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3  ! "The role of chemistry in the oscillating combustion of hydrocarbons:
4  ! an experimental and theoretical study"
5  ! A. Stagni, Y. Song, L.A. Vandewalle, K.M. Van Geem,
6  ! G.B. Marin, O. Herbinet, F. Battin-Leclerc, T. Faravelli
7  !
8  ! Submitted to Chemical Engineering Journal (March 2019)
9  !
10 ! Kinetic mechanism of methane oxidation at atmospheric pressure
11 ! and diluted conditions:
12 ! X_CH4 = 0.0025 - 0.025
13 ! Equivalence ratio: 0.5 - 2
14 !
15 ! CHEMKIN format
16 !
17 ELEMENTS
18 C
19 H
20 O
21 N
22 HE
23 END
24 SPECIES
25 N2                HE                H2                H
26 O2
27 O                 H2O                OH                H2O2
28 CO                CO2                CH4                CH3
29 CH2(S)            CH3O2              CH3OH              CH3O
30 CH2OH
31 CH2O              HCO                C2H6                C2H5
32 C2H4
33 C2H3              C2H2                CH3CHO              CH3CO
34 CH2CHO
35 CH2CO              HCCO                C3H4-P              C3H3
36 END
37 REACTIONS
38 H2+M=2H+M                4.5770e+19    -1.400
39 104400.00
40 H2/ 2.50/ H2O/ 12.00/ CO/ 1.90/ CO2/ 3.80/ HE/ 0.83/ CH4/ 2.00/ C2H6/ 3.00/
41 H2+O=H+OH                5.0800e+04    2.670
42 6292.00
43 H2+OH=H+H2O              4.3800e+13    0.000
44 6990.00
45 2O+M=O2+M                6.1650e+15    -0.500
46 0.00
47 H2/ 2.50/ H2O/ 12.00/ CO/ 1.90/ CO2/ 3.80/ HE/ 0.83/ CH4/ 2.00/ C2H6/ 3.00/
48 H+O2=O+OH                1.1400e+14    0.000
49 15286.00
50 H+OH+M=H2O+M            3.5000e+22    -2.000
51 0.00
52 H2/ 0.73/ H2O/ 3.65/ CH4/ 2.00/ C2H6/ 3.00/
53 O+H2O=2OH                6.7000e+07    1.704
54 14986.80
55 H+O+M=OH+M                4.7140e+18    -1.000
56 0.00
57 H2/ 2.50/ H2O/ 12.00/ CO/ 1.50/ CO2/ 2.00/ HE/ 0.75/ CH4/ 2.00/ C2H6/ 3.00/
58 H2O2 (+M)=2OH (+M)        2.0000e+12    0.900
59 48749.00
60 LOW/ 2.49e+24    -2.300    48749.0/
61 TROE/ 0.4300    1.000e-30    1.000e+30/
62 H2O/ 7.65/ CO2/ 1.60/ N2/ 1.50/ O2/ 1.20/ HE/ 0.65/ H2O2/ 7.70/ H2/ 3.70/ CO/
63 2.80/
64 H+H2O2=H2O+OH            2.4100e+13    0.000
65 3970.00
66 H+H2O2=H2+HO2            2.1500e+10    1.000
67 6000.00
68 O+H2O2=OH+HO2            9.5500e+06    2.000
69 3970.00
70 OH+H2O2=H2O+HO2          1.7400e+12    0.000
71 318.00

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99	H2+CH2 (S)=H+CH3					7.0000e+13	0.000
	0.00						
100	OH+CH2 (S)=H+CH2O					3.0000e+13	0.000
	0.00						
101	CO2+CH2 (S)=CO+CH2O					1.4000e+13	0.000
	0.00						
102	H+CH2 (+M)=CH3 (+M)					2.5000e+16	-0.800
	0.00						
103	LOW/ 3.20e+27	-3.140	1230.0/				
104	TROE/	0.6800	78.00	1995.	5590./		
105	H2/ 2.00/ H2O/ 6.00/ CO/ 1.50/ CO2/ 2.00/ CH4/ 2.00/ C2H6/ 3.00/ HE/ 0.70/						
106	O2+CH2=OH+HCO					1.0600e+13	0.000
	1500.00						
107	O2+CH2=>2H+CO2					2.6400e+12	0.000
	1500.00						
108	O+CH2=>2H+CO					5.0000e+13	0.000
	0.00						
109	O2+CH3 (+M)=CH3O2 (+M)					7.8120e+09	0.900
	0.00						
110	LOW/ 6.85e+24	-3.000	0.0/				
111	TROE/	0.6000	1000.	70.00	1700./		
112	O2+CH3=O+CH3O					7.5460e+12	0.000
	28320.00						
113	O2+CH3=OH+CH2O					2.6410e+00	3.283
	8105.00						
114	O+CH3=H+CH2O					5.5400e+13	0.050
	-136.00						
115	OH+CH3=H2O+CH2 (S)					4.9360e+14	-0.669
	-445.80						
116	PLOG /	1.000000e-02	4.936000e+14	-6.690000e-01	-4.458000e+02	/	
117	PLOG /	1.000000e-01	1.207000e+15	-7.780000e-01	-1.756000e+02	/	
118	PLOG /	1.000000e+00	5.282000e+17	-1.518000e+00	1.772000e+03	/	
119	PLOG /	1.000000e+01	4.788000e+23	-3.155000e+00	7.003000e+03	/	
120	PLOG /	1.000000e+02	8.433000e+19	-1.962000e+00	8.244000e+03	/	
121	OH+CH3=H2+CH2O					3.5020e+05	1.441
	-3244.00						
122	PLOG /	1.000000e-02	3.502000e+05	1.441000e+00	-3.244000e+03	/	
123	PLOG /	1.000000e-01	8.854000e+05	1.327000e+00	-2.975000e+03	/	
124	PLOG /	1.000000e+00	1.650000e+07	9.730000e-01	-2.010000e+03	/	
125	PLOG /	1.000000e+01	5.374000e+09	2.870000e-01	2.800000e+02	/	
126	PLOG /	1.000000e+02	9.494000e+18	-2.199000e+00	9.769000e+03	/	
127	OH+CH3=H+CH2OH					1.6210e+10	0.965
	3210.00						
128	PLOG /	1.000000e-02	1.621000e+10	9.650000e-01	3.214000e+03	/	
129	PLOG /	1.000000e-01	1.807000e+10	9.500000e-01	3.247000e+03	/	
130	PLOG /	1.000000e+00	4.686000e+10	8.330000e-01	3.566000e+03	/	
131	PLOG /	1.000000e+01	1.525000e+13	1.340000e-01	5.641000e+03	/	
132	PLOG /	1.000000e+02	3.590000e+14	-1.860000e-01	8.601000e+03	/	
133	OH+CH3=H+CH3O					1.1860e+09	1.016
	11940.00						
134	PLOG /	1.000000e-02	1.186000e+09	1.016000e+00	1.194000e+04	/	
135	PLOG /	1.000000e-01	1.188000e+09	1.016000e+00	1.194000e+04	/	
136	PLOG /	1.000000e+00	1.230000e+09	1.011000e+00	1.195000e+04	/	
137	PLOG /	1.000000e+01	1.798000e+09	9.650000e-01	1.206000e+04	/	
138	PLOG /	1.000000e+02	5.242000e+10	5.510000e-01	1.307000e+04	/	
139	OH+CH3=H2O+CH2					4.2930e+04	2.568
	3997.80						
140	HO2+CH3=OH+CH3O					1.0000e+12	0.269
	-687.50						
141	O+CH3O2=O2+CH3O					3.6000e+13	0.000
	0.00						
142	H+CH3O2=OH+CH3O					9.6000e+13	0.000
	0.00						
143	OH+CH3O2=O2+CH3OH					6.0000e+13	0.000
	0.00						
144	CH3+CH3O2=2CH3O					5.0800e+12	0.000
	-1411.00						
145	2CH3O2=>O2+CH3OH+CH2O					3.1100e+14	-1.610
	-1051.00						
146	2CH3O2=>O2+2CH3O					1.4000e+16	-1.610
	1860.00						
147	CH3OH (+M)=OH+CH3 (+M)					2.0840e+18	-0.615

	92540.60						
148	LOW/	1.50e+43	-6.995	97992.2/			
149	TROE/		-0.4748	3.558e+04	1116.	9023./	
150	CH3OH (+M)=H2O+CH2 (S) (+M)					3.1210e+18	-1.017
	91712.00						
151	LOW/	1.43e+47	-8.227	99417.1/			
152	TROE/		2.545	3290.	4.732e+04	4.711e+04/	
153	CH3OH (+M)=H+CH2OH (+M)					7.8960e-03	5.038
	84467.40						
154	LOW/	3.39e+42	-7.244	105230.3/			
155	TROE/		-73.91	3.705e+04	4.150e+04	5220./	
156	H+CH3OH=H2+CH3O					1.9900e+05	2.560
	10300.00						
157	H+CH3OH=H2+CH2OH					3.0700e+05	2.550
	5440.00						
158	O+CH3OH=OH+CH3O					3.8800e+04	2.500
	3080.00						
159	O+CH3OH=OH+CH2OH					3.8800e+05	2.500
	3080.00						
160	OH+CH3OH=H2O+CH3O					1.5000e+02	3.030
	-763.00						
161	OH+CH3OH=H2O+CH2OH					3.0800e+04	2.650
	-806.70						
162	O2+CH3OH=HO2+CH3O					3.5800e+04	2.270
	42764.50						
163	O2+CH3OH=HO2+CH2OH					3.5800e+05	2.270
	42764.50						
164	HO2+CH3OH=H2O2+CH3O					1.2200e+12	0.000
	20070.70						
165	HO2+CH3OH=H2O2+CH2OH					3.2600e+13	0.000
	18782.20						
166	CH3+CH3OH=CH4+CH2OH					2.1300e-01	3.953
	7055.10						
167	CH3+CH3OH=CH4+CH3O					3.2200e+03	2.425
	8579.50						
168	CH3OH+HCO=CH2OH+CH2O					9.6300e+03	2.900
	13110.00						
169	CH3OH+CH3O=CH3OH+CH2OH					3.0000e+11	0.000
	4074.00						
170	O2+CH2OH=HO2+CH2O					1.5100e+15	-1.000
	0.00						
171	DUPLICATE						
172	O2+CH2OH=HO2+CH2O					2.4100e+14	0.000
	5017.00						
173	DUPLICATE						
174	H+CH2OH=H2+CH2O					6.0000e+12	0.000
	0.00						
175	HO2+CH2OH=H2O2+CH2O					1.2000e+13	0.000
	0.00						
176	CH2OH+HCO=2CH2O					1.8000e+14	0.000
	0.00						
177	CH2OH+HCO=CO+CH3OH					1.0000e+13	0.000
	0.00						
178	CH3O+CH2OH=CH3OH+CH2O					2.4000e+13	0.000
	0.00						
179	OH+CH2OH=H2O+CH2O					2.4000e+13	0.000
	0.00						
180	O+CH2OH=OH+CH2O					4.2000e+13	0.000
	0.00						
181	2CH2OH=CH3OH+CH2O					3.0000e+12	0.000
	0.00						
182	O2+CH3O=HO2+CH2O					4.3800e-19	9.500
	-5501.00						
183	H+CH3O=H2+CH2O					2.0000e+13	0.000
	0.00						
184	HO2+CH3O=H2O2+CH2O					3.0100e+11	0.000
	0.00						
185	CH3+CH3O=CH4+CH2O					1.2000e+13	0.000
	0.00						
186	2CH3O=CH3OH+CH2O					6.0300e+13	0.000
	0.00						
187	H+HCO (+M)=CH2O (+M)					1.0900e+12	0.480
	-260.00						



234	CH2 (S)+C2H6=CH3+C2H5 0.00			1.2000e+14	0.000
235	CH3+C2H6=CH4+C2H5 3231.00			5.5500e-04	4.720
236	CH3O+C2H6=CH3OH+C2H5 7090.00			2.4100e+11	0.000
237	H+C2H4 (+M)=C2H5 (+M) 1355.00			9.5690e+08	1.463
238	LOW/ 1.42e+39 -6.642 5769.0/				
239	TROE/ -0.5690 299.0 -9147. 152.4/				
240	H2/ 2.00/ H2O/ 6.00/ CH4/ 2.00/ CO/ 1.50/ CO2/ 2.00/ C2H6/ 3.00/				
241	H+C2H5=H2+C2H4 0.00			2.0000e+12	0.000
242	2C2H4=C2H5+C2H3 71530.00			4.8200e+14	0.000
243	CH3+C2H5=CH4+C2H4 -2921.00			1.1800e+04	2.450
244	O+C2H5=H+CH3CHO 0.00			1.1000e+14	0.000
245	2CH3=H+C2H5 10664.30			4.7400e+12	0.105
246	PLOG / 1.000000e-02 4.740000e+12 1.050000e-01 1.066430e+04 /				
247	PLOG / 1.000000e-01 2.570000e+13 -9.600000e-02 1.140610e+04 /				
248	PLOG / 1.000000e+00 3.100000e+14 -3.620000e-01 1.337250e+04 /				
249	PLOG / 1.000000e+01 2.150000e+10 8.850000e-01 1.353250e+04 /				
250	PLOG / 1.000000e+02 1.032000e+02 3.230000e+00 1.123610e+04 /				
251	O2+C2H5=HO2+C2H4 -391.40			2.0940e+09	0.490
252	PLOG / 4.000000e-02 2.094000e+09 4.900000e-01 -3.914000e+02 /				
253	PLOG / 1.000000e+00 1.843000e+07 1.130000e+00 -7.206000e+02 /				
254	PLOG / 1.000000e+01 7.561000e+14 -1.010000e+00 4.749000e+03 /				
255	O2+C2H5=OH+CH3CHO 254.30			4.9080e-06	4.760
256	PLOG / 4.000000e-02 4.908000e-06 4.760000e+00 2.543000e+02 /				
257	PLOG / 1.000000e+00 6.803000e-02 3.570000e+00 2.643000e+03 /				
258	PLOG / 1.000000e+01 8.265000e+02 2.410000e+00 5.285000e+03 /				
259	H+C2H3 (+M)=C2H4 (+M) 280.00			6.0800e+12	0.270
260	LOW/ 1.40e+30 -3.860 3320.0/				
261	TROE/ 0.7820 207.5 2663. 6095./				
262	H2/ 2.00/ H2O/ 6.00/ CO/ 1.50/ CO2/ 2.00/ CH4/ 2.00/ C2H6/ 3.00/ HE/ 0.70/				
263	C2H4+M=H2+C2H2+M 67823.00			2.6100e+16	0.000
264	H2/ 2.00/ H2O/ 6.00/ CH4/ 2.00/ CO/ 1.50/ CO2/ 2.00/ C2H6/ 3.00/				
265	O2+C2H4=HO2+C2H3 57623.10			4.2200e+13	0.000
266	H+C2H4=H2+C2H3 12950.00			5.0700e+07	1.930
267	OH+C2H4=H2O+C2H3 2215.50			2.2300e+04	2.745
268	CH3O+C2H4=CH3OH+C2H3 6750.00			1.2000e+11	0.000
269	CH3+C2H4=CH4+C2H3 15148.00			9.7600e+02	2.947
270	DUPLICATE				
271	CH3+C2H4=CH4+C2H3 8835.80			8.1300e-05	4.417
272	DUPLICATE				
273	O+C2H4=CH3+HCO 183.00			7.4530e+06	1.880
274	O+C2H4=H+CH2CHO 183.00			6.0980e+06	1.880
275	CH3+CH2 (S)=H+C2H4 0.00			2.0000e+13	0.000
276	OH+C2H4=CH3+CH2O -1732.70			5.3500e+00	2.920
277	PLOG / 1.000000e-02 5.350000e+00 2.920000e+00 -1.732700e+03 /				
278	PLOG / 2.500000e-02 3.190000e+01 2.710000e+00 -1.172300e+03 /				
279	PLOG / 1.000000e-01 5.550000e+02 2.360000e+00 -1.808000e+02 /				
280	PLOG / 1.000000e+00 1.780000e+05 1.680000e+00 2.060500e+03 /				
281	PLOG / 1.000000e+01 2.370000e+09 5.600000e-01 6.006700e+03 /				
282	PLOG / 1.000000e+02 2.760000e+13 -5.000000e-01 1.145510e+04 /				
283	OH+C2H4=H+CH3CHO			2.3700e-07	5.300

-2050.60						
284	PLOG /	1.000000e-02	2.370000e-07	5.300000e+00	-2.050600e+03	/
285	PLOG /	2.500000e-02	8.730000e-05	4.570000e+00	-6.180000e+02	/
286	PLOG /	1.000000e-01	4.030000e-01	3.540000e+00	1.881700e+03	/
287	PLOG /	1.000000e+00	2.380000e-02	3.910000e+00	1.722700e+03	/
288	PLOG /	1.000000e+01	8.250000e+08	1.010000e+00	1.050730e+04	/
289	PLOG /	1.000000e+02	6.800000e+09	8.100000e-01	1.386730e+04	/
290	H+C2H2 (+M)=C2H3 (+M)				1.7100e+10	1.266
2709.00						
291	LOW/	6.35e+31	-4.664	3780.0/		
292	TROE/	0.7880	-1.020e+04	1.000e-30/		
293	H2/ 2.00/ H2O/ 6.00/ CO/ 1.50/ CO2/ 2.00/ CH4/ 2.00/ C2H6/ 3.00/ HE/ 0.70/					
294	O2+C2H3=O+CH2CHO				1.7600e+12	0.150
4205.00						
295	DUPLICATE					
296	PLOG /	1.000000e-02	7.880000e+20	-2.670000e+00	6.742000e+03	/
297	PLOG /	1.000000e-01	7.720000e+20	-2.670000e+00	6.713000e+03	/
298	PLOG /	3.160000e-01	9.870000e+20	-2.700000e+00	6.724000e+03	/
299	PLOG /	1.000000e+00	7.100000e+20	-2.650000e+00	6.489000e+03	/
300	PLOG /	3.160000e+00	4.500000e+20	-2.530000e+00	6.406000e+03	/
301	PLOG /	1.000000e+01	1.760000e+23	-3.220000e+00	8.697000e+03	/
302	PLOG /	3.160000e+01	3.140000e+25	-3.770000e+00	1.153000e+04	/
303	PLOG /	1.000000e+02	1.020000e+26	-3.800000e+00	1.391000e+04	/
304	O2+C2H3=O+CH2CHO				1.7600e+12	0.150
4205.00						
305	DUPLICATE					
306	PLOG /	1.000000e-02	1.360000e+10	6.200000e-01	-2.776000e+02	/
307	PLOG /	1.000000e-01	1.420000e+10	6.200000e-01	-2.477000e+02	/
308	PLOG /	3.160000e-01	1.660000e+10	6.000000e-01	-1.625000e+02	/
309	PLOG /	1.000000e+00	2.020000e+10	5.800000e-01	3.840000e+01	/
310	PLOG /	3.160000e+00	9.750000e+09	6.700000e-01	2.480000e+02	/
311	PLOG /	1.000000e+01	7.340000e+09	7.200000e-01	7.781000e+02	/
312	PLOG /	3.160000e+01	1.570000e+09	9.200000e-01	1.219000e+03	/
313	PLOG /	1.000000e+02	7.850000e+07	1.280000e+00	1.401000e+03	/
314	O2+C2H3=HO2+C2H2				6.4900e+06	1.500
5218.00						
315	DUPLICATE					
316	PLOG /	1.000000e-02	1.080000e+07	1.280000e+00	3.322000e+03	/
317	PLOG /	1.000000e-01	7.750000e+06	1.330000e+00	3.216000e+03	/
318	PLOG /	3.160000e-01	1.210000e+07	1.270000e+00	3.311000e+03	/
319	PLOG /	1.000000e+00	2.150000e+07	1.190000e+00	3.367000e+03	/
320	PLOG /	3.160000e+00	1.130000e+08	1.000000e+00	3.695000e+03	/
321	PLOG /	1.000000e+01	1.310000e+11	1.200000e-01	5.872000e+03	/
322	PLOG /	3.160000e+01	1.190000e+09	8.200000e-01	5.617000e+03	/
323	PLOG /	1.000000e+02	1.060000e+17	-1.450000e+00	1.223000e+04	/
324	O2+C2H3=HO2+C2H2				6.4900e+06	1.500
5218.00						
325	DUPLICATE					
326	PLOG /	1.000000e-02	4.760000e+01	2.750000e+00	-7.964000e+02	/
327	PLOG /	1.000000e-01	5.160000e+01	2.730000e+00	-7.683000e+02	/
328	PLOG /	3.160000e-01	5.550000e+01	2.730000e+00	-6.585000e+02	/
329	PLOG /	1.000000e+00	4.600000e+01	2.760000e+00	-4.928000e+02	/
330	PLOG /	3.160000e+00	3.750000e+00	3.070000e+00	-6.010000e+02	/
331	PLOG /	1.000000e+01	5.480000e+00	3.070000e+00	8.570000e+01	/
332	PLOG /	3.160000e+01	4.470000e+08	0.000000e+00	9.550000e+02	/
333	PLOG /	1.000000e+02	2.020000e+01	2.940000e+00	1.847000e+03	/
334	O2+C2H3=OH+CH2CO				1.1700e+03	2.430
7074.00						
335	DUPLICATE					
336	PLOG /	1.000000e-02	8.660000e+02	2.410000e+00	6.061000e+03	/
337	PLOG /	1.000000e-01	8.910000e+02	2.410000e+00	6.078000e+03	/
338	PLOG /	3.160000e-01	9.430000e+02	2.400000e+00	6.112000e+03	/
339	PLOG /	1.000000e+00	1.060000e+03	2.390000e+00	6.180000e+03	/
340	PLOG /	3.160000e+00	1.090000e+03	2.380000e+00	6.179000e+03	/
341	PLOG /	1.000000e+01	1.390000e+03	2.360000e+00	6.074000e+03	/
342	PLOG /	3.160000e+01	2.490000e+06	1.420000e+00	8.480000e+03	/
343	PLOG /	1.000000e+02	1.660000e+10	3.600000e-01	1.201000e+04	/
344	O2+C2H3=OH+CH2CO				1.1700e+03	2.430
7074.00						
345	DUPLICATE					
346	PLOG /	1.000000e-02	1.820000e-01	3.120000e+00	1.331000e+03	/
347	PLOG /	1.000000e-01	2.070000e-01	3.110000e+00	1.383000e+03	/
348	PLOG /	3.160000e-01	2.710000e-01	3.080000e+00	1.496000e+03	/

349	PLOG /	1.000000e+00	5.260000e-01	3.010000e+00	1.777000e+03	/	
350	PLOG /	3.160000e+00	1.370000e+00	2.900000e+00	2.225000e+03	/	
351	PLOG /	1.000000e+01	4.190000e-01	2.930000e+00	2.052000e+03	/	
352	PLOG /	3.160000e+01	1.190000e-04	4.210000e+00	2.043000e+03	/	
353	PLOG /	1.000000e+02	1.300000e-03	3.970000e+00	3.414000e+03	/	
354	O2+C2H3=CH2O+HCO					1.1600e+16	-1.130
	3791.00						
355	DUPLICATE						
356	PLOG /	1.000000e-02	2.490000e+36	-7.600000e+00	1.264000e+04	/	
357	PLOG /	1.000000e-01	2.430000e+36	-7.600000e+00	1.261000e+04	/	
358	PLOG /	3.160000e-01	1.950000e+36	-7.570000e+00	1.249000e+04	/	
359	PLOG /	1.000000e+00	2.730000e+35	-7.320000e+00	1.182000e+04	/	
360	PLOG /	3.160000e+00	1.430000e+36	-7.470000e+00	1.246000e+04	/	
361	PLOG /	1.000000e+01	5.180000e+35	-7.200000e+00	1.343000e+04	/	
362	PLOG /	3.160000e+01	3.190000e+20	-2.570000e+00	5.578000e+03	/	
363	PLOG /	1.000000e+02	2.730000e+33	-6.280000e+00	1.600000e+04	/	
364	O2+C2H3=CH2O+HCO					1.1600e+16	-1.130
	3791.00						
365	DUPLICATE						
366	PLOG /	1.000000e-02	4.540000e+15	-1.280000e+00	5.153000e+02	/	
367	PLOG /	1.000000e-01	4.590000e+15	-1.280000e+00	5.130000e+02	/	
368	PLOG /	3.160000e-01	4.810000e+15	-1.290000e+00	5.206000e+02	/	
369	PLOG /	1.000000e+00	6.080000e+15	-1.310000e+00	6.457000e+02	/	
370	PLOG /	3.160000e+00	9.450000e+15	-1.360000e+00	1.066000e+03	/	
371	PLOG /	1.000000e+01	2.560000e+15	-1.180000e+00	1.429000e+03	/	
372	PLOG /	3.160000e+01	1.030000e+69	-1.923000e+01	1.476000e+04	/	
373	PLOG /	1.000000e+02	4.210000e+10	1.900000e-01	8.306000e+02	/	
374	O2+C2H3=>H+CO+CH2O					1.1600e+16	-1.130
	3791.00						
375	DUPLICATE						
376	PLOG /	1.000000e-02	5.820000e+36	-7.600000e+00	1.264000e+04	/	
377	PLOG /	1.000000e-01	5.660000e+36	-7.600000e+00	1.261000e+04	/	
378	PLOG /	3.160000e-01	4.550000e+36	-7.570000e+00	1.249000e+04	/	
379	PLOG /	1.000000e+00	6.360000e+35	-7.320000e+00	1.182000e+04	/	
380	PLOG /	3.160000e+00	3.350000e+36	-7.470000e+00	1.246000e+04	/	
381	PLOG /	1.000000e+01	1.210000e+36	-7.200000e+00	1.343000e+04	/	
382	PLOG /	3.160000e+01	7.430000e+20	-2.570000e+00	5.578000e+03	/	
383	PLOG /	1.000000e+02	6.360000e+33	-6.280000e+00	1.600000e+04	/	
384	O2+C2H3=>H+CO+CH2O					1.1600e+16	-1.130
	3791.00						
385	DUPLICATE						
386	PLOG /	1.000000e-02	1.060000e+16	-1.280000e+00	5.153000e+02	/	
387	PLOG /	1.000000e-01	1.070000e+16	-1.280000e+00	5.130000e+02	/	
388	PLOG /	3.160000e-01	1.130000e+16	-1.290000e+00	5.206000e+02	/	
389	PLOG /	1.000000e+00	1.420000e+16	-1.310000e+00	6.457000e+02	/	
390	PLOG /	3.160000e+00	2.200000e+16	-1.360000e+00	1.066000e+03	/	
391	PLOG /	1.000000e+01	5.980000e+15	-1.180000e+00	1.429000e+03	/	
392	PLOG /	3.160000e+01	2.390000e+69	-1.923000e+01	1.476000e+04	/	
393	PLOG /	1.000000e+02	9.810000e+10	1.900000e-01	8.306000e+02	/	
394	O2+C2H3=CO+CH3O					3.0900e+13	-0.890
	3682.00						
395	DUPLICATE						
396	PLOG /	1.000000e-02	8.190000e+18	-2.660000e+00	3.201000e+03	/	
397	PLOG /	1.000000e-01	4.060000e+14	-1.320000e+00	8.858000e+02	/	
398	PLOG /	3.160000e-01	4.340000e+14	-1.330000e+00	9.006000e+02	/	
399	PLOG /	1.000000e+00	1.030000e+11	-3.300000e-01	-7.478000e+02	/	
400	PLOG /	3.160000e+00	1.890000e+12	-3.000000e+00	-8.995000e+03	/	
401	PLOG /	1.000000e+01	1.930000e+24	-5.630000e+00	1.800000e+00	/	
402	PLOG /	3.160000e+01	1.100000e+18	-2.220000e+00	5.178000e+03	/	
403	PLOG /	1.000000e+02	5.790000e+32	-6.450000e+00	1.681000e+04	/	
404	O2+C2H3=CO+CH3O					3.0900e+13	-0.890
	3682.00						
405	DUPLICATE						
406	PLOG /	1.000000e-02	1.290000e+09	1.800000e-01	-1.717000e+03	/	
407	PLOG /	1.000000e-01	5.990000e+11	-2.930000e+00	-9.564000e+03	/	
408	PLOG /	3.160000e-01	2.910000e+11	-2.930000e+00	-1.012000e+04	/	
409	PLOG /	1.000000e+00	5.770000e+21	-3.540000e+00	4.772000e+03	/	
410	PLOG /	3.160000e+00	4.990000e+15	-1.620000e+00	1.849000e+03	/	
411	PLOG /	1.000000e+01	9.330000e+16	-1.960000e+00	3.324000e+03	/	
412	PLOG /	3.160000e+01	1.020000e+72	-2.069000e+01	1.586000e+04	/	
413	PLOG /	1.000000e+02	1.100000e+09	3.100000e-01	1.024000e+03	/	
414	O2+C2H3=CO2+CH3					6.1600e+13	-1.050
	3743.00						

415	DUPLICATE						
416	PLOG /	1.000000e-02	2.370000e+35	-7.760000e+00	1.263000e+04	/	
417	PLOG /	1.000000e-01	1.730000e+35	-7.720000e+00	1.252000e+04	/	
418	PLOG /	3.160000e-01	4.470000e+34	-7.550000e+00	1.214000e+04	/	
419	PLOG /	1.000000e+00	7.250000e+31	-6.700000e+00	1.044000e+04	/	
420	PLOG /	3.160000e+00	3.630000e+35	-7.750000e+00	1.283000e+04	/	
421	PLOG /	1.000000e+01	2.090000e+35	-7.530000e+00	1.405000e+04	/	
422	PLOG /	3.160000e+01	3.840000e+18	-2.440000e+00	5.408000e+03	/	
423	PLOG /	1.000000e+02	1.210000e+32	-6.320000e+00	1.619000e+04	/	
424	O2+C2H3=CO2+CH3				6.1600e+13		-1.050
	3743.00						
425	DUPLICATE						
426	PLOG /	1.000000e-02	6.270000e+13	-1.160000e+00	4.063000e+02	/	
427	PLOG /	1.000000e-01	6.240000e+13	-1.160000e+00	4.014000e+02	/	
428	PLOG /	3.160000e-01	6.120000e+13	-1.160000e+00	3.970000e+02	/	
429	PLOG /	1.000000e+00	5.320000e+13	-1.140000e+00	4.467000e+02	/	
430	PLOG /	3.160000e+00	1.450000e+14	-1.260000e+00	9.877000e+02	/	
431	PLOG /	1.000000e+01	5.020000e+13	-1.110000e+00	1.409000e+03	/	
432	PLOG /	3.160000e+01	1.400000e+70	-2.011000e+01	1.543000e+04	/	
433	PLOG /	1.000000e+02	9.210000e+08	2.500000e-01	8.553000e+02	/	
434	H+C2H3=H2+C2H2				9.6352e+13		0.000
	0.00						
435	OH+C2H3=H2O+C2H2				3.0110e+13		0.000
	0.00						
436	CH3+C2H3=CH4+C2H2				3.9200e+11		0.000
	0.00						
437	2C2H3=C2H4+C2H2				9.6000e+11		0.000
	0.00						
438	O+C2H2=CO+CH2				7.3950e+08		1.280
	2472.00						
439	O+C2H2=H+HCCO				2.9580e+09		1.280
	2472.00						
440	HO2+C2H2=OH+CH2CO				6.0300e+09		0.000
	7949.00						
441	HCO+C2H2=CO+C2H3				1.0000e+07		2.000
	6000.00						
442	CH2+C2H2=H+C3H3				1.2000e+13		0.000
	6620.00						
443	CH2 (S)+C2H2=H+C3H3				2.0000e+13		0.000
	0.00						
444	C2H2+HCCO=CO+C3H3				1.0000e+11		0.000
	3000.00						
445	OH+C2H2=H+CH2CO				1.5780e+03		2.560
	-844.50						
446	PLOG /	1.000000e-02	1.578000e+03	2.560000e+00	-8.445000e+02	/	
447	PLOG /	2.500000e-02	1.518000e+04	2.280000e+00	-2.921000e+02	/	
448	PLOG /	1.000000e-01	3.017000e+05	1.920000e+00	5.981000e+02	/	
449	PLOG /	1.000000e+00	7.528000e+06	1.550000e+00	2.106000e+03	/	
450	PLOG /	1.000000e+01	5.101000e+06	1.650000e+00	3.400000e+03	/	
451	PLOG /	1.000000e+02	1.457000e+04	2.450000e+00	4.477000e+03	/	
452	OH+C2H2=CO+CH3				4.7570e+05		1.680
	-329.80						
453	PLOG /	1.000000e-02	4.757000e+05	1.680000e+00	-3.298000e+02	/	
454	PLOG /	2.500000e-02	4.372000e+06	1.400000e+00	2.265000e+02	/	
455	PLOG /	1.000000e-01	7.648000e+07	1.050000e+00	1.115000e+03	/	
456	PLOG /	1.000000e+00	1.277000e+09	7.300000e-01	2.579000e+03	/	
457	PLOG /	1.000000e+01	4.312000e+08	9.200000e-01	3.736000e+03	/	
458	PLOG /	1.000000e+02	8.250000e+05	1.770000e+00	4.697000e+03	/	
459	CH3CHO (+M)=CH3+HCO (+M)				2.4500e+22		-1.740
	86355.00						
460	LOW/	1.03e+59	-11.300	95912.5/			
461	TROE/	0.002490	718.1	6.089	3780./		
462	CH3CHO (+M)=CO+CH4 (+M)				2.7200e+21		-1.740
	86355.00						
463	LOW/	1.14e+58	-11.300	95912.5/			
464	TROE/	0.002490	718.1	6.089	3780./		
465	O2+CH3CHO=HO2+CH3CO				3.0100e+13		0.000
	39150.00						
466	O+CH3CHO=OH+CH3CO				5.9400e+12		0.000
	1868.00						
467	OH+CH3CHO=H2O+CH3CO				3.3700e+12		0.000
	-619.00						
468	HO2+CH3CHO=H2O2+CH3CO				1.0000e+12		0.000

469	H+CH3CHO=H2+CH2CHO				2.7200e+03	3.100
	5210.00					
470	OH+CH3CHO=H2O+CH2CHO				1.7200e+05	2.400
	815.00					
471	CH3CO=CO+CH3				1.0700e+12	0.630
	16895.50					
472	PLOG / 1.000000e-01	1.960000e+16	-2.090000e+00	1.519660e+04	/	/
473	PLOG / 1.000000e+00	6.450000e+18	-2.520000e+00	1.643650e+04	/	/
474	PLOG / 1.000000e+01	8.180000e+19	-2.550000e+00	1.726310e+04	/	/
475	PLOG / 1.000000e+02	1.260000e+20	-2.320000e+00	1.801210e+04	/	/
476	O2+CH3CO=HO2+CH2CO				3.6000e+10	0.544
	3721.00					
477	PLOG / 1.000000e-01	1.300000e+08	1.986000e+00	2.280000e+02	/	/
478	PLOG / 1.000000e+00	3.600000e+10	5.440000e-01	3.721000e+03	/	/
479	PLOG / 1.000000e+01	7.700000e+13	-3.350000e-01	7.510000e+03	/	/
480	CH3CO (+M) =H+CH2CO (+M)				9.4130e+07	1.917
	44987.20					
481	LOW/ 1.52e+51	-10.270	55390.0/			
482	TROE/ 0.6009	8.103e+09	667.7	5.000e+09/		
483	H+CH3CO=H2+CH2CO				2.0000e+13	0.000
	0.00					
484	O+CH3CO=OH+CH2CO				2.0000e+13	0.000
	0.00					
485	CH3+CH3CO=CH4+CH2CO				5.0000e+13	0.000
	0.00					
486	CH2CHO (+M) =H+CH2CO (+M)				1.4300e+15	-0.150
	45600.00					
487	LOW/ 6.00e+29	-3.800	43423.9/			
488	TROE/ 0.9850	393.0	9.800e+09	5.000e+09/		
489	CH2CHO (+M) =CO+CH3 (+M)				2.9300e+12	0.290
	40300.00					
490	LOW/ 9.52e+33	-5.070	41300.0/			
491	TROE/ 7.130e-17	1150.	4.990e+09	1.790e+09/		
492	CH2CO (+M) =CO+CH2 (+M)				3.0000e+13	0.000
	71000.00					
493	LOW/ 3.00e+15	0.000	57000.0/			
494	H2/ 2.00/ H2O/ 6.00/ CO/ 1.50/ CO2/ 2.00/ CH4/ 2.00/ C2H6/ 3.00/ HE/ 0.70/					
495	O+C2H3=H+CH2CO				3.0000e+13	0.000
	0.00					
496	H+CH2CO=CO+CH3				7.7700e+08	1.450
	2780.00					
497	CH3+HCO=H2+CH2CO				4.9000e+08	0.750
	842.00					
498	PLOG / 5.000000e-02	6.100000e+06	1.240000e+00	-1.733000e+03	/	/
499	PLOG / 1.000000e-01	1.100000e+07	1.180000e+00	-1.303000e+03	/	/
500	PLOG / 1.000000e+00	4.900000e+08	7.500000e-01	8.420000e+02	/	/
501	PLOG / 1.000000e+01	1.600000e+11	1.090000e-01	4.387000e+03	/	/
502	O+CH2CO=CO2+CH2				1.7500e+12	0.000
	1350.00					
503	OH+CH2CO=CO+CH2OH				2.0000e+12	0.000
	-1010.00					
504	CH2 (S) +CH2CO=CO+C2H4				2.0000e+13	0.000
	-526.00					
505	CH3+CH2CO=CO+C2H5				4.7690e+04	2.312
	9468.00					
506	OH+HCCO=>H2+2CO				1.0000e+14	0.000
	0.00					
507	O+HCCO=>H+2CO				8.0000e+13	0.000
	0.00					
508	H+HCCO=CO+CH2 (S)				1.0000e+14	0.000
	0.00					
509	O2+HCCO=>OH+2CO				1.9100e+11	-0.020
	1020.00					
510	O2+HCCO=>H+CO+CO2				4.7800e+12	-0.142
	1150.00					
511	CH2 (S) +C2H4=CH3+C2H3				1.7700e+19	-1.940
	6790.00					
512	DUPLICATE					
513	PLOG / 1.000000e-02	1.770000e+19	-1.940000e+00	6.790000e+03	/	/
514	PLOG / 1.000000e-01	1.680000e+19	-1.800000e+00	4.310000e+03	/	/
515	PLOG / 1.000000e+00	4.160000e+24	-3.190000e+00	9.760000e+03	/	/
516	PLOG / 1.000000e+01	7.890000e+24	-3.070000e+00	1.390000e+04	/	/

517	PLOG /	1.000000e+02	7.360000e+29	-4.280000e+00	2.380000e+04	/
518	CH2(S)+C2H4=CH3+C2H3				4.3000e+12	0.190
	-110.41					
519	DUPLICATE					
520	PLOG /	1.000000e-02	4.300000e+12	1.900000e-01	-1.104100e+02	/
521	PLOG /	1.000000e-01	2.260000e+11	5.400000e-01	4.781000e+01	/
522	PLOG /	1.000000e+00	4.920000e+09	1.020000e+00	5.997700e+02	/
523	PLOG /	1.000000e+01	1.470000e+08	1.330000e+00	1.228400e+03	/
524	PLOG /	1.000000e+02	8.110000e+10	5.500000e-01	5.506500e+03	/
525	CH2O+C2H3=HCO+C2H4				1.0000e+11	0.000
	0.00					
526	PLOG /	1.000000e-03	1.110000e+07	1.090000e+00	1.807200e+03	/
527	PLOG /	1.000000e-02	2.470000e+07	9.930000e-01	1.994900e+03	/
528	PLOG /	1.000000e-01	2.470000e+08	7.040000e-01	2.596200e+03	/
529	PLOG /	1.000000e+00	1.420000e+10	2.090000e-01	3.934200e+03	/
530	PLOG /	1.000000e+01	3.450000e+13	-7.260000e-01	6.944300e+03	/
531	PLOG /	1.000000e+02	3.310000e+14	-8.660000e-01	1.096570e+04	/
532	PLOG /	1.000000e+03	1.650000e+01	3.170000e+00	9.399800e+03	/
533	O2+C3H4-P=HO2+C3H3				3.0000e+13	0.000
	42630.00					
534	O+C3H4-P=OH+C3H3				7.6500e+08	1.500
	8600.00					
535	H+C3H4-P=H2+C3H3				3.5720e+04	2.825
	4821.00					
536	OH+C3H4-P=H2O+C3H3				2.0000e+07	2.000
	5000.00					
537	HO2+C3H4-P=H2O2+C3H3				9.5500e-02	4.170
	9632.80					
538	CH3+C3H4-P=CH4+C3H3				1.8000e+12	0.000
	7700.00					
539	C2H3+C3H4-P=C2H4+C3H3				1.0000e+12	0.000
	7700.00					
540	H+C3H4-P=CH3+C2H2				2.1200e+10	1.060
	3945.00					
541	PLOG /	1.000000e-03	2.440000e+10	1.040000e+00	3.980000e+03	/
542	PLOG /	3.900000e-02	3.890000e+10	9.890000e-01	4.114000e+03	/
543	PLOG /	1.000000e+00	3.460000e+12	4.420000e-01	5.463000e+03	/
544	PLOG /	1.000000e+01	1.720000e+14	-1.000000e-02	7.134000e+03	/
545	PLOG /	1.000000e+02	1.900000e+15	-2.900000e-01	8.306000e+03	/
546	O+C3H4-P=CH3+HCCO				7.3000e+12	0.000
	2250.00					
547	O+C3H4-P=CO+C2H4				1.0000e+13	0.000
	2250.00					
548	O+C3H4-P=HCO+C2H3				3.2000e+12	0.000
	2010.00					
549	HO2+C3H4-P=>OH+CO+C2H4				3.0000e+12	0.000
	19000.00					
550	HO2+C3H3=>OH+CO+C2H3				8.0000e+11	0.000
	0.00					
551	HCO+C3H3=CO+C3H4-P				2.5000e+13	0.000
	0.00					
552	O2+C3H3=HCO+CH2CO				1.7000e+05	1.700
	1500.00					
553	OH+C3H3=CH2O+C2H2				2.0000e+12	0.000
	0.00					
554	OH+C3H3=HCO+C2H3				1.0000e+13	0.000
	0.00					
555	OH+C3H3=CO+C2H4				1.0000e+13	0.000
	0.00					
556	CH3CHO=H2+CH2CO				4.0000e+13	0.000
	80500.00					
557	O+C2H2=>CH2CO				1.0000e+13	0.000
	15000.00					
558	O+CH2CO=>2HCO				2.0000e+13	0.000
	2300.00					
559	O+CH2CO=>CO+CH2O				1.0000e+12	0.000
	5000.00					
560	OH+CH2CO=>CO2+CH3				1.0000e+13	0.000
	0.00					
561	O2+CH2CO=>CO2+CH2O				1.0000e+14	0.000
	37000.00					
562	O2+CH2CO=>OH+CO+HCO				3.0000e+14	0.000
	40000.00					

563	OH+CH3CO=>H2O+CH2CO 0.00	3.0000e+12	0.000
564	OH+CH2CHO=>H2O+CH2CO 0.00	5.0000e+12	0.000
565	HO2+CH2CO=>OH+CO+CH2O 5000.00	1.0000e+10	0.000
566	O2+CH2CHO=>HO2+CH2CO 3000.00	5.0000e+11	0.000
567	2CH2CO=CH3CO+HCCO 60500.00	1.5000e+13	0.000
568	2CH2CO=>2CO+C2H4 40000.00	7.5000e+10	0.000
569	CH2CO=>H+HCCO 102400.00	1.5000e+14	0.000
570	CH2+CH2CO=CO+C2H4 6210.00	5.0000e+03	2.800
571	CH2+CH2CO=CH3+HCCO 11000.00	3.6000e+13	0.000
572	CH3+CH2CO=OH+C3H4-P 39000.00	3.0000e+10	0.000
573	OH+HCCO=H+CO+HCO 0.00	1.0000e+13	0.000
574	O2+HCCO=CO2+HCO -854.00	2.4000e+11	0.000
575	CH2+HCCO=CO+C2H3 0.00	3.0000e+13	0.000
576	2HCCO=>2CO+C2H2 0.00	1.0000e+13	0.000
577	C2H3+HCCO=CO+C3H4-P 0.00	4.0000e+13	0.000
578	O2+C2H2=OH+HCCO 30000.00	2.0000e+07	1.500
579	CH2O+CH3CO=HCO+CH3CHO 11500.00	1.0830e+06	2.000
580	CH2O+C2H5=HCO+C2H6 5917.09	1.8390e+05	2.000
581	CH2O+CH2CHO=HCO+CH3CHO 9527.24	1.8390e+05	2.000
582	CH2O+HCCO=HCO+CH2CO 3698.82	3.4240e+05	2.000
583	CH3OH+CH3CO=CH3O+CH3CHO 16897.45	6.7670e+04	2.000
584	CH3OH+CH2CHO=CH3O+CH3CHO 13414.83	1.1490e+04	2.000
585	CH3OH+HCCO=CH3O+CH2CO 7064.07	2.1400e+04	2.000
586	CH3OH+CH3CO=CH2OH+CH3CHO 16918.97	4.0600e+05	2.000
587	CH3OH+C2H3=CH2OH+C2H4 7914.10	2.0350e+05	2.000
588	CH3OH+C2H5=CH2OH+C2H6 10525.57	6.8950e+04	2.000
589	CH3OH+CH2CHO=CH2OH+CH3CHO 14525.57	6.8950e+04	2.000
590	CH3OH+HCCO=CH2OH+CH2CO 8025.57	1.2840e+05	2.000
591	H+CH2CO=>H2+HCCO 14126.59	1.5000e+14	0.000
592	CH3+CH2CO=>CH4+HCCO 15137.82	2.5000e+12	0.000
593	O2+CH2CO=>HO2+HCCO 51172.82	7.4540e+06	2.000
594	OH+CH2CO=>H2O+HCCO 1698.84	1.7470e+06	2.000
595	O+CH2CO=>OH+HCCO 8519.89	5.9210e+06	2.000
596	HO2+CH2CO=>H2O2+HCCO 19802.73	2.3570e+05	2.000
597	C2H5+CH2CO=>C2H6+HCCO 14621.99	1.0060e+05	2.000
598	C2H3+CH2CO=>C2H4+HCCO 11151.84	2.9670e+05	2.000
599	CH3CO+CH2CO=>CH3CHO+HCCO	5.9210e+05	2.000

	22155.49				
600	CH2CHO+CH2CO=>CH3CHO+HCCO 18968.53			1.0060e+05	2.000
601	O+OH+M=HO2+M 0.00			1.0000e+16	0.000
602	H2O+CO=H2+CO2 38000.00			2.0000e+11	0.000
603	O2+C2H5=>CH3O+CH2O 24000.00			1.0000e+14	0.000
604	O2+C2H5=>O+CH3+CH2O 27000.00			1.0000e+13	0.000
605	O+C2H5=>0.35H+0.30OH+0.35CH3+0.35CH2O+0.3C2H4+0.35CH3CHO 0.00			5.0000e+13	0.000
606	HO2+C2H5=>OH+CH3+CH2O 0.00			5.0000e+12	0.000
607	O+C2H4=>CH3CHO 5000.00			1.0000e+09	0.000
608	CH3O2=OH+CH2O 47000.00			1.5000e+13	0.000
609	OH+CH3O2=>HO2+CH3O 0.00			3.0000e+12	0.000
610	HO2+CH3O2=>O2+H2O+CH2O 0.00			5.0000e+10	0.000
611	CH3O2+CH2O=>H2+OH+CO+CH2O 11000.00			2.0000e+11	0.000
612	CO+CH3O2=>CO2+CH3O 24000.00			1.0000e+14	0.000
613	CH3+CH2O=H+CH3CHO 7600.00			2.0000e+11	0.000
614	CH2+HCO=CO+CH3 0.00			2.0000e+13	0.000
615	O+CH2=H2+CO 0.00			5.0000e+13	0.000
616	OH+CH2=H+CH2O 0.00			3.0000e+13	0.000
617	CO2+CH2=CO+CH2O 1000.00			1.1000e+11	0.000
618	O+CH2(S)=2H+CO 0.00			3.0000e+13	0.000
619	CH4+CH2(S)=2CH3 0.00			4.3000e+13	0.000
620	C2H6+C2H2=C2H5+C2H3 60000.00			2.0000e+14	0.000
621	2CH3=>H2+C2H4 32000.00			5.0000e+14	0.000
622	2CH2=>2H+C2H2 0.00			1.2000e+14	0.000
623	C2H6=H2+C2H4 78500.00			3.0000e+13	0.000
624	H+C3H3=C3H4-P -31.20			6.4000e+13	0.102
625	PLOG / 4.000000e-02	3.630000e+36	-7.360000e+00	6.039000e+03	/
626	PLOG / 1.000000e+00	7.940000e+29	-5.060000e+00	4.861000e+03	/
627	PLOG / 1.000000e+01	1.070000e+24	-3.150000e+00	3.261000e+03	/
628	PLOG / 1.000000e+02	6.400000e+13	1.020000e-01	-3.120000e+01	/
629	H+CH3CO=CH3CHO 0.00			1.3000e+13	0.000
630	O2+C3H4-P=>HCO+CH3CO 41000.00			7.0000e+13	0.000
631	O2+CH3CHO=HO2+CH2CHO 49000.00			4.0000e+13	0.000
632	H+CH3CHO=H2+CH3CO 3600.00			5.0000e+07	2.000
633	CH3+CH3CHO=CH4+CH3CO 4100.00			2.6000e+05	2.000
634	C2H3+CH3CHO=C2H4+CH3CO 3965.69			4.0700e+05	2.000
635	C2H5+CH3CHO=C2H6+CH3CO 5917.09			1.3790e+05	2.000
636	CH3CHO+CH2CHO=CH3CHO+CH3CO 9527.24			1.3790e+05	2.000
637	CH3CHO+HCCO=>CH3CO+CH2CO 3698.82			2.5680e+05	2.000

638	CH3+CH3CHO=CH4+CH2CHO 7968.53	1.1710e+05	2.000
639	O+CH3CHO=OH+CH2CHO 5025.57	4.0600e+06	2.000
640	C2H3+CH3CHO=C2H4+CH2CHO 8001.75	2.0350e+05	2.000
641	C2H5+CH3CHO=C2H6+CH2CHO 10525.57	6.8950e+04	2.000
642	HO2+CH3CHO=H2O2+CH2CHO 15025.57	1.6160e+05	2.000
643	CH3CHO+HCCO=>CH2CHO+CH2CO 8025.57	1.2840e+05	2.000
644	H+CH3OH=>H2O+CH3 5300.00	6.5000e+11	0.000
645	O+CH2O=>2H+CO2 5000.00	2.0000e+13	0.000
646	O+CH3CHO=>H+CO2+CH3 3000.00	2.0000e+13	0.000
647	OH+CH2O=>H2+H+CO2 0.00	1.0000e+11	0.000
648	OH+CH3CHO=>H2+CO2+CH3 0.00	2.0000e+11	0.000
649	HO2+C2H2=>CH2O+HCO 15000.00	5.0000e+12	0.000
650	CH2O+HCO=CO2+CH3 6000.00	5.0000e+11	0.000
651	HCO+CH3CHO=>CO2+C2H5 6000.00	3.0000e+11	0.000
652	CH2O+C2H3=>0.5CH3O+0.5CH2OH+C2H2 6000.00	5.0000e+11	0.000
653	CO+CH3O=CO2+CH3 6500.00	5.0000e+11	0.000
654	O2+C2H2=>CO+CH2O 26000.00	3.0000e+11	0.000
655	O2+C2H4=>2CH2O 48000.00	1.0000e+14	0.000
656	O2+C2H2=>2HCO 27000.00	3.0000e+11	0.000
657	O2+C2H4=>CH3O+HCO 43000.00	1.0000e+14	0.000
658	O2+CH2CHO=>OH+CO+CH2O 0.00	6.0000e+10	0.000
659	O+CH3+M=>CH3O+M 0.00	5.0000e+16	0.000
660	O+C2H3=>CH2CHO 0.00	2.5000e+13	0.000
661	O+CH2CHO=>CH2O+HCO 0.00	5.0000e+13	0.000
662	OH+C2H3=>CH3CHO 0.00	5.0000e+12	0.000
663	HO2+C2H3=>OH+CH2CHO 0.00	3.0000e+12	0.000
664	HO2+HCO=H2O2+CO 0.00	4.0000e+11	0.000
665	OH+CH3O=>H2O+CH2O 0.00	1.5000e+13	0.000
666	CH3O+HCO=2CH2O 0.00	1.0000e+13	0.000
667	CH3O+HCO=>CO+CH3OH 0.00	1.0000e+13	0.000
668	CH3+CH2OH=>CH4+CH2O 0.00	1.5000e+13	0.000
669	H+CH2CHO=>CH3CHO 0.00	6.0000e+13	0.000
670	OH+CH2CHO=>CH2OH+HCO 0.00	1.0000e+13	0.000
671	CH2CHO=CH3CO 32000.00	2.0000e+11	0.000
672	OH+C2H2=>CH2CHO 0.00	5.0000e+11	0.000
673	C2H6+C2H3=C2H5+C2H4 7629.22	6.1050e+05	2.000
674	C2H6+HCCO=>C2H5+CH2CO	3.8520e+05	2.000

675	8025.57 O+C2H4=OH+C2H3 8781.96	1.0830e+07	2.000
676	HO2+C2H4=H2O2+C2H3 19844.40	4.3100e+05	2.000
677	C2H4+HCCO=>C2H3+CH2CO 12160.02	3.4240e+05	2.000
678	CH3O+C3H4-P=CH3OH+C3H3 7522.23	2.5680e+06	2.000
679	CH2OH+C3H4-P=CH3OH+C3H3 18214.10	1.6970e+06	2.000
680	HCCO+C3H4-P=CH2CO+C3H3 12160.02	2.5680e+06	2.000
681	CH3CO+C3H4-P=CH3CHO+C3H3 22331.49	8.1200e+06	2.000
682	END		