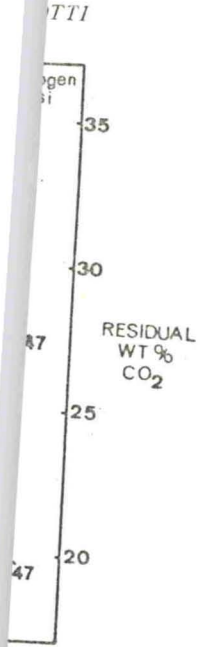


TABLE 4. MASS SPECTROGRAPHIC ANALYSES OF REACTION GASES<sup>a,b,c</sup> AND WET-CHEMICAL ANALYSES OF RESIDUAL CO<sub>2</sub> IN UNREACTED D<sup>9</sup>LOMITE: DOLOMITE-HYDROGEN SYSTEM

Experiment No.	39	41	42	43	44	45	46	47	49	50	51	56	57	58	59	83	84
Temperature (°C)	520	525	550	620	620	620	620	620	735	735	735	735	735	735	735	605	605
Pressure (psi)	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	4,000	4,000	5,000	2,000	2,000
Wt. % CO <sub>2</sub> remaining in solid	N.A. <sup>d</sup>	44.3	40.2	25.6	10.1	25.4	30.7	19.4	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	0.87	N.A.	N.A.
Duration of run (hours)	4	4	4	4	4	8	2	12	4	4	4	4	6	7	4	2	4
Mole % CH <sub>4</sub> in gas	0.01	0.02	0.04	1.20	2.34	1.82	1.53	2.05	2.00	1.88	1.77	1.80	2.86	4.76	2.12	0.46	2.64
Mole % C <sub>2</sub> H <sub>6</sub> in gas	—	—	0.01	0.02	—	0.04	0.05	0.04	—	—	—	—	—	0.03	—	0.03	0.14
Mole % CO <sub>2</sub> in gas	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.09	0.03
Mole % CO in gas	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.72	0.13
Mole % H <sub>2</sub> in gas	97.70	99.90	99.30	98.70	97.60	98.00	98.40	97.80	98.00	98.10	98.10	98.16	97.10	95.20	97.86	98.6	97.0
Mole % He in gas	2.25	0.10	0.12	0.07	0.04	0.10	0.03	0.07	0.03	0.05	0.11	0.03	—	0.06	0.01	0.06	0.08

<sup>a</sup> Analysis calculated on water-free basis.  
<sup>b</sup> Starting hydrogen impurities given as follows: less than 5 ppm N<sub>2</sub>, less than 1 ppm O<sub>2</sub>, less than 1/2 ppm CO, less than 1/2 ppm CO, Dew point -100°F.  
<sup>c</sup> Detection limit 0.01%.  
<sup>d</sup> Not analyzed.



% CH<sub>2</sub> in the solid for the 8, and 12 hour experiments.

Experiments were run at a range of reaction gases for the dolomite-hydrogen system.

Results are considerably more consistent. An evaluation of the rate of reaction time pair at 620°C, however, shows wide scatter, and emergence from linearity is apparent. A plot of the six temperature kinetic data into physically limited data available.

Mesh siderite fragments and calcite-hydrogen and dolomite were used with only four experiments at 605°C and 2000 to 2000 psi under helium was used in