

## IUPAC Task Group on Atmospheric Chemical Kinetic Data Evaluation – Data Sheet VI.A1.13 HET\_H2OL\_13

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Data sheet last evaluated: December 2008; last change in preferred values: December 2008.

### HI + H<sub>2</sub>O(liq) → products

#### Experimental data

Parameter	Temp./K	Reference	Technique/ Comments
<i>Accommodation coefficients: <math>\alpha_b</math></i>			
$8 \times 10^{-2}$	278	Schweitzer et al., 2000	DT-MS(a)
0.19	262		

#### Comments

- (a) Uptake experiment on fast droplet train of 80-150  $\mu\text{m}$  diameter with a gas-liquid interaction time of 0-20 ms. The HI concentrations were in the range  $10^{12} - 10^{14}$  molecule  $\text{cm}^{-3}$ , with most experiments performed at  $10^{13}$  molecule  $\text{cm}^{-3}$ . The rate of uptake was time-independent thus non-saturating as well as independent on pH in the range 7-14. The diffusion-corrected uptake coefficient is interpreted as a bulk accommodation coefficient  $\alpha_b$  with a significant negative temperature dependence.

#### Preferred Values

Parameter	Value	T/K
$\alpha_b$	$2.4 \times 10^{-2}$	298
$\alpha_b$	$6.35 \times 10^{-9} \exp(4519/T)$	262-278

#### Reliability

$\Delta \log(\alpha_b)$	$\pm 0.3$	298
$\Delta(E/R)$	$\pm 300 \text{ K}$	262-278

#### Comments on Preferred Values

The uptake data were interpreted as bulk accommodation coefficients. Saturation effects of HI on the surface of the H<sub>2</sub>O drop were absent because the uptake kinetics on neutral water and 1M NaOH aqueous solution were identical. The resulting activation energy is  $E = -37.6 \text{ kJ/Mol}$ , the Arrhenius plot had a correlation coefficient of 0.9697.

#### References

Schweitzer, F., Mirabel, Ph. and George, C.: J. Phys. Chem. A, 104, 72-76, 2000.