



R-1234ze

Characteristics and applications

The R-1234ze refrigerant gas is an HFO that replaces R-134a in chillers for industrial refrigeration and A/A. As with all HFO refrigerants, it causes no damage to the ozone layer. It has great thermal and chemical stability, low toxicity and is also highly compatible with the majority of materials.

R-1234ze is non-flammable, in accordance with the ASHRAE standard 34 (ISO 817). However, it may catch fire if it is mixed with pressurised air and is exposed to strong ignition sources. Its safety classification is **A2L** group **L2**.

It is miscible with polyolester synthetic oils (POE) and polyalkylene glycols (PAG), so it should always be used with these kinds of oils.

It is used in chillers, hermetic compressors for industrial refrigeration, vending machines, refrigerated cabinets and cold rooms.

Toxicity and storage

R-1234ze is a substance with a very low toxicity. R-1234ze cylinders should be stored in a cool and well-ventilated place, away from heat sources. The vapours from R-1234ze are heavier than air and may cause asphyxiation by reducing the oxygen in the air being breathed. Protect it from solar rays and avoid exposing it to temperatures over 50 °C.

A unique feature of R-1234ze is the fact that it is non-flammable when mixed with air at 30°C below room temperature. It is therefore considered non-flammable for handling and storage.

Components

Chemical Name	% By weight	CAS No.	EC No.
trans-1,3,3,3-Tetrafluoroprop-1-ene (R-1234ze)	100	29118-24-9	471-480-0



Physical properties

PROPIEDADES FÍSICAS	UNIDADES	R-1234ze
Molecular weight	(g/mol)	114.0
Boiling point	(°C)	-19.0
Critical temperature	(°C)	109.4
Critical pressure	(bar)	36.36
Critical density	(Kg/m ³)	489.0
Vapour pressure (20°C)	(bar)	4.27
Vapour pressure (54,4°C)	(bar)	11.15
Density (21,1°C)	(Kg/m ³)	1170
Solubility in water	(mg/l)	373
Sliding temperature or glide	(K)	0
Safety classification		A2L
Auto-ignition temperature	(°C)	368
ODP	-	0
GWP	-	7*

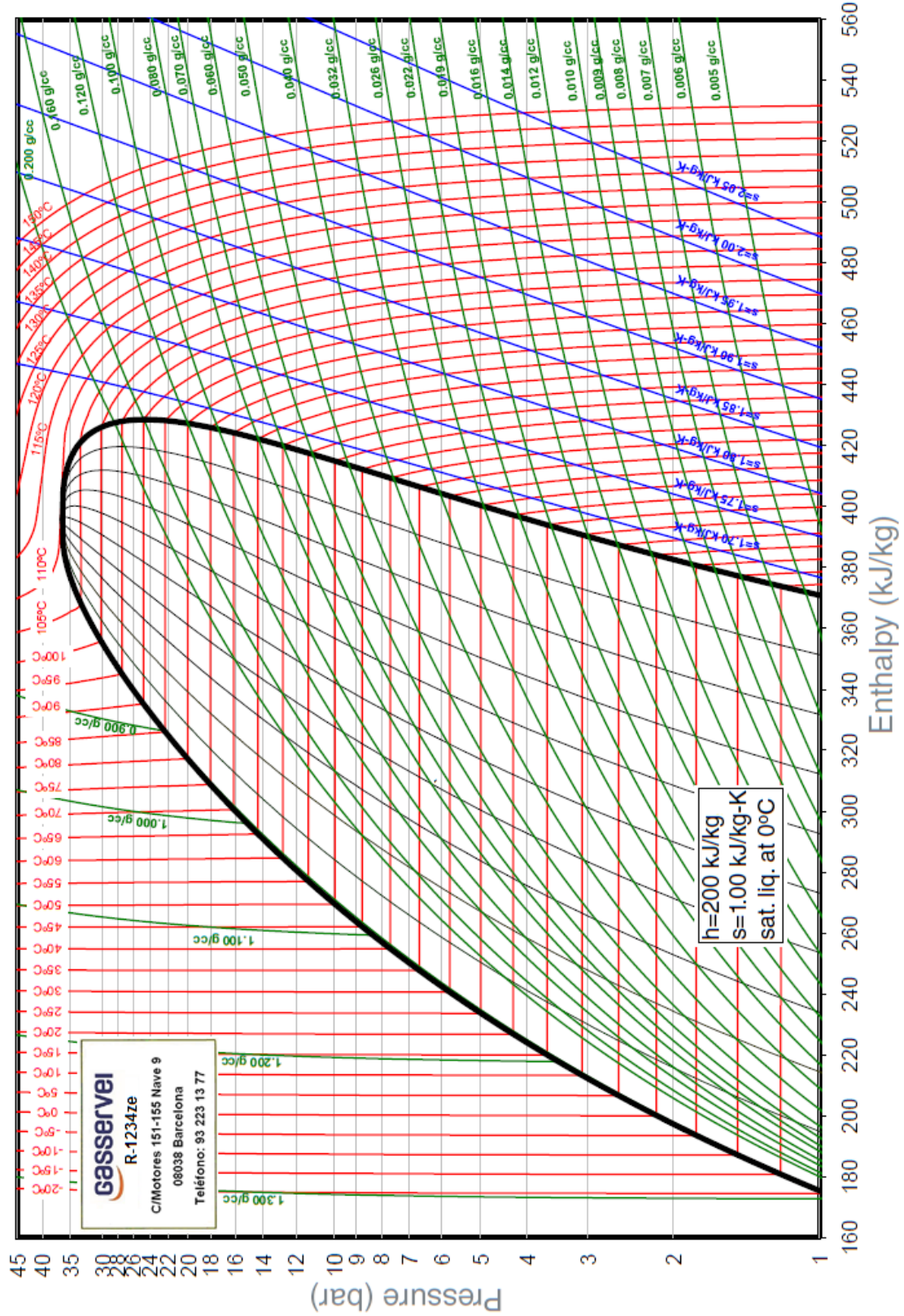
* According to IPPCC-AR4/CIE (Fourth Assessment Report of the Intergovernmental Panel of Experts on Climate Change)-2007.

Pressure / temperature table

TEMP. (°C)	ABSOLUTE PRESSURE (bar)		DENSITY (Kg/m ³)		ENTHALPY (kJ/Kg)		ENTROPY (kJ/Kg.K)	
	DEW	BUBBLE	DEW	BUBBLE	DEW	BUBBLE	DEW	BUBBLE
-50	0.21	0.21	1375	1.303	136.200	348.805	0.743	1.696
-45	0.28	0.28	1362	1.707	142.418	352.369	0.770	1.691
-40	0.37	0.37	1350	2.206	148.664	355.941	0.797	1.687
-35	0.48	0.48	1336	2.814	154.942	359.515	0.824	1.683
-30	0.61	0.61	1323	3.549	161.253	363.086	0.850	1.680
-25	0.77	0.77	1310	4.428	167.602	366.651	0.876	1.678
-20	0.97	0.97	1296	5.470	173.991	370.202	0.901	1.677
-15	1.20	1.20	1283	6.696	180.422	373.736	0.927	1.675
-10	1.47	1.47	1269	8.129	186.898	377.247	0.951	1.675
-5	1.79	1.79	1255	9.793	193.423	380.730	0.976	1.674
0	2.17	2.17	1240	11.714	200.000	384.180	1.000	1.674
5	2.59	2.59	1225	13.923	206.632	387.591	1.024	1.675
10	3.08	3.08	1210	16.450	213.323	390.957	1.048	1.675
15	3.64	3.64	1195	19.332	220.078	394.271	1.071	1.676
20	4.27	4.27	1179	22.607	226.902	397.528	1.094	1.676
25	4.99	4.99	1163	26.321	233.799	400.719	1.118	1.677
30	5.78	5.78	1146	30.523	240.778	403.835	1.141	1.678
35	6.67	6.67	1129	35.272	247.843	406.867	1.163	1.679
40	7.67	7.67	1112	40.636	255.003	409.803	1.186	1.680
45	8.76	8.76	1093	46.693	262.266	412.629	1.209	1.681
50	9.97	9.97	1074	53.538	269.642	415.328	1.231	1.682



Mollier Diagram



Gasservei
R-1234ze
C/Motors 151-155 Nave 9
08038 Barcelona
Teléfono: 93 223 13 77