



## Characteristics and applications

The R-448A refrigerant gas is an HFC+HFO blend and a direct drop-in replacement for R-404A and R-507 in existing systems. As with all HFC+HFO 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 (centralised systems, chiller/freezer rooms, refrigerated warehouses, plug-in equipment, etc.).
- It is compatible with the equipment, components, lubricant and joints of an existing R-507 or R-404A system.
- It has a low global warming potential (GWP). A reduction of 64.66% in comparison to R-404A.
- It is compatible with POE synthetic oils.

## Toxicity and storage

R-448A is a substance with a very low toxicity. R-448A 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-448A cylinders should be stored in a cool and well-ventilated place, away from heat sources.

## Components

Nombre químico	% en peso	Nº CAS	Nº CE
Difluorometano (R-32)	26,0	75-10-5	200-839-4
trans-1,3,3,3-Tetrafluoroprop-1-ene (R-1234ze)	7,0	29118-24-9	471-480-0
1,1,1,2-tetrafluoroetano (R-134a)	21,0	811-97-2	212-377-0
Pentafluoroetano (R-125)	26,0	354-33-6	206-557-8
2,3,3,3-Tetrafluoropropeno (R-1234yf)	20,0	754-12-1	468-710-7



## Physical properties

PHYSICAL PROPERTIES	UNITS	R-448A
Molecular weight	(g/mol)	86,3
Boiling point (at 1,013 bar)	(°C)	-45,9
Critical temperature	(°C)	83,7
Critical pressure	(bar)	46,6
Critical density	(Kg/m <sup>3</sup> )	480,2
Vapor density at boiling point	(Kg/m <sup>3</sup> )	4,701
Liquid density (0°C)	(Kg/m <sup>3</sup> )	1192,5
Liquid density (25°C)	(Kg/m <sup>3</sup> )	1092,3
Heat of vaporization at boiling point	(KJ/Kg)	241,1
Vapour pressure (25°C)	(bar)	11,07
Sliding temperature or or glide	(K)	~4
Flammability		No
ODP	-	0
GWP	-	1387 *

\* 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 <sup>3</sup> )		ENTHALPY (kJ/Kg)		ENTROPY (kJ/Kg.K)	
	BUBBLE	DEW	BUBBLE	DEW	BUBBLE	DEW	BUBBLE	DEW
-50	0,77	0,56	1359,90	2,72	132,84	375,34	0,730	1,833
-46	0,94	0,69	1348,00	3,33	137,99	377,75	0,753	1,824
-42	1,15	0,85	1335,90	4,03	143,18	380,14	0,776	1,816
-38	1,38	1,04	1323,80	4,85	148,40	382,51	0,798	1,808
-34	1,65	1,26	1311,40	5,79	153,65	384,86	0,820	1,800
-30	1,96	1,51	1298,90	6,87	158,94	387,18	0,842	1,793
-26	2,31	1,80	1286,30	8,10	164,27	389,46	0,864	1,787
-22	2,71	2,13	1273,40	9,50	169,63	391,72	0,885	1,781
-18	3,15	2,50	1260,30	11,09	175,05	393,93	0,906	1,775
-14	3,66	2,93	1247,00	12,88	180,50	396,10	0,927	1,770
-10	4,22	3,41	1233,40	14,89	186,01	398,23	0,948	1,765
-6	4,84	3,94	1219,60	17,15	191,56	400,31	0,969	1,760
-2	5,53	4,54	1205,50	19,67	197,17	402,33	0,990	1,755
2	6,29	5,21	1191,00	22,49	202,84	404,30	1,010	1,751
6	7,13	5,95	1176,20	25,63	208,57	406,20	1,031	1,747
10	8,04	6,76	1161,00	29,13	214,37	408,02	1,051	1,743
14	9,05	7,66	1145,40	33,02	220,24	409,77	1,071	1,739
18	10,14	8,64	1129,30	37,34	226,19	411,43	1,092	1,735
22	11,33	9,72	1112,70	42,14	232,22	412,99	1,112	1,731
26	12,61	10,89	1095,60	47,48	238,34	414,44	1,132	1,727
30	14,01	12,18	1077,80	53,42	244,56	415,76	1,152	1,723
34	15,51	13,57	1059,20	60,04	250,88	416,95	1,172	1,719
38	17,12	15,08	1039,90	67,43	257,33	417,99	1,193	1,714
42	18,86	16,72	1019,50	75,71	263,91	418,84	1,213	1,710
46	20,73	18,49	998,15	85,02	270,64	419,50	1,234	1,705
50	22,72	20,41	975,44	95,54	277,55	419,91	1,255	1,699



### Mollier Diagram

