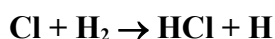


# IUPAC Task Group on Atmospheric Chemical Kinetic Data Evaluation – Data Sheet $\text{iClOx7}$

Website: <http://iupac.pole-ether.fr>. See website for latest evaluated data. Data sheets can be downloaded for personal use only and must not be re-transmitted or disseminated either electronically or in hard copy without explicit written permission.

This data sheet last evaluated: 28<sup>th</sup> June 2007; no revision of preferred values.



$$\Delta H^\circ = 4.4 \text{ kJ}\cdot\text{mol}^{-1}$$

## Rate coefficient data

$k/\text{cm}^3 \text{ molecule}^{-1} \text{ s}^{-1}$	Temp./K	Reference	Technique/ Comments
<i>Absolute Rate Coefficients</i>			
$2.0 \times 10^{-11} \exp[-(2164 \pm 101)/T]$	251-456	Westenberg and de Haas, 1968	DF-EPR
$(1.35 \pm 0.07) \times 10^{-14}$	297		
$(1.26 \pm 0.1) \times 10^{-14}$	298	Davis et al., 1970	FP-RF (a)
$5.5 \times 10^{-11} \exp[-(2391 \pm 50)/T]$	213-350	Watson et al., 1975	FP-RF
$(1.80 \pm 0.2) \times 10^{-14}$	298		
$2.66 \times 10^{-11} \exp[-(2230 \pm 60)/T]$	200-500	Lee et al., 1977	FP-RF
$(1.77 \pm 0.13) \times 10^{-14}$	302		
$3.65 \times 10^{-11} \exp[-(2310 \pm 20)/T]$	199-499	Miller and Gordon, 1981	FP-RF
$(1.49 \pm 0.07) \times 10^{-14}$	$298.1 \pm 0.5$		
$6.00 \times 10^{-11} \exp[-(2470 \pm 100)/T]$	297-425	Kita and Stedman, 1982	DF-RF
$(1.46 \pm 0.22) \times 10^{-14}$	297		
$4.4 \times 10^{-11} \exp(-2568/T)$	291-1283	Adusei and Fontijn, 1994	FP/PLP-RF
$8.1 \times 10^{-15}$	291		
$(1.68 \pm 0.22) \times 10^{-14}$	296	Kumaran et al., 1994	PLP-RA (b)

## Comments

- (a) Rate coefficient has been decreased by 10%, as recommended by the NASA evaluation panel (NASA, 1997).
- (b) Rate coefficients also measured over the temperature range 699-3020 K, and a combination of the 296 K and 699-2939 K rate coefficients resulted in  $k = 4.78 \times 10^{-16} T^{1.58} \exp(-1610/T) \text{ cm}^3 \text{ molecule}^{-1} \text{ s}^{-1}$ .

## Preferred Values

$$k = 1.7 \times 10^{-14} \text{ cm}^3 \text{ molecule}^{-1} \text{ s}^{-1} \text{ at } 298 \text{ K.}$$

$$k = 3.9 \times 10^{-11} \exp(-2310/T) \text{ cm}^3 \text{ molecule}^{-1} \text{ s}^{-1} \text{ over the temperature range } 200\text{-}310 \text{ K.}$$

## Reliability

$$\Delta \log k = \pm 0.1 \text{ at } 298 \text{ K.}$$

$$\Delta(E/R) = \pm 200 \text{ K.}$$

### *Comments on Preferred Values*

The preferred value is derived from a least-squares fit to the rate coefficients measured at  $\leq 302$  K by Watson et al. (1975), Lee et al. (1977), Miller and Gordon (1981), Kita and Stedman (1982) and Kumaran et al. (1994). The results of these studies are in excellent agreement below  $\sim 300$  K; at higher temperatures the data are in poorer agreement. The two studies of Miller and Gordon (1981) and Kita and Stedman (1982) have measured both the forward and reverse rates and have shown that the rate coefficient ratio agrees with equilibrium constant data. The room temperature rate coefficients of Adusei and Fontijn (1994) are in reasonable agreement with the preferred values.

### **References**

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