Number	Reaction	A	n	E	Ref.
148	$C_4H_6 \rightarrow C_2H_2 + C_2H_3 + H$	1.580E+16	0.00	460	[1]
149	$C_4H_6 \rightarrow 2\ C_2H_3$	1.800E+13	0.00	356	[1]
150	$2\ C_2H_3 \rightarrow C_4H_6$	1.260E+13	0.00	0	[1]
151	$C_4H_6 + H \rightarrow C_2H_3 + C_2H_4$	5.000E+11	0.00	0	[1]
152	$C_4H_6 + H \rightarrow H_2 + C_2H_2 + C_2H_3$	6.300E+10	0.70	25.1	[1]
153	$C_4H_6 + OH \rightarrow CHO + H + C_3H_5$	5.000E+12	0.00	0	[1]
154	$C_4H_6 + CH_3 \rightarrow CH_4 + C_2H_2 + C_2H_3$	7.000E+13	0.00	77	[1]
155	$C_3H_3 + CH_3 \rightarrow C_4H_6$	5.000E+12	0.00	0	[1]
156	$C_5H_8 \rightarrow C_3H_6 + C_2H_2$	1.000E+16	0.00	305	[1]
157	$C_5H_8 \rightarrow C_3H_4 + C_2H_4$	3.160E+12	0.00	239	[1]
158	$C_5H_8 \rightarrow C_3H_5 + C_2H_3$	3.160E+12	0.00	239	[1]
159	$C_5H_8 + O_2 \rightarrow C_2H_2 + C_3H_5 + HO_2$	3.000E+12	0.00	0	[1]
160	$C_5H_8 + O_2 \rightarrow C_2H_3 + C_3H_4 + HO_2$	3.000E+12	0.00	0	[1]
161	$C_5H_8 + HO_2 \rightarrow C_2H_2 + C_3H_5 + H_2O_2$	1.000E+14	0.00	0	[1]
162	$C_5H_8 + HO_2 \rightarrow C_2H_3 + C_3H_4 + H_2O_2$	1.000E+14	0.00	0	[1]
J1	$JP_{10} \rightarrow H + C_3H_3 + C_2H_4 + C_5H_8$	6.000E+16	0.00	410	[1]
J2	$JP_{10} \rightarrow H + C_3H_5 + C_2H_2 + C_5H_8$	6.000E+16	0.00	411	[1]
J3	$JP_{10} \rightarrow C_2H_2 + 2\ C_2H_4 + C_4H_6$	5.000E+16	0.00	358	[1]
J4	$JP_{10} + H \rightarrow H_2 + C_3H_3 + C_2H_4 + C_5H_8$	1.320E+06	2.54	28.3	[1]
J5	$JP_{10} + O \rightarrow OH + C_3H_3 + C_2H_4 + C_5H_8$	2.880E+06	2.40	23	[1]
J6	$JP_{10} + OH \rightarrow H_2O + C_3H_3 + C_2H_4 + C_5H_8$	1.740E+07	1.80	4.1	[1]
J7	$JP_{10} + O_2 \rightarrow HO_2 + C_3H_3 + C_2H_4 + C_5H_8$	3.980E+13	0.00	213	[1]
J8	$JP_{10} + HO_2 \rightarrow H_2O_2 + C_3H_3 + C_2H_4 + C_5H_8$	4.760E+04	2.55	69.1	[1]
J9	$JP_{10} + H \rightarrow H_2 + C_3H_5 + C_2H_2 + C_5H_8$	2.600E+06	2.40	18.7	[1]
J10	$JP_{10} + O \rightarrow OH + C_3H_5 + C_2H_2 + C_5H_8$	2.760E+05	2.60	8	[1]
J11	$JP_{10} + OH \rightarrow H_2O + C_3H_5 + C_2H_2 + C_5H_8$	3.800E+06	2.00	-2.5	[1]
J12	$JP_{10} + O_2 \rightarrow HO_2 + C_3H_5 + C_2H_2 + C_5H_8$	7.920E+13	0.00	199	[1]
J13	$JP_{10} + HO_2 \rightarrow H_2O_2 + C_3H_5 + C_2H_2 + C_5H_8$	1.930E+04	2.60	58.2	[1]

Units are mol, cm^3, kJ, K.

The backward rates for all reversible reactions can be calculated from thermodynamic data.

References

[1] S. C. Li, B. Varatharajan, and F. A. Williams. The chemistry of jp-10 ignition. *AIAA Journal*, 39(12):2351–2356, 2001.