TECHNICAL
DATA SHEET

R-407A

Features and uses of R-407A

R407A 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-407A has 6.4 ° 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-407A 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-407A is not miscible with mineral oils, it should be used with polyolester oils (POE).

Toxicity and storage

R-407A toxicity is very low, even with long exposure time. AEL (Allowable Exposure Limit) is 1000 ppm. (8-hour TWA). R407A containers should be stored in a cool and ventilated area away from heat sources.

Security

R-407A 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)	40	811-97-2	212-377-0
Pentafluoroethane (R-125)	40	354-33-6	206-557-8
Difluoromethane (R-32)	20	75-10-5	200-839-4

Physical Properties

PHYSICAL PROPERTIES	UNITS	R-407A	R-404A	R-22
Molecular weight	(g/mol)	90,1	97,6	86,5
Boiling temperature (at 1,013 bar)	(ºC)	-45,3	-46,2	-40,8
Critical temperature	(ºC)	82,3	72,1	96,1
Critical pressure	(bar abs)	45,2	37,3	49,9
Liquid density (25ºC)	(Kg/m³)	1145.1	1044	1191
Liquid density (-25ºC)	(Kg/m³)	49,74	65,3	44,2
Saturated vapour density (at 1,013 bar)	(Kg/m3)	1.115	1.197	0.869
Vapour pressure (25ºC)	(bar abs)	10,93	12,42	10,44
Specific heat of vapor at (25ºC) (1,013 bar)	(KJ/Kg K)	182,59	140	182,50
Flammability limit in air at 1 atm.	(% vol)	None	None	None
ODP	-	0	0	0,055
GWP	-	2107*	3922	1810

(1) Bubble point

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

Thermodynamic properties

TEMP. (ºC)	ABSOLUTE PRESSURE (bar)		DENSITY (Kg/m3)		ENTHALPY (kJ/Kg)		ENTROPY (kJ/Kg.K)	
	BUBBLE	DEW	BUBBLE	DEW	BUBBLE	DEW	BUBBLE	BUBBLE
-40	1.28	0.94	1387.40	4.57	146.44	374.73	0.7896	1.7838
-35	1.60	1.20	1371.20	5.75	152.93	377.71	0.8171	1.7744
-30	1.99	1.52	1354.80	7.16	159.47	380.44	0.8441	1.7658
-25	2.44	1.89	1338.10	8.84	166.07	383.22	0.8708	1.7580
-20	2.97	2.34	1321.10	10.81	172.72	385.95	0.8972	1.7507
-15	3.58	2.86	1303.70	13.11	179.43	388.61	0.9233	1.7440
-10	4.29	3.47	1285.90	15.78	186.21	391.72	0.9491	1.7377
-5	5.09	4.17	1267.70	18.87	193.06	393.72	0.9746	1.7319
0	6.00	4.98	1248.90	22.44	200.00	396.15	1.0000	1.7264
5	7.03	5.90	1229.60	26.53	207.03	398.47	1.0252	1.7211
10	8.19	6.94	1209.70	31.22	214.15	400.69	1.0502	1.7161
15	9.49	8.12	1189.00	36.59	221.38	402.78	1.0752	1.7112
20	10.93	9.45	1167.50	42.73	228.74	404.73	1.1001	1.7064
25	12.53	10.93	1145.10	49.74	236.23	406.51	1.1249	1.7016
30	14.29	12.58	1121.60	57.78	243.86	408.11	1.1498	1.6966
35	16.23	14.42	1096.90	67.00	251.67	409.48	1.1748	1.6915
40	18.37	16.45	1070.70	77.62	259.68	410.60	1.1999	1.6860
45	20.70	18.69	1042.70	89.92	267.90	411.41	1.2253	1.6801
50	23.24	21.16	1012.50	104.29	276.40	411.85	1.2510	1.6735

Mollier Diagram