



## Characteristics and applications

The R-152a refrigerant gas is a pure and azeotropic HFC, just like R-134a, that causes no damage to the ozone layer, has a very low global warming potential (GWP) and replaces R-134a in new systems. It has great thermal and chemical stability, low toxicity, mid-level flammability and is also highly compatible with the majority of materials. Its safety classification is **A2** group **L2**.

Some of its main properties are:

- It is an alternative refrigerant to R-134a for new mid and high temperature air conditioning and refrigeration systems.
- It is a **direct drop-in** replacement for R-134a and a non-direct replacement for **retrofitting** R-12 and R-409A (change the oil type).
- It is compatible with the equipment, components, lubricant and joints of an existing R134a system.
- When retrofitting an existing R-12 or R-409A system, the mineral lubricant will need to be changed for a synthetic POE lubricant. The joints will also need to be replaced and the thermostatic expansion valve (TXV) may also need to be adjusted.
- The discharge pressure is lower and the refrigerant load is approximately 30% lower than that of R-134a.
- It has a very low global warming potential (GWP). A reduction of 91.33% in comparison to R134a.
- It is compatible with POE synthetic oils.

**IMPORTANT:** when using, take into account the guidelines of the European Regulation 517/2014 and the Safety Regulation for Refrigerated Systems, corresponding to the country where this product will be used.

## Toxicity and storage

R-152a is a substance with a very low toxicity. R-152a vapours are heavier than the air, so tend to accumulate near the floor. Containers of R-152a should be stored in a cool and well-ventilated place, away from heat sources. Avoid open flames and high temperatures. Store in temperatures below 50°C.

## Components

Chemical Name	% By weight	CAS No.	EC No.
1,1- Difluoroethane (R-152a)	100	75-37-6	200-866-1



## Physical properties

PHYSICAL PROPERTIES	UNITS	R-152a
Molecular weight	(g/mol)	66,051
Boiling point (at 1,013 bar)	(°C)	-24,7
Freezing point (a 1.013 bar)	(°C)	-117
Critical temperature	(°C)	113,15
Critical pressure	(bar)	44,96
Vapour pressure (25°C)	(bar)	5,08
Liquid density (25°C)	(kg/m <sup>3</sup> )	899
Saturated vapour density	(kg/m <sup>3</sup> )	3,37
Specific heat of liquid (25°C a 1,013 bar)	(KJ/Kg.K)	1,8
Specific heat of vapour (25°C a 1,013 bar)	(KJ/Kg.K)	1,051
Solubility in water (25°C)	(g/l)	0,2
Upper / lower flammability limit	%	16,9 / 3,9
Auto-ignition temperature	(°C)	440
Flammability		Yes (A2)
ODP	-	0
GWP	-	124 *

\* 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)	
	BUBBLE	DEW	BUBBLE	DEW	BUBBLE	DEW
-30	0,77	0,77	1023,50	2,615	150,39	485,55
-25	0,97	0,97	1013,20	3,241	158,48	489,26
-20	1,21	1,21	1002,70	3,979	166,64	492,94
-15	1,49	1,49	992,09	4,844	174,86	496,57
-10	1,82	1,82	981,28	5,852	183,16	500,15
-5	2,20	2,20	970,30	7,017	191,54	503,66
0	2,64	2,64	959,11	8,359	200,00	507,11
5	3,15	3,15	947,71	9,896	208,55	510,49
10	3,73	3,73	936,07	11,651	217,19	513,78
15	4,39	4,39	924,17	13,647	225,93	516,99
20	5,13	5,13	911,97	15,909	234,77	520,09
25	5,96	5,96	899,47	18,469	243,73	523,09
30	6,90	6,90	886,61	21,357	252,80	525,96
35	7,94	7,94	873,36	24,613	262,01	528,70
40	9,09	9,09	859,67	28,280	271,35	531,28
45	10,37	10,37	845,50	32,408	280,84	533,70
50	11,77	11,77	830,78	37,057	290,50	535,93
55	13,32	13,32	815,43	42,300	300,34	537,95
60	15,01	15,01	799,37	48,222	310,38	539,72
65	16,85	16,85	782,48	54,932	320,64	541,21



TECHNICAL  
DATA SHEET  
R-152a

Mollier Diagram

