

Global Warming Potential (GWP) of certain substances and mixtures that contain such substances, based on the Fourth Assessment Report of the Intergovernmental Panel on Climate Change and a hundred years time period

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Table 1: Global Warming Potentials (GWP₁₀₀) of hydrofluorocarbons, hydrochlorofluorocarbons, and perfluorocarbons (HFCs, HCFCs and PFCs), as well as other perfluorinated compounds

Industrial nomenclature	Chemical nomenclature	Formula / Composition	GWP ¹
Hydrofluorocarbons and hydrochlorofluorocarbons (HFCs and HCFCs)			
HFC-23	Trifluoromethane	CHF ₃	14 800
HFC-32	Difluoromethane	CH ₂ F ₂	675
HFC-41	Fluoromethane	CH ₃ F	92
HFC-125	1,1,1,2,2-Pentafluoroethane	CF ₃ -CHF ₂	3 500
HFC-134	1,1,2,2-Tetrafluoroethane	CHF ₂ -CHF ₂	1 100
HFC-134a	1,1,1,2-Tetrafluoroethane	CF ₃ -CH ₂ F	1 430
HFC-143	1,1,2-Trifluoroethane	CHF ₂ -CH ₂ F	353
HFC-143a	1,1,1-Trifluoroethane	CF ₃ -CH ₃	4 470
HFC-152	1,2-Difluoroethane	CH ₂ F-CH ₂ F	53
HFC-152a	1,1-Difluoroethane	CHF ₂ -CH ₃	124
HFC-161	Fluoroethane	CH ₂ F-CH ₃	12
HFC-227ea	1,1,1,2,3,3,3-Heptafluoropropane	CF ₃ -CHF-CF ₃	3 220
HFC-236cb	1,1,1,2,2,3-Hexafluoropropane	CF ₃ -CF ₂ -CH ₂ F	1 340
HFC-236ea	1,1,1,2,3,3-Hexafluoropropane	CF ₃ -CHF-CHF ₂	1 370
HFC-236fa	1,1,1,3,3,3-Hexafluoropropane	CF ₃ -CH ₂ -CF ₃	9 810
HFC-245ca	1,1,2,2,3-Pentafluoropropane	CHF ₂ -CF ₂ -CH ₂ F	693

Industrial nomenclature	Chemical nomenclature	Formula / Composition	GWP ¹
HFC-245fa	1,1,1,3,3-Pentafluoropropane	CF ₃ -CH ₂ -CHF ₂	1 030
HFC-365mfc	1,1,1,3,3-Pentafluorobutane	CF ₃ -CH ₂ -CF ₂ -CH ₃	794
HFC-43-10mee	1,1,1,2,2,3,4,5,5,5-Decafluoropentane	CF ₃ -CF ₂ -CHF-CHF-CF ₃	1 640
HFC-1234yf	2,3,3,3-Tetrafluoroprop-1-ene	CH ₂ =CF-CF ₃	4 ²
HFC-1234ze (E)	trans-1,3,3,3-Tetrafluoroprop-1-ene	CHF=CH-CF ₃ (E)	7 ²
HFC-1336mzz (Z)	cis-1,1,1,4,4,4-Hexafluorobut-2-ene	CF ₃ -CH=CH-CF ₃ (Z)	9 ²
HCFC-1224yd (Z)	cis-1-Chloro-2,3,3,3-tetrafluoroprop-1-ene	CHCl=CF-CF ₃ (Z)	1 ³
HCFC-1233xf	2-Chloro-3,3,3-trifluoroprop-1-ene	CH ₂ =CCl-CF ₃	1 ³
HCFC-1233zd (E)	trans-1-Chloro-3,3,3-trifluoroprop-1-ene	CHCl=CH-CF ₃ (E)	4,5 ²
Perfluorocarbons (PFC)			
PFC-14	Tetrafluoromethane (Perfluoromethane)	CF ₄	7 390
PFC-116	Hexafluoroethane (Perfluoroethane)	C ₂ F ₆	12 200
PFC-216	Hexafluorocyclopropane (Perfluorocyclopropane)	c-C ₃ F ₆	17 340
PFC-218	Oktafluoropropane (Perfluoropropane)	C ₃ F ₈	8 830
PFC-c-318	Octafluorocyclobutane (Perfluorocyclobutane)	c-C ₄ F ₈	10 300
PFC-3-1-10	Decafluorobutane (Perfluorobutane)	C ₄ F ₁₀	8 860
PFC-4-1-12	Dodecafluoropentane (Perfluoropentane)	C ₅ F ₁₂	9 160
PFC-5-1-14	Tetradecafluorohexane (Perfluorohexane)	C ₆ F ₁₄	9 300
PFC-9-1-18	Octadecafluorodecaline (Perfluorodecaline)	C ₁₀ F ₁₈	7 500
Other perfluorinated compounds			
	Sulphur hexafluoride	SF ₆	22 800
	Nitrogen trifluoride	NF ₃	17 200
	Trifluoromethyl sulphur pentafluoride	SF ₅ CF ₃	17 700
	Trifluoroiodomethane	CF ₃ I	0,4

¹ If not indicated otherwise, GWP₁₀₀ from: Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, 996 pp.

² GWP₁₀₀ from: WMO (World Meteorological Organization), Scientific Assessment of Ozone Depletion: 2010, Global Ozone Research and Monitoring Project–Report No. 52, Geneva, Switzerland, 2010.

³ Standard value, GWP₁₀₀ not available.

Table 2: Global Warming Potentials (GWP₁₀₀) of chlorofluoroethers, fluorinated ethers (HCFE, HFE), fluorinated alcohols and perfluoropolyethers (PFPE)

Industrial nomenclature	Chemical nomenclature	Formula / Composition	GWP ¹
Chlorofluoroethers and fluorinated ethers (HCFE und HFE)			
HCFE-235ca2 (Enflurane)		CHF ₂ -O-CF ₂ -CHFCl	583 ⁴
HCFE-235da2 (Isoflurane)		CHF ₂ -O-CHCl-CF ₃	350
HFE-125		CHF ₂ -O-CF ₃	14 900
HFE-134 (HG-00)		CHF ₂ -O-CHF ₂	6 320
HFE-143a		CH ₃ -O-CF ₃	756
HFE-227ea		CF ₃ -CHF-O-CF ₃	1 540
HFE-236ca12 (HG-10)		CHF ₂ -O-CF ₂ -O-CHF ₂	2 800
HFE-236ea2 (Desflurane)		CHF ₂ -O-CHF-CF ₃	989
HFE-236fa		CF ₃ -CH ₂ -O-CF ₃	487
HFE-245cb2		CF ₃ -CF ₂ -O-CH ₃	708
HFE-245fa1		CHF ₂ -CH ₂ -O-CF ₃	286
HFE-245fa2		CHF ₂ -O-CH ₂ -CF ₃	659
HFE-254cb2		CH ₃ -O-CF ₂ -CHF ₂	359
HFE-263fb2		CF ₃ -CH ₂ -O-CH ₃	11
HFE-329mcc2		CF ₃ -CF ₂ -O-CF ₂ -CHF ₂	919
HFE-338mcf2		CF ₃ -CH ₂ -O-CF ₂ -CF ₃	552
HFE-338mmz1		(CF ₃) ₂ CH-O-CHF ₂	380
HFE-338pcc13 (HG-01)		CHF ₂ -O-CF ₂ -CF ₂ -O-CHF ₂	1 500
HFE-347mcc3 (HFE-7000)		CH ₃ -O-CF ₂ -CF ₂ -CF ₃	575
HFE-347mcf2		CHF ₂ -CH ₂ -O-CF ₂ -CF ₃	374
HFE-347mmy1		(CF ₃) ₂ CF-O-CH ₃	343
HFE-347mmz1 (Sevoflurane)		CH ₂ F-O-CH(CF ₃) ₂	216 ⁴
HFE-347pcf2		CHF ₂ -CF ₂ -O-CH ₂ -CF ₃	580
HFE-356mec3		CH ₃ -O-CF ₂ -CHF-CF ₃	101
HFE-356mm1		(CF ₃) ₂ CH-O-CH ₃	27

Industrial nomenclature	Chemical nomenclature	Formula / Composition	GWP ¹
HFE-356pcc3		CH ₃ -O-CF ₂ -CF ₂ -CHF ₂	110
HFE-356pcf2		CHF ₂ -CH ₂ -O-CF ₂ -CHF ₂	265
HFE-356pcf3		CHF ₂ -O-CH ₂ -CF ₂ -CHF ₂	502
HFE-365mcf3		CF ₃ -CF ₂ -CH ₂ -O-CH ₃	11
HFE-374pc2		CHF ₂ -CF ₂ -O-CH ₂ -CH ₃	557
HFE-449sl (HFE-7100)		C ₄ F ₉ -O-CH ₃	297
HFE-569sf2 (HFE-7200)		C ₄ F ₉ -O-C ₂ H ₅	59
HFE-43- 10pccc124 (H-Galden 1040x)		CHF ₂ -O-CF ₂ -O-C ₂ F ₄ -O-CHF ₂	1 870
Fluorinated alcohols			
	2,2,3,3,3-Pentafluoropropan-1-ol	CF ₃ -CF ₂ -CH ₂ -OH	42
	Bis(trifluoromethyl)methanol	(CF ₃) ₂ CH-OH	195
	Octafluortetramethylen- hydroxymethyl-group	-(CF ₂) ₄ CH(OH)-	73
Perfluoropolyether (PFPE)			
PFPME	Perfluoropolymethylisopropylether	CF ₃ (O-CF(CF ₃)CF ₂) _n -(O-CF ₂) _m - O-CF ₃ (n,m=1)	10 300

¹ If not indicated otherwise GWP₁₀₀ taken from: Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, 996 pp.

⁴ GWP₁₀₀ from: Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, 1535 pp.

Table 3: Global Warming Potentials (GWP₁₀₀) of HFC-mixtures / Refrigerant blends

Industrial nomenclature	Chemical nomenclature	Formula / Composition	GWP ^{1,5}
HFC-mixtures / Refrigerant blends			
R-404A		HFC-125 (CHF ₂ -CF ₃): 44% HFC-134a (CH ₂ F-CF ₃): 4% HFC-143a (CH ₃ -CF ₃): 52%	3 922
R-407A		HFC-32 (CH ₂ F ₂): 20% HFC-125 (CHF ₂ -CF ₃): 40% HFC-134a (CF ₃ -CH ₂ F): 40%	2 107
R-407B		HFC-32 (CH ₂ F ₂): 10% HFC-125 (CHF ₂ -CF ₃): 70% HFC-134a (CF ₃ -CH ₂ F): 20%	2 804
R-407C		HFC-32 (CH ₂ F ₂): 23% HFC-125 (CHF ₂ -CF ₃): 25% HFC-134a (CH ₂ F-CF ₃): 52%	1 774
R-407D		HFC-32 (CH ₂ F ₂): 15% HFC-125 (CHF ₂ -CF ₃): 15% HFC-134a (CF ₃ -CH ₂ F): 70%	1 627
R-407E		HFC-32 (CH ₂ F ₂): 25% HFC-125 (CHF ₂ -CF ₃): 15% HFC-134a (CF ₃ -CH ₂ F): 60%	1 552
R-407F		HFC-32 (CH ₂ F ₂): 30% HFC-125 (CHF ₂ -CF ₃): 30% HFC-134a (CF ₃ -CH ₂ F): 40%	1 825
R-407G		HFC-32 (CH ₂ F ₂): 2,5% HFC-125 (CHF ₂ -CF ₃): 2,5% HFC-134a (CF ₃ -CH ₂ F): 95%	1 463
R-407H		HFC-32 (CH ₂ F ₂): 32,5% HFC-125 (CHF ₂ -CF ₃): 15% HFC-134a (CF ₃ -CH ₂ F): 52,5%	1 495
R-407I		HFC-32 (CH ₂ F ₂): 19,5% HFC-125 (CHF ₂ -CF ₃): 8,5% HFC-134a (CF ₃ -CH ₂ F): 72%	1 459
R-410A		HFC-32 (CH ₂ F ₂): 50% HFC-125 (CHF ₂ -CF ₃): 50%	2 088
R-410B		HFC-32 (CH ₂ F ₂): 45% HFC-125 (CHF ₂ -CF ₃): 55%	2 229
R-413A		HFC-134a (CH ₂ F-CF ₃): 88% PFC-218 (CF ₃ -CF ₂ -CF ₃): 9% R-600a (CH(CH ₃) ₃): 3%	2 053
R-417A		HFC-125 (CHF ₂ -CF ₃): 46,6% HFC-134a (CH ₂ F-CF ₃): 50% R-600 (CH ₃ -CH ₂ -CH ₂ -CH ₃): 3,4%	2 346

Industrial nomenclature	Chemical nomenclature	Formula / Composition	GWP ^{1,5}
R-417B		HFC-125 (CHF ₂ -CF ₃): 79% HFC-134a (CH ₂ F-CF ₃): 18,3% R-600 (CH ₃ -CH ₂ -CH ₂ -CH ₃): 2,7%	3 027
R-417C		HFC-125 (CHF ₂ -CF ₃): 19,5% HFC-134a (CH ₂ F-CF ₃): 78,8% R-600 (CH ₃ -CH ₂ -CH ₂ -CH ₃): 1,7%	1 809
R-419A		HFC-125 (CHF ₂ -CF ₃): 77% HFC-134a (CF ₃ -CH ₂ F): 19% R-E170 (CH ₃ -O-CH ₃): 4%	2 967
R-419B		HFC-125 (CHF ₂ -CF ₃): 48,5% HFC-134a (CF ₃ -CH ₂ F): 48% R-E170 (CH ₃ -O-CH ₃): 3,5%	2 384
R-421A		HFC-125 (CHF ₂ -CF ₃): 58% HFC-134a (CF ₃ -CH ₂ F): 42%	2 631
R-421B		HFC-125 (CHF ₂ -CF ₃): 85% HFC-134a (CF ₃ -CH ₂ F): 15%	3 190
R-422A		HFC-125 (CHF ₂ -CF ₃): 85,1% HFC-134a (CF ₃ -CH ₂ F): 11,5% R-600a (CH(CH ₃) ₃): 3,4%	3 143
R-422B		HFC-125 (CHF ₂ -CF ₃): 55% HFC-134a (CF ₃ -CH ₂ F): 42% R-600a (CH(CH ₃) ₃): 3%	2 526
R-422C		HFC-125 (CHF ₂ -CF ₃): 82% HFC-134a (CF ₃ -CH ₂ F): 15% R-600a (CH(CH ₃) ₃): 3%	3 085
R-422D		HFC-125 (CHF ₂ CF ₃): 65,1% HFC-134a (CF ₃ -CH ₂ F): 31,5% R-600a (CH(CH ₃) ₃): 3,4%	2 729
R-422E		HFC-125 (CHF ₂ CF ₃): 58% HFC-134a (CF ₃ -CH ₂ F): 39,3% R-600a (CH(CH ₃) ₃): 2,7%	2 592
R-423A		HFC-134a (CF ₃ -CH ₂ F): 52,5% HFC-227ea (CF ₃ -CHF-CF ₃): 47,5%	2 280
R-424A		HFC-125 (CHF ₂ -CF ₃): 50,5% HFC-134a (CF ₃ -CH ₂ F): 47% R-600 (CH ₃ -CH ₂ -CH ₂ -CH ₃): 1% R-600a (CH(CH ₃) ₃): 0,9% R-601a (CH ₃ CH(CH ₃)CH ₂ CH ₃): 0,6%	2 440
R-425A		HFC-32 (CH ₂ F ₂): 18,5% HFC-134a (CF ₃ -CH ₂ F): 69,5% HFC-227ea (CF ₃ -CHF-CF ₃): 12%	1 505

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R-426A		HFC-125 (CHF ₂ -CF ₃): 5,1% HFC-134a (CF ₃ -CH ₂ F): 93% R-600 (CH ₃ -CH ₂ -CH ₂ -CH ₃): 1,3% R-601a (CH ₃ CH(CH ₃)CH ₂ CH ₃): 0,6%	1 508
R-427A		HFC-32 (CH ₂ F ₂): 15% HFC-125 (CHF ₂ -CF ₃): 25% HFC-134a (CF ₃ -CH ₂ F): 50% HFC-143a (CH ₃ -CF ₃): 10%	2 138
R-428A		HFC-125 (CHF ₂ -CF ₃): 77,5% HFC-143a (CH ₃ -CF ₃): 20% R-290 (CH ₃ -CH ₂ -CH ₃): 0,6% R-600a (CH(CH ₃) ₃): 1,9%	3 607
R-429A		HFC-152a (CHF ₂ -CH ₃): 10% R-E170 (CH ₃ -O-CH ₃): 60% R-600a (CH(CH ₃) ₃): 30%	14
R-430A		HFC-152a (CHF ₂ -CH ₃): 76% R-600a (CH(CH ₃) ₃): 24%	95
R-431A		HFC-152a (CHF ₂ -CH ₃): 29% R-290 (CH ₃ -CH ₂ -CH ₃): 71%	38
R-434A		HFC-125 (CHF ₂ -CF ₃): 63,2% HFC-134a (CF ₃ -CH ₂ F): 16% HFC-143a (CH ₃ -CF ₃): 18% R-600a (CH(CH ₃) ₃): 2,8%	3 245
R-435A		HFC-152a (CHF ₂ -CH ₃): 20% R-E170 (CH ₃ -O-CH ₃): 80%	26
R-437A		HFC-125 (CHF ₂ -CF ₃): 19,5% HFC-134a (CF ₃ -CH ₂ F): 78,5% R-600 (CH ₃ -CH ₂ -CH ₂ -CH ₃): 1,4% R-601 (CH ₃ -CH ₂ -CH ₂ -CH ₂ -CH ₃): 0,6%	1 805
R-438A		HFC-32 (CH ₂ F ₂): 8,5% HFC-125 (CHF ₂ -CF ₃): 45% HFC-134a (CF ₃ -CH ₂ F): 44,2% R-600 (CH ₃ -CH ₂ -CH ₂ -CH ₃): 1,7% R-601a (CH ₃ CH(CH ₃)CH ₂ CH ₃): 0,6%	2 265
R-439A		HFC-32 (CH ₂ F ₂): 50% HFC-125 (CHF ₂ -CF ₃): 47% R-600a (CH(CH ₃) ₃): 3%	1 983
R-440A		HFC-134a (CF ₃ -CH ₂ F): 1,6% HFC-152a (CHF ₂ -CH ₃): 97,8% R-290 (CH ₃ -CH ₂ -CH ₃): 0,6%	144

Industrial nomenclature	Chemical nomenclature	Formula / Composition	GWP ^{1,5}
R-442A		HFC-32 (CH ₂ F ₂): 31% HFC-125 (CHF ₂ -CF ₃): 31% HFC-134a (CF ₃ -CH ₂ F): 30% HFC-152a (CHF ₂ -CH ₃): 3% HFC-227ea (CF ₃ -CHF-CF ₃): 5%	1 888
R-444A		HFC-32 (CH ₂ F ₂): 12% HFC-152a (CHF ₂ -CH ₃): 5% HFC-1234ze (CHF=CH-CF ₃): 83%	93
R-444B		HFC-32 (CH ₂ F ₂): 41,5% HFC-152a (CHF ₂ -CH ₃): 10% HFC-1234ze (CHF=CH-CF ₃): 48,5%	296
R-445A		HFC-134a (CF ₃ -CH ₂ F): 9% HFC-1234ze (CHF=CH-CF ₃): 85% R-744 (CO ₂): 6%	135
R-446A		HFC-32 (CH ₂ F ₂): 68% HFC-1234ze (CHF=CH-CF ₃): 29% R-600 (CH ₃ -CH ₂ -CH ₂ -CH ₃): 3%	461
R-447A		HFC-32 (CH ₂ F ₂): 68% HFC-125 (CHF ₂ -CF ₃): 3,5% HFC-1234ze (CHF=CH-CF ₃): 28,5%	583
R-447B		HFC-32 (CH ₂ F ₂): 68% HFC-125 (CHF ₂ -CF ₃): 8% HFC-1234ze (CHF=CH-CF ₃): 24%	741
R-448A		HFC-32 (CH ₂ F ₂): 26% HFC-125 (CHF ₂ -CF ₃): 26% HFC-134a (CF ₃ -CH ₂ F): 21% HFC-1234yf (CH ₂ =CF-CF ₃): 20% HFC-1234ze (CHF=CH-CF ₃): 7%	1 387
R-449A		HFC-32 (CH ₂ F ₂): 24,3% HFC-125 (CHF ₂ -CF ₃): 24,7% HFC-134a (CF ₃ -CH ₂ F): 25,7% HFC-1234yf (CH ₂ =CF-CF ₃): 25,3%	1 397
R-449B		HFC-32 (CH ₂ F ₂): 25,2% HFC-125 (CHF ₂ -CF ₃): 24,3% HFC-134a (CF ₃ -CH ₂ F): 27,3% HFC-1234yf (CH ₂ =CF-CF ₃): 23,2%	1 412
R-449C		HFC-32 (CH ₂ F ₂): 20% HFC-125 (CHF ₂ -CF ₃): 20% HFC-134a (CF ₃ -CH ₂ F): 29% HFC-1234yf (CH ₂ =CF-CF ₃): 31%	1 251
R-450A		HFC-134a (CF ₃ -CH ₂ F): 42% HFC-1234ze (CHF=CH-CF ₃): 58%	605
R-451A		HFC-134a (CF ₃ -CH ₂ F): 10,2% HFC-1234yf (CH ₂ =CF-CF ₃): 89,8%	149

Industrial nomenclature	Chemical nomenclature	Formula / Composition	GWP ^{1,5}
R-451B		HFC-134a (CF ₃ -CH ₂ F): 11,2% HFC-1234yf (CH ₂ =CF-CF ₃): 88,8%	164
R-452A		HFC-32 (CH ₂ F ₂): 11% HFC-125 (CHF ₂ -CF ₃): 59% HFC-1234yf (CH ₂ =CF-CF ₃): 30%	2 140
R-452B		HFC-32 (CH ₂ F ₂): 67% HFC-125 (CHF ₂ -CF ₃): 7% HFC-1234yf (CH ₂ =CF-CF ₃): 26%	698
R-452C		HFC-32 (CH ₂ F ₂): 12,5% HFC-125 (CHF ₂ -CF ₃): 61% HFC-1234yf (CH ₂ =CF-CF ₃): 26,5%	2 220
R-453A		HFC-32 (CH ₂ F ₂): 20% HFC-125 (CHF ₂ -CF ₃): 20% HFC-134a (CF ₃ -CH ₂ F): 53,8% HFC-227ea (CF ₃ -CHF-CF ₃): 5% R-600 (CH ₃ -CH ₂ -CH ₂ -CH ₃): 0,6% R-601a (CH ₃ CH(CH ₃)CH ₂ CH ₃): 0,6%	1 765
R-454A		HFC-32 (CH ₂ F ₂): 35% HFC-1234yf (CH ₂ =CF-CF ₃): 65%	239
R-454B		HFC-32 (CH ₂ F ₂): 68,9% HFC-1234yf (CH ₂ =CF-CF ₃): 31,1%	466
R-454C		HFC-32 (CH ₂ F ₂): 21,5% HFC-1234yf (CH ₂ =CF-CF ₃): 78,5%	148
R-455A		HFC-32 (CH ₂ F ₂): 21,5% HFC-1234yf (CH ₂ =CF-CF ₃): 75,5% R-744 (CO ₂): 3%	148
R-456A		HFC-32 (CH ₂ F ₂): 6% HFC-134a (CF ₃ -CH ₂ F): 45% HFC-1234ze (CHF=CH-CF ₃): 49%	687
R-457A		HFC-32 (CH ₂ F ₂): 18% HFC-152a (CHF ₂ -CH ₃): 12% HFC-1234yf (CH ₂ =CF-CF ₃): 70%	139
R-458A		HFC-32 (CH ₂ F ₂): 20,5% HFC-125 (CHF ₂ -CF ₃): 4% HFC-134a (CF ₃ -CH ₂ F): 61,4% HFC-227ea (CF ₃ -CHF-CF ₃): 13,5% HFC-236fa (CF ₃ -CH ₂ -CF ₃): 0,6%	1 650
R-459A		HFC-32 (CH ₂ F ₂): 68% HFC-1234yf (CH ₂ =CF-CF ₃): 26% HFC-1234ze (CF ₃ -CH=CHF): 6%	460
R-459B		HFC-32 (CH ₂ F ₂): 21% HFC-1234yf (CH ₂ =CF-CF ₃): 69% HFC-1234ze (CF ₃ -CH=CHF): 10%	145

Industrial nomenclature	Chemical nomenclature	Formula / Composition	GWP ^{1,5}
R-460A		HFC-32 (CH ₂ F ₂): 12% HFC-125 (CHF ₂ -CF ₃): 52% HFC-134a (CF ₃ -CH ₂ F): 14% HFC-1234ze (CHF=CH-CF ₃): 22%	2 103
R-460B		HFC-32 (CH ₂ F ₂): 28% HFC-125 (CHF ₂ -CF ₃): 25% HFC-134a (CF ₃ -CH ₂ F): 20% HFC-1234ze (CHF=CH-CF ₃): 27%	1 352
R-460C		HFC-32 (CH ₂ F ₂): 2,5% HFC-125 (CHF ₂ -CF ₃): 2,5% HFC-134a (CF ₃ -CH ₂ F): 46% HFC-1234ze (CHF=CH-CF ₃): 49%	766
R-461A		HFC-125 (CHF ₂ -CF ₃): 55% HFC-134a (CH ₂ F-CF ₃): 32% HFC-143a (CH ₃ -CF ₃): 5% HFC-227ea (CF ₃ -CHF-CF ₃): 5% R-600a (CH(CH ₃) ₃): 3%	2 767
R-462A		HFC-32 (CH ₂ F ₂): 9% HFC-125 (CHF ₂ -CF ₃): 42% HFC-134a (CH ₂ F-CF ₃): 44% HFC-143a (CH ₃ -CF ₃): 2% R-600 (CH ₃ -CH ₂ -CH ₂ -CH ₃): 3%	2 249
R-463A		HFC-32 (CH ₂ F ₂): 36% HFC-125 (CHF ₂ -CF ₃): 30% HFC-134a (CH ₂ F-CF ₃): 14% HFC-1234yf (CH ₂ =CF-CF ₃): 14% R-744 (CO ₂): 6%	1 494
R-464A		HFC-32 (CH ₂ F ₂): 27% HFC-125 (CHF ₂ -CF ₃): 27% HFC-227ea (CF ₃ -CHF-CF ₃): 6% HFC-1234ze (CHF=CH-CF ₃): 40%	1 323
R-465A		HFC-32 (CH ₂ F ₂): 21% HFC-1234yf (CH ₂ =CF-CF ₃): 71,1% R-290 (CH ₃ -CH ₂ -CH ₃): 7,9%	145
R-466A		HFC-32 (CH ₂ F ₂): 49% HFC-125 (CHF ₂ -CF ₃): 11,5% CF ₃ I: 39,5%	733
R-507A		HFC-125 (CHF ₂ -CF ₃): 50% HFC-143a (CH ₃ -CF ₃): 50%	3 985
R-508A		HFC-23 (CHF ₃): 39% PFC-116 (C ₂ F ₆): 61%	13 214
R-508B		HFC-23 (CHF ₃): 46% PFC-116 (C ₂ F ₆): 54%	13 396

Industrial nomenclature	Chemical nomenclature	Formula / Composition	GWP ^{1,5}
R-511A		HFC-152a (CHF ₂ -CH ₃): 5% R-290 (CH ₃ -CH ₂ -CH ₃): 95%	9
R-512A		HFC-134a (CF ₃ -CH ₂ F): 5% HFC-152a (CHF ₂ -CH ₃): 95%	189
R-513A		HFC-134a (CF ₃ -CH ₂ F): 44% HFC-1234yf (CH ₂ =CF-CF ₃): 56%	631
R-513B		HFC-134a (CF ₃ -CH ₂ F): 41,5% HFC-1234yf (CH ₂ =CF-CF ₃): 58,5%	596
R-514A		HFC-1336mzz (CF ₃ -CH=CH-CF ₃): 74,7% R-1130 (CHCl=CHCl): 25,3%	7
R-515A		HFC-227ea (CF ₃ -CHF-CF ₃): 12% HFC-1234ze (CHF=CH-CF ₃): 88%	393
R-516A		HFC-134a (CF ₃ -CH ₂ F): 8,5% HFC-152a (CHF ₂ -CH ₃): 14% HFC-1234yf (CH ₂ =CF-CF ₃): 77,5%	142
Isceon® MO89		HFC-125 (CF ₃ -CHF ₂): 86% PFC-218 (CF ₃ -CF ₂ -CF ₃): 9% R-290 (CH ₃ -CH ₂ -CH ₃): 5%	3 805

Table 4: Global Warming Potentials (GWP₁₀₀) of halogen free substances

Industrial nomenclature	Chemical nomenclature	Formula / Composition	GWP ¹
Halogen free substances			
	Methane	CH ₄	25
R-170	Ethane	CH ₃ -CH ₃	6
R-290	Propane	CH ₃ -CH ₂ -CH ₃	3
R-600	n-Butane	CH ₃ -CH ₂ -CH ₂ -CH ₃	4
R-600a	i-Butane (Isobutane)	(CH ₃) ₂ -CH-CH ₃	3
R-601	n-Pentane	CH ₃ -CH ₂ -CH ₂ -CH ₂ -CH ₃	5 ⁵
R-601a	i-Pentane (Isopentane)	(CH ₃) ₂ -CH-CH ₂ -CH ₃	5 ⁵
R-E170	Dimethyl ether (DME)	CH ₃ -O-CH ₃	1
R-610	Diethyl ether	CH ₃ -CH ₂ -O-CH ₂ -CH ₃	4
R-611	Methyl formate	HCOOCH ₃	25
R-702	Hydrogen	H ₂	6
R-717	Ammonia	NH ₃	0
R-718	Water	H ₂ O	0
R-723	Dimethyl ether/Ammonia - Blend	R717 (NH ₃): 60% RE170 (CH ₃ -O-CH ₃): 40%	1
R-744	Carbon dioxide	CO ₂	1
R-1150	Ethene (Ethylene)	CH ₂ =CH ₂	4
R-1270	Propene (Propylene)	CH ₂ =CH-CH ₃	2

¹ If not indicated otherwise GWP₁₀₀ taken from: Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, 996 pp.

⁵ Standard value based on GWP₁₀₀ of other hydrocarbons.

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