TECHNICAL
DATA SHEET

R-407C

Features and uses of R-407C

R-407C is a ternary mixture non-azeotropic composed of R-32, R-125 and R-134a. It is chemically stable, has good thermodynamic properties, low environmental impact and very low toxicity.

Although one of its components, R-32, is flammable, the overall mixture composition is formulated so that the product is not flammable in situations that may occur fragmentation of the mixture. It is classified as **A1 Group L1** of High Security refrigerants.

R-407C has 7.2 ° C glide temperature, WHICH MEANS THAT IN CERTAIN CONDITIONS UNDER LEAKAGE OF THIS PRODUCT, THE MIXTURE CAN BE FRACTIONATED. In the event of product leaks, we suggest to consult us to see how to proceed.

They are mainly used in air conditioning sector and new equipment that are manufactured nowadays: their behavior in these applications is very similar to R-22. Its performance is much lower at low temperatures for that reason it is not recommended to use. It is not compatible with mineral oil, so it is not advisable to use it in direct conversions of R-22, as it may have oil return problems, capillary blockage, etc...

As R-407C is a non-azeotropic mixture, to obtain maximum performance and avoid subdivisions thereof, the product must be loaded each time in liquid phase.

Owing to the fact that R-407C is not miscible with mineral oils, it should be used with polyolester oils (POE).

Toxicity and storage

R-407C toxicity is very low, even with long exposure time. AEL (Allowable Exposure Limit) is 1000 ppm. (8-hour TWA). R407C containers should be stored in a cool and ventilated area away from heat sources.

Security

R-407C is not toxic, not flammable, high security.
It has been classified as **A1 / group L1.**

Components

Chemical Name	% By weight	CAS N °	EC N °
1,1,1,2- Tetrafluoroethane (R-134a)	52	811-97-2	212-377-0
Pentafluoroethane (R-125)	25	354-33-6	206-557-8
Butane	23	75-10-5	200-839-4

Physical Properties

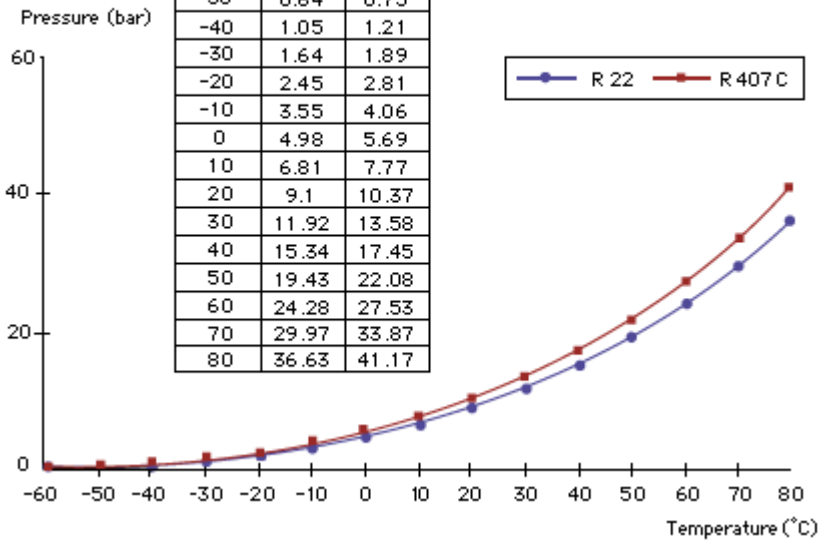
PHYSICAL PROPERTIES	UNITS	R-407C
Molecular weight	(g/mol)	86.2
Boiling temperature (at 1,013 bar)	(ºC)	-43.5
Critical temperature	(ºC)	86.74
Sliding boiling (a 1,013 bar)	(K)	7.2
Critical pressure	(bar abs)	46.2
Critical density	(Kg/m³)	527
Liquid density (25ºC)	(Kg/m³)	1134
Liquid density (-25ºC)	(Kg/m³)	1326
Saturated vapour density (at 25º C)	(Kg/m3)	41.98
Vapour pressure (25ºC)	(kPa abs)	1174.1
Vapour pressure (-25ºC)	(kPa abs)	227.6
Heat of vaporization at boiling point	(KJ/Kg)	245
Specific heat of liquid at (25ºC) (1,013 bar)	(KJ/kg k)	1.54
Specific heat of vapour at (25ºC) (1,013 bar)	(KJ/Kg K)	0.83
Thermal conductivity of liquid (25ºC)	(W/mK)	0.082
Thermal conductivity of steam (1 atm.)	(W/mK)	0.0131
Solubility in water	(ppm)	Negligible
Flammability limit in air at 1 atm.	(% vol)	None
Toxicity (AEL)	(ppm)	1000
ODP	-	0
GWP	-	1774*

(1) Bubble point

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

Comparison chart temperature / pressure R-407C-R-22

T(°C)	R 22	R 407 C
-60	0.37	0.44
-50	0.64	0.75
-40	1.05	1.21
-30	1.64	1.89
-20	2.45	2.81
-10	3.55	4.06
0	4.98	5.69
10	6.81	7.77
20	9.1	10.37
30	11.92	13.58
40	15.34	17.45
50	19.43	22.08
60	24.28	27.53
70	29.97	33.87
80	36.63	41.17



Thermodynamic properties

TEMP. (ºC)	ABSOLUTE PRESSURE (kPa)		DENSITY (kg/m3)		ENTHALPY (kJ/kg)		ENTROPY (kJ/kg.K)	
	BUBBLE	DEW	BUBBLE	DEW	BUBBLE	DEW	BUBBLE	BUBBLE
–40	119.7	85.0	1378.9	3.880	146.6	389.5	0.7903	1.8487
–35	149.8	108.5	1361.3	4.876	153.2	392.7	0.8184	1.8394
–30	185.5	136.9	1343.5	6.064	159.6	395.9	0.8448	1.8310
–25	227.6	170.9	1325.6	7.472	165.7	399.0	0.8696	1.8233
–20	276.8	211.2	1307.5	9.127	172.4	402.1	0.8959	1.8162
–15	333.8	258.6	1289.2	11.062	179.1	405.2	0.9221	1.8097
–10	399.6	313.9	1270.8	13.313	185.9	408.2	0.9478	1.8037
–5	474.8	378.1	1252.1	15.919	192.9	411.1	0.9739	1.7981
0	560.3	452.0	1233.2	18.924	200.0	413.9	1.0000	1.7928
5	657.0	536.6	1214.1	22.378	207.3	416.6	1.0261	1.7879
10	765.8	632.8	1194.6	26.338	214.7	419.3	1.0522	1.7831
15	887.6	741.7	1174.8	30.870	222.3	421.8	1.0784	1.7785
20	1023.4	864.4	1154.7	36.052	230.1	424.1	1.1047	1.7740
25	1174.1	1002.1	1134.0	41.977	238.0	426.4	1.1312	1.7695
30	1340.7	1155.9	1112.9	48.755	246.2	428.4	1.1580	1.7649
35	1524.2	1327.1	1091.1	56.523	254.7	430.2	1.1850	1.7602
40	1725.5	1517.0	1068.6	65.448	263.4	431.7	1.2125	1.7551
45	1945.8	1727.2	1045.2	75.747	272.5	433.0	1.2404	1.7497
50	2185.9	1959.0	1020.7	87.701	281.9	433.9	1.2690	1.7437

Mollier Diagram