

1 Trimolecular Reactions

A total of 18 trimolecular reactions were selected and they are given in Table 1.

#	Reactants	Products	Rate coefficient
1	$O(^3P) + O_2 \xrightarrow{M}$	O_3	$k_1^o = [M] 6.000 \times 10^{-34} e^{-\frac{2.400}{T}}$ $f_1^c = 0.6000$
2	$H + O_2 \xrightarrow{M}$	HO_2	$k_2^o = [M] 5.700 \times 10^{-32} e^{-\frac{1.600}{T}}$ $k_2^\infty = 7.500 \times 10^{-11}$ $f_2^c = 0.6000$
3	$OH + OH \xrightarrow{M}$	H_2O_2	$k_3^o = [M] 6.900 \times 10^{-31} e^{-\frac{1.000}{T}}$ $k_3^\infty = 2.600 \times 10^{-11}$ $f_3^c = 0.6000$
4	$OH + NO_2 \xrightarrow{M}$	HNO_3	$k_4^o = [M] 2.000 \times 10^{-30} e^{-\frac{3.000}{T}}$ $k_4^\infty = 2.500 \times 10^{-11}$ $f_4^c = 0.6000$
5	$ClO + NO_2 \xrightarrow{M}$	$ClONO_2$	$k_5^o = [M] 1.800 \times 10^{-31} e^{-\frac{3.400}{T}}$ $k_5^\infty = 1.500 \times 10^{-11} e^{-\frac{1.900}{T}}$ $f_5^c = 0.6000$
6	$HO_2 + NO_2 \xrightarrow{M}$	HO_2NO_2	$k_6^o = [M] 1.800 \times 10^{-31} e^{-\frac{3.200}{T}}$ $k_6^\infty = 4.700 \times 10^{-12} e^{-\frac{1.400}{T}}$ $f_6^c = 0.6000$
7	$NO_2 + O(^3P) \xrightarrow{M}$	NO_3	$k_7^o = [M] 2.500 \times 10^{-31} e^{-\frac{1.800}{T}}$ $k_7^\infty = 2.200 \times 10^{-11} e^{-\frac{0.7000}{T}}$ $f_7^c = 0.6000$
8	$NO_2 + NO_3 \xrightarrow{M}$	N_2O_5	$k_8^o = [M] 2.000 \times 10^{-30} e^{-\frac{4.400}{T}}$ $k_8^\infty = 1.400 \times 10^{-12} e^{-\frac{0.7000}{T}}$ $f_8^c = 0.6000$
9	$CH_3 + O_2 \xrightarrow{M}$	CH_3O_2	$k_9^o = [M] 4.500 \times 10^{-31} e^{-\frac{3.000}{T}}$ $k_9^\infty = 1.800 \times 10^{-12} e^{-\frac{1.700}{T}}$ $f_9^c = 0.6000$
10	$NO + O(^3P) \xrightarrow{M}$	NO_2	$k_{10}^o = [M] 9.000 \times 10^{-31} e^{-\frac{1.500}{T}}$ $k_{10}^\infty = 3.000 \times 10^{-11}$ $f_{10}^c = 0.6000$

Table 1: Trimolecular reactions.

#	Reactants	Products	Rate coefficient
11	$O(^1D) + N_2 \xrightarrow{M}$	N_2O	$k_{11}^o = [M] 3.500 \times 10^{-37} e^{-\frac{0.6000}{T}}$ $f_{11}^c = 0.6000$
12	$O(^3P) + O(^3P) \xrightarrow{M}$	O_2	$k_{12}^o = [M] 1.400 \times 10^{-33} e^{-\frac{408.0}{T}}$ $f_{12}^c = 0.6000$
13	$BrO + NO_2 \xrightarrow{M}$	$BrONO_2$	$k_{13}^o = [M] 5.200 \times 10^{-31} e^{-\frac{3.200}{T}}$ $k_{13}^\infty = 6.900 \times 10^{-12} e^{-\frac{2.900}{T}}$ $f_{13}^c = 0.6000$
14	$ClO + ClO \xrightarrow{M}$	Cl_2O_2	$k_{14}^o = [M] 1.600 \times 10^{-32} e^{-\frac{4.500}{T}}$ $k_{14}^\infty = 2.000 \times 10^{-12} e^{-\frac{2.400}{T}}$ $f_{14}^c = 0.6000$
15	$CO + O(^3P) \xrightarrow{M}$	CO_2	$k_{15}^o = [M] 2.000 \times 10^{-37}$ $f_{15}^c = 0.6000$
16	$N_2O_5 \xrightarrow{M}$	$NO_2 + NO_3$	$k_{16}^o = [M] 3.000 \times 10^{-27} e^{-\frac{1.0990E+04}{T}}$ $f_{16}^c = 0.6000$
17	$HO_2NO_2 \xrightarrow{M}$	$HO_2 + NO_2$	$k_{17}^o = [M] 2.100 \times 10^{-27} e^{-\frac{1.0900E+04}{T}}$ $f_{17}^c = 0.6000$
18	$Cl_2O_2 \xrightarrow{M}$	$ClO + 0.000 ClO$	$k_{18}^o = [M] 1.270 \times 10^{-27} e^{-\frac{8744.}{T}}$ $f_{18}^c = 0.6000$

Table 1: (continued) Trimolecular reactions.