

氫氟碳化物 HFCs 各種類之溫暖化潛勢值 (Global warming potential, 簡稱 GWP 值)

以下列出美國供暖製冷空調工程師學會 (簡稱 ASHRAE, American Society of Heating, Refrigerating, and Air-Condition. Engineers) 公告其認可冷媒編號之 HFCs 種類, 包括純物質與混合物, 以及國內常見之 HCFCs 種類等之 GWP 值, 此值目前是依據蒙特婁議定書以政府間氣候變遷專門委員會 (簡稱 IPCC, Intergovernmental Panel on Climate Change) 之第四次評估報告 (簡稱 AR4, Fourth Assessment Report) 內公布之 GWP 值計算, 後續將再視蒙特婁議定書公告變動而更新。

HCFCs

編號	編號	化學名	化學名	化學式	GWP (AR4)
R-22	HCFC-22	二氟一氯甲烷	chlorodifluoromethane	CHClF ₂	1,810
R-141b	HCFC-141b	一氟二氯乙烷	1,1-dichloro-1-fluoroethane	CH ₃ CCl ₂ F	725
R-142b	HCFC-142b	二氟一氯乙烷	1-chloro-1,1-difluoroethane	CH ₃ CClF ₂	2,310
R-225	HCFC-225	五氟二氯丙烷	1,2-Dichloro-1,1,3,3,3-pentafluoropropane	C ₃ HF ₅ Cl ₂	595
R-123	HCFC-123	三氟二氯乙烷	2,2-dichloro-1,1,1-trifluoroethane	CHCl ₂ CF ₃	77.0000
R-124	HCFC-124	四氟一氯乙烷	2-chloro-1,1,1,2-tetrafluoroethane	CHClF ₂ CF ₃	609.0000

HFCs

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R-23	HFC-23	三氟甲烷	trifluoromethane (fluoroform)	CHF ₃	14,800
R-32	HFC-32	二氟甲烷	difluoromethane	CH ₂ F ₂	675
R-41	HFC-41	氟甲烷	fluoromethane (methyl fluoride)	CH ₃ F	92
R-125	HFC-125	五氟乙烷	pentafluoroethane	CHF ₂ CF ₃	3,500
R-134	HFC-134	1,1,2,2-四氟乙烷	1,1,2,2-tetrafluoroethane	CHF ₂ CHF ₂	1,100
R-134a	HFC-134a	1,1,1,2-四氟乙烷	1,1,1,2-tetrafluoroethane	CH ₂ FCF ₃	1,430
R-143	HFC-143	1,1,2-三氟乙烷	1,1,2-trifluoroethane	CH ₂ FCHF ₂	353
R-143a	HFC-143a	1,1,1-三氟乙烷	1,1,1-trifluoroethane	CH ₃ CF ₃	4,470
R-152	HFC-152	1,2-二氟乙烷	1,2-difluoroethane	CH ₂ FCH ₂ F	53
R-152a	HFC-152a	1,1-二氟乙烷	1,1-difluoroethane	CH ₃ CHF ₂	124

R-227ea	HFC-227ea	1,1,1,2,3,3,3-七氟丙烷	1,1,1,2,3,3,3-heptafluoropropane	CF ₃ CHF ₂ CF ₃	3,220
R-236cb	HFC-236cb	1,1,1,2,2,3-六氟丙烷	1,1,1,2,2,3-hexafluoropropane	CH ₂ FCF ₂ CF ₃	1,340
R-236ea	HFC-236ea	1,1,1,2,3,3-六氟丙烷	1,1,1,2,3,3-hexafluoropropane	CHF ₂ CHF ₂ CF ₃	1,370
R-236fa	HFC-236fa	1,1,1,3,3,3-六氟丙烷	1,1,1,3,3,3-hexafluoropropane	CF ₃ CH ₂ CF ₃	9,810
R-245ca	HFC-245ca	1,1,2,2,3-五氟丙烷	1,1,2,2,3-pentafluoropropane	CH ₂ FCF ₂ CHF ₂	693
R-245fa	HFC-245fa	1,1,1,3,3-五氟丙烷	1,1,1,3,3-pentafluoropropane	CHF ₂ CH ₂ CF ₃	1,030
R-365mfc	HFC-365mfc	1,1,1,3,3-五氟丁烷	1,1,1,3,3-pentafluorobutane	CF ₃ CH ₂ CF ₂ CH ₃	794
R-43-10 mee	HFC-43-10mee	1,1,1,2,2,3,4,5,5,5-十氟戊烷	1,1,1,2,2,3,4,5,5,5-decafluoropentane	CF ₃ CHFCHF ₂ CF ₂ CF ₃	1,640

HFCs 混合物

編號	GWP (AR4)	混合比例
R-400	10,450	R-12/114 (must be specified) (50.0/50.0) (60.0/40.0)
R-401A	1,182	R-22/152a/124 (53.0/13.0/34.0)
R-401B	1,288	R-22/152a/124 (61.0/11.0/28.0)
R-401C	933	R-22/152a/124 (33.0/15.0/52.0)
R-402A	2,788	R-125/290/22 (60.0/2.0/38.0)
R-402B	2,416	R-125/290/22 (38.0/2.0/60.0)
R-403A	3,124	R-290/22/218 (5.0/75.0/20.0)
R-403B	4,457	R-290/22/218 (5.0/56.0/39.0)
R-404A	3,922	R-125/143a/134a (44.0/52.0/4.0)
R-405A	5,328	R-22/152a/142b/C318 (45.0/7.0/5.5/42.5)
R-406A	1,943	R-22/600a/142b (55.0/4.0/41.0)
R-407A	2,107	R-32/125/134a (20.0/40.0/40.0)
R-407B	2,804	R-32/125/134a (10.0/70.0/20.0)
R-407C	1,774	R-32/125/134a (23.0/25.0/52.0)
R-407D	1,627	R-32/125/134a (15.0/15.0/70.0)
R-407E	1,552	R-32/125/134a (25.0/15.0/60.0)
R-407F	1,825	R-32/125/134a (30.0/30.0/40.0)
R-407G	1,463	R-32/125/134a (2.5/2.5/95.0)
R-407H	1,495	R-32/125/134a (32.5/15.0/52.5)

R-407I	1,459	R-32/125/134a (19.5/8.5/72.0)
R-408A	3,152	R-125/143a/22 (7.0/46.0/47.0)
R-409A	1,585	R-22/124/142b (60.0/25.0/15.0)
R-409B	1,560	R-22/124/142b (65.0/25.0/10.0)
R-410A	2,088	R-32/125 (50.0/50.0)
R-410B	2,229	R-32/125 (45.0/55.0)
R-411A	1,597	R-1270/22/152a) (1.5/87.5/11.0)
R-411B	1,711	R-1270/22/152a (3.0/94.0/3.0)
R-411C	1,730	HC-1270/HCFC-22/HFC-152a (3.0/95.5/1.5)
R-412A	2,286	R-22/218/142b (70.0/5.0/25.0)
R-413A	2,053	R-218/134a/600a (9.0/88.0/3.0)
R-414A	1,478	R-22/124/600a/142b (51.0/28.5/4.0/16.5)
R-414B	1,362	R-22/124/600a/142b (50.0/39.0/1.5/9.5)
R-415A	1,507	R-22/152a (82.0/18.0)
R-415B	546	R-22/152a (25.0/75.0)
R-416A	1,084	R-134a/124/600 (59.0/39.5/1.5)
R-417A	2,346	R-125/134a/600 (46.6/50.0/3.4)
R-417B	3,027	R-125/134a/600 (79.0/18.3/2.7)
R-417C	1,809	R-125/134a/600 (19.5/78.8/1.7)
R-418A	1,741	R-290/22/152a (1.5/96.0/2.5)
R-419A	2,967	R-125/134a/E170 (77.0/19.0/4.0)
R-419B	2,384	R-125/134a/E170 (48.5/48.0/3.5)
R-420A	1,536	R-134a/142b (88.0/12.0)

R-421A	2,631	R-125/134a (58.0/42.0)
R-421B	3,190	R-125/134a (85.0/15.0)
R-422A	3,143	R-125/134a/600a (85.1/11.5/3.4)
R-422B	2,526	R-125/134a/600a (55.0/42.0/3.0)
R-422C	3,085	R-125/134a/600a (82.0/15.0/3.0)
R-422D	2,729	R-125/134a/600a (65.1/31.5/3.4)
R-422E	2,592	R-125/134a/600a (58.0/39.3/2.7)
R-423A	2,280	134a/227ea (52.5/47.5)
R-424A	2,440	R-125/134a/600a/600/601a (50.5/47.0/0.9/1.0/0.6)
R-425A	1,505	R-32/134a/227ea (18.5/69.5/12)
R-426A	1,508	R-125/134a/600/601a (5.1/93.0/1.3/0.6)
R-427A	2,138	R-32/125/143a/134a (15.0/25.0/10.0/50.0)
R-427C	2,063	R-32/125/143a/134a (25.0/25.0/10.0/40.0)
R-428A	3,607	R-125/143a/290/600a (77.5/20.0/0.6/1.9)
R-429A	12	R-E170/152a/600a (60.0/10.0/30.0)
R-430A	94	R-152a/600a (76.0/24.0)
R-431A	36	R-290/152a (71.0/29.0)
R-432A	0	R-1270/E170 (80.0/20.0)
R-433A	0	R-1270/290 (30.0/70.0)
R-433B	0	R-1270/290 (5.0/95.0)
R-433C	0	R-1270/290 (25.0/75.0)
R-434A	3,245	R-125/143a/134a/600a (63.2/18.0/16.0/2.8)
R-435A	25	R-E170/152a (80.0/20.0)

R-436A	0	R-290/600a (56.0/44.0)
R-436B	0	R-290/600a (52.0/48.0)
R-436C	0	R-290/600a (95.0/5.0)
R-437A	1,805	R-125/134a/600/601 (19.5/78.5/1.4/0.6)
R-438A	2,264	R-32/125/134a/600/601a (8.5/45.0/44.2/1.7/0.6)
R-439A	1,983	R-32/125/600a (50.0/47.0/3.0)
R-440A	144	R-290/134a/152a (0.6/1.6/97.8)
R-441A	0	R-170/290/600a/600 (3.1/54.8/6.0/36.1)
R-442A	1,888	R-32/125/134a/152a/227ea (31.0/31.0/30.0/3.0/5.0)
R-443A	0	R-1270/290/600a (55.0/40.0/5.0)
R-444A	87	R-32/152a/1234ze(E) (12.0/5.0/83.0)
R-444B	293	R-32/152a/1234ze(E) (41.5/10.0/48.5)
R-445A	129	R-744/134a/1234ze(E) (6.0/9.0/85.0)
R-446A	459	R-32/1234ze(E)/600 (68.0/29.0/3.0)
R-447A	582	R-32/125/1234ze(E) (68.0/3.5/28.5)
R-447B	739	R-32/125/1234ze (E) (68.0/8.0/24.0)
R-448A	1,386	R-32/125/1234yf/134a/1234ze(E) (26.0/26.0/20.0/21.0/7.0)
R-448B	1,320	R-32/125/1234yf/134a/1234ze(E) (21.0/21.0/20.0/31.0/7.0)
R-449A	1,396	R-32 /125 /1234yf /134a (24.3/24.7/25.3/25.7)
R-449B	1,411	R-32/125/1234yf/134a (25.2/24.3/23.2/27.3)
R-449C	1,250	R-32/125/1234yf/134a (20.0/20.0/31.0/29.0)

R-450A	601	R-134a/1234ze(E) (42.0/58.0)
R-451A	146	R-1234yf/134a (89.8/10.2)
R-451B	160	R-1234yf/134a (88.8/11.2)
R-452A	2,139	R-32/125/1234yf (11.0/59.0/30.0)
R-452B	697	R-32/125/1234yf (67.0/7.0/26.0)
R-452C	2,219	R-32/125/1234yf (12.5/61.0/26.5)
R-453A	1,765	R-32/125/134a/227ea/600/601a (20.0/20.0/53.8/5.0/0.6/0.6)
R-454A	236	R-32/1234yf (35.0/65.0)
R-454B	465	R-32/1234yf (68.9/31.1)
R-454C	145	R-32/1234yf (21.5/78.5)
R-455A	145	R-744/32/1234yf (3.0/21.5/75.5)
R-456A	684	R-32/134a/1234ze(E) (6.0/45.0/49.0)
R-457A	136	R-32/1234yf/152a (18.0/70.0/12.0)
R-457B	249	R-32/1234yf/152a (35.0/55.0/10.0)
R-458A	1,650	R-32/125/134a/227ea/236fa (20.5/4.0/61.4/13.5/0.6)
R-459A	459	R-32/1234yf/1234ze(E) (68.0/26.0/6.0)
R-459B	142	LTR 11: R-32/1234yf/1234ze(E) (21.0/69.0/10.0)
R-460A	2,101	LTR 10: R-32/125/134a/1234ze(E) (12.0/52.0/14.0/22.0)
R-460B	1,350	LTR4X10: R-32/125/134a/1234ze(E) (28.0/25.0/20.0/27.0)
R-460C	762	R-32/125/134a/1234ze(E) (2.5/2.5/46.0/49.0)

R-461A	2,767	R-125/143a/134a/227ea/600a (55.0/5.0/32.0/5.0/3.0)
R-462A	2,249	R-32/125/143a/134a/600 (9.0/42.0/2.0/44.0/3.0)
R-463A	1,493	R-744/32/125/1234yf/134a (6.0/36.0/30.0/14.0/14.0)
R-464A	1,320	R-32/125/1234ze(E)/227ea (27.0/27.0/40.0/6.0)
R-465A	142	R-32/290/1234yf (21.0/7.9/71.1)
R-466A	733	R-32/125/131I (49.0/11.5/39.5)
R-467A	1,359	R-32/125/134a/600a (22.0/5.0/72.4/0.6)
R-468A	145	R-1132a/32/1234yf (3.5/21.5/75.0)
R-469A	1,357	R-744/32/125 (35.0/32.5/32.5)
R-470A	976	R-744/32/125/134a/1234ze(E)/227ea (10.0/17.0/19.0/7.0/44.0/3.0)
R-470B	748	R-744/32/125/134a/1234ze(E)/227ea (10.0/11.5/11.5/3.0/57.0/7.0)
R-471A	138	R-1234ze(E)/227ea/1336mzz(E) (78.7/4.3/17.0)
R-472A	353	R-744/32/134a (69.0/12.0/19.0)
R-473A	1,830	R-1132a/23/744/125 (20.0/10.0/60.0/10.0)
R-500	8,077	R-12/152a (73.8/26.2)
R-501	4,083	R-22/12 (75.0/25.0)
R-502	4,657	R-22/115 (48.8/51.2)
R-503	14,560	R-23/13 (40.1/59.9)
R-504	4,143	R-32/115 (48.2/51.8)
R-505	8,502	R-12/31 (78.0/22.0)
R-506	4,490	R-31/114 (55.1/44.9)

R-507A	3,985	R-125/143a (50.0/50.0)
R-508A	13,214	R-23/116 (39.0/61.0)
R-508B	13,396	R-23/116 (46.0/54.0)
R-509A	5,741	R-22/218 (44.0/56.0)
R-510A	0	R-E170/600a (88.0/12.0)
R-511A	0	R-290/E170 (95.0/5.0)
R-512A	189	R-134a/152a (5.0/95.0)
R-513A	629	R-1234yf/134a (56.0/44.0)
R-513B	593	R-1234yf/134a (58.5/41.5)
R-514A	0	R-1336mzz(Z)/1130(E) (74.7/25.3)
R-515A	386	R-1234ze (E)/227ea (88.0/12.0)
R-515B	287	R-1234ze(E)/227ea (91.1/8.9)
R-516A	139	R-1234yf/134a/152a (77.5/8.5/14.0)