

R-407F (Performax® LT)

Zetropic blend (30 % R-32 - 30 % R-125 - 40 % R-134a)

Molecular weight (g/mol)	82.06
Melting point (°C)	N/A
Boiling point (at 1.013 bar)	-46.06
Temperature glide at 1.013 bar (K)	6.4
Critical temperature (°C)	82.7
Critical pressure (bar absolute)	47.55
Specific heat (liquid) at + 25°C (kJ/kg.K)	1.575
Specific heat (vapour) at 1.013 bar and + 25°C (kJ/kg.K)	0.834
Thermal capacity ratio (Cp/Cv) at + 25°C and 1.013 bar	1.152
Viscosity (liquid) at + 25°C in Centipoise (10 ⁻³ Pa.s)	0.145
Surface tension at + 25°C in dyne per centimetre (10 ⁻³ N/m)	6.63
Classification NF-EN 378	A1
GWP (IPCC 4)	1825

🔍 Main applications

Performax® LT is a "non azeotropic" HFC blend, designed for commercial and direct expansion industrial refrigeration applications. It can be used for new or existing systems as a replacement for R-404A. R-407F is mainly used in new refrigeration units in supermarkets, cold stores, food preservation storage units, cooling display cabinets and for refrigerated transport.

🔍 Commercial specifications

Composition: 30 % R-32 -30 % R-125 - 40 % R-134a (±2 % / ±2 % / ±2 %).

Purity: ≥ 99.5 % weight.

Water content: ≤ 10 ppm weight.

Chloride ion test: negative

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

Acidity (HCl): ≤ 1 ppm weight.

High boiling residue: ≤ 0.01% 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 Performax® LT are governed by EU Regulation n° 517/2014. The recovery of Performax® LT is mandatory under EU Regulation n° 517/2014.

(Refer to regulations enforced in each country).

Thermodynamic properties of R-407F (Performax® LT) - Saturated state

Absolute pressure P (bar)	LIQUID					VAPOUR					Latent heat Lv (kJ/kg.K)
	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)	
0.027	-100	0.653	1.531	65.841	0.393	-92.68	6.715	0.149	362.053	2.073	296.212
0.042	-95	0.659	1.517	72.391	0.430	-87.77	4.417	0.226	365.017	2.045	292.626
0.064	-90	0.666	1.502	78.916	0.466	-82.86	2.986	0.335	367.991	2.018	289.074
0.095	-85	0.672	1.488	85.428	0.501	-77.95	2.069	0.483	370.969	1.995	285.541
0.137	-80	0.679	1.474	91.936	0.535	-73.03	1.466	0.682	373.946	1.973	282.011
0.193	-75	0.685	1.459	98.445	0.568	-68.12	1.060	0.943	376.916	1.953	278.471
0.268	-70	0.692	1.444	104.964	0.601	-63.2	0.781	1.280	379.874	1.935	274.910
0.364	-65	0.699	1.430	111.497	0.633	-58.28	0.586	1.708	382.813	1.918	271.316
0.487	-60	0.707	1.415	118.050	0.664	-53.37	0.446	2.243	385.728	1.903	267.677
0.641	-55	0.714	1.400	124.628	0.694	-48.45	0.344	2.904	388.612	1.888	263.983
0.833	-50	0.722	1.385	131.236	0.724	-43.54	0.269	3.712	391.460	1.875	260.224
1.013	-46.06	0.729	1.372	136.461	0.747	-39.67	0.224	4.465	393.672	1.866	257.211
1.067	-45	0.730	1.369	137.878	0.753	-38.62	0.213	4.688	394.266	1.863	256.388
1.350	-40	0.739	1.354	144.558	0.782	-33.71	0.171	5.856	397.023	1.852	252.465
1.690	-35	0.747	1.338	151.282	0.811	-28.79	0.138	7.242	399.727	1.842	248.445
2.093	-30	0.757	1.322	158.053	0.839	-23.88	0.113	8.875	402.370	1.832	244.316
2.567	-25	0.766	1.305	164.878	0.866	-18.98	0.093	10.785	404.945	1.823	240.067
3.120	-20	0.776	1.289	171.761	0.894	-14.07	0.077	13.006	407.446	1.815	235.685
3.760	-15	0.786	1.272	178.709	0.921	-9.17	0.064	15.575	409.865	1.807	231.157
4.496	-10	0.797	1.254	185.726	0.947	-4.27	0.054	18.534	412.194	1.799	226.468
5.336	-5	0.809	1.237	192.821	0.974	0.63	0.046	21.928	414.422	1.792	221.602
6.291	0	0.821	1.218	200.000	1.000	5.52	0.039	25.809	416.540	1.785	216.540
7.368	5	0.834	1.199	207.272	1.026	10.4	0.033	30.237	418.534	1.779	211.262
8.579	10	0.848	1.180	214.647	1.052	15.28	0.028	35.278	420.390	1.772	205.743
9.933	15	0.862	1.160	222.136	1.078	20.15	0.024	41.014	422.091	1.766	199.955
11.440	20	0.878	1.139	229.750	1.104	25.01	0.021	47.536	423.616	1.760	193.866
13.110	25	0.895	1.117	237.505	1.129	29.86	0.018	54.958	424.943	1.753	187.438
14.955	30	0.914	1.094	245.418	1.155	34.71	0.016	63.416	426.042	1.747	180.624
16.986	35	0.935	1.070	253.510	1.181	39.53	0.014	73.080	426.880	1.740	173.370
19.214	40	0.957	1.044	261.807	1.207	44.35	0.012	84.170	427.414	1.732	165.606
21.651	45	0.983	1.017	270.344	1.233	49.14	0.010	96.970	427.586	1.724	157.243
24.310	50	1.012	0.988	279.164	1.260	53.91	0.009	111.869	427.324	1.716	148.160
27.203	55	1.046	0.956	288.334	1.287	58.66	0.008	129.423	426.518	1.706	138.184
30.346	60	1.086	0.921	297.955	1.315	63.37	0.007	150.470	425.011	1.695	127.056
33.751	65	1.136	0.880	308.194	1.345	68.04	0.006	176.383	422.542	1.681	114.349
37.433	70	1.202	0.832	319.372	1.376	72.63	0.005	209.708	418.638	1.664	99.266
41.401	75	1.299	0.770	332.234	1.412	77.11	0.004	256.275	412.231	1.641	79.997
45.616	80	1.498	0.668	349.694	1.460	81.3	0.003	338.233	399.397	1.601	49.703

Thermodynamic properties of R-407F (Performax® LT) - (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	0.013	13258.297	13645.036	14031.251	14417.058	14802.539	15187.758	15572.764	15957.593	16342.275	16726.834	17111.289	17495.655	17879.945	18264.170	18648.337	19032.455	19416.530	19800.567	20184.570	20568.544	20952.491
-95	0.022	8264.723	8499.958	8734.773	8969.258	9203.479	9437.483	9671.311	9904.991	10138.548	10372.000	10605.363	10838.650	11071.872	11305.036	11538.151	11771.223	12004.256	12237.256	12470.226	12703.170	12936.090
-90	0.035	5322.477	5470.575	5618.331	5765.817	5913.083	6060.171	6207.110	6353.925	6500.635	6647.256	6793.801	6940.279	7086.701	7233.073	7379.402	7525.692	7671.949	7818.176	7964.376	8110.553	8256.708
-85	0.054	3530.229	3626.452	3722.332	3818.107	3913.639	4009.020	4104.277	4199.427	4294.488	4389.472	4484.390	4579.251	4674.062	4768.829	4863.558	4958.254	5052.919	5147.558	5242.173	5336.767	5431.342
-80	0.081	2404.912	2469.263	2533.377	2597.300	2661.069	2724.711	2788.246	2851.690	2915.056	2978.356	3041.599	3104.792	3167.944	3231.051	3294.128	3357.175	3420.195	3483.191	3546.166	3609.122	3672.061
-75	0.118	1678.542	1722.738	1766.730	1810.561	1854.260	1897.850	1941.347	1984.767	2028.119	2071.413	2114.657	2157.857	2201.018	2244.145	2287.242	2330.313	2373.359	2416.385	2459.391	2502.379	2545.353
-70	0.170	1197.682	1228.788	1259.719	1290.514	1321.188	1351.771	1382.274	1412.709	1443.085	1473.411	1503.692	1533.934	1564.142	1594.320	1624.471	1654.597	1684.703	1714.789	1744.858	1774.911	1804.951
-65	0.238	871.893	894.289	916.530	938.651	960.672	982.611	1004.481	1026.290	1048.048	1069.761	1091.434	1113.073	1134.682	1156.263	1177.821	1199.357	1220.873	1242.372	1263.852	1285.325	1306.781
-60	0.328	646.429	662.894	679.224	695.448	711.585	727.649	743.652	759.602	775.507	791.371	807.201	822.999	838.770	854.517	870.243	885.948	901.637	917.309	932.967	948.613	964.246
-55	0.443	487.313	499.656	511.880	524.010	536.062	548.050	559.984	571.871	583.717	595.527	607.307	619.058	630.785	642.490	654.175	665.843	677.494	689.132	700.756	712.369	723.970
-50	0.589	372.985	382.408	391.723	400.955	410.118	419.223	428.280	437.295	446.274	455.220	464.138	473.032	481.903	490.754	499.587	508.404	517.207	525.997	534.774	543.541	552.298
-45	0.771	289.644	296.779	303.998	311.142	318.223	325.254	332.240	339.189	346.105	352.993	359.854	366.693	373.512	380.313	387.097	393.867	400.623	407.367	414.101	420.824	427.538
-40	0.996	227.506	233.275	238.957	244.571	250.129	255.641	261.113	266.551	271.960	277.342	282.700	288.039	293.358	298.661	303.950	309.224	314.487	319.738	324.980	330.212	335.435
-39.67	1.013	223.980	229.661	235.257	240.784	246.256	251.682	257.069	262.421	267.744	273.041	278.315	283.569	288.804	294.022	299.226	304.417	309.595	314.762	319.919	325.067	330.206
-35	1.270	180.888	185.505	190.043	194.519	198.945	203.328	207.675	211.991	216.280	220.546	224.789	229.014	233.222	237.415	241.594	245.761	249.916	254.062	258.197	262.325	266.444
-30	1.601	145.348	149.094	152.768	156.386	159.957	163.490	166.990	170.461	173.907	177.332	180.737	184.124	187.496	190.854	194.199	197.533	200.856	204.170	207.475	210.772	214.062
-25	1.995	117.921	121.000	124.013	126.974	129.893	132.776	135.629	138.455	141.259	144.042	146.807	149.557	152.291	155.013	157.723	160.423	163.112	165.793	168.466	171.131	173.789
-20	2.462	96.513	99.075	101.576	104.029	106.443	108.823	111.176	113.504	115.811	118.100	120.371	122.628	124.872	127.103	129.323	131.533	133.734	135.927	138.113	140.291	142.463
-15	3.008	79.626	81.783	83.883	85.937	87.956	89.944	91.905	93.844	95.764	97.665	99.552	101.424	103.284	105.132	106.970	108.799	110.620	112.432	114.238	116.037	117.830
-10	3.644	66.174	68.009	69.791	71.531	73.237	74.914	76.566	78.198	79.811	81.408	82.990	84.559	86.116	87.663	89.200	90.728	92.248	93.761	95.267	96.767	98.262
-5	4.379	55.357	56.935	58.463	59.952	61.408	62.837	64.243	65.629	66.998	68.352	69.691	71.019	72.335	73.641	74.938	76.227	77.508	78.783	80.051	81.313	82.570
0	5.222	46.585	47.955	49.279	50.564	51.819	53.049	54.256	55.445	56.617	57.775	58.919	60.052	61.175	62.287	63.392	64.488	65.578	66.660	67.737	68.808	69.874
5	6.184	39.412	40.614	41.771	42.892	43.983	45.050	46.097	47.125	48.137	49.136	50.122	51.097	52.062	53.018	53.966	54.907	55.840	56.768	57.690	58.606	59.518
10	7.275	33.501	34.566	35.587	36.573	37.530	38.465	39.379	40.276	41.157	42.026	42.882	43.728	44.565	45.393	46.213	47.026	47.832	48.632	49.427	50.216	51.003
15	8.506	28.595	29.547	30.456	31.331	32.178	33.003	33.808	34.597	35.371	36.132	36.881	37.621	38.351	39.073	39.788	40.496	41.197	41.893	42.584	43.269	43.951
20	9.889	24.495	25.354	26.170	26.953	27.709	28.443	29.158	29.856	30.541	31.212	31.873	32.524	33.165	33.801	34.428	35.048	35.663	36.272	36.876	37.475	38.070
25	11.435	21.045	21.828	22.568	23.274	23.954	24.612	25.251	25.874	26.483	27.080	27.667	28.244	28.812	29.373	29.927	30.474	31.016	31.553	32.084	32.611	33.134
30	13.159	18.123	18.844	19.520	20.163	20.779	21.373	21.949	22.508	23.055	23.589	24.113	24.628	25.134	25.633	26.125	26.611	27.091	27.567	28.038	28.504	28.966
35	15.073	15.633	16.303	16.928	17.517	18.080	18.620	19.142	19.648	20.141	20.622	21.093	21.555	22.008	22.455	22.895	23.329	23.757	24.181	24.600	25.015	25.426
40	17.193	13.498	14.128	14.709	15.255	15.772	16.267	16.743	17.204	17.651	18.087	18.513	18.929	19.338	19.740	20.135	20.525	20.909	21.289	21.664	22.035	22.403
45	19.533	11.654	12.255	12.801	13.310	13.789	14.245	14.683	15.104	15.513	15.910	16.297	16.675	17.045	17.409	17.766	18.117	18.464	18.806	19.143	19.477	19.807
50	22.112	10.052	10.631	11.151	11.629	12.076	12.499	12.904	13.292	13.667	14.031	14.384	14.729	15.065	15.397	15.721	16.040	16.353	16.662	16.967	17.269	17.566
55	24.950	8.649	9.216	9.715	10.168	10.589	10.985	11.361	11.720	12.066	12.401	12.726	13.042	13.350	13.652	13.947	14.238	14.523	14.804	15.080	15.353	15.623
60	28.070	7.408	7.975	8.460	8.893	9.292	9.664	10.015	10.350	10.671	10.980	11.280	11.571	11.854	12.131	12.401	12.666	12.927	13.183	13.435	13.684	13.929
65	31.501	6.296	6.877	7.355	7.774	8.154	8.506	8.836	9.149	9.448	9.735	10.013	10.281	10.543	10.797	11.046	11.289	11.528	11.762	11.993	12.220	12.444
70	35.282	5.279	5.879	6.375	6.784	7.149	7.484	7.796	8.090	8.370	8.637	8.895	9.144	9.386	9.621	9.850	10.074	10.294	10.509	10.720	10.928	11.133
75	39.476	4.314	5.010	5.497	5.900	6.253	6.573	6.869	7.147	7.409	7.660	7.900	8.132	8.356	8.574	8.785	8.992	9.194	9.392	9.586	9.777	9.965
80	44.224	3.292	4.179	4.688	5.089	5.434	5.741	6.023	6.286	6.533	6.768	6.993	7.208	7.417	7.618	7.814	8.005	8.192	8.374	8.552	8.728	8.900

Thermodynamic properties of R-407F (Performax® LT) - (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	0.013	357.666	360.767	363.905	367.080	370.295	373.549	376.842	380.175	383.549	386.963	390.417	393.912	397.447	401.023	404.640	408.297	411.996	415.735	419.515	423.335	427.197
-95	0.022	360.660	363.812	367.000	370.224	373.485	376.785	380.124	383.503	386.921	390.378	393.876	397.415	400.993	404.612	408.271	411.971	415.712	419.493	423.316	427.178	431.082
-90	0.035	363.671	366.877	370.115	373.389	376.699	380.047	383.433	386.857	390.320	393.823	397.365	400.948	404.570	408.232	411.935	415.678	419.461	423.285	427.150	431.055	435.001
-85	0.054	366.694	369.955	373.247	376.573	379.933	383.330	386.763	390.235	393.745	397.293	400.881	404.508	408.175	411.881	415.628	419.414	423.241	427.109	431.016	434.964	438.952
-80	0.081	369.724	373.043	376.391	379.770	383.182	386.630	390.113	393.633	397.190	400.786	404.420	408.093	411.805	415.556	419.347	423.178	427.049	430.960	434.911	438.902	442.934
-75	0.118	372.754	376.135	379.541	382.976	386.443	389.942	393.476	397.046	400.653	404.297	407.978	411.698	415.457	419.254	423.091	426.967	430.882	434.837	438.832	442.867	446.942
-70	0.170	375.779	379.225	382.692	386.186	389.708	393.263	396.850	400.471	404.129	407.822	411.553	415.321	419.127	422.971	426.854	430.776	434.737	438.737	442.777	446.857	450.976
-65	0.238	378.793	382.308	385.839	389.394	392.975	396.586	400.228	403.904	407.613	411.358	415.139	418.956	422.811	426.703	430.634	434.603	438.610	442.657	446.742	450.867	455.031
-60	0.328	381.790	385.377	388.976	392.595	396.238	399.908	403.607	407.338	411.102	414.899	418.732	422.600	426.505	430.447	434.426	438.443	442.498	446.592	450.724	454.894	459.104
-55	0.443	384.763	388.427	392.098	395.784	399.491	403.223	406.982	410.770	414.590	418.443	422.329	426.250	430.206	434.199	438.228	442.294	446.398	450.539	454.719	458.936	463.192
-50	0.589	387.707	391.452	395.199	398.955	402.730	406.525	410.346	414.195	418.073	421.983	425.924	429.900	433.909	437.954	442.035	446.151	450.305	454.495	458.723	462.989	467.292
-45	0.771	390.616	394.447	398.272	402.103	405.948	409.811	413.697	417.608	421.547	425.515	429.514	433.546	437.610	441.709	445.842	450.011	454.215	458.456	462.733	467.048	471.399
-40	0.996	393.483	397.405	401.314	405.223	409.141	413.075	417.028	421.004	425.006	429.035	433.094	437.183	441.304	445.458	449.646	453.868	458.125	462.417	466.746	471.110	475.511
-39.67	1.013	393.672	397.601	401.515	405.430	409.353	413.291	417.249	421.230	425.236	429.269	433.332	437.425	441.550	445.708	449.899	454.125	458.385	462.681	467.013	471.381	475.785
-35	1.270	396.303	400.321	404.317	408.300	412.304	416.311	420.335	424.378	428.446	432.538	436.659	440.808	444.988	449.199	453.443	457.720	462.030	466.376	470.756	475.172	479.623
-30	1.601	399.069	403.188	407.277	411.354	415.430	419.514	423.612	427.726	431.861	436.020	440.204	444.416	448.656	452.926	457.228	461.561	465.928	470.327	474.761	479.229	483.732
-25	1.995	401.774	406.000	410.187	414.354	418.516	422.680	426.854	431.042	435.248	439.475	443.726	448.002	452.304	456.636	460.997	465.389	469.812	474.268	478.756	483.279	487.835
-20	2.462	404.413	408.752	413.041	417.303	421.554	425.803	430.057	434.322	438.602	442.900	447.219	451.562	455.929	460.324	464.746	469.198	473.680	478.194	482.739	487.316	491.926
-15	3.008	406.978	411.435	415.833	420.195	424.539	428.877	433.215	437.560	441.916	446.288	450.679	455.091	459.526	463.986	468.472	472.986	477.528	482.101	486.704	491.338	496.004
-10	3.644	409.460	414.044	418.435	422.804	427.166	431.529	435.892	440.257	444.617	448.985	453.362	457.756	462.176	466.629	471.116	475.630	480.170	484.736	489.328	493.946	498.591
-5	4.379	411.852	416.569	421.205	425.782	430.328	434.855	439.373	443.889	448.410	452.940	457.482	462.041	466.617	471.214	475.834	480.478	485.148	489.844	494.568	499.320	504.102
0	5.222	414.142	419.003	423.765	428.462	433.118	437.747	442.362	446.971	451.579	456.193	460.816	465.452	470.103	474.773	479.463	484.175	488.911	493.672	498.459	503.273	508.115
5	6.184	416.321	421.335	426.234	431.057	435.829	440.567	445.284	449.989	454.689	459.390	464.097	468.814	473.544	478.289	483.057	487.835	492.639	497.467	502.319	507.197	512.101
10	7.257	418.375	423.554	428.601	433.558	438.453	443.306	448.131	452.937	457.734	462.527	467.322	472.123	476.934	481.757	486.596	491.452	496.327	501.224	506.143	511.087	516.055
15	8.506	420.287	425.647	430.854	435.955	440.982	445.958	450.897	455.811	460.709	465.599	470.486	475.375	480.270	485.174	490.091	495.023	499.972	504.940	509.929	514.939	519.973
20	9.889	422.041	427.600	432.981	438.238	443.408	448.514	453.574	458.602	463.607	468.598	473.582	478.563	483.546	488.535	493.534	498.544	503.569	508.611	513.671	518.752	523.853
25	11.435	423.613	429.395	434.968	440.396	445.719	450.966	456.156	461.304	466.423	471.521	476.605	481.682	486.758	491.835	496.918	502.011	507.115	512.233	517.368	522.520	527.691
30	13.159	424.977	431.011	436.799	442.415	447.905	453.304	458.633	463.910	469.148	474.359	479.550	484.728	489.900	495.070	500.241	505.419	510.605	515.803	521.016	526.240	531.484
35	15.073	426.101	432.427	438.457	444.281	449.954	455.517	460.996	466.410	471.777	477.107	482.410	487.695	492.968	498.234	503.498	508.764	514.035	519.315	524.605	529.907	535.227
40	17.193	426.946	433.615	439.920	445.977	451.852	457.594	463.234	468.797	474.299	479.756	485.179	490.575	495.954	501.321	506.682	512.040	517.401	522.766	528.139	533.522	538.917
45	19.533	427.460	434.538	441.164	447.483	453.588	459.522	465.337	471.059	476.707	482.299	487.848	493.363	498.854	504.327	509.789	515.244	520.697	526.151	531.609	537.075	542.551
50	22.112	427.574	435.156	442.157	448.776	455.128	461.283	467.291	473.185	478.990	484.727	490.409	496.050	501.659	507.244	512.812	518.389	523.971	529.564	535.169	540.786	546.422
55	24.950	427.192	435.411	442.861	449.828	456.464	462.861	469.079	475.160	481.135	487.027	492.853	498.627	504.361	510.064	515.743	521.405	527.056	532.705	538.361	544.024	549.696
60	28.070	426.171	435.228	443.228	450.602	457.563	464.231	470.682	476.969	483.128	489.187	495.166	501.083	506.950	512.777	518.574	524.348	530.105	535.850	541.588	547.322	553.056
65	31.501	424.279	434.500	443.190	451.052	458.888	466.563	474.073	481.457	488.764	495.947	503.029	510.020	516.930	523.770	530.550	537.278	543.954	550.588	557.179	563.725	570.236
70	35.282	421.098	433.068	442.656	451.111	458.888	466.214	473.218	479.983	486.564	493.002	499.322	505.560	511.721	517.823	523.877	529.893	535.880	541.844	547.791	553.725	559.651
75	39.476	415.713	430.667	441.473	450.670	458.975	466.711	474.050	481.098	487.926	494.583	501.105	507.517	513.843	520.097	526.294	532.445	538.558	544.641	550.701	556.744	562.774
80	44.224	404.954	426.673	439.272	449.450	458.421	466.655	474.393	481.774	488.888	495.796	502.540	509.155	515.665	522.090	528.445	534.743	540.995	547.209	553.393	559.554	565.696

Thermodynamic properties of R-407F (Performax® LT) - (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	0.013	2.121	2.139	2.156	2.173	2.190	2.207	2.223	2.239	2.255	2.271	2.287	2.302	2.318	2.333	2.348	2.363	2.378	2.392	2.407	2.421	2.435
-95	0.022	2.088	2.105	2.122	2.139	2.156	2.172	2.189	2.205	2.220	2.236	2.252	2.267	2.282	2.297	2.312	2.327	2.342	2.356	2.370	2.385	2.399
-90	0.035	2.057	2.075	2.092	2.108	2.125	2.141	2.157	2.173	2.189	2.204	2.220	2.235	2.250	2.265	2.279	2.294	2.309	2.323	2.337	2.351	2.366
-85	0.054	2.030	2.047	2.063	2.080	2.096	2.113	2.128	2.144	2.160	2.175	2.190	2.205	2.220	2.235	2.250	2.264	2.279	2.293	2.307	2.321	2.335
-80	0.081	2.004	2.021	2.038	2.054	2.071	2.087	2.102	2.118	2.133	2.149	2.164	2.179	2.194	2.208	2.223	2.237	2.251	2.266	2.280	2.294	2.308
-75	0.118	1.981	1.998	2.015	2.031	2.047	2.063	2.079	2.094	2.109	2.125	2.140	2.154	2.169	2.184	2.198	2.212	2.227	2.241	2.255	2.269	2.282
-70	0.170	1.960	1.977	1.994	2.010	2.026	2.042	2.057	2.072	2.088	2.103	2.118	2.132	2.147	2.161	2.176	2.190	2.204	2.218	2.232	2.246	2.259
-65	0.238	1.941	1.958	1.974	1.990	2.006	2.022	2.037	2.053	2.068	2.083	2.097	2.112	2.127	2.141	2.155	2.169	2.183	2.197	2.211	2.225	2.239
-60	0.328	1.924	1.940	1.957	1.973	1.988	2.004	2.019	2.035	2.050	2.064	2.079	2.094	2.108	2.122	2.137	2.151	2.165	2.178	2.192	2.206	2.219
-55	0.443	1.908	1.924	1.940	1.956	1.972	1.988	2.003	2.018	2.033	2.048	2.062	2.077	2.091	2.105	2.120	2.134	2.147	2.161	2.175	2.188	2.202
-50	0.589	1.893	1.909	1.926	1.942	1.957	1.973	1.988	2.003	2.018	2.033	2.047	2.062	2.076	2.090	2.104	2.118	2.132	2.146	2.159	2.173	2.186
-45	0.771	1.879	1.896	1.912	1.928	1.944	1.959	1.974	1.989	2.004	2.019	2.033	2.048	2.062	2.076	2.090	2.104	2.118	2.131	2.145	2.158	2.172
-40	0.996	1.867	1.883	1.900	1.915	1.931	1.946	1.962	1.977	1.991	2.006	2.020	2.035	2.049	2.063	2.077	2.091	2.104	2.118	2.132	2.145	2.158
-39.67	1.013	1.866	1.882	1.899	1.915	1.930	1.946	1.961	1.976	1.991	2.005	2.020	2.034	2.048	2.062	2.076	2.090	2.104	2.117	2.131	2.144	2.157
-35	1.270	1.855	1.872	1.888	1.904	1.920	1.935	1.950	1.965	1.980	1.994	2.009	2.023	2.037	2.051	2.065	2.079	2.093	2.106	2.120	2.133	2.146
-30	1.601	1.844	1.861	1.877	1.893	1.909	1.924	1.940	1.954	1.969	1.984	1.998	2.012	2.026	2.040	2.054	2.068	2.082	2.095	2.109	2.122	2.135
-25	1.995	1.834	1.851	1.868	1.884	1.899	1.915	1.930	1.945	1.959	1.974	1.988	2.003	2.017	2.031	2.044	2.058	2.072	2.085	2.099	2.112	2.125
-20	2.462	1.825	1.842	1.859	1.875	1.890	1.906	1.921	1.936	1.951	1.965	1.979	1.994	2.008	2.022	2.035	2.049	2.063	2.076	2.089	2.103	2.116
-15	3.008	1.816	1.834	1.850	1.866	1.882	1.897	1.913	1.928	1.942	1.957	1.971	1.985	1.999	2.013	2.027	2.041	2.054	2.068	2.081	2.094	2.107
-10	3.644	1.808	1.826	1.842	1.858	1.874	1.890	1.905	1.920	1.935	1.949	1.964	1.978	1.992	2.006	2.020	2.033	2.047	2.060	2.073	2.087	2.100
-5	4.379	1.801	1.818	1.835	1.851	1.867	1.883	1.898	1.913	1.928	1.942	1.957	1.971	1.985	1.999	2.013	2.026	2.040	2.053	2.066	2.080	2.093
0	5.222	1.793	1.811	1.828	1.844	1.860	1.876	1.891	1.906	1.921	1.936	1.950	1.964	1.979	1.992	2.006	2.020	2.033	2.047	2.060	2.073	2.086
5	6.184	1.786	1.804	1.821	1.838	1.854	1.870	1.885	1.900	1.915	1.930	1.944	1.959	1.973	1.987	2.000	2.014	2.027	2.041	2.054	2.067	2.080
10	7.275	1.779	1.798	1.815	1.832	1.848	1.864	1.879	1.895	1.910	1.924	1.939	1.953	1.967	1.981	1.995	2.009	2.022	2.035	2.049	2.062	2.075
15	8.506	1.773	1.791	1.809	1.826	1.842	1.858	1.874	1.889	1.904	1.919	1.934	1.948	1.962	1.976	1.990	2.004	2.017	2.031	2.044	2.057	2.070
20	9.889	1.766	1.785	1.803	1.820	1.837	1.853	1.869	1.884	1.899	1.914	1.929	1.943	1.957	1.971	1.985	1.999	2.013	2.026	2.039	2.052	2.065
25	11.435	1.760	1.779	1.797	1.815	1.831	1.848	1.864	1.879	1.895	1.910	1.924	1.939	1.953	1.967	1.981	1.995	2.008	2.022	2.035	2.048	2.061
30	13.159	1.753	1.773	1.791	1.809	1.826	1.843	1.859	1.875	1.890	1.905	1.920	1.935	1.949	1.963	1.977	1.991	2.004	2.018	2.031	2.044	2.057
35	15.073	1.746	1.766	1.786	1.804	1.821	1.838	1.854	1.870	1.886	1.901	1.916	1.931	1.945	1.959	1.973	1.987	2.001	2.014	2.028	2.041	2.054
40	17.193	1.739	1.760	1.780	1.798	1.816	1.833	1.850	1.866	1.882	1.897	1.912	1.927	1.941	1.955	1.970	1.983	1.997	2.011	2.024	2.037	2.051
45	19.533	1.731	1.753	1.774	1.793	1.811	1.828	1.845	1.862	1.877	1.893	1.908	1.923	1.938	1.952	1.966	1.980	1.994	2.008	2.021	2.034	2.047
50	22.112	1.723	1.746	1.767	1.787	1.806	1.824	1.841	1.857	1.873	1.889	1.904	1.919	1.934	1.949	1.963	1.977	1.991	2.004	2.018	2.031	2.045
55	24.950	1.714	1.738	1.761	1.781	1.800	1.819	1.836	1.853	1.869	1.885	1.901	1.916	1.931	1.945	1.960	1.974	1.988	2.001	2.015	2.028	2.042
60	28.070	1.703	1.730	1.753	1.775	1.795	1.813	1.831	1.848	1.865	1.881	1.897	1.912	1.927	1.942	1.956	1.971	1.985	1.999	2.012	2.026	2.039
65	31.501	1.690	1.720	1.746	1.768	1.789	1.808	1.826	1.844	1.861	1.877	1.893	1.909	1.924	1.939	1.953	1.968	1.982	1.996	2.009	2.023	2.036
70	35.282	1.675	1.709	1.737	1.760	1.782	1.802	1.821	1.839	1.856	1.873	1.889	1.905	1.920	1.935	1.950	1.964	1.979	1.993	2.007	2.020	2.034
75	39.476	1.653	1.696	1.726	1.752	1.775	1.795	1.815	1.833	1.851	1.868	1.885	1.901	1.916	1.932	1.946	1.961	1.975	1.990	2.003	2.017	2.031
80	44.224	1.617	1.679	1.714	1.741	1.766	1.787	1.808	1.827	1.845	1.863	1.879	1.896	1.912	1.927	1.942	1.957	1.972	1.986	2.000	2.014	2.027