

Reactions	Rate coefficients ($\text{cm}^3 \text{s}^{-1}, \text{s}^{-1}$)
$\text{O}^+ + \text{O}_2 \rightarrow \text{O}_2^+ + \text{O}$	$\gamma = 2.82 \times 10^{-11} - 7.74 \times 10^{-12}(T_{\text{eff}}/300) + 1.07 \times 10^{-12}(T_{\text{eff}}/300)^2 - 5.17 \times 10^{-14}(T_{\text{eff}}/300)^3 + 9.65 \times 10^{-16}(T_{\text{eff}}/300)^4$
$\text{O}(^1\text{D}) + \text{N}_2 \rightarrow \text{O} + \text{N}_2$	$k_1 = 2 \times 10^{-11} \exp(107.8/T_n)$
$\text{O}(^1\text{D}) + \text{O}_2 \rightarrow \text{O} + \text{O}_2$	$k_2 = 2.9 \times 10^{-11} \exp(67.5/T_n)$
$\text{O}(^1\text{D}) + \text{O} \rightarrow \text{O} + \text{O}$	$k_3 = (3.73 + 1.1965 \times 10^{-1} T_n^{0.5} - 6.5898 \times 10^{-4} T_n) \times 10^{-12}$
$\text{O}(^1\text{D}) \rightarrow \text{O} + h\nu(630.0 \text{ nm})$	$A_{1D} = 7.1 \times 10^{-3}$
$\text{O}(^1\text{D}) \rightarrow \text{O} + h\nu(634.4 \text{ nm})$	$A_{2D} = 2.2 \times 10^{-3}$