Table A. Hg° gaseous reactions in the model.

	reactant	reactions	Rate constant/ equilibrium constant	Reference
Mercury Gaseous reaction	$Hg^0 + O_3$	$Hg^0_{(g)} + O_3 \rightarrow HgO_{(s,g)} + O_{2(g)}$ (~ 1atm N_2)	$8.43 \times 10^{-17} \exp(-1407/T)$ cm^3 $molecule^{-1}$ s^{-1}	Pal and Ariya, 2004(b)
	$Hg^0 + OH$	$Hg^0_{(g)} + OH \leftrightarrow HgOH_{(g)}$ (1atm N_2)	$\rightarrow 3.2\times10^{-13}(T/298)^{-3.06}$ cm^3 $molecule^{-1}$ s^{-1} $\leftarrow 2.7\times10^{9} \exp(-4061/T)$ s^{-1}	Goodsite et al., 2004
		$Hg^0_{(g)} + OH\cdot \rightarrow HgOH\cdot + O_2 \rightarrow HgO + HO_2\cdot$	$3.55 \times 10^{-14} \exp(294/T)$ cm^3 $molecule^{-1}$ s^{-1}	Pal and Ariya, 2004(a)
	$Hg^0 + H_2O_2$	$Hg^0_{(g)} + H_2O_2 \rightarrow Hg(OH)_{2(g,s)}$	8.5×10^{-19} cm^3 $molecule^{-1}$ s^{-1}	Tokos et al., 1998
	$Hg^0 + Br$	$Hg^0_{(g)} + Br_{(g)} \leftrightarrow HgBr_{(g)} \rightarrow HgBr_{2(g)}$ (1atm N_2)	$\rightarrow 1.1\times10^{-12}(T/298)^{-2.37}$ cm^3 $molecule^{-1}$ s^{-1} $\rightarrow 2.5\times10^{-10}(T/298)^{-0.57}$ cm^3 $molecule^{-1}$ s^{-1} $\leftarrow 1.2\times10^{10} \exp(-8357/T)$ s^{-1}	Goodsite et al., 2004
		$Hg^0_{(g)} + Br_{(g)} \rightarrow HgBr_{(g)}$ (1atm ($0.8N_2$+$0.2O_2$))	$1.01\times10^{-12} \exp(209.03/T)$ cm^3 $molecule^{-1}$ s^{-1}	Khalizov et al,. 2003
		$Hg^0_{(g)} + Br_{(g)} + M \rightarrow HgBr_{(g)} + M$	$1.46\times10^{-32}\times(T/298)^{-1.86}$ cm^6 $molecule^{-2}$ s^{-1} (1atm $N_2 = 2.9\times10^{19}$ molecule cm^3)	Donohoue et al., 2006
	$Hg^0 + Br_2$	$Hg^0_{(g)} + Br_{2(g)} \rightarrow HgBr_{2(g)}$ (750 Torr air or N_2)	$(0.9\pm0.2)\times10^{-16}$ cm^3 $molecule^{-1}$ s^{-1} (at 298K)	Ariya et al., 2002
			$(2.74)\times10^{-31}$ cm^3 $molecule^{-1}$ s^{-1} (at 298K)	Balabanov et al., 2005
	HgBr + Br	$HgBr_{(g)} + Br_{(g)} \rightarrow Hg_{(g)} + Br_{2(g)}$	3.89×10^{-11} cm^3 $molecule^{-1}$ s^{-1} (at 298K)	Balabanov et al., 2005
		$HgBr_{(g)} + Br_{(g)} \rightarrow HgBr_{(g)} + Br_{(g)}$	3.97×10^{-11} cm^3 $molecule^{-1}$ s^{-1} (at 298K)	Balabanov et al., 2005
	$Hg^0 + I$	$Hg^0_{(g)} + I_{(g)} \leftrightarrow HgI_{(g)}$ (1atm N_2)	$\rightarrow 4.0\times10^{-13}(T/298)^{-2.38}$ cm^3 $molecule^{-1}$ s^{-1} $\leftarrow 3.0\times10^{9} \exp(-3742/T)$ s^{-1}	Goodsite et al., 2004
	$Hg^0 + Cl_2$	$Hg^0_{(g)} + Cl_{2(g)} \rightarrow HgCl_{2(g)}$ (750 Torr air or N_2)	$(2.6\pm0.2)\times10^{-18}$ cm^3 $molecule^{-1}$ s^{-1} (at 298K)	Ariya et al., 2002
	$Hg^0 + Cl$	$Hg^0_{(g)} + Cl_{(g)} \rightarrow HgCl_{(g)}$ (1atm ($0.8N_2$+$0.2O_2$))	$1.38\times10^{-12} \exp(208.02/T)$ cm^3 $molecule^{-1}$ s^{-1}	Khalizov et al,. 2003
		$Hg^0_{(g)} + Cl_{(g)} + M \rightarrow HgCl_{(g)} + M$	$2.2\times10^{-32}\exp(680*(1/T-1/298))cm^6molecule^{-2}s^{-1}$ (1atm $N_2 = 2.9\times10^{19}$ molecule cm^3)	Donohoue et al., 2005

Table B. Gaseous halogen chemistry in the model.

	Reactions	Rate constant/ equilibrium constant	Reference
Bromine chemistry	$Br_2 \rightarrow Br + Br$		ARCTAS measurement
	$Br + O_3 \rightarrow BrO + O_2$	$1.7 \times 10^{-11} \exp(-800/T)$ cm^3 molecule^{-1} s^{-1}	Sander et al.(2006)
	$BrO \rightarrow Br + O$		ARCTAS measurement
	$2BrO \rightarrow 2Br + O_2$	$2.4 \times 10^{-12} \exp(40/T)$ cm^3 molecule^{-1} s^{-1}	Sander et al.(2006)
	$2BrO \rightarrow Br_2 + O_2$	$2.8 \times 10^{-14} \exp(860/T)$ cm^3 molecule^{-1} s^{-1}	Sander et al.(2006)
	$BrO + ClO \rightarrow Br + OClO$	$9.5 \times 10^{-13} \exp(550/T)$ cm^3 molecule^{-1} s^{-1}	Sander et al.(2006)
	$BrO + ClO \rightarrow Br + ClOO$	$2.3 \times 10^{-12} \exp(260/T)$ cm^3 molecule^{-1} s^{-1}	Sander et al.(2006)
	$BrO + ClO \rightarrow BrCl + O_2$	$4.1 \times 10^{-13} \exp(290/T)$ cm^3 molecule^{-1} s^{-1}	Sander et al.(2006)
	$BrO + HO_2 \rightarrow HOBr + O_2$	$4.5 \times 10^{-12} \exp(500/T)$ cm^3 molecule^{-1} s^{-1}	Atkinson et al. (2007)
	$BrO + NO \rightarrow NO_2 + Br$	$8.8 \times 10^{-12} \exp(260/T)$ cm^3 molecule^{-1} s^{-1}	Sander et al.(2006)
	$HOBr \rightarrow Br + OH$		ARCTAS measurement
	$Br + HO_2 \rightarrow HBr + O_2$	$4.8 \times 10^{-12} \exp(-310/T)$ cm^3 molecule^{-1} s^{-1}	Sander et al.(2006)
	$Br + H_2CO \rightarrow HBr + HCO$	$1.7 \times 10^{-11} \exp(-800/T)$ cm^3 molecule^{-1} s^{-1}	Sander et al.(2006)
	$HBr + OH \rightarrow Br + H_2O$	$5.5 \times 10^{-12} \exp(200/T)$ cm^3 molecule^{-1} s^{-1}	Sander et al.(2006)
	$CH_3Br + OH \rightarrow CH_2Br + H_2O$	$2.35 \times 10^{-12} \exp(-1300/T)$ cm^3 molecule^{-1} s^{-1}	Sander et al. (2006)
	$Br_2 + OH \rightarrow HOBr + Br$	$2.1 \times 10^{-11} \exp(240/T)$ cm^3 molecule^{-1} s^{-1}	Sander et al. (2006)
	$Br + C_2H_2 (+ M) \rightarrow BrC_2H_2 (+ M)$	$6.35 \times 10^{-15} \exp(440/T)$ cm^3 molecule^{-1} s^{-1}	Atkinson et al. (2006)
	$Br + NO_2 + M \rightarrow BrNO_2 + M$	$k_0=4.2 \times 10^{-31}$, $k_\infty=2.7 \times 10^{-11}$, n=2.4, m=0	Sander et al.(2006)
	$BrO + NO_2 + M \rightarrow BrONO_2 + M$	$k_0=5.2 \times 10^{-31}$, $k_\infty=6.9 \times 10^{-12}$, n=3.2, m=2.9	Sander et al. (2006)
	$BrONO_2 \rightarrow BrO + NO_2$		ARCTAS measurement
	$BrONO_2 \rightarrow Br + NO_3$		ARCTAS measurement
	$BrCl \rightarrow Br + Cl$		ARCTAS measurement
	$Br + CH_3CHO \rightarrow HBr + CH_3CO$	$1.8 \times 10^{-11} \exp(-460/T)$ cm^3 molecule^{-1} s^{-1}	Atkinson et al. (2006)
	$BrO + O \rightarrow Br + O_2$	$1.9 \times 10^{-11} \exp(230/T)$ cm^3 molecule^{-1} s^{-1}	Sander et al. (2006)
	$HBr + O \rightarrow OH + Br$	$5.8 \times 10^{-12} \exp(-1500/T)$ cm^3 molecule^{-1} s^{-1}	Sander et al. (2006)
	$HOBr + O \rightarrow OH + BrO$	$1.2 \times 10^{-10} \exp(-430/T)$ cm^3 molecule^{-1} s^{-1}	Sander et al. (2006)
	$BrONO_2 + O \rightarrow NO_3 + BrO$	$1.9 \times 10^{-11} \exp(215/T)$ cm^3 molecule^{-1} s^{-1}	Sander et al. (2006)
	$BrNO_2 \rightarrow 0.5(BrO+NO+NO2+Br)$	7.128×10^{-3} s^{-1}	TUV model based on Sander et al. (2006)

	Reactions	Rate constant/ equilibrium constant	Reference
Chlorine chemistry	$Cl_2 \rightarrow Cl + Cl$		ARCTAS measurement
	$Cl + O_3 \rightarrow ClO + O_2$	$2.3 \times 10^{-11} \exp(-200/T)$ cm^3 molecule^{-1} s^{-1}	Sander et al.(2006)
	$ClO \rightarrow Cl + O$	3×10^{-5} s^{-1}	Simpson et al. (2007)
	$2ClO \rightarrow Cl_2 + O_2$	$1 \times 10^{-12} \exp(-1590/T)$ cm^3 molecule^{-1} s^{-1}	Sander et al.(2006)/Atkinson et al.(2007)
	$2ClO \rightarrow ClOO + Cl$	$3 \times 10^{-11} \exp(-2450/T)$ cm^3 molecule^{-1} s^{-1}	Sander et al.(2006)/Atkinson et al.(2007)

	$2ClO \rightarrow OClO + Cl$	$3.5 \times 10^{-13} \exp(-1370/T)$ cm^3 molecule^{-1} s^{-1}	Sander et al.(2006)/Atkinson et al.(2007)
	$ClO + HO_2 \rightarrow HOCl + O_2$	$2.7 \times 10^{-12} \exp(220/T)$ cm^3 molecule^{-1} s^{-1}	Sander et al.(2006)
	$ClO + NO \rightarrow Cl + NO_2$	$6.4 \times 10^{-12} \exp(290/T)$ cm^3 molecule^{-1} s^{-1}	Sander et al.(2006)
	$HOCl \rightarrow Cl + OH$	0.0001118 s^{-1}	TUV model based on Sander et al. (2006)
	$Cl + HO_2 \rightarrow HCl + O_2$	$1.8 \times 10^{-11} \exp(170/T)$ cm^3 molecule^{-1} s^{-1}	Sander et al.(2006)
	$Cl + HO_2 \rightarrow OH + ClO$	$4.1 \times 10^{-11} \exp(-450/T)$ cm^3 molecule^{-1} s^{-1}	Sander et al.(2006)
	$Cl + H_2CO \rightarrow HCl + CHO$	$8.1 \times 10^{-11} \exp(-30/T)$ cm^3 molecule^{-1} s^{-1}	Sander et al.(2006)
	$HCl + OH \rightarrow Cl + H_2O$	$2.6 \times 10^{-12} \exp(-350/T)$ cm^3 molecule^{-1} s^{-1}	Sander et al.(2006)
	$OH + ClO \rightarrow HCl + O_2$	$6 \times 10^{-13} \exp(230/T)$ cm^3 molecule^{-1} s^{-1}	Sander et al. (2006)
	$OH + ClO \rightarrow Cl + HO_2$	$7.4 \times 10^{-12} \exp(270/T)$ cm^3 molecule^{-1} s^{-1}	Sander et al. (2006)
	$Cl + CH_4 \rightarrow HCl + CH_3$	$7.3 \times 10^{-12} \exp(-1280/T)$ cm^3 molecule^{-1} s^{-1}	Sander et al. (2006)
	$Cl + H_2 \rightarrow HCl + H$	$3.05 \times 10^{-11} \exp(-2270/T)$ cm^3 molecule^{-1} s^{-1}	Sander et al. (2006)
	$Cl + C_2H_6 \rightarrow HCl + C_2H_5$	$7.2 \times 10^{-11} \exp(-70/T)$ cm^3 molecule^{-1} s^{-1}	Sander et al. (2006)
	$Cl + C_3H_8 \rightarrow HCl + C_3H_7$	$7.85 \times 10^{-11} \exp(-80/T)$ cm^3 molecule^{-1} s^{-1}	Sander et al. (2006)
	$Cl + H_2O_2 \rightarrow HCl + HO_2$	$1.1 \times 10^{-11} \exp(-980/T)$ cm^3 molecule^{-1} s^{-1}	Sander et al. (2006)
	$Cl + ClOO \rightarrow Cl_2 + O_2$	2.3×10^{-10} cm^3 molecule^{-1} s^{-1}	Sander et al. (2006)
	$Cl + ClOO \rightarrow 2ClO$	1.2×10^{-11} cm^3 molecule^{-1} s^{-1}	Sander et al. (2006)
	$HOCl + OH \rightarrow ClO + H2O$	$3 \times 10^{-12} \exp(-500/T)$ cm^3 molecule^{-1} s^{-1}	Sander et al. (2006)
	$Cl + O_2 + M \rightarrow ClOO + M$	$k_0=2.2 \times 10^{-33}$, $k_\infty=1.8 \times 10^{-10}$, n=3.1, m=0	Sander et al. (2006)
	$Cl + NO_2 + M \rightarrow ClONO + M$	$k_0=1.3 \times 10^{-30}$, $k_\infty=1.\times 10^{-10}$, n=2, m=1	Sander et al. (2006)
	$ClO + NO_2 + M \rightarrow ClONO_2 + M$	$k_0=1.8 \times 10^{-31}$, $k_\infty=1.5\times 10^{-11}$, n=3.4, m=1.9	Sander et al. (2006)
	$ClONO \rightarrow Cl + NO_2$	1.601×10^{-3} s^{-1}	TUV model based on Sander et al. (2006)
	$ClONO_2 \rightarrow Cl + NO_3$		ARCTAS measurement
	$ClONO_2 \rightarrow ClO + NO_2$		ARCTAS measurement
	$OClO \rightarrow ClO + O$	0.1035 s^{-1}	TUV model based on Sander et al. (2006)
	$Cl + C_2H_2 + M \rightarrow C_2H_2Cl + M$	$k_0=6.1 \times 10^{-30}$, $k_\infty=2. \times 10^{-10}$, n=3, m=0	Atkinson et al. (2006)
	$Cl + n\text{-}C_4H_{10} \rightarrow HCl + C_4H_9$	2.05×10^{-10} cm^3 molecule^{-1} s^{-1}	Atkinson et al. (2006)
	$Cl + CH_3CHO \rightarrow HCl + CH_3CO$	8×10^{-11} cm^3 molecule^{-1} s^{-1}	Atkinson et al. (2006)
	$Cl + CH_3OH \rightarrow HCl + CH_2OH$	5.5×10^{-11} cm^3 molecule^{-1} s^{-1}	Atkinson et al. (2006)
	$Cl + C_2H_5OH \rightarrow$ product	$8.6 \times 10^{-11} \exp(45/T)$ cm^3 molecule^{-1} s^{-1}	Atkinson et al. (2006)
	$O + ClO \rightarrow Cl + O_2$	$2.8 \times 10^{-11} \exp(85/T)$ cm^3 molecule^{-1} s^{-1}	Sander et al. (2006)
	$O + OClO \rightarrow ClO + O_2$	$2.4 \times 10^{-12} \exp(-960/T)$ cm^3 molecule^{-1} s^{-1}	Sander et al. (2006)
	$O + OClO + M \rightarrow ClO_3 + M$	$k_0=2.9 \times 10^{-31}$, $k_\infty=8.3 \times 10^{-12}$, n=3.1, m=0	Sander et al. (2006)
	$O + HCl \rightarrow OH + Cl$	$1.0 \times 10^{-11} \exp(-3300/T)$ cm^3 molecule^{-1} s^{-1}	Sander et al. (2006)
	$O + HOCl \rightarrow OH + ClO$	1.7×10^{-13} cm^3 molecule^{-1} s^{-1}	Sander et al. (2006)
	$O + ClONO_2 \rightarrow$ products	$2.9 \times 10^{-12} \exp(-800/T)$ cm^3 molecule^{-1} s^{-1}	Sander et al. (2006)
	$O_3 + OClO \rightarrow$ products	$2.1 \times 10^{-12} \exp(-4700/T)$ cm^3 molecule^{-1} s^{-1}	Sander et al. (2006)
	$ClOO + M \rightarrow Cl + O_2 + M$	$2.8\times 10^{-10}/\exp(1820/T) \times [N_2]$	Atkinson et al. (2007)

	Reactions	Rate constant/ equilibrium constant	Reference
Iodine chemistry	$I + O_3 \rightarrow IO + O_2$	$2.3 \times 10^{-11} \exp(-870/T)$ cm^3 molecule^{-1} s^{-1}	Sander et al.(2006)
	$IO \rightarrow I + O$	0.2 s^{-1}	Simpson et al. (2007)
	$2IO \rightarrow$ product	$1.5 \times 10^{-11} \exp(500/T)$ cm^3 molecule^{-1} s^{-1}	Sander et al.(2006)
	$IO + ClO \rightarrow$ product	$5.1 \times 10^{-12} \exp(280/T)$ cm^3 molecule^{-1} s^{-1}	Sander et al.(2006)
	$IO + BrO \rightarrow$ product	$1.5 \times 10^{-11} \exp(510/T)$ cm^3 molecule^{-1} s^{-1}	Atkinson et al. (2007)
	$IO + HO_2 \rightarrow HOI + O_2$	$1.4 \times 10^{-11} \exp(540/T)$ cm^3 molecule^{-1} s^{-1}	Atkinson et al. (2007)
	$IO + NO \rightarrow I + NO_2$	$9.1 \times 10^{-12} \exp(240/T)$ cm^3 molecule^{-1} s^{-1}	Sander et al.(2006)
	$I_2 \rightarrow I + I$	0.12 s^{-1}	Saiz-Lopez et al. (2004)
	$I + HO_2 \rightarrow HI + O_2$	$1.5 \times 10^{-11} \exp(-1090/T)$ cm^3 molecule^{-1} s^{-1}	Sander et al.(2006)/Atkinson et al.(2007)
	$HI + OH \rightarrow I + H_2O$	$1.6 \times 10^{-11} \exp(440/T)$ cm^3 molecule^{-1} s^{-1}	Atkinson et al. (2007)

Table C. Ozone chemistry in the model.

	Reactions	Rate constant/ equilibrium constant	Reference
Ozone Chemistry	$O_3 \rightarrow O(D^1) + O_2$		ARCTAS measurement
	$NO_2 \rightarrow O(^3P) + NO$		ARCTAS measurement
	$CH_3CHO \rightarrow CH_3 + HCO$		ARCTAS measurement
	$HCHO \rightarrow H + HCO$		ARCTAS measurement
	$HCHO \rightarrow H_2 + CO$		ARCTAS measurement
	$CH_3OOH \rightarrow CH_3O + OH$		ARCTAS measurement
	$N_2O_5 \rightarrow NO_2 + NO_3$		ARCTAS measurement
	$H_2O_2 \rightarrow 2OH$		ARCTAS measurement
	$NO_3 + NO_2 \rightarrow N_2O_5$	$k_0=2.0 \times 10^{-30}$, $k_\infty=1.4 \times 10^{-12}$, n=4.4, m=0.7	Sander et al. (2006)
	$O_3 + NO \rightarrow NO_2 + O_2$	$1.4 \times 10^{-12} / \exp(1310/T)$ cm^3 molecule^{-1} s^{-1}	Atkinson et al. (2004)
	$NO_2 + O_3 \rightarrow NO_3 + O_2$	$1.4 \times 10^{-13} / \exp(2470/T)$ cm^3 molecule^{-1} s^{-1}	Atkinson et al. (2004)
	$NO_3 + NO \rightarrow 2NO_2$	$1.5 \times 10^{-11} \exp(170/T)$ cm^3 molecule^{-1} s^{-1}	Sander et al. (2006)
	$O(1D) + H_2O \rightarrow 2OH$	$1.63 \times 10^{-10} \exp(60/T)$ cm^3 molecule^{-1} s^{-1}	Sander et al. (2006)
	$O(1D) + N_2 \rightarrow O(^3P) + N_2$	$2.15 \times 10^{-11} \exp(110/T)$ cm^3 molecule^{-1} s^{-1}	Sander et al. (2006)
	$HO_2 + NO \rightarrow OH + NO_2$	$3.5 \times 10^{-12} \exp(250/T)$ cm^3 molecule^{-1} s^{-1}	Sander et al. (2006)
	$OH + CH_4 \rightarrow H_2O + CH_3$	$1.85 \times 10^{-12} / \exp(1690/T)$ cm^3 molecule^{-1} s^{-1}	Atkinson et al. (2006)
	$CH_3 + O_2 \rightarrow CH_3O_2$	$k_0=1.0 \times 10^{-30}$, $k_\infty=1.8 \times 10^{-12}$, n=3.3, m=-1.1	Atkinson et al. (2006)
	$OH + HCHO \rightarrow H_2O + HCO$	$5.4 \times 10^{-12} \exp(135/T)$ cm^3 molecule^{-1} s^{-1}	Atkinson et al. (2006)
	$OH + CH_3OOH \rightarrow CH_3O_2 + H_2O$	$3.8 \times 10^{-12} \exp(200/T)$ cm^3 molecule^{-1} s^{-1}	Sander et al. (2006)
	$OH + CO \rightarrow H + CO_2$	$k_0=1.5 \times 10^{-13}$, $k_\infty=2.1 \times 10^{9}$, n=-0.6, m=-6.1	Sander et al. (2006)
	$OH + NO \rightarrow HONO$	$k_0=7.0 \times 10^{-31}$, $k_\infty=3.6 \times 10^{-11}$, n=2.6, m=0.1	Sander et al. (2006)
	$OH + NO_2 \rightarrow HONO_2$	$k_0=1.8 \times 10^{-30}$, $k_\infty=2.8 \times 10^{-11}$, n=3.0, m=0.	Sander et al. (2006)
	$OH + HO_2 \rightarrow H_2O + O_2$	$4.8 \times 10^{-11} \exp(250/T)$ cm^3 molecule^{-1} s^{-1}	Atkinson et al. (2004)

	$OH + O_3 \rightarrow HO_2 + O_2$	$1.7 \times 10^{-12} / \exp(940/T)$ cm^3 $molecule^{-1}$ s^{-1}	Atkinson et al. (2004)
	$2HO_2 + N_2 \rightarrow H_2O_2 + O_2 + N_2$	$1.9 \times 10^{-33} \exp(980/T)$ cm^6 $molecule^{-2}$ s^{-1}	Atkinson et al. (2004)
	$HO_2 + O_3 \rightarrow OH + 2O_2$	$2.03 \times 10^{-16} \exp(693/T) \times (T/300)^{4.57}$ cm^3 $molecule^{-1}$ s^{-1}	Atkinson et al. (2004)
	$HO_2 + CH_3O_2 \rightarrow CH_3OOH + O_2$	$3.8 \times 10^{-13} \exp(780/T)$ cm^3 $molecule^{-1}$ s^{-1}	Atkinson et al. (2006)
	$CH_3O_2 + NO \rightarrow CH_3O + NO_2$	$2.3 \times 10^{-12} \exp(360/T)$ cm^3 $molecule^{-1}$ s^{-1}	Atkinson et al. (2006)
	$O(^1D) + O_2 \rightarrow O(^3P) + O_2$	$3.3 \times 10^{-11} \exp(55/T)$ cm^3 $molecule^{-1}$ s^{-1}	Sander et al. (2006)
	$O(^1D) + O_3 \rightarrow 2O(^3P) + O_2$	1.2×10^{-10} cm^3 $molecule^{-1}$ s^{-1}	Sander et al. (2006)
	$O(^3P) + O_2 + N_2 \rightarrow O_3 + N_2$	$5.6 \times 10^{-34} / (T/300)^{2.6}$ cm^6 $molecule^{-2}$ s^{-1}	Atkinson et al. (2004)
	$OH + C_2H_2 \rightarrow C_2H_2OH$	$k_0 = 5.5 \times 10^{-30}$, $k_\infty = 8.3 \times 10^{-13}$, n=0, m=-2	Sander et al. (2006)
	$OH + C_2H_6 \rightarrow H_2O + C_2H_5$	$8.7 \times 10^{-12} / \exp(1070/T)$ cm^3 $molecule^{-1}$ s^{-1}	Sander et al. (2006)
	$OH + C_3H_8 \rightarrow$ product	$8.7 \times 10^{-12} / \exp(615/T)$ cm^3 $molecule^{-1}$ s^{-1}	Sander et al. (2006)
	$O_3 + C_2H_2 \rightarrow$ product	$1 \times 10^{-14} / \exp(4100/T)$ cm^3 $molecule^{-1}$ s^{-1}	Sander et al. (2006)