



Characteristics and applications

The R-407F refrigerant gas is a zeotropic HFC blend and a direct **drop-in** replacement for R-404A and R-507 in existing systems. It can also be used for **retrofitting** in existing R-22 systems (change the oil). As with all HFC refrigerants, it causes no damage to the ozone layer. Its safety classification is **A1** group **L1**, meaning that it has a low toxicity and is non-flammable.

Some of its main properties are:

- It is a good alternative to R-404A and R-507 for new medium and low temperature systems.
- It is a **direct drop-in** replacement for R-404A and R-507 in existing commercial and industrial medium and low temperature refrigeration equipment that uses positive displacement compressors and direct expansion systems.
- Applications: supermarkets, food industry, chemical and pharmaceutical industry, etc.
- It is compatible with the equipment, components, lubricant and joints of an existing R-507 or R-404A system, and a thermostatic expansion valve (TXV) similar to one used for R-22.
- It is compatible with POE synthetic oils.

Toxicity and storage

R-407F is a substance with a very low toxicity. R-407F vapours are heavier than the air, so tend to accumulate near the floor. High atmospheric concentrations could cause anaesthetic effects and asphyxiation. Prolonged exposure may lead to heart arrhythmia and could cause sudden death.

R-407F cylinders should be stored in a cool and well-ventilated place, away from heat sources.

Components

Chemical Name	% By weight	CAS No.	EC No.
1,1,1,2- Tetrafluoroethane (R-134a)	40,0	811-97-2	212-377-0
Pentafluoroethane (R-125)	30,0	354-33-6	206-557-8
Difluoromethane (R-32)	30,0	75-10-5	200-839-4



Physical properties

PHYSICAL PROPERTIES	UNITS	R-407F
Molecular weight	(g/mol)	82.06
Boiling point (at 1,013 bar)	(°C)	-46.06
Critical temperature	(°C)	82.66
Critical pressure	(bar)	47.55
Liquid density (0°C)	(kg/m ³)	1116.93
Vapour density (25°C)	(kg/m ³)	47.52
Vapour pressure (21,1°C)	(bar)	10.22
Sliding temperature o glide	(K)	~5.5
Flammability		None
ODP	-	0
GWP	-	1825 *

* According to IPPCC-AR4/CIE (Fourth Assessment Report of the Intergovernmental Panel of Experts on Climate Change)-2007

Pressure / temperature table

TEMP. (°C)	ABSOLUTE PRESSURE (bar)		DENSITY (Kg/m ³)		ENTHALPY (kJ/Kg)		ENTROPY (kJ/Kg.K)	
	BUBBLE	DEW	BUBBLE	DEW	BUBBLE	DEW	BUBBLE	DEW
-50	0.82	0.58	1384.5	2.68	131.24	387.71	0.724	1.893
-46	1.00	0.72	1372.3	3.29	136.55	390.04	0.748	1.882
-42	1.22	0.89	1359.9	4.00	141.88	392.34	0.771	1.872
-38	1.47	1.09	1347.3	4.82	147.24	394.62	0.794	1.862
-34	1.75	1.32	1334.6	5.78	152.63	396.86	0.816	1.853
-30	2.08	1.59	1321.8	6.88	158.05	399.07	0.839	1.844
-26	2.45	1.90	1308.7	8.14	163.51	401.24	0.861	1.836
-22	2.88	2.25	1295.5	9.57	169.00	403.37	0.883	1.829
-18	3.35	2.66	1282.0	11.20	174.53	405.45	0.904	1.822
-14	3.89	3.11	1268.3	13.04	180.11	407.48	0.926	1.815
-10	4.48	3.63	1254.4	15.11	185.73	409.46	0.947	1.808
-6	5.15	4.21	1240.1	17.44	191.40	411.38	0.968	1.802
-2	5.88	4.86	1225.6	20.05	197.12	413.24	0.990	1.796
2	6.69	5.58	1210.7	22.97	202.90	415.03	1.010	1.790
6	7.59	6.38	1195.5	26.22	208.74	416.74	1.031	1.785
10	8.57	7.26	1179.9	29.85	214.65	418.37	1.052	1.779
14	9.64	8.23	1163.8	33.89	220.63	419.92	1.073	1.774
18	1.80	9.30	1147.3	38.39	226.69	421.36	1.093	1.769
22	12.07	10.47	1130.2	43.40	232.83	422.69	1.114	1.764
26	13.45	11.75	1112.4	48.97	239.07	423.90	1.134	1.758
30	14.94	13.15	1094.0	55.18	245.42	424.98	1.155	1.753
34	16.55	14.66	1074.9	62.11	251.88	425.90	1.176	1.748
38	18.29	16.31	1054.8	69.86	258.46	426.64	1.197	1.742
42	20.15	18.09	1033.8	78.56	265.19	427.19	1.217	1.736
46	22.15	20.02	1011.6	88.37	272.08	427.52	1.239	1.730
50	24.30	22.10	988.0	99.48	279.16	427.57	1.260	1.723

Mollier Diagram

