

Regulated Substance Key

This document provides information on fluorinated greenhouse gases (f-gases) regulated under 6 NYCRR Part 494 and Part 495. Under Part 495, regulated substances include any f-gas with a 20-year Global Warming Potential (GWP20) value that is greater than 10. Under Part 494, regulated substances that are intended for specific uses¹ with a GWP20 above 10 or that are reasonably anticipated to have GWP20 greater than 10; these are most commonly CFCs, HCFCs, HFCs, or blends thereof. Comment or questions on this document can be emailed to climate.regs@dec.ny.gov with the subject “Part 494/495 Regulated Substances.” All GWP values in this document are derived from the IPCC (2021) Sixth Assessment Report, which is incorporated by reference into Parts 494 and 495, unless otherwise noted. The Part 494/495 regulations refer to GWP20 as required by the Climate Leadership and Community Protection Act. GWP100 values are provided as a reference for provisions in Part 494 that are incorporated from the EPA Technology Transitions regulation (40 CFR Part 84 Subpart B). The lists below are not exhaustive, additional information on other GHGs can be found in the references provided. Note that many of the regulated substances listed here may be regulated under other, additional laws such as those related to hazardous substances or ozone-depleting substances.

References	
	IPCC (2021) WG1. Sixth Assessment Report
*	WMO (2022) Scientific Assessment of Ozone Depletion
†	Appendix A to 40 CFR 84, 40 CFR 84.64, or EPA website ²

Table 1. F-Gas Groupings (WMO, 2022)

Grouping	GWP20 Range*	# of Substances	# of Regulated Substances	Example Regulated Substances
Chlorofluorocarbons (CFCs)	4740-12700	15	15	CFC-11, CFC-12
Hydrochlorofluorocarbons (HCFCs)	168-5690	274	274	HCFC-22
Hydrofluorocarbons (HFCs)	17-12400	163	156	HFC-134a
Unsaturated CFCs and HCFCs	2-14	19	3	HCFO-1233zd(E)
Unsaturated HFCs	<1-64	32	7	HFO-1336mzz(E)
Fully Fluorinated Species	<1-23500	32	23	PFC-14, SF6, NF3
Special Compounds	<1-7130	10	3	Sulfonyl fluoride
Other groupings³	<1-15200	157	107	HFE-236ea2 (desflurane)

¹ See Part 494 for covered products and equipment in air-conditioning, refrigeration, foams, aerosols, and solvents.

² <https://www.epa.gov/climate-hfcs-reduction/technology-transitions-gwp-reference-table>

³ F-gases among halons, unsaturated bromofluorocarbons, unsaturated bromochlorofluorocarbons, halogenated ethers, fluoroesters, halogenated alcohols, halogenated ketones, halogenated aldehydes, iodo-carbons

Table 2. Example Regulated Substances

Substance	GWP20	GWP100	Other naming conventions	CAS RN
CFC-11	8320	6230	R-11, CCl ₃ F, Trichlorofluoromethane	75-69-4
CFC-12	12700	12500	R-12, CCl ₂ F ₂ , Dichlorodifluoromethane	75-71-8
CFC-13	12400	16200	R-13, CClF ₃ , Chlorotrifluoromethane	75-72-9
CFC-113	6860	6520	R-113, CCl ₂ FCClF ₂ , 1,1,2-Trichloro- 1,2,2-trifluoroethane	76-13-1
CFC-114	8260	9430	R-114, CClF ₂ CClF ₂ , 1,2-Dichloro- 1,1,2,2-tetrafluoroethane	76-14-2
CFC-115	7410	9600	R-115, CClF ₂ CF ₃ , Chloropentafluoroethane	76-15-3
HCFC-22	5690	1960	R-22, CHF ₂ Cl, Chlorodifluoromethane	75-45-6
HCFC-123	325	90.4	R-123, CHCl ₂ CF ₃ , 2,2-Dichloro-1,1,1- trifluoroethane	306-83-2
HCFC-124	2070	597	R-124, CHClFCF ₃ , 2-Chloro-1,1,1,2- tetrafluoroethane	2837-89-0
HCFC-141b	2710	860	R-141b, CH ₃ CCl ₂ F, 1,1-Dichloro-1- fluoroethane	1717-00-6
HCFC-142b	5510	2300	R-142b, CH ₃ CClF ₂ , 1-Chloro-1,1- difluoroethane	75-68-3
HFC-23	12400	14800 [†]	R-23, CHF ₃ , Trifluoromethane	75-46-7
HFC-32	2690	675 [†]	R-32, CH ₂ F ₂ , Difluoromethane	75-10-5
HFC-41	485	92 [†]	R-41, CH ₃ F, Fluoromethane	593-53-3
HFC-125	6740	3500 [†]	R-125, CHF ₂ CF ₃ , Pentafluoroethane	354-33-6
HFC-134	3900	1100 [†]	R-134, CHF ₂ CHF ₂ , 1,1,2,2- Tetrafluoroethane	359-35-3
HFC-134a	4140	1430 [†]	R-134a, CH ₂ FCF ₃ , 1,1,1,2- Tetrafluoroethane	811-97-2
HFC-143	1300	353 [†]	R-143, CH ₂ FCHF ₂ , 1,1,2- Trifluoroethane	430-66-0
HFC-143a	7840	4470 [†]	R-143a, CH ₃ CF ₃ , 1,1,1- Trifluoroethane	420-46-2
HFC-152	77.6	53 [†]	R-152, CH ₂ FCH ₂ F, 1,2- Difluoroethane	624-72-6
HFC-152a	591	124 [†]	R-152a, CH ₃ CHF ₂ , 1,1- Difluoroethane	75-37-6
HFC-227ea	5850	3220 [†]	R-227ea, CF ₃ CHFCF ₃ , 1,1,1,2,3,3,3- Heptafluoropropane	431-89-0
HFC-236cb	3750	1340 [†]	R-236cb, CH ₂ FCF ₂ CF ₃ , 1,1,1,2,2,3- Hexafluoropropane	677-56-5
HFC-236ea	4420	1370 [†]	R-236ea, CHF ₂ CHFCF ₃ , 1,1,1,2,2,3- Hexafluoropropane	431-63-0
HFC-236fa	7450	9810 [†]	R-236fa, CF ₃ CH ₂ CF ₃ , 1,1,1,3,3,3- Hexafluoropropane	690-39-1

Substance	GWP20	GWP100	Other naming conventions	CAS RN
HFC-245ca	2680	693 [†]	R-245ca, CH ₂ FCF ₂ CHF ₂ , 1,1,2,2,3-Pentafluoropropane	679-86-7
HFC-245fa	3170	1030 [†]	R-245fa, CHF ₂ CH ₂ CF ₃ , 1,1,1,3,3-Pentafluoropropane	460-73-1
HFC-365mfc	2920	794 [†]	R-365mfc, CF ₃ CH ₂ CF ₂ CH ₃ , 1,1,1,3,3-Pentafluorobutane	138495-42-8
HFC-43-10mee	3960	1640 [†]	R-43-10mee, CF ₃ CHFCHFCF ₂ CF ₃ , 1,1,1,2,3,4,4,5,5,5-Decafluoropentane	138495-42-8
HFO-1336mzz(E)	64.3	17.9	R-1336mzz(E), (E)-CF ₃ CH=CHCF ₃ , Trans-1,1,1,4,4,4-hexafluoro-2-butene	66711-86-2
HCFO-1233zd(E) or HFO-1233zd(E)	14	4 [†]	R-1233zd(E), (E)-CF ₃ CH=CHCl, Trans-1-chloro-3,3,3-trifluoro-1-propene	102687-65-0
PFC-116	8940	12400	R-116, C ₂ F ₆ , Perfluoroethane, Hexafluoroethane	76-16-4
PFC-218	6770	831	R-218, C ₃ F ₈ , Perfluoropropane, Octafluoropropane	76-19-7
PFC-c318	7400	912	R-318, c-C ₄ F ₈ , Perfluorocyclobutane, Octafluorocyclobutane	115-25-3
Sulfur hexafluoride	18200	24300	SF ₆ , Hexafluorosulfur	2551-62-4
Nitrogen trifluoride	13400	17400	NF ₃ , Trifluorammonia, Trifluorammine	7783-54-2
Sulfuryl fluoride	7510	4630	SO ₂ F ₂	2699-79-8
Heptafluorobutyronitrile or heptafluoroisobutyronitrile	4580	2750	C ₄ -FN, C ₄ F ₇ N, (CF ₃) ₂ CFCN	375-00-8, 42532-60-5
HFE-236ea2	7020	2590	Desflurane, CHF ₂ OCHFCF ₃ , 2-(Difluoromethoxy)-1,1,1,2-tetrafluoroethane	57041-67-5
HCFE-235da2	1930	539	Isoflurane, CHF ₂ OCHClCF ₃ , 2-Chloro-2-(difluoromethoxy)-1,1,1-trifluoroethane	26675-46-7
HFE-347mmz1	702	195	Sevoflurane, (CF ₃) ₂ CHOCH ₂ F, 1,1,1,3,3,3-Hexafluoro-2-(fluoromethoxy)propane	28523-86-6
HFE-347pcf2	3370	987 [†]	CHF ₂ CF ₂ OCH ₂ CF ₃	406-78-0
HFE-449s1	1620	297 [†]	HFE-7100, C ₄ F ₉ OCH ₃	219484-64-7
HFE-569sf2	219	59 [†]	HFE-7200, C ₄ F ₉ OC ₂ H ₅	-
Methyl formate	46 [*]	13 ^{**}	CH ₃ OCHO	107-31-3

Table 3. Example Refrigerant Blends That Are Regulated Substances

Blend ASHRAE #	GWP20	GWP100 ⁴	Components (% Composition) ⁵
R-401A	3796	1182	R-22/152a/124 (53.0/13.0/34.0)
R-402A	6206	2788	R-125/290/22 (60.0/2.0/38.0)
R-404A	7208	3922 [†]	R-125/143a/134a (44.0/52.0/4.0)
R-407A	4890	2107	R-32/125/134a (20.0/40.0/40.0)
R-407B	5815	2804	R-32/125/134a (10.0/70.0/20.0)
R-407C	4457	1774 [†]	R-32/125/134a (23.0/25.0/52.0)
R-407F	4485	1825	R-32/125/134a (30.0/30.0/40.0)
R-408A	6753	3152	R-125/143a/22 (7.0/46.0/47.0)
R-409A	4758	1585	R-22/124/142b (60.0/25.0/15.0)
R-410A	4715	2088 [†]	R-32/125 (50.0/50.0)
R-410B	4918	2229	R-32/125 (45.0/55.0)
R-417A	5211	2346	R-125/134a/600 (46.6/50.0/3.4)
R-421A	5648	2631	R-125/134a (58.0/42.0)
R-421B	6350	3190	R-125/134a (85.0/15.0)
R-422A	6212	3143	R-125/134a/600a (85.1/11.5/3.4)
R-422B	5446	2526	R-125/134a/600a (55.0/42.0/3.0)
R-422C	6148	3085	R-125/134a/600a (82.0/15.0/3.0)
R-422D	5692	2729	R-125/134a/600a (65.1/31.5/3.4)
R-423A	4952	2280	134a/227ea (52.5/47.5)
R-424A	5350	2440	R-125/134a/600a/600/601a (50.5/47.0/0.9/1.0/0.6)
R-426A	4194	1508	R-125/134a/600/601a (5.1/93.0/1.3/0.6)
R-428A	6792	3607	R-125/143a/290/600a (77.5/20.0/0.6/1.9)
R-434A	6333	3245	R-125/143a/134a/600a (63.2/18.0/16.0/2.8)
R-437A	4564	1805	R-125/134a/600/601 (19.5/78.5/1.4/0.6)
R-438A	2265	5092	R-32/125/134a/600/601a (8.5/45.0/44.2/1.7/0.6)
R-448A	3322	1386 [†]	R-32/125/1234yf/134a/1234ze(E) (26.0/26.0/20.0/21.0/7.0)
R-449A	3383	1396 [†]	R-32 /125 /1234yf /134a (24.3/24.7/25.3/25.7)
R-449B	3446	1411 [†]	R-32/125/1234yf/134a (25.2/24.3/23.2/27.3)
R-452B	2275	698 [†]	R-32/125/1234yf (67.0/7.0/26.0)
R-454A	943	237 [†]	R-32/1234yf (35.0/65.0)
R-454B	1854	465 [†]	R-32/1234yf (68.9/31.1)
R-454C	580	146 [†]	R-32/1234yf (21.5/78.5)
R-466A	2094	733	R-32/125/131I (49.0/11.5/39.5)
R-507A	7290	3985 [†]	R-125/143a (50.0/50.0)
R-508B	10532	13396 [†]	R-23/116 (46.0/54.0)
R-513A	1823	630 [†]	R-1234yf/134a (56.0/44.0)
R-513B	1719	594 [†]	R-1234yf/134a (58.5/41.5)
R-515B	533	287 [†]	R-1234ze(E)/227ea (91.1/8.9)

⁴ Where not provided by EPA, estimates of GWP100 are calculated as described by EPA in the rulemaking docket for 40 CFR Part 84 Subpart B. <https://www.federalregister.gov/d/2023-22529/p-234>

⁵ e.g., <https://www.ashrae.org/technical-resources/standards-and-guidelines/ashrae-refrigerant-designations>