

IUPAC Subcommittee on Gas Kinetic Data Evaluation – Data Sheet V.A4.4

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This datasheet updated: 4th April 2008.

HBr + SAT

Experimental data

<i>Parameter</i>	Temp./K	Reference	Technique/ Comments
<i>Experimental uptake coefficients: γ, γ_0</i>			
$\gamma_{ss} = 0.25$ (10% H ₂ SO ₄ , frozen)	190	Seisel and Rossi, 1997	Knud-MS (a)
$= 0.18$ (60% H ₂ SO ₄ , frozen)	190		
$< 1 \times 10^{-4}$ (95% H ₂ SO ₄ , frozen)	220		
<i>Partition coefficients: $K(cm)$</i>			
No reversible adsorption			

Comments

- (a) HBr [(2-8) $\times 10^{11}$ molecule cm⁻³]. Uptake of pure HBr on frozen bulk aqueous solutions of defined [H₂SO₄]. No saturation effects observed.

Preferred Values

$$\gamma_{ss} = 0.18 \text{ at } 190 \text{ K}$$

Reliability

$$\Delta \log(\gamma_{ss}) = 0.3$$

Comments on Preferred Values

There appears to be only one experimental study of HBr interaction with specifically prepared H₂SO₄-hydrate surfaces at temperatures and concentrations corresponding to hydrate thermodynamically stability regions. Under these conditions uptake is continuous and irreversible. There is a strong decrease of γ with increasing concentration of H₂SO₄ in frozen as well as in liquid supercooled H₂SO₄-H₂O mixtures.

References

Seisel, S. and Rossi, M.J.: Ber. Bunsenges. Phys. Chem. 101, 943 (1997).