1.723
5	2.346	1.459	1.474	1.488	1.502	1.517	1.531	1.544	1.558	1.572	1.585	1.598	1.612	1.625	1.638	1.650	1.663	1.676	1.689	1.701	1.714	1.726
10	2.796	1.463	1.477	1.492	1.506	1.520	1.534	1.548	1.562	1.575	1.589	1.602	1.615	1.628	1.641	1.654	1.667	1.679	1.692	1.704	1.717	1.729
15	3.309	1.466	1.481	1.496	1.510	1.524	1.538	1.552	1.565	1.579	1.592	1.606	1.619	1.632	1.645	1.657	1.670	1.683	1.695	1.708	1.720	1.732
20	3.891	1.470	1.485	1.500	1.514	1.528	1.542	1.556	1.569	1.583	1.596	1.609	1.622	1.635	1.648	1.661	1.674	1.686	1.699	1.711	1.723	1.736
25	4.547	1.474	1.489	1.504	1.518	1.532	1.546	1.560	1.573	1.587	1.600	1.613	1.626	1.639	1.652	1.665	1.678	1.690	1.703	1.715	1.727	1.739
30	5.284	1.478	1.493	1.508	1.522	1.536	1.550	1.564	1.578	1.591	1.604	1.618	1.631	1.644	1.656	1.669	1.682	1.694	1.706	1.719	1.731	1.743
35	6.108	1.482	1.497	1.512	1.526	1.540	1.554	1.568	1.582	1.595	1.609	1.622	1.635	1.648	1.660	1.673	1.686	1.698	1.711	1.723	1.735	1.747
40	7.025	1.486	1.501	1.516	1.530	1.545	1.559	1.573	1.586	1.600	1.613	1.626	1.639	1.652	1.665	1.677	1.690	1.702	1.715	1.727	1.739	1.751
45	8.041	1.490	1.505	1.520	1.535	1.549	1.563	1.577	1.591	1.604	1.617	1.631	1.644	1.656	1.669	1.682	1.694	1.707	1.719	1.731	1.743	1.755
50	9.164	1.493	1.509	1.524	1.539	1.553	1.567	1.581	1.595	1.609	1.622	1.635	1.648	1.661	1.674	1.686	1.699	1.711	1.723	1.735	1.748	1.759
55	10.401	1.497	1.513	1.528	1.543	1.558	1.572	1.586	1.599	1.613	1.626	1.639	1.652	1.665	1.678	1.691	1.703	1.715	1.728	1.740	1.752	1.764
60	11.759	1.500	1.516	1.532	1.547	1.562	1.576	1.590	1.604	1.617	1.631	1.644	1.657	1.670	1.683	1.695	1.708	1.720	1.732	1.744	1.756	1.768
65	13.247	1.503	1.520	1.536	1.551	1.566	1.580	1.594	1.608	1.622	1.635	1.649	1.662	1.674	1.687	1.700	1.712	1.724	1.737	1.749	1.761	1.773
70	14.874	1.505	1.523	1.539	1.555	1.570	1.584	1.599	1.613	1.626	1.640	1.653	1.666	1.679	1.692	1.704	1.717	1.729	1.741	1.753	1.765	1.777
75	16.649	1.507	1.526	1.542	1.558	1.574	1.588	1.603	1.617	1.631	1.644	1.657	1.671	1.683	1.696	1.709	1.721	1.734	1.746	1.758	1.770	1.782
80	18.583	1.509	1.528	1.545	1.562	1.577	1.592	1.607	1.621	1.635	1.649	1.662	1.675	1.688	1.701	1.713	1.726	1.738	1.750	1.762	1.774	1.786
85	20.688	1.509	1.530	1.548	1.565	1.581	1.596	1.611	1.625	1.639	1.653	1.666	1.679	1.692	1.705	1.718	1.730	1.743	1.755	1.767	1.779	1.791
90	22.981	1.507	1.531	1.550	1.568	1.584	1.600	1.615	1.629	1.643	1.657	1.671	1.684	1.697	1.710	1.722	1.735	1.747	1.759	1.771	1.783	1.795
95	25.479	1.502	1.531	1.552	1.570	1.587	1.603	1.618	1.633	1.647	1.661	1.675	1.688	1.701	1.714	1.727	1.739	1.752	1.764	1.776	1.788	1.800
100	28.216	1.487	1.529	1.553	1.572	1.590	1.606	1.622	1.636	1.651	1.665	1.679	1.692	1.705	1.718	1.731	1.743	1.756	1.768	1.780	1.792	1.804