GREENHOUSE GAS PROTOCOL

Global Warming Potentials

The following table includes the direct (except for CH_4) 100-year time horizon global warming potentials (GWP) relative to CO_2. This table is adapted from table 2.14 of the IPCC Fourth Assessment Report, 2007. The 4th assessment report values are the most recent (2007), but the second assessment report values (1995) are also listed. For more information, please see the IPCC website (www.ipcc.ch).

[Table] Direct (except for CH_4) global warming potentials (GWP) relative to CO_2 (adapted from table 2.14, IPCC Fourth Assessment Report, 2007)

Industrial designation or common name	Chemical formula	GWP for 100-year time horizon	
		Second assessment report (SAR)	4th assessment report (AR4)
Carbon dioxide	CO_2	1	1
Methane	CH_4	21	25
Nitrous oxide	N_2O	310	298
Substances controlled by the Montreal Protocol			
CFC-11	CCl_3F	3,800	4,750
CFC-12	CCl_2F_2	8,100	10,900
CFC-13	$CClF_3$		14,400
CFC-113	CCl_2FCClF_2	4,800	6,130
CFC-114	$CClF_2CClF_2$		10,000
CFC-115	$CClF_2CF_3$		7,370
Halon-1301	$CBrF_3$	5,400	7,140
Halon-1211	$CBrClF_2$		1,890
Halon-2402	$CBrF_2CBrF_2$		1,640
Carbon tetrachloride	CCl_4	1,400	1,400
Methyl bromide	CH_3Br		5
Methyl chloroform	CH_3CCl_3	100	146

Industrial designation or common name	Chemical formula	GWP for 100-year time horizon	
		Second assessment report (SAR)	4th assessment report (AR4)
HFCF-21	$CHCl_2F$		151
HCFC-22	$CHCLF_2$	1,500	1,810
HCFC-123	$CHCl_2CF_3$	90	77
HCFC-124	$CHClFCF_3$	470	609
HCFC-141b	CH_3CCl_2F	600	725
HCFC-142b	CH_3CClF_2	1,800	2,310
HCFC-225ca	$CHCl_2CF_2CF_3$		122
HCFC-225cb	$CHClFCF_2CClF_2$		595
Hydrofluorocarbons			
HFC-23	CHF_3	11,700	14,800
HFC-32	CH_2F_2	650	675
HFC-41	CH_3F_2	150	92
HFC-125	CHF_2CF_3	2,800	3,500
HFC-134	CHF_2CHF_2	1000	1,100
HFC-134a	CH_2FCF_3	1,300	1,430
HFC-143	CH_2FCHF_2	300	353
HFC-143a	CH_3CF_3	3,800	4,470
HFC-152	CH_2FCH_2F		53
HFC-152a	CH_3CHF_2	140	124
HFC-161	CH_3CH_2F		12
HFC-227ea	CF_3CHFCF_3	2,900	3,220
HFC-236cb	$CH_2FCF_2CF_3$		1,340
HFC-236ea	CHF_2CHFCF_3		1,370
HFC-236fa	$CF_3CH_2CF_3$	6,300	9,810
HFC-245ca	$CH_2FCF_2CHF_2$	560	693

Industrial designation or common name	Chemical formula	GWP for 100-year time horizon	
		Second assessment report (SAR)	4th assessment report (AR4)
HFC-254fa	$CHF_2CH_2CF_3$		1,030
HFC-365mfc	$CH_3CF_2CH_2CF_3$		794
HFC-43-10mee	$CF_3CHFCHFCF_2CF_3$	1,300	1,640
Perfluorinated compounds			
Sulfur hexafluoride	SF_6	23,900	22,800
Nitrogen trifluoride	NF_3		17,200
PFC-14	CF_4	6,500	7,390
PFC-116	C_2F_6	9,200	12,200
PFC-218	C_3F_8	7,000	8,830
PFC-318	$c\text{-}C_4F_8$	8,700	10,300
PFC-3-1-10	C_4F_{10}	7,000	8,860
PFC-4-1-12	C_5F_{12}	7,500	9,160
PFC-5-1-14	C_6F_{14}	7,400	9,300
PCF-9-1-18	$C_{10}F_{18}$		>7,500
Trifluoromethyl sulfur pentafluoride	SF_5CF_3		17,700
Perfluorocyclopropane	$c\text{-}C_3F_6$		>17,340
Fluorinated ethers			
HFE-125	CHF_2OCF_3		14,900
HFE-134	CHF_2OCHF_2		6,320
HFE-143a	CH_3OCF_3		756
HCFE-235da2	$CHF_2OCHClCF_3$		350
HFE-245cb2	$CH_3OCF_2CF_3$		708
HFE-245fa2	$CHF_2OCH_2CF_3$		659
HFE-254cb2	$CH_3OCF_2CHF_2$		359

Industrial designation or common name	Chemical formula	GWP for 100-year time horizon	
		Second assessment report (SAR)	4th assessment report (AR4)
HFE-347mcc3	$CH_3OCF_2CF_2CF_3$		575
HFE-347pcf2	$CHF_2CF_2OCH_2CF_3$		580
HFE-356pcc3	$CH_3OCF_2CF_2CHF_2$		110
HFE-449sl (HFE-7100)	$C_4F_9OCH_3$		297
HFE-569sf2 (HFE-7200)	$C_4F_9OC_2H_5$		59
HFE-43-10pccc124 (H-Galden 1040x)	$CHF_2OCF_2OC_2F_4OCHF_2$		1,870
HFE-236ca12 (HG-10)	$CHF_2OCF_2OCHF_2$		2,800
HFE-338pcc13 (HG-01)	$CHF_2OCF_2CF_2OCHF_2$		1,500
HFE-227ea	$CF_3CHFOCF_3$		1,540
HFE-236ea2	$CHF_2OCHFCF_3$		989
HFE-236fa	$CF_3CH_2OCF_3$		487
HFE-245fa1	$CHF_2CH_2OCF_3$		286
HFE 263fb2	$CF_3CH_2OCH_3$		11
HFE-329mcc2	$CHF_2CF_2OCF_2CF_3$		919
HFE-338mcf2	$CF_3CH_2OCF_2CF_3$		552
HFE-347mcf2	$CHF_2CH_2OCF_2CF_3$		374
HFE-356mec3	$CH_3OCF_2CHFCF_3$		101
HFE-356pcf2	$CHF_2CH_2OCF_2CHF_2$		265
HFE-356pcf3	$CHF_2OCH_2CF_2CHF_2$		502
HFE 365mcf3	$CF_3CF_2CH_2OCH_3$		11
HFE-374pc2	$CHF_2CF_2OCH_2CH_3$		557
Perfluoropolyethers			
PFPMIE	$CF_3OCF(CF_3)CF_2OCF_2OCF_3$		10,300

Industrial designation or common name	Chemical formula	GWP for 100-year time horizon	
		Second assessment report (SAR)	4th assessment report (AR4)
Hydrocarbons and other compounds-direct effects			
Dimethylether	CH_3OCH_3		1
Chloroform	$CHCl_3$	4	31
Methylene chloride	CH_2Cl_2	9	8.7
Methyl choloride	CH_3Cl		13
Halon-1201	$CHBrF_2$		404
Trifluoroiodomethane	CF_3I	<1	0.4