

R-427A (Forane® FX100)

Zeotropic blend (15 % R-32 - 25 % R-125 -
10 % R-143a - 50 % R-134a)

Molecular weight (g/mol)	90.44
Melting point (°C)	N/A
Boiling point (at 1,013 bar)	-42.97
Temperature glide at 1,013 bar (K)	6.76
Critical temperature (°C)	85.3
Critical pressure (bar absolute)	43.92
Specific heat (liquid) at + 25°C (kJ/kg.K)	1.517
Specific heat (vapour) at 1,013 bar and + 25°C (kJ/kg.K)	0.847
Thermal capacity ratio (Cp/Cv) at + 25°C and 1,013 bar	1.135
Viscosity (liquid) at + 25°C in Centipoise (10 ⁻³ Pa.s)	0.154
Surface tension at + 25°C in dyne per centimetre (10 ⁻³ N/m)	6.61
Classification NF-EN 378	A1
GWP (IPCC 4)	2138

🔍 Main applications

R-427A (Forane® FX100) is a "non azeotropic" HFC blend designed to replace R-22 (HCFC) as a conversion fluid. It can be used in direct expansion refrigeration and air conditioning systems.

🔍 Commercial specifications

Composition: (50 % R-134a – 25 % R-125 – 15 % R-32 – 10 % R-143a)
(±2 % / ± 2% / ±2 % / ±2 %).

Purity: ≥ 99.5 % weight.

Water content: ≤ 10 ppm weight.

Chloride ion test: negative

Acidity (HCl): ≤ 1 ppm weight.

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

High boiling residue: ≤ 0.01 % volume.

🔍 Oils

Use a polyol ester oil (POE).

A residual amount of the original mineral oil (MO) or alkyl benzene (AB) is acceptable following the conversion procedure.

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

🔍 Regulation

The use of HFCs are restricted by the European Union Regulation n° 517/2014.

Recovery of halogenated refrigerants is compulsory as defined by the European regulation n° 517/2014.

(For their use, pay attention to the regulation of your country).

Thermodynamic properties of R-427A - 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)	
0.023	-100	0.651	1.537	69.555	0.409	-92.07	7.199	0.139	344.770	1.963	275.215
0.036	-95	0.657	1.522	75.963	0.446	-87.17	4.729	0.211	347.733	1.938	271.770
0.055	-90	0.663	1.507	82.332	0.481	-82.27	3.192	0.313	350.715	1.916	268.382
0.081	-85	0.670	1.493	88.678	0.515	-77.37	2.209	0.453	353.712	1.896	265.034
0.117	-80	0.676	1.478	95.012	0.548	-72.47	1.563	0.640	356.719	1.877	261.707
0.165	-75	0.683	1.464	101.342	0.581	-67.57	1.129	0.885	359.732	1.861	258.390
0.229	-70	0.690	1.449	107.678	0.612	-62.67	0.831	1.203	362.745	1.846	255.067
0.312	-65	0.697	1.435	114.026	0.643	-57.77	0.623	1.606	365.753	1.832	251.726
0.418	-60	0.704	1.420	120.393	0.673	-52.88	0.473	2.112	368.750	1.819	248.357
0.551	-55	0.712	1.405	126.783	0.703	-47.98	0.365	2.737	371.732	1.808	244.948
0.716	-50	0.719	1.390	133.203	0.732	-43.09	0.286	3.502	374.692	1.798	241.489
0.919	-45	0.727	1.375	139.655	0.760	-38.2	0.226	4.426	377.625	1.788	237.970
1.013	-42.97	0.730	1.369	142.292	0.772	-36.21	0.206	4.853	378.810	1.784	236.517
1.164	-40	0.735	1.360	146.146	0.788	-33.31	0.181	5.533	380.525	1.779	234.379
1.458	-35	0.744	1.344	152.680	0.816	-28.42	0.146	6.847	383.387	1.772	230.707
1.808	-30	0.753	1.329	159.260	0.843	-23.53	0.119	8.396	386.204	1.764	226.944
2.220	-25	0.762	1.313	165.892	0.870	-18.64	0.098	10.208	388.970	1.758	223.078
2.700	-20	0.771	1.296	172.580	0.897	-13.76	0.081	12.315	391.678	1.752	219.099
3.258	-15	0.782	1.280	179.329	0.923	-8.88	0.068	14.753	394.322	1.746	214.994
3.899	-10	0.792	1.263	186.145	0.949	-4.0	0.057	17.560	396.895	1.741	210.750
4.632	-5	0.803	1.245	193.033	0.975	0.88	0.048	20.778	399.387	1.736	206.354
5.464	0	0.815	1.227	200.000	1.000	5.75	0.041	24.457	401.789	1.731	201.789
6.406	5	0.827	1.209	207.053	1.025	10.61	0.035	28.651	404.091	1.727	197.038
7.464	10	0.840	1.190	214.200	1.050	15.48	0.030	33.421	406.281	1.722	192.081
8.648	15	0.854	1.170	221.451	1.075	20.33	0.026	38.841	408.344	1.718	186.893
9.967	20	0.870	1.150	228.815	1.100	25.18	0.022	44.995	410.263	1.714	181.448
11.429	25	0.886	1.129	236.305	1.125	30.02	0.019	51.984	412.018	1.710	175.714
13.046	30	0.904	1.107	243.935	1.150	34.85	0.017	59.930	413.587	1.705	169.652
14.826	35	0.923	1.084	251.723	1.175	39.67	0.014	68.983	414.942	1.701	163.218
16.781	40	0.944	1.059	259.691	1.200	44.48	0.013	79.333	416.046	1.696	156.355
18.919	45	0.968	1.033	267.866	1.225	49.27	0.011	91.223	416.857	1.691	148.991
21.253	50	0.995	1.005	276.283	1.251	54.04	0.010	104.982	417.316	1.685	141.032
23.794	55	1.026	0.975	284.993	1.277	58.8	0.008	121.060	417.341	1.678	132.348
26.555	60	1.062	0.942	294.067	1.304	63.52	0.007	140.119	416.816	1.670	122.749
29.547	65	1.105	0.905	303.617	1.331	68.21	0.006	163.189	415.561	1.661	111.944
32.786	70	1.161	0.862	313.840	1.360	72.85	0.005	192.036	413.271	1.649	99.431
36.282	75	1.236	0.809	325.126	1.391	77.41	0.004	230.188	409.346	1.632	84.220
40.038	80	1.357	0.737	338.525	1.428	81.81	0.003	287.067	402.224	1.608	63.699

Thermodynamic properties of R-427A - (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	0.010	2.009	2.026	2.043	2.060	2.077	2.094	2.110	2.126	2.142	2.158	2.174	2.189	2.205	2.220	2.235	2.250	2.265	2.280	2.295	2.309	2.324
-95	0.017	1.979	1.996	2.013	2.030	2.047	2.063	2.079	2.096	2.111	2.127	2.143	2.158	2.173	2.189	2.204	2.219	2.233	2.248	2.263	2.277	2.291
-90	0.028	1.952	1.970	1.986	2.003	2.020	2.036	2.052	2.068	2.084	2.099	2.115	2.130	2.145	2.160	2.175	2.190	2.205	2.219	2.234	2.248	2.262
-85	0.043	1.928	1.945	1.962	1.979	1.995	2.011	2.027	2.043	2.058	2.074	2.089	2.104	2.119	2.134	2.149	2.164	2.178	2.193	2.207	2.222	2.236
-80	0.066	1.906	1.923	1.940	1.956	1.973	1.989	2.004	2.020	2.035	2.051	2.066	2.081	2.096	2.111	2.126	2.140	2.155	2.169	2.183	2.198	2.212
-75	0.097	1.887	1.903	1.920	1.936	1.952	1.968	1.984	1.999	2.015	2.030	2.045	2.060	2.075	2.090	2.104	2.119	2.133	2.148	2.162	2.176	2.190
-70	0.140	1.869	1.885	1.902	1.918	1.934	1.950	1.965	1.981	1.996	2.011	2.026	2.041	2.056	2.071	2.085	2.099	2.114	2.128	2.142	2.156	2.170
-65	0.197	1.853	1.869	1.885	1.902	1.917	1.933	1.949	1.964	1.979	1.994	2.009	2.024	2.039	2.053	2.068	2.082	2.096	2.110	2.124	2.138	2.152
-60	0.272	1.838	1.854	1.871	1.887	1.902	1.918	1.933	1.949	1.964	1.979	1.994	2.008	2.023	2.037	2.052	2.066	2.080	2.094	2.108	2.122	2.136
-55	0.369	1.825	1.841	1.857	1.873	1.889	1.904	1.920	1.935	1.950	1.965	1.980	1.994	2.009	2.023	2.038	2.052	2.066	2.080	2.094	2.108	2.121
-50	0.493	1.812	1.829	1.845	1.861	1.877	1.892	1.907	1.923	1.938	1.952	1.967	1.982	1.996	2.010	2.025	2.039	2.053	2.067	2.080	2.094	2.108
-45	0.648	1.801	1.818	1.834	1.850	1.866	1.881	1.896	1.911	1.926	1.941	1.956	1.970	1.985	1.999	2.013	2.027	2.041	2.055	2.069	2.082	2.096
-40	0.839	1.791	1.808	1.824	1.840	1.855	1.871	1.886	1.901	1.916	1.931	1.945	1.960	1.974	1.988	2.002	2.016	2.030	2.044	2.058	2.071	2.085
-36.21	1.013	1.784	1.801	1.817	1.833	1.848	1.864	1.879	1.894	1.909	1.924	1.938	1.953	1.967	1.981	1.995	2.009	2.023	2.037	2.050	2.064	2.077
-35	1.074	1.782	1.799	1.815	1.831	1.846	1.862	1.877	1.892	1.907	1.921	1.936	1.950	1.965	1.979	1.993	2.007	2.021	2.034	2.048	2.062	2.075
-30	1.357	1.774	1.791	1.807	1.823	1.838	1.853	1.869	1.884	1.898	1.913	1.928	1.942	1.956	1.970	1.984	1.998	2.012	2.026	2.039	2.053	2.066
-25	1.697	1.766	1.783	1.799	1.815	1.831	1.846	1.861	1.876	1.891	1.906	1.920	1.934	1.949	1.963	1.977	1.990	2.004	2.018	2.031	2.045	2.058
-20	2.099	1.760	1.776	1.792	1.808	1.824	1.839	1.854	1.869	1.884	1.899	1.913	1.927	1.942	1.956	1.970	1.984	1.997	2.011	2.024	2.038	2.051
-15	2.571	1.753	1.770	1.786	1.802	1.818	1.833	1.848	1.863	1.878	1.893	1.907	1.921	1.935	1.950	1.963	1.977	1.991	2.005	2.018	2.031	2.045
-10	3.122	1.747	1.764	1.780	1.796	1.812	1.827	1.843	1.858	1.872	1.887	1.902	1.916	1.930	1.944	1.958	1.972	1.985	1.999	2.012	2.026	2.039
-5	3.760	1.742	1.759	1.775	1.791	1.807	1.822	1.838	1.853	1.867	1.882	1.897	1.911	1.925	1.939	1.953	1.967	1.980	1.994	2.007	2.021	2.034
0	4.492	1.737	1.754	1.770	1.786	1.802	1.818	1.833	1.848	1.863	1.878	1.892	1.906	1.921	1.935	1.948	1.962	1.976	1.989	2.003	2.016	2.029
5	5.330	1.732	1.749	1.766	1.782	1.798	1.814	1.829	1.844	1.859	1.874	1.888	1.902	1.917	1.931	1.944	1.958	1.972	1.985	1.999	2.012	2.025
10	6.280	1.727	1.745	1.762	1.778	1.794	1.810	1.825	1.840	1.855	1.870	1.884	1.899	1.913	1.927	1.941	1.955	1.968	1.982	1.995	2.008	2.022
15	7.355	1.723	1.740	1.758	1.774	1.790	1.806	1.822	1.837	1.852	1.867	1.881	1.895	1.910	1.924	1.938	1.951	1.965	1.979	1.992	2.005	2.018
20	8.563	1.718	1.736	1.754	1.771	1.787	1.803	1.818	1.834	1.849	1.864	1.878	1.893	1.907	1.921	1.935	1.949	1.962	1.976	1.989	2.002	2.016
25	9.915	1.714	1.732	1.750	1.767	1.784	1.800	1.815	1.831	1.846	1.861	1.875	1.890	1.904	1.918	1.932	1.946	1.960	1.973	1.987	2.000	2.013
30	11.423	1.710	1.729	1.746	1.764	1.780	1.797	1.813	1.828	1.843	1.858	1.873	1.887	1.902	1.916	1.930	1.944	1.957	1.971	1.984	1.998	2.011
35	13.099	1.705	1.725	1.743	1.760	1.777	1.794	1.810	1.825	1.841	1.856	1.871	1.885	1.900	1.914	1.928	1.942	1.955	1.969	1.982	1.996	2.009
40	14.955	1.701	1.720	1.739	1.757	1.774	1.791	1.807	1.823	1.838	1.854	1.869	1.883	1.898	1.912	1.926	1.940	1.954	1.967	1.981	1.994	2.007
45	17.004	1.695	1.716	1.735	1.754	1.771	1.788	1.805	1.821	1.836	1.852	1.867	1.881	1.896	1.910	1.924	1.938	1.952	1.966	1.979	1.993	2.006
50	19.263	1.690	1.711	1.731	1.750	1.768	1.785	1.802	1.818	1.834	1.849	1.865	1.879	1.894	1.909	1.923	1.937	1.951	1.964	1.978	1.991	2.004
55	21.746	1.683	1.706	1.727	1.746	1.765	1.782	1.799	1.816	1.832	1.847	1.863	1.878	1.892	1.907	1.921	1.935	1.949	1.963	1.977	1.990	2.003
60	24.475	1.676	1.700	1.722	1.742	1.761	1.779	1.797	1.813	1.830	1.845	1.861	1.876	1.891	1.905	1.920	1.934	1.948	1.962	1.975	1.989	2.002
65	27.470	1.667	1.694	1.717	1.738	1.757	1.776	1.794	1.811	1.827	1.843	1.859	1.874	1.889	1.904	1.918	1.933	1.947	1.961	1.974	1.988	2.001
70	30.763	1.656	1.686	1.711	1.733	1.753	1.772	1.790	1.808	1.825	1.841	1.857	1.872	1.887	1.902	1.917	1.931	1.945	1.959	1.973	1.987	2.000
75	34.395	1.642	1.677	1.704	1.727	1.748	1.768	1.787	1.805	1.822	1.838	1.854	1.870	1.885	1.900	1.915	1.930	1.944	1.958	1.972	1.985	1.999
80	38.439	1.620	1.665	1.695	1.720	1.743	1.763	1.783	1.801	1.818	1.835	1.852	1.868	1.883	1.898	1.913	1.928	1.942	1.956	1.970	1.984	1.998