Class I Ozone-depleting Substances

Chemical Name	Lifetime, in years	ODP3 (WMO 2006)	ODP2 (40 CFR 82)	ODP1 (Montreal Protocol)	GWP5 (WMO 2006)	GWP4 (SROC)	GWP3 (40 CFR 82)	GWP2 (TAR)	GWP1 (WMO 2002)	CAS Number
Group I (from section 602 of the CAA)										
CFC-11 (CCl3F) Trichlorofluoromethane	45	1	1	1	4750	4680	4000	4600	4680	75-69-4
CFC-12 (CCl2F2) Dichlorodifluoromethane	100	1	1	1	10890	10720	8500	10600	10720	75-71-8
CFC-113 (C2F3Cl3) 1,1,2-Trichlorotrifluoroethane	85	1	0.8	0.8	6130	6030	5000	6000	6030	76-13-1
CFC-114 (C2F4Cl2) Dichlorotetrafluoroethane	300	1	1	1	10040		9300	9800	9880	76-14-2
CFC-115 (C2F5Cl) Monochloropentafluoroethane	1700	0.44	0.6	0.6	7370		9300	7200	7250	76-15-3
Group II (from section 602 of the CAA)										
Halon 1211 (CF2ClBr) Bromochlorodifluoromethane	16	7.1	3	3	1890	1860		1300	1860	353-59-3
Halon 1301 (CF3Br) Bromotrifluoromethane	65	16	10	10	7140	7030		6900	7030	75-63-8
Halon 2402 (C2F4Br2) Dibromotetrafluoroethane	20	11.5	6	6	1640	1620			1620	124-73-2
Group III (from section 602 of the CAA)										
CFC-13 (CF3Cl) Chlorotrifluoromethane	640		1	1	14420		11700	14000	14190	75-72-9
CFC-111 (C2FCl5) Pentachlorofluoroethane			1	1						354-56-3
CFC-112 (C2F2Cl4) Tetrachlorodifluoroethane			1	1						76-12-0
CFC-211 (C3FCl7) Heptachlorofluoropropane			1	1						422-78-6
CFC-212 (C3F2Cl6) Hexachlorodifluoropropane			1	1						3182-26-1
CFC-213 (C3F3Cl5) Pentachlorotrifluoropropane			1	1						2354-06-5
CFC-214 (C3F4Cl4) Tetrachlorotetrafluoropropane			1	1						29255-31-0
CFC-215 (C3F5Cl3) Trichloropentafluoropropane			1	1						4259-43-2
CFC-216 (C3F6Cl2) Dichlorohexafluoropropane			1	1						661-97-2
CFC-217 (C3F7Cl) Chloroheptafluoropropane			1	1						422-86-6
Group IV (from section 602 of the CAA)										
CCl4 Carbon tetrachloride	26	0.73	1.1	1.1	1400	1380	1400	1800	1380	56-23-5
Group V (from section 602 of the CAA)										
Methyl Chloroform (C2H3Cl3) 1,1,1-trichloroethane	5	0.12	0.1	0.1	146	144	110	140	144	71-55-6

Group VI (listed in the Accelerated Phaseout Final Rule)										
Methyl Bromide (CH3Br)	0.7	0.51	0.7	0.6	5	5		5	5	74-83-9
Group VII (listed in the Accelerated Phaseout Final Rule)										
CHFBr2			1	1						
HBFC-12B1(CHF2Br)				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			0.1-1.7	0.1 - 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						
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			0.9-14	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			0.03-0.3	0.03-0.3						

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						

Why are there multiple values given for the ODPs and GWPs?

The numbers in the "ODP1" column are from the Montreal Protocol. Some numbers have been updated as per amendments to the protocol. The "ODP2" column numbers are from the stratospheric ozone protection regulations at 40 CFR Part 82, as required by Title VI of the Clean Air Act amendments. These numbers include the amendments of July 18, 2003 (68 FR 42892). Data in the "ODP3" column come from WMO's *Scientific Assessment of Ozone Depletion: 2006*. ODP values listed are semi-empirical and can be found in Table 8-1 of the document.

All GWP values represent global warming potential over a 100-year time horizon. The numbers in the "GWP1" 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 "GWP1" 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*. "GWP2" column numbers are from the Intergovernmental Panel on Climate Change *Third Assessment Report: Climate Change 2001*, and "GWP3" column numbers are from 40 CFR Part 82, stratospheric ozone protection regulations required by Title VI of the Clean Air Act amendments. The data in the "GWP4" column come from the *IPCC Special Report on Safeguarding the Ozone Layer and the Global Climate System: Issues related to Hydrofluorocarbons and Perfluorocarbons* ("SROC"). The values listed are for direct radiative forcing and can be found in Table 2.7 in the document. The numbers in the "GWP5" column come from the WMO's *Scientific Assessment of Ozone Depletion: 2006*. The values listed are for direct radiative forcing and can be found in Table 8-2 of the document.

References

WMO (World Meteorological Organization), *Scientific Assessment of Ozone Depletion: 2006*, Global Ozone Research and Monitoring Project—Report No. 50, 572 pp., Geneva, Switzerland, 2007.

IPCC (Intergovernmental Panel on Climate Change). *Special Report on Safeguarding the Ozone Layer and the Global Climate System: Issues Related to Hydrofluorocarbons and Perfluorocarbons*, Special Report of the Intergovernmental Panel on Climate Change, Cambridge, England, 2005.