

Experimental data of the pyrolysis of bromoethane

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Evolution of the conversion of the reactant (in %) as a function of the temperature and of the inlet mole fraction of bromoethane. Jet-stirred reactor.

T (°C)	T (K)	$x_{C_2H_5Br}^{inlet} = 0.01, \tau = 2 \text{ s}, P = 1.067 \text{ bar}$	$x_{C_2H_5Br}^{inlet} = 0.03, \tau = 2 \text{ s}, P = 1.067 \text{ bar}$
327	600	0	0
377	650	3.9	1.7
427	700	5.0	1.8
477	750	7.7	2.7
502	775	12.5	7.6
527	800	21.8	25.0
552	825	37.9	46.4
577	850	64.1	69.5
602	875	80.9	82.8
627	900	90.6	91.5
652	925	91.5	96.4
677	950	99.1	98.8
702	975	100	100

Conversion of bromoethane as a function of the residence time ($x_{C_2H_5Br}^{inlet} = 0.01, \tau = 2 \text{ s}, P = 1.067 \text{ bar}$). Tubular reactor.

Residence time (s)	2	3	4	5	6	7	8
Conversion (%)	12.6	17.1	20.7	22.0	23.5	26.5	32.1

Mole fraction of reaction products of the pyrolysis of bromoethane as a function of the temperature

($x_{C_2H_5Br}^{inlet} = 0.01, \tau = 2 \text{ s}, P = 1.067 \text{ bar}$). Tubular reactor. GC analysis.

T (°C)	T (K)	Methane	Acetylene	Ethylene	Ethane	C ₂ H ₃ Br	1,3-butadiene	Vinyl acetylene
327	600	0	0	0	0	0	0	0
377	650	0	0	0	0	0	0	0
427	700	0	0	2.43E-05	0	0	0	0
477	750	0	0	4.22E-04	1.39E-05	7.62E-06	0	0
502	775	0	0	6.30E-04	1.50E-05	1.10E-05	0	0
527	800	0	0	1.97E-03	3.83E-05	3.89E-05	0	0
552	825	2.21E-05	0	5.56E-03	1.02E-04	1.30E-05	0	4.83E-06
577	850	2.49E-05	0	7.64E-03	1.41E-04	1.84E-05	0	7.47E-06
602	875	3.47E-05	0	8.90E-03	1.68E-04	2.43E-05	0	1.09E-05
627	900	3.08E-05	0	1.00E-02	1.87E-04	3.13E-04	0	1.47E-05
652	925	5.68E-05	0	9.20E-03	1.63E-04	2.88E-04	0	1.47E-05
677	950	4.08E-05	0	1.01E-02	1.55E-04	3.01E-04	0	1.91E-05
702	975	8.63E-05	0	9.33E-03	1.04E-04	2.36E-04	0	2.30E-05
727	1000	4.51E-05	0	1.04E-02	6.89E-05	1.75E-04	6.38E-06	3.22E-05

Evolution of the mole fraction of *HBr* as a function of the temperature ($x_{C_2H_5Br}^{inlet} = 0.01$, $\tau = 2$ s, $P = 1.067$ bar). Tubular reactor. FTIR analysis.

T(°C)	T(K)	HBr
327	600	0
377	650	0
427	700	0
477	750	5.19E-05
502	775	1.32E-03
527	800	3.75E-03
552	825	6.65E-03
577	850	8.10E-03
602	875	9.33E-03
627	900	9.87E-03
652	925	9.30E-03
677	950	9.01E-03
702	975	9.64E-03

Mole fraction of reaction products of the pyrolysis of bromoethane as a function of the temperature

($x_{C_2H_5Br}^{inlet} = 0.01$, $\tau = 2$ s, $P = 1.067$ bar). Jet-stirred reactor. GC analysis.

T (°C)	T (K)	Methane	Acetylene	Ethylene	Ethane	C ₂ H ₃ Br	1,3-butadiene	Vinyl acetylene
327	600	0	0	0	0	0	0	0
377	650	0	0	0	0	0	0	0
427	700	0	0	9.14E-06	0	0	0	0
477	750	0	0	1.78E-04	0	0	0	0
502	775	0	0	5.47E-04	8.27E-06	2.83E-06	0	0
527	800	0	0	1.53E-03	1.94E-05	1.04E-05	0	0
552	825	0	0	3.58E-03	5.45E-05	3.40E-05	0	0
577	850	0	0	5.51E-03	9.06E-05	6.31E-05	0	0
602	875	0	0	6.88E-03	1.26E-04	9.75E-05	0	0
627	900	0	0	7.70E-03	1.46E-04	1.31E-04	0	0
652	925	0	0	8.20E-03	1.56E-04	1.40E-04	0	1.10E-05
677	950	1.20E-04	9.70E-05	8.74E-03	1.37E-04	1.99E-04	4.46E-06	1.17E-05
702	975	1.24E-04	1.97E-04	8.90E-03	1.09E-04	2.02E-04	7.36E-05	2.18E-05
727	1000	1.33E-04	3.57E-04	9.09E-03	6.99E-05	1.59E-04	1.81E-05	3.09E-05