



Ozone Depletion

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Class I Ozone-Depleting Substances

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- The list of Class II substances (the HCFCs) is [here](#).

- Global warming potentials (GWPs) for selected non-ozone-depleting substances are provided in [another table](#).

Why are there three values given for the ODPs and four values given for the GWPs?

The numbers in the "ODP-1" column are from Table 1-5 of *The Scientific Assessment of Ozone Depletion, 2002*, a report of the World Meteorological Association's Global Ozone Research and Monitoring Project. The ODPs in the "ODP-1" column that were not in Table 1-5 of the 2002 report have not been updated since 1998 and are from *The Scientific Assessment of Ozone Depletion, 1998*. The "ODP-2" column numbers are from the Montreal Protocol, and the "ODP-3" column numbers are from 40 CFR Part 82, stratospheric ozone protection regulations required by title VI of the Clean Air Act amendments.

All GWP values represent global warming potential over a 100-year time horizon. The numbers in the "GWP-1" column are from Table 1-6 of *The Scientific Assessment of Ozone Depletion, 2002*, a report of the World Meteorological Association's Global Ozone Research and Monitoring Project. The GWPs in the "GWP-1" column that were not provided Table 1-6 of the 2002 report have not been updated since 1998 and are from *The Scientific Assessment of Ozone Depletion, 1998*. "GWP-2" column numbers are from the Intergovernmental Panel on Climate Change (IPCC [\[EXIT DISCLAIMER\]](#)) *Second Assessment Report: Climate Change 1995*, "GWP-3" column numbers are from the IPCC *Third Assessment Report: Climate Change 2001*, and "GWP-4" column numbers are from 40 CFR Part 82, stratospheric ozone protection regulations required by title VI of the Clean Air Act amendments.

Under section 602 of the Clean Air Act, EPA was required to list in the Federal Register the GWPs for ozone-depleting substances. That list was published on [January 19, 1996](#).

- Blanks in the data indicate that the information was not shown in the original source.

Chemical Name	Lifetime, In Years	ODP1 (WMO 2002 ¹)	ODP2 (Montreal Protocol)	ODP3 (40 CFR)	GWP1 (WMO 2002)	GWP2 (SAR)	GWP3 (TAR)	GWP4 (40 CFR)	CAS Number
Group I (from section 602 of the CAA)									
CFC-11 (CCl3F)	45	1.0	1.0	1.0	4680	3800	4600	4000	75-69-4
Trichlorofluoromethane									
CFC-12 (CCl2F2)	100	1.0	1.0	1.0	10720	8100	10600	8500	75-71-8
Dichlorodifluoromethane									
CFC-113 (C2F3Cl3)	85	1.0	0.8	1.0	6030	4800	6000	5000	76-13-1
1,1,2-Trichlorotrifluoroethane									
CFC-114 (C2F4Cl2)	300	0.94	1.0	1.0	9880		9800	9300	76-14-2
Dichlorotetrafluoroethane									
CFC-115 (C2F5Cl)	1700	0.44	0.6	0.6	7250		7200	9300	76-15-3
Monochloropentafluoroethane									
Group II (from section 602 of the CAA)									
Halon 1211 (CF2ClBr)	16	6.0	3.0	3.0	1860		1300		353-59-3
Bromochlorodifluoromethane									
Halon 1301 (CF3Br)	65	12	10.0	10.0	7030		6900		75-63-8
Bromotrifluoromethane									
Halon 2402 (C2F4Br2)	20	<8.6	6.0	6.0	1620				124-73-2
Dibromotetrafluoroethane									
Group III (from section 602 of the CAA)									
CFC-13 (CF3Cl)	640	1.0	1.0	1.0	14190		14000	11700	75-72-9
Chlorotrifluoromethane									
CFC-111 (C2FC15)		1.0	1.0	1.0					354-56-3
Pentachlorofluoroethane									
CFC-112 (C2F2Cl4)		1.0	1.0	1.0					76-12-0
Tetrachlorodifluoroethane									
CFC-211 (C3FC17)		1.0	1.0	1.0					422-78-6
Heptachlorofluoropropane									
CFC-212 (C3F2Cl6)		1.0	1.0	1.0					3182-26-1
Hexachlorodifluoropropane									
CFC-213 (C3F3Cl5)		1.0	1.0	1.0					2354-06-5
Pentachlorotrifluoropropane									
CFC-214 (C3F4Cl4)		1.0	1.0	1.0					29255-31-0
Tetrachlorotetrafluoropropane									

CFC-215 (C3F5Cl3)		1.0	1.0	1.0														4259-43-2
Trichloropentafluoropropane																		
CFC-216 (C3F6Cl2)		1.0	1.0	1.0														661-97-2
Dichlorohexafluoropropane																		
CFC-217 (C3F7Cl)		1.0	1.0	1.0														422-86-6
Chloroheptafluoropropane																		
Group IV (from section 602 of the CAA)																		
CCl4	26	0.73	1.1	1.1	1.1	1380	1400	1800	1400	56-23-5								
Carbon tetrachloride																		
Group V (from section 602 of the CAA)																		
Methyl Chloroform (C2H3Cl3)	5.0	0.12	0.1	0.1	0.1	144		140	110	71-55-6								
1,1,1-trichloroethane																		
Group VI (listed in the Accelerated Phaseout Final Rule)																		
Methyl Bromide (CH3Br)	0.7	0.38	0.6			5		5		74-83-9								
Group VII (listed in the Accelerated Phaseout Final Rule)																		
CHFBr2		1.0	1.0															
HBFC-12B1 (CHF2Br)		0.74	0.74															
CH2FBr		0.73	0.73															
C2HFBr4		0.3 - 0.8	0.3-0.8															
C2HF2Br3		0.5 - 1.8	0.5 - 1.8															
C2HF3Br2		0.4 - 1.6	0.4 - 1.6															
C2HF4Br		0.7 - 1.2	0.7 - 1.2															
C2H2FBr3		0.1 - 1.1	0.1 - 1.1															
C2H2F2Br2		0.2 - 1.5	0.2 - 1.5															
C2H2F3Br		0.7 - 1.6	0.7 - 1.6															
C2H3FBr2		0.1 -	0.1 - 1.7															

				1.7															
C2H3F2Br				0.2 - 1.1	0.2 - 1.1														
C2H4FBr				0.07 - 0.1	0.07 - 0.1														
C3HFBr6				0.3 - 1.5	0.3 - 1.5														
C3HF2Br5				0.2 - 1.9	0.2 - 1.9														
C3HF3Br4				0.3 - 1.8	0.3 - 1.8														
C3HF4Br3				0.5 - 2.2	0.5 - 2.2														
C3HF5Br2				0.9 - 2.0	0.9 - 2.0														
C3HF6Br				0.7 - 3.3	0.7 - 3.3														
C3H2FBr5				0.1 - 1.9	0.1 - 1.9														
C3H2F2Br4				0.2 - 2.1	0.2 - 2.1														
C3H2F3Br3				0.2 - 5.6	0.2 - 5.6														
C3H2F4Br2				0.3 - 7.5	0.3 - 7.5														
C3H2F5Br				0.9 - 1.4	0.9 - 1.4														
C3H3FBr4				0.08 - 1.9	0.08 - 1.9														
C3H3F2Br3				0.1 - 3.1	0.1 - 3.1														
C3H3F3Br2				0.1 - 2.5	0.1 - 2.5														
C3H3F4Br				0.3 - 4.4	0.3 - 4.4														
C3H4FBr3				0.03 - 0.03	0.03 - 0.03														

		0.3	0.3							
C3H4F2Br2		0.1 - 1.0	0.1 - 1.0							
C3H4F3Br		0.07 - 0.8	0.07 - 0.8							
C3H5FBr2		0.04 - 0.4	0.04 - 0.4							
C3H5F2Br		0.07 - 0.8	0.07 - 0.8							
C3H6FBr		0.02 - 0.7	0.02 - 0.7							
Group VIII (from the Chlorobromomethane Phaseout Final Rule)										
CH2BrCl Chlorobromomethane	0.37		0.12	0.12						

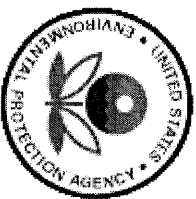
¹ *The Scientific Assessment of Ozone Depletion, 2002* updated a limited number of GWPs and ODPs (semiempirical values for all updated ODPs except CFC-114 and CFC-115, which are model-derived). All GWPs and ODPs that were not updated in 2002 are 1998 values that have not changed.

- Class II ozone-depleting chemicals are listed in a [different table](#).

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Class II substances are listed in section 602 of the Clean Air Act, and comprise all HCFCs. All the class II substances and their isomers are regulated under the accelerated phaseout. These compounds are numbered according to the ASHRAE Standard 34 scheme.

The list of Class I substances (the CFCs) is [here](#).

GWPs for selected non-ozone-depleting substances are provided in [another table](#).

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Chemical Name	Lifetime, In years	ODP1 (WMO 2002 ¹)	ODP2 (Montreal Protocol)	ODP3 (40 CFR)	GWPI (WMO 2002)	GWPI (SAR)	GWPI (TAR)	GWPI (40 CFR)	CAS Number
HCFC-21 (CHFCl2) Dichlorofluoromethane	1.7	0.04	0.04		148		210		75-43-4
HCFC-22 (CHF2Cl) Monochlorodifluoromethane	12.0	0.05	0.055	0.05	1780	1500	1700	1700	75-45-6
HCFC-31 (CH2FCI) Monochlorofluoromethane		0.02	0.02						593-70-4
HCFC-121 (C2HFCl4) Tetrachlorofluoroethane		0.01 -0.04	0.01- 0.04						354-14-3
HCFC-122 (C2HF2Cl3) Trichlorodifluoroethane		0.02- 0.08	0.02- 0.08						354-21-2
HCFC-123 (C2HF3Cl2) Dichlorotrifluoroethane	1.3	0.02	0.02- 0.06	0.02	76	90	120	93	306-83-2
HCFC-124 (C2HF4Cl) Monochlorotetrafluoroethane	5.8	0.02	0.02- 0.04	0.02	599	470	620	480	2837-89-0
HCFC-131 (C2H2FCI3) Trichlorofluoroethane		0.007 -0.05	0.007- 0.05						359-28-4
HCFC-132b (C2H2F2Cl2) Dichlorodifluoroethane		0.008 -0.05	0.008- 0.05						1649-08-7
HCFC-133a (C2H2F3Cl) Monochlorotrifluoroethane		0.02- 0.06	0.02- 0.06						75-88-7
HCFC-141b (C2H3FCI2) Dichlorofluoroethane	9.3	0.12	0.11	0.1	713		700	630	1717-00-6
HCFC-142b (C2H3F2Cl) Monochlorodifluoroethane	17.9	0.07	0.065	0.06	2270	1800	2400	2000	75-68-3
HCFC-221 (C3HFCl6) Hexachlorofluoropropane		0.015 -0.07	0.015- 0.07						422-26-4
HCFC-222 (C3HF2Cl5) Pentachlorodifluoropropane		0.01- 0.09	0.01- 0.09						422-49-1
HCFC-223 (C3HF3Cl4) Tetrachlorotrifluoropropane		0.01- 0.08	0.01- 0.08						422-52-6
HCFC-224 (C3HF4Cl3) Trichlorotetrafluoropropane		0.01- 0.09	0.01- 0.09						422-54-8

HGFC-225ca (C3H5FC12)	1.9	0.02	0.025		120		180	170	422-56-0
Dichloropentafluoropropane									
HGFC-225cb (C3H5FC12)	5.8	0.03	0.033		586		620	530	507-55-1
Dichloropentafluoropropane									
HGFC-226 (C3H5FC1)		0.02 -	0.02 -						431-87-8
Monochlorohexafluoropropane		0.1	0.1						
HGFC-231 (C3H2FC15)		0.05 -	0.05 -						421-94-3
Pentachlorofluoropropane		0.09	0.09						
HGFC-232 (C3H2F2C14)		0.008	0.008 -						460-89-9
Tetrachlorodifluoropropane		-0.1	0.1						
HGFC-233 (C3H2F3C13)		0.007	0.007 -						7125-84-0
Trichlorotrifluoropropane		-0.23	0.23						
HGFC-234 (C3H2F4C12)		0.01 -	0.01 -						425-94-5
Dichlorotetrafluoropropane		0.28	0.28						
HGFC-235 (C3H2F5C1)		0.03 -	0.03 -						460-92-4
Monochloropentafluoropropane		0.52	0.52						
HGFC-241 (C3H3FC14)		0.004	0.004 -						666-27-3
Tetrachlorofluoropropane		-0.09	0.09						
HGFC-242 (C3H3F2C13)		0.005	0.005 -						460-63-9
Trichlorodifluoropropane		-0.13	0.13						
HGFC-243 (C3H3F3C12)		0.007	0.007 -						460-69-5
Dichlorotrifluoropropane		-0.12	0.12						
HGFC-244 (C3H3F4C1)		0.009	0.009 -						
Monochlorotetrafluoropropane		-0.14	0.14						
HGFC-251 (C3H4FC13)		0.001	0.001 -						421-41-0
Trichlorofluoropropane		-0.01	0.01						
HGFC-252 (C3H4F2C12)		0.005	0.005 -						819-00-1
Dichlorodifluoropropane		-0.04	0.04						
HGFC-253 (C3H4F3C1)		0.003	0.003 -						460-35-5
Monochlorotrifluoropropane		-0.03	0.03						
HGFC-261 (C3H5FC12)		0.002	0.002 -						420-97-3
Dichlorofluoropropane		-0.02	0.02						
HGFC-262 (C3H5F2C1)		0.002	0.002 -						421-02-03
Monochlorodifluoropropane		-0.02	0.02						
HGFC-271 (C3H6FC1)		0.001	0.001 -						430-55-7
Monochlorofluoropropane		-0.03	0.03						

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