

Parameter	Description	Value
Condensed phase		
$D_{p,S}$	Surface-weighted middle diameter of initial dry particles	125 nm (initial)
ρ_p	Density of SOA	1.3 g cm^{-3}
MW_p	Molecular weight of SOA	175 g mol^{-1}
GF	Hygroscopic growth factor	1.1 (high RH) or 1.0 (low RH)
γ	Uptake coefficient of OH and HO ₂	0–1
p_{frag}	A combined probability for fragmentation	0–1
$k_{\text{RO}_2+\text{RO}_2}$	Reaction rate coefficient of RO ₂ • + RO ₂ •	1×10^{-21} – $1 \times 10^{-15} \text{ cm}^3 \text{ molecule}^{-1} \text{ s}^{-1}$
d_{SL}	Depth of surface layer	0.76 nm
D_{org}	Bulk diffusivity of SOA compound	1×10^{-16} – $1 \times 10^{-11} \text{ cm}^2 \text{ s}^{-1}$
Gas-phase		
[OH] _g	OH concentration along the flow tube	0– $1.84 \times 10^{11} \text{ molecule cm}^{-3}$ -air
[HO ₂] _g	HO ₂ concentration along the flow tube	Same as [OH]
\bar{c}_{OH}	Mean speed of OH radicals	610 m s^{-1}
\bar{c}_{HO_2}	Mean speed of HO ₂ radicals	440 m s^{-1}
$D_{\text{g,OH}}$	Diffusion coefficient of OH radicals	$0.21 \text{ cm}^2 \text{ s}^{-1}$
$D_{\text{g,HO}_2}$	Diffusion coefficient of HO ₂ radicals	$0.25 \text{ cm}^2 \text{ s}^{-1}$