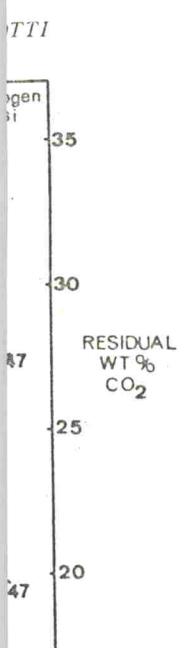


TABLE 4. MASS SPECTROGRAPHIC ANALYSES OF REACTION GASES^{a,b,c} AND WET-CHEMICAL ANALYSES OF RESIDUAL CO₂ IN UNREACTED D^oLOMITE: DOLOMITE-HYDROGEN SYSTEM

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	735	620	620	620	735	735	735	735	735	735	835	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 ₂ remaining in solid	N.A. ^d	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 ₄ 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 ₂ H ₆ in gas	—	—	0.01	0.02	—	0.04	0.05	0.04	—	—	—	—	—	0.03	—	0.03	0.14
Mole % CO ₂ in gas	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.09	0.03
Mole % CO in gas	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.72	0.13
Mole % H ₂ 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

^a Analysis calculated on water free basis.
^b Starting hydrogen impurities given as follows: less than 5 ppm N₂, less than 1 ppm O₂, less than 1/2 ppm CO, less than 100°F.
^c Detection limit 0.01%.
^d Not analyzed.



% CH₄ in the solid for the 8, and 12 hour experiments.

Experiments were run at a reaction gases for the dolomite-hydrogen

are considerably more evaluation of the rate reaction time pair at 620°C under, shows wide scatter, emergence from linearity is for a plot of the six temperature kinetic data into physically limited data available.

mesh siderite fragments using calcite-hydrogen and studied with only four experiments to 605°C and 2000 to under helium was used in