



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



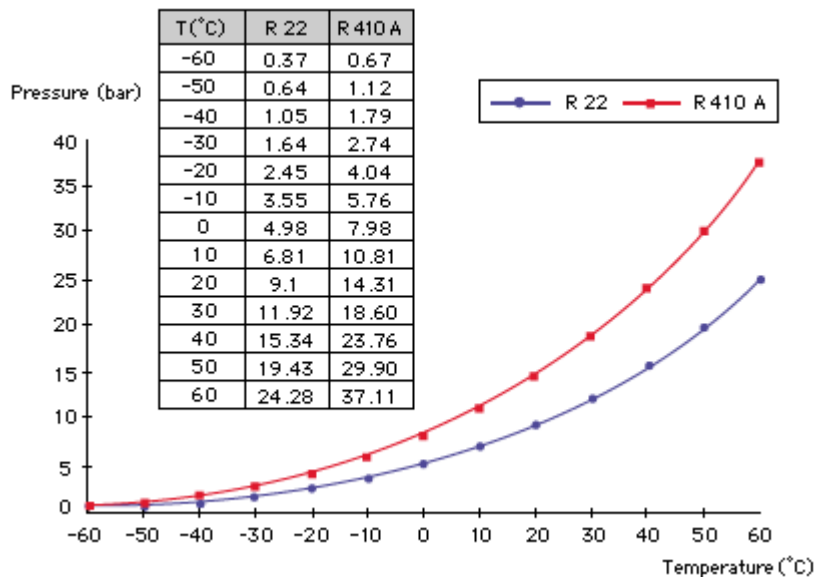
Physical Properties

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/m³)	488.90
Liquid density (25°C)	(Kg/m³)	1062
Liquid density (-25°C)	(Kg/m³)	1273
Saturated vapour density (at 25° C)	(Kg/m³)	65.92
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 (kPa)		DENSITY (kg/m ³)		ENTHALPY (kJ/kg)		ENTROPY (kJ/kg.K)	
	BUBBLE	DEW	BUBBLE	DEW	BUBBLE	DEW	BUBBLE	BUBBLE
-50	109.7	109.4	1358.9	4.500	127.3	402.2	0.7052	1.9372
-45	139.9	139.5	1342.5	5.660	134.2	404.7	0.7361	1.9217
-40	176.2	175.8	1325.7	7.045	141.1	407.1	0.7666	1.9072
-35	219.6	219.0	1308.6	8.685	148.2	409.4	0.7968	1.8936
-30	270.8	270.1	1291.2	10.613	155.3	411.6	0.8267	1.8807
-25	330.9	329.9	1273.3	12.866	162.5	413.7	0.8562	1.8685
-20	400.7	399.5	1255.0	15.486	169.8	415.7	0.8855	1.8569
-15	481.3	479.9	1236.2	18.519	177.2	417.6	0.9145	1.8457
-10	573.9	572.1	1216.9	22.016	184.7	419.4	0.9432	1.8351
-5	679.3	677.3	1197.1	26.036	192.3	421.0	0.9717	1.8247
0	799.0	796.5	1176.7	30.649	200.0	422.5	1.0000	1.8147
5	933.9	931.0	1155.5	35.931	207.8	423.9	1.0281	1.8049
10	1085.5	1082.0	1133.7	41.977	215.7	425.1	1.0560	1.7953
15	1254.9	1250.8	1110.9	48.897	223.8	426.1	1.0838	1.7857
20	1443.6	1438.8	1087.2	56.825	232.0	426.8	1.1116	1.7760
25	1652.9	1647.4	1062.4	65.924	240.4	427.3	1.1394	1.7662
30	1884.2	1877.9	1036.3	76.398	249.1	427.6	1.1674	1.7562
35	2139.2	2132.0	1008.6	88.506	257.9	427.5	1.1956	1.7458
40	2419.3	2411.1	978.9	102.585	267.1	427.0	1.2243	1.7348
45	2726.1	2717.0	946.8	119.085	276.7	426.0	1.2537	1.7230
50	3061.3	3051.5	911.4	138.645	286.9	424.6	1.2843	1.7104



TECHNICAL
DATA SHEET
R-410A

Mollier Diagram

