

R-407A



SPÉCIFICATIONS SELON NORME AHRI 700

CARACTÉRISTIQUES STANDARD	CONFORMITÉ EN LIMITE DE TOLÉRANCE
Composition nominale : R32 : 20 % R125 : 40 % R134a : 40 %	18 % ≤ R32 ≤ 22 % 38 % ≤ R125 ≤ 42 % 38 % ≤ R134a ≤ 42 %
Pureté	≥ 99,5 % poids
Teneur en eau	≤ 10 ppm poids
Acidité (HCl)	≤ 1 ppm (poids)
Teneur en incondensables (phase gazeuse)	≤ 1,5 % volume
Résidus haute ébullition	≤ 0,01 % volume

PROPRIÉTÉS PHYSIQUES

Nom	Difluoromethane 20% en poids Pentafluoroethane 40% en poids 1,1,1,2- Tetrafluoroethane 40% en poids
Formule chimique	$\text{CH}_2\text{F}_2 / \text{CHF}_2-\text{CF}_3 / \text{CF}_3-\text{CH}_2\text{F}$
Température d'ébullition à 1,013 bar	-45,1 °C
Température critique	82,25 °C
Potentiel de Réchauffement Global (GWP)	2 107 (selon IPCC 2007 Fourth Assesment Report)
Classe de sécurité	A1
Potentiel d'action sur l'ozone	Nul
Limites d'inflammabilité dans l'air	Aucune
Lubrifiant	POE (PolyolEster)

SUBSTITUTION

- R-22
- R-404A
- R-507

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TABLE THERMODYNAMIQUE

Température (°C)	Liquide	Vapeur	Liquide	Vapeur	Liquide	Vapeur	Liquide	Vapeur
	Pression (bar abs)	Pression (bar abs)	Densité (kg/m ³)	Densité (kg/m ³)	Enthalpie (kJ/kg)	Enthalpie (kJ/kg)	Entropie (kJ/kg-K)	Entropie (kJ/kg-K)
-110	0,0093689	0,0039924	1600,6	0,026543	57,537	333,12	0,33662	2,0709
-109	0,010412	0,0045003	1597,5	0,02974	58,834	333,69	0,34455	2,0634
-108	0,011555	0,0050638	1594,4	0,033264	60,128	334,27	0,3524	2,056
-107	0,012804	0,0056878	1591,4	0,037142	61,419	334,85	0,3602	2,0488
-106	0,014168	0,0063778	1588,3	0,041402	62,707	335,43	0,36792	2,0417
-105	0,015655	0,0071395	1585,3	0,046076	63,992	336,01	0,37559	2,0348
-104	0,017274	0,007979	1582,2	0,051195	65,275	336,59	0,38319	2,028
-103	0,019035	0,0089029	1579,2	0,056793	66,555	337,18	0,39074	2,0213
-102	0,020948	0,009918	1576,2	0,062907	67,833	337,76	0,39823	2,0148
-101	0,023023	0,011032	1573,2	0,069574	69,109	338,35	0,40566	2,0084
-100	0,025271	0,012252	1570,1	0,076834	70,383	338,93	0,41304	2,0021
-99	0,027704	0,013587	1567,1	0,084729	71,655	339,52	0,42036	1,996
-98	0,030334	0,015045	1564,1	0,093302	72,926	340,11	0,42764	1,99
-97	0,033173	0,016637	1561,1	0,1026	74,195	340,7	0,43486	1,9841
-96	0,036235	0,01837	1558,1	0,11267	75,462	341,29	0,44204	1,9783
-95	0,039534	0,020257	1555,1	0,12357	76,728	341,88	0,44916	1,9727
-94	0,043084	0,022307	1552,1	0,13534	77,993	342,48	0,45624	1,9671
-93	0,046901	0,024532	1549,1	0,14804	79,257	343,07	0,46327	1,9617
-92	0,050999	0,026944	1546,2	0,16174	80,52	343,66	0,47026	1,9563
-91	0,055395	0,029555	1543,2	0,17648	81,782	344,26	0,47721	1,9511
-90	0,060107	0,032379	1540,2	0,19233	83,043	344,86	0,48411	1,946
-89	0,065152	0,03543	1537,2	0,20936	84,304	345,45	0,49097	1,941
-88	0,070548	0,038721	1534,2	0,22763	85,563	346,05	0,49779	1,936
-87	0,076314	0,042267	1531,2	0,24721	86,823	346,65	0,50458	1,9312
-86	0,08247	0,046086	1528,2	0,26818	88,081	347,25	0,51132	1,9265
-85	0,089037	0,050192	1525,3	0,29061	89,34	347,85	0,51802	1,9218
-84	0,096035	0,054603	1522,3	0,31458	90,598	348,45	0,52469	1,9173
-83	0,10349	0,059336	1519,3	0,34016	91,855	349,05	0,53132	1,9128
-82	0,11141	0,064411	1516,3	0,36745	93,113	349,65	0,53791	1,9085
-81	0,11984	0,069845	1513,3	0,39652	94,37	350,25	0,54447	1,9042
-80	0,12879	0,07566	1510,3	0,42747	95,628	350,86	0,55099	1,9
-79	0,13829	0,081875	1507,3	0,46039	96,885	351,46	0,55748	1,8958
-78	0,14836	0,088512	1504,3	0,49536	98,142	352,06	0,56394	1,8918
-77	0,15903	0,095593	1501,4	0,53249	99,4	352,66	0,57036	1,8878
-76	0,17032	0,10314	1498,4	0,57188	100,66	353,27	0,57675	1,884
-75	0,18227	0,11118	1495,4	0,61362	101,92	353,87	0,58311	1,8801

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-74	0.1949	0.11973	1492.4	0.65783	103.17	354.47	0.58944	1.8764
-73	0.20825	0.12883	1489.4	0.70461	104.43	355.08	0.59574	1.8727
-72	0.22234	0.13849	1486.3	0.75407	105.69	355.68	0.60201	1.8691
-71	0.2372	0.14874	1483.3	0.80632	106.95	356.28	0.60825	1.8656
-70	0.25286	0.15961	1480.3	0.86149	108.21	356.89	0.61446	1.8622
-69	0.26936	0.17114	1477.3	0.9197	109.47	357.49	0.62064	1.8588
-68	0.28673	0.18333	1474.3	0.98105	110.73	358.09	0.6268	1.8554
-67	0.305	0.19624	1471.3	1.0457	111.99	358.7	0.63293	1.8522
-66	0.32421	0.20989	1468.2	1.1137	113.26	359.3	0.63903	1.849
-65	0.3444	0.22431	1465.2	1.1853	114.52	359.9	0.64511	1.8458
-64	0.36559	0.23953	1462.2	1.2606	115.78	360.51	0.65115	1.8428
-63	0.38783	0.25559	1459.1	1.3396	117.05	361.11	0.65718	1.8397
-62	0.41116	0.27252	1456.1	1.4226	118.31	361.71	0.66318	1.8368
-61	0.43561	0.29036	1453	1.5098	119.58	362.31	0.66915	1.8339
-60	0.46122	0.30913	1450	1.6011	120.84	362.91	0.6751	1.831
-59	0.48803	0.32889	1446.9	1.6968	122.11	363.51	0.68103	1.8282
-58	0.51608	0.34966	1443.8	1.7971	123.38	364.11	0.68693	1.8254
-57	0.54541	0.37148	1440.7	1.9021	124.65	364.71	0.69281	1.8227
-56	0.57608	0.3944	1437.7	2.0119	125.92	365.3	0.69867	1.8201
-55	0.60811	0.41845	1434.6	2.1268	127.2	365.9	0.70451	1.8175
-54	0.64155	0.44367	1431.5	2.2468	128.47	366.5	0.71032	1.815
-53	0.67645	0.47011	1428.4	2.3722	129.74	367.09	0.71611	1.8125
-52	0.71285	0.49781	1425.3	2.5031	131.02	367.69	0.72188	1.81
-51	0.7508	0.5268	1422.2	2.6397	132.3	368.28	0.72763	1.8076
-50	0.79034	0.55715	1419	2.7821	133.58	368.87	0.73336	1.8052
-49	0.83152	0.58888	1415.9	2.9306	134.86	369.46	0.73907	1.8029
-48	0.87439	0.62205	1412.8	3.0854	136.14	370.05	0.74476	1.8006
-47	0.91899	0.6567	1409.6	3.2466	137.42	370.64	0.75043	1.7984
-46	0.96539	0.69287	1406.5	3.4143	138.7	371.23	0.75608	1.7962
-45	1.0136	0.73063	1403.3	3.5889	139.99	371.82	0.76171	1.794
-44	1.0637	0.77001	1400.2	3.7705	141.28	372.4	0.76733	1.7919
-43	1.1158	0.81107	1397	3.9593	142.56	372.99	0.77292	1.7898
-42	1.1698	0.85385	1393.8	4.1555	143.85	373.57	0.7785	1.7878
-41	1.2259	0.89841	1390.6	4.3594	145.15	374.15	0.78406	1.7858
-40	1.2841	0.9448	1387.4	4.571	146.44	374.73	0.7896	1.7838
-39	1.3444	0.99307	1384.2	4.7907	147.73	375.31	0.79513	1.7818

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-38	1.4069	1.0433	1381	5.0187	149.03	375.89	0.80063	1.7799
-37	1.4717	1.0955	1377.7	5.2551	150.33	376.46	0.80612	1.7781
-36	1.5388	1.1497	1374.5	5.5003	151.63	377.04	0.8116	1.7762
-35	1.6083	1.206	1371.2	5.7544	152.93	377.61	0.81706	1.7744
-34	1.6802	1.2645	1368	6.0177	154.24	378.18	0.8225	1.7726
-33	1.7545	1.3252	1364.7	6.2904	155.54	378.75	0.82793	1.7709
-32	1.8315	1.3882	1361.4	6.5727	156.85	379.31	0.83334	1.7692
-31	1.911	1.4535	1358.1	6.865	158.16	379.88	0.83874	1.7675
-30	1.9931	1.5212	1354.8	7.1675	159.47	380.44	0.84412	1.7658
-29	2.078	1.5914	1351.5	7.4803	160.79	381	0.84949	1.7642
-28	2.1657	1.664	1348.2	7.8038	162.1	381.56	0.85484	1.7626
-27	2.2562	1.7392	1344.8	8.1383	163.42	382.12	0.86018	1.761
-26	2.3496	1.8171	1341.5	8.484	164.74	382.67	0.86551	1.7595
-25	2.446	1.8976	1338.1	8.8412	166.07	383.22	0.87082	1.758
-24	2.5453	1.9809	1334.7	9.2102	167.39	383.77	0.87612	1.7565
-23	2.6478	2.067	1331.4	9.5912	168.72	384.32	0.88141	1.755
-22	2.7534	2.1561	1327.9	9.9846	170.05	384.87	0.88668	1.7535
-21	2.8623	2.248	1324.5	10.391	171.38	385.41	0.89194	1.7521
-20	2.9744	2.343	1321.1	10.81	172.72	385.95	0.89719	1.7507
-19	3.0898	2.4411	1317.6	11.242	174.05	386.49	0.90243	1.7493
-18	3.2086	2.5423	1314.2	11.688	175.39	387.02	0.90766	1.7479
-17	3.331	2.6467	1310.7	12.147	176.74	387.56	0.91287	1.7466
-16	3.4568	2.7544	1307.2	12.621	178.08	388.09	0.91807	1.7453
-15	3.5863	2.8655	1303.7	13.11	179.43	388.61	0.92327	1.744
-14	3.7194	2.98	1300.2	13.613	180.78	389.14	0.92845	1.7427
-13	3.8562	3.098	1296.6	14.132	182.13	389.66	0.93362	1.7414
-12	3.9969	3.2196	1293.1	14.667	183.49	390.18	0.93878	1.7402
-11	4.1414	3.3448	1289.5	15.217	184.85	390.69	0.94393	1.7389
-10	4.2899	3.4737	1285.9	15.784	186.21	391.21	0.94907	1.7377
-9	4.4424	3.6064	1282.3	16.367	187.57	391.72	0.9542	1.7365
-8	4.5989	3.743	1278.7	16.968	188.94	392.22	0.95932	1.7353
-7	4.7596	3.8835	1275	17.586	190.31	392.72	0.96444	1.7342
-6	4.9246	4.028	1271.4	18.222	191.69	393.22	0.96954	1.733
-5	5.0938	4.1766	1267.7	18.877	193.06	393.72	0.97464	1.7319
-4	5.2673	4.3293	1264	19.55	194.44	394.21	0.97973	1.7307
-3	5.4454	4.4863	1260.2	20.243	195.83	394.7	0.98481	1.7296

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-2	5,6279	4,6476	1256,5	20,955	197,22	395,19	0,98988	1,7285
-1	5,8149	4,8132	1252,7	21,688	198,61	395,67	0,99494	1,7274
0	6,0067	4,9834	1248,9	22,441	200	396,15	1	1,7264
1	6,2031	5,1581	1245,1	23,215	201,4	396,62	1,0051	1,7253
2	6,4043	5,3374	1241,3	24,011	202,8	397,09	1,0101	1,7242
3	6,6105	5,5215	1237,4	24,829	204,2	397,56	1,0151	1,7232
4	6,8215	5,7103	1233,5	25,67	205,61	398,02	1,0202	1,7222
5	7,0376	5,904	1229,6	26,535	207,03	398,47	1,0252	1,7211
6	7,2587	6,1026	1225,7	27,423	208,44	398,93	1,0302	1,7201
7	7,485	6,3063	1221,7	28,335	209,86	399,37	1,0352	1,7191
8	7,7166	6,5151	1217,7	29,273	211,29	399,82	1,0402	1,7181
9	7,9535	6,7292	1213,7	30,237	212,72	400,26	1,0452	1,7171
10	8,1958	6,9485	1209,7	31,226	214,15	400,69	1,0502	1,7161
11	8,4435	7,1732	1205,6	32,243	215,59	401,12	1,0552	1,7151
12	8,6968	7,4033	1201,5	33,287	217,03	401,54	1,0602	1,7142
13	8,9557	7,6391	1197,4	34,36	218,48	401,96	1,0652	1,7132
14	9,2204	7,8804	1193,2	35,462	219,93	402,37	1,0702	1,7122
15	9,4908	8,1275	1189	36,594	221,38	402,78	1,0752	1,7112
16	9,7671	8,3804	1184,8	37,757	222,85	403,18	1,0802	1,7103
17	10,049	8,6393	1180,5	38,951	224,31	403,58	1,0851	1,7093
18	10,338	8,9041	1176,2	40,177	225,78	403,97	1,0901	1,7083
19	10,632	9,175	1171,9	41,437	227,26	404,35	1,0951	1,7074
20	10,932	9,4522	1167,5	42,731	228,74	404,73	1,1001	1,7064
21	11,239	9,7356	1163,1	44,06	230,22	405,1	1,105	1,7055
22	11,552	10,025	1158,7	45,425	231,72	405,46	1,11	1,7045
23	11,872	10,322	1154,2	46,828	233,21	405,82	1,115	1,7035
24	12,198	10,625	1149,7	48,269	234,72	406,17	1,1199	1,7026
25	12,531	10,934	1145,1	49,749	236,23	406,51	1,1249	1,7016
26	12,87	11,25	1140,5	51,269	237,74	406,85	1,1299	1,7006
27	13,216	11,574	1135,8	52,832	239,26	407,17	1,1349	1,6996
28	13,569	11,904	1131,2	54,437	240,79	407,49	1,1398	1,6986
29	13,929	12,241	1126,4	56,087	242,32	407,8	1,1448	1,6976
30	14,296	12,586	1121,6	57,782	243,86	408,11	1,1498	1,6966
31	14,67	12,937	1116,8	59,525	245,41	408,4	1,1548	1,6956
32	15,051	13,297	1111,9	61,317	246,97	408,68	1,1598	1,6946
33	15,439	13,663	1106,9	63,159	248,53	408,96	1,1648	1,6936

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34	15,835	14,038	1101,9	65,053	250,1	409,22	1,1698	1,6926
35	16,238	14,42	1096,9	67,001	251,67	409,48	1,1748	1,6915
36	16,649	14,81	1091,8	69,005	253,26	409,72	1,1798	1,6904
37	17,068	15,208	1086,6	71,067	254,85	409,96	1,1848	1,6894
38	17,494	15,614	1081,3	73,188	256,45	410,18	1,1898	1,6883
39	17,928	16,028	1076	75,372	258,06	410,4	1,1949	1,6872
40	18,37	16,451	1070,7	77,62	259,68	410,6	1,1999	1,686
41	18,819	16,882	1065,2	79,935	261,3	410,78	1,205	1,6849
42	19,277	17,321	1059,7	82,32	262,94	410,96	1,21	1,6837
43	19,744	17,77	1054,1	84,777	264,58	411,12	1,2151	1,6825
44	20,218	18,227	1048,4	87,309	266,24	411,27	1,2202	1,6813
45	20,701	18,693	1042,7	89,921	267,9	411,41	1,2253	1,6801
46	21,192	19,169	1036,8	92,614	269,58	411,53	1,2304	1,6788
47	21,692	19,653	1030,9	95,393	271,27	411,63	1,2355	1,6776
48	22,2	20,147	1024,9	98,261	272,97	411,72	1,2407	1,6762
49	22,718	20,651	1018,8	101,22	274,68	411,79	1,2458	1,6749
50	23,244	21,165	1012,5	104,29	276,4	411,85	1,251	1,6735
51	23,779	21,688	1006,2	107,45	278,14	411,88	1,2562	1,6721
52	24,323	22,221	999,74	110,72	279,89	411,9	1,2614	1,6707
53	24,877	22,765	993,16	114,11	281,66	411,9	1,2667	1,6692
54	25,439	23,319	986,46	117,62	283,44	411,87	1,272	1,6676
55	26,011	23,884	979,62	121,26	285,23	411,83	1,2773	1,666
56	26,593	24,459	972,64	125,03	287,05	411,76	1,2826	1,6644
57	27,184	25,045	965,5	128,95	288,88	411,66	1,288	1,6627
58	27,785	25,643	958,2	133,02	290,73	411,54	1,2934	1,661
59	28,396	26,252	950,72	137,25	292,6	411,39	1,2988	1,6591
60	29,017	26,873	943,04	141,66	294,49	411,21	1,3043	1,6573
61	29,648	27,505	935,17	146,25	296,41	411	1,3099	1,6553
62	30,289	28,15	927,06	151,05	298,35	410,75	1,3155	1,6533
63	30,94	28,807	918,72	156,06	300,31	410,47	1,3211	1,6512
64	31,602	29,477	910,1	161,31	302,31	410,14	1,3268	1,6489
65	32,274	30,16	901,2	166,82	304,34	409,77	1,3326	1,6466
66	32,957	30,857	891,97	172,61	306,4	409,36	1,3385	1,6442
67	33,65	31,567	882,38	178,71	308,51	408,89	1,3444	1,6416
68	34,355	32,291	872,39	185,16	310,65	408,36	1,3505	1,6389
69	35,07	33,03	861,95	191,98	312,84	407,77	1,3567	1,636

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TABLE THERMODYNAMIQUE

Température (°C)	Liquide	Vapeur	Liquide	Vapeur	Liquide	Vapeur	Liquide	Vapeur
	Pression (bar abs)	Pression (bar abs)	Densité (kg/m ³)	Densité (kg/m ³)	Enthalpie (kJ/kg)	Enthalpie (kJ/kg)	Entropie (kJ/kg-K)	Entropie (kJ/kg-K)
70	35.796	33.784	850.99	199.24	315.09	407.11	1.363	1.6329
71	36.533	34.554	839.45	206.98	317.4	406.36	1.3695	1.6297
72	37.281	35.34	827.23	215.28	319.78	405.53	1.3761	1.6262
73	38.04	36.144	814.21	224.23	322.25	404.58	1.383	1.6224
74	38.81	36.965	800.23	233.95	324.81	403.52	1.3901	1.6183
75	39.59	37.806	785.1	244.58	327.49	402.3	1.3975	1.6138
76	40.38	38.668	768.52	256.33	330.33	400.9	1.4054	1.6088
77	41.179	39.552	750.07	269.52	333.36	399.27	1.4137	1.6031
78	41.986	40.461	729.09	284.61	336.65	397.33	1.4228	1.5967
79	42.798	41.4	704.44	302.37	340.33	394.98	1.433	1.5891
80	43.609	42.376	673.79	324.27	344.66	391.98	1.4449	1.5797