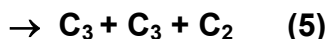
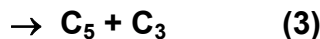


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Thermodynamic Data

$$\Delta H^{\circ}_0 (1) = - 353 \text{ kJ mol}^{-1}$$

$$\Delta H^{\circ}_0 (2) = - 323 \text{ kJ mol}^{-1}$$

$$\Delta H^{\circ}_0 (3) = - 498 \text{ kJ mol}^{-1}$$

$$\Delta H^{\circ}_0 (4) = - 295 \text{ kJ mol}^{-1}$$

$$\Delta H^{\circ}_0 (5) = + 62 \text{ kJ mol}^{-1}$$

$$\text{Ionisation Potential} = 883 \text{ kJ mol}^{-1} = 9.15 \text{ eV}$$

Thermochemical data have been obtained with $\Delta H^{\circ}_0 = \text{DE-IP}$. DE from Diaz-Tendero et al (2006 IP (vertical) from Belau et al (2007) (estimated error bars 0.1). Estimated error bars on ΔH values: $\sim 60 \text{ kJ mol}^{-1}$

Rate Coefficient Data

| $k / \text{cm}^3 \text{ molecule}^{-1} \text{ s}^{-1}$ | T / K | Reference | Comments |
|--|----------------|-------------------|----------|
| <i>Rate Coefficient Measurement</i> | | | |
| <i>None</i> | | | |
| <i>Reviews and Evaluations</i> | | | |
| $2.0 \times 10^{-6}(\text{T}/300)^{-0.3}$ | | OSU09 website | (a) |
| $2.0 \times 10^{-6}(\text{T}/300)^{-0.3}$ | 10-300 | UMIST06 database | (a) |
| <i>Branching Fraction Measurement</i> | | | |
| (1) = 0.03 (± 0.005) | | Chabot 2006, 2010 | (b) |
| (2) = 0.01 (± 0.005) | | | |
| (3) = 0.90 (± 0.04) | | | |
| (4) = 0.06 (± 0.01) | | | |
| <i>Branching fraction Reviews and Evaluations</i> | | | |
| (1) = (2) = 0.5; (3) = (4) = 0.0 | | OSU09 website | |
| (1) = (2) = 0.5; (3) = (4) = 0.0 | 10-300 | UMIST06 database | |

Comments

(a) OSU and UMIST estimations for reaction rates and branching fractions are from Herbst & Leung (1989). Lognormal factor 1.25 of accuracy is reported.

(b) Measurements have been performed with High Velocity Collision experiments on hot (3000°K) C^+_8 clusters produced by a sputtering source and capturing an electron from an atom. Results have been interpreted satisfactorily

within a statistical fragmentation behaviour (Martinet, 2004). Derivation of these experimental results in astrochemical context assumes that statistical fragmentation occurs under DR process (Chabot 2010).

Preferred Values

Rate constant:

$$k = 2 \times 10^{-6} (T/300)^{-0.3} \text{ cm}^3 \text{ molecule}^{-1} \text{ s}^{-1}$$

Reliability of rate constant:

$$F_0=2; g=0$$

Recommended Branching Fractions:

$$(1) = 0.0$$

$$(2) = 0.20$$

$$(3) = 0.80$$

Reliability of Branching Fractions:

$$\pm 0.1 \text{ (uniform)}$$

References

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