



Features and uses of R-410A

R410A is an almost azeotropic mixture composed of R-125 and R-32, it is currently used primarily in new air conditioners that are appearing on the market. It is a chemically stable product with low temperature glide and low toxicity. Despite the flammability character of R-32, the overall formulation makes this product non-flammable, even in case of leaks. It is rated **A1 group L1**.

R-410A has higher refrigerating capacity and much higher pressures than R-22. Due to the fact that this product is not azeotrope, it must always be transferred and loaded in liquid phase.

R-410A is not miscible with mineral oils; oils to be used with this refrigerant gas are polyolester (POE)

Toxicity and storage

R-410A has very low toxicity even after repeated exposure. The value of AEL (Allowance Exposure Limit) is 1000 ppm (8 hour TWA). R-410A containers should be stored in cool and ventilated areas away from heat sources. In the case of leakage, the vapor will be concentrated at ground level, displacing oxygen from the ambient air, in this case precautions must be taken when evacuating the affected area.

Security

R-410A is not toxic, not flammable, high security.
It has been classified as **A1 / group L1**.

Components

Chemical Name	% By weight	CAS N °	EC N °
Pentafluoroethane (R-125)	50	354-33-6	206-557-8
Difluoromethane (R-32)	50	75-10-5	200-839-4

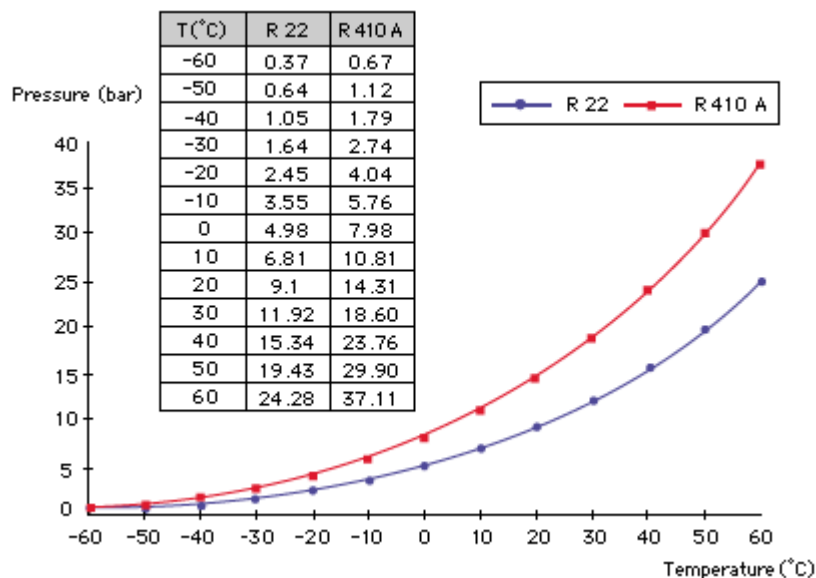
Physical Properties

PHYSICAL PROPERTIES	UNITS	R-410A
Molecular weight	(g/mol)	72.6
Boiling point (at 1,013 bar)	(°C)	-51.58
Sliding boiling (at 1,013 bar)	(K)	0.1
Critical temperature	(°C)	72.13
Critical pressure	(bar abs)	49.26
Critical density	(Kg/m ³)	488,90
Liquid density (25°C)	(Kg/m ³)	1062
Liquid density (-25°C)	(Kg/m ³)	1273
Saturated vapour density (at 1,013 bar)	(Kg/m ³)	4,12
Vapour pressure (25°C)	(bar abs)	16.5
Vapour pressure (-25°C)	(bar abs)	3.30
Latent heat of vaporization (at 1,013 bar)	(KJ/Kg)	276
Specific heat of liquid at (25°C) (1,013 bar)	(KJ/Kg K)	1.84
Specific heat of vapour at (25°C) (1,013 bar)	KJ/Kg K)	0.83
Thermal conductivity of liquid (25°C)	(W/mK)	0.088
Thermal conductivity of steam (1,013 bar)	(W/mk)	0.013
Solubility in water (25°C)	ppm	Negligible
Flammability Limit (25°C)	(% vol.)	None
Toxicity (AEL)	ppm	1000
ODP	-	0
GWP	-	2088*

(1) Bubble point

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

Comparison chart temperature / pressure R-22-R-410A





Thermodynamic properties

TEMP. (°C)	ABSOLUTE PRESSURE (bar)		DENSITY (Kg/m ³)		ENTHALPY (kJ/Kg)		ENTROPY (kJ/Kg.K)	
	BUBBLE	DEW	BUBBLE	DEW	BUBBLE	DEW	BUBBLE	BUBBLE
-50	1.124	1.121	1339.59	4.54	136.46	406.37	0.8104	2.0201
-45	1.428	1.424	1323.93	5.67	143.01	409.29	0.8393	2.0066
-40	1.793	1.788	1308.01	7.02	149.62	412.14	0.8679	1.9941
-35	2.228	2.222	1291.79	8.62	156.31	414.92	0.8961	1.9823
-30	2.740	2.732	1275.24	10.48	163.07	417.62	0.9240	1.9712
-25	3.340	3.330	1258.34	12.65	169.91	420.23	0.9517	1.9607
-20	4.036	4.023	1241.03	15.15	176.83	422.74	0.9791	1.9508
-15	4.838	4.821	1223.28	18.04	183.83	425.13	1.0062	1.9413
-10	5.757	5.735	1205.04	21.35	190.92	427.40	1.0331	1.9321
-5	6.802	6.774	1186.27	25.13	198.11	429.52	1.0599	1.9233
0	7.984	7.950	1166.89	29.44	205.41	431.50	1.0864	1.9146
5	9.315	9.274	1146.86	34.34	212.81	433.31	1.1129	1.9061
10	10.805	10.756	1126.10	39.91	220.34	434.94	1.1392	1.8977
15	12.467	12.408	1104.53	46.22	228.00	436.38	1.1655	1.8892
20	14.312	14.241	1182.05	53.38	235.80	437.59	1.1918	1.8807
25	16.351	16.269	1158.55	61.50	243.77	438.56	1.2181	1.8720
30	18.598	18.502	1133.91	70.71	251.91	439.27	1.2445	1.8631
35	21.063	20.954	1107.95	81.18	260.26	439.68	1.2710	1.8538
40	23.760	23.636	980.48	93.12	268.84	439.76	1.2977	1.8442
45	26.701	26.563	951.26	106.79	277.69	439.46	1.3248	1.8339
50	29.899	29.745	919.95	122.55	286.87	438.72	1.3524	1.8229



TECHNICAL
DATA SHEET
R-410A

Mollier Diagram

