

| Gas-phase reactions | k_{298} [cm ³ s ⁻¹] | $-E_a/R$ [K] | Reference |
|--|---|-----------------|--|
| DMS + OH $\xrightarrow{\text{abstraction}}$ SO ₂ + CH ₃ O ₂ + CH ₂ O | 4.69×10^{-12} | -280 | Burkholder et al. (2015) |
| DMS + OH $\xrightarrow{\text{addition}}$ 0.6 SO ₂ + 0.4 DMSO + CH ₃ O ₂ ^(new) | See note ^a | | Burkholder et al. (2015); Pham et al. (1995); Spracklen et al. (2005) |
| DMS + NO ₃ → SO ₂ + HNO ₃ + CH ₃ O ₂ + CH ₂ O | 1.13×10^{-12} | 530 | Burkholder et al. (2015) |
| DMS + BrO → DMSO + Br ^(new) | 3.39×10^{-13} | 950 | Burkholder et al. (2015) |
| DMS + O ₃ → SO ₂ ^(new) | 1.00×10^{-19} | 0 | Burkholder et al. (2015); Du et al. (2007) |
| DMS + Cl → 0.5 SO ₂ + 0.5 DMSO + 0.5 HCl + 0.5 ClO ^(new) | 3.40×10^{-10} | 0 | Burkholder et al. (2015); Barnes et al. (2006); IUPAC ^e |
| DMSO + OH → 0.95 MSIA + 0.05 SO ₂ ^(new) | 8.94×10^{-11} | 800 | Burkholder et al. (2015); von Glasow and Crutzen (2004) |
| MSIA + OH → 0.9 SO ₂ + 0.1 MSA ^(new) | 9.0×10^{-11} | 0 | Burkholder et al. (2015); Kukui et al. (2003); Hoffmann et al. (2016); Zhu et al. (2006) |
| MSIA + O ₃ → MSA ^(new) | 2.0×10^{-18} | 0 | Lucas and Prinn (2002); von Glasow and Crutzen (2004) |
| SO ₂ + OH $\xrightarrow{\text{O}_2, \text{H}_2\text{O}}$ H ₂ SO ₄ + HO ₂ | See note ^b | | Burkholder et al. (2015) |
| Aqueous-phase reactions | k_{298} [M ⁻¹ s ⁻¹] | $-E_a/R$ [K] | Reference |
| DMS _(aq) + O _{3(aq)} → DMSO _(aq) + O _{2(aq)} ^(new) | 8.61×10^8 | -2600 | Gershenzon et al. (2001) |
| DMSO _(aq) + OH _(aq) → MSIA _(aq) ^(new) | 6.63×10^9 | -1270 | Zhu et al. (2003) |
| MSIA _(aq) + OH _(aq) → MSA _(aq) ^(new) | 6.00×10^9 | 0 | Sehested and Holcman (1996) |
| MSI ⁻ + OH _(aq) → MSA _(aq) ^(new) | 1.20×10^{10} | 0 | Bardouki et al. (2002) |
| MSIA _(aq) + O _{3(aq)} → MSA _(aq) ^(new) | 3.50×10^7 | 0 | Hoffmann et al. (2016) |
| MSI ⁻ + O _{3(aq)} → MS ^{-(new)} | 2.00×10^6 | 0 | Flyunt et al. (2001) |
| MSA _(aq) + OH _(aq) → SO ₄ ^{2-(new)} | 1.50×10^7 | 0 | Hoffmann et al. (2016) |
| MS ⁻ + OH _(aq) → SO ₄ ^{2-(new)} | 1.29×10^7 | -2630 | Zhu et al. (2003) |
| HSO ₃ ⁻ + H ₂ O _{2(aq)} + H ⁺ → SO ₄ ²⁻ + 2 H ⁺ + H ₂ O _(aq) | $2.36 \times 10^{3(c)}$ | -4760 | Jacob (1986) |
| HSO ₃ ⁻ + O _{3(aq)} → SO ₄ ²⁻ + H ⁺ + O _{2(aq)} | 3.20×10^5 | -4830 | Jacob (1986) |
| SO ₃ ²⁻ + O _{3(aq)} → SO ₄ ²⁻ + O _{2(aq)} | 1.00×10^9 | -4030 | Jacob (1986) |
| S(IV) + O _{2(aq)} $\xrightarrow{\text{Mn(II), Fe(III)}}$ SO ₄ ²⁻ | See note ^d | | Martin and Good (1991) |
| HSO ₃ ⁻ + HOBr _(aq) → SO ₄ ²⁻ + 2 H ⁺ + Br ⁻ | 3.20×10^9 | 0 | Liu (2000); Chen et al. (2016, 2017) |
| SO ₃ ²⁻ + HOBr _(aq) → SO ₄ ²⁻ + H ⁺ + Br ⁻ | 5.00×10^9 | 0 | Troy and Margerum (1991) |