

Table A1. Experimental data of methane adsorption-desorption in dry shale at 45 °C.

Adsorption		Desorption	
Pressure (MPa)	Absolute adsorption amount (cm ³ /g, STP)	Pressure (MPa)	Absolute adsorption amount (cm ³ /g, STP)
0	0	24.469	3.801
0.967	0.956	22.940	3.834
1.963	1.401	21.658	3.817
2.886	1.660	19.497	3.668
3.729	1.894	18.604	3.590
4.493	2.111	17.092	3.489
5.819	2.364	15.887	3.420
7.802	2.718	14.089	3.329
9.663	2.969	11.460	3.163
11.591	3.185	10.230	3.123
13.472	3.265	6.566	2.716
15.517	3.396	4.911	2.560
16.990	3.541	4.603	2.499
18.461	3.551	3.755	2.372
20.010	3.721	2.549	2.073
21.465	3.778	2.060	1.894
21.703	3.770	1.011	1.411
22.792	3.774	0.506	1.047
23.703	3.772		
24.469	3.801		

Table A2. Experimental data of methane adsorption-desorption in shale with the water content of 2.03% at 45 °C.

Adsorption		Desorption	
Pressure (MPa)	Absolute adsorption amount (cm ³ /g, STP)	Pressure (MPa)	Absolute adsorption amount (cm ³ /g, STP)
0	0	25.058	3.358
1.173	0.712	23.907	3.335
2.237	1.096	22.408	3.235
3.189	1.421	21.273	3.213
4.047	1.622	19.386	3.238
6.129	2.086	17.883	3.167
8.124	2.347	15.705	3.133
10.004	2.579	13.921	3.039
12.236	2.771	12.157	2.993
13.967	2.891	9.861	2.844
16.072	2.952	7.941	2.687
17.816	3.067	5.821	2.517
19.937	3.122	3.986	2.302
21.832	3.258	2.728	2.078
23.900	3.288	1.275	1.672
25.058	3.358	0.598	1.447

Table A3. Experimental data of methane adsorption-desorption in shale with the water content of 4.22% at 45 °C.

Adsorption		Desorption	
Pressure (MPa)	Absolute adsorption amount (cm ³ /g, STP)	Pressure (MPa)	Absolute adsorption amount (cm ³ /g, STP)
0	0	23.882	2.837
1.072	0.477	22.485	2.810
2.084	0.860	20.195	2.795
4.559	1.428	17.705	2.698
5.809	1.644	15.862	2.673
8.101	1.978	14.098	2.639
9.987	2.146	11.898	2.516
11.860	2.302	10.236	2.402
14.032	2.451	7.944	2.280
15.980	2.530	5.998	2.113
16.999	2.581	4.657	1.990
17.955	2.688	2.117	1.547
19.902	2.771	0.939	1.280
21.329	2.790	0.420	1.157
23.022	2.811		
23.882	2.837		

Table A4. Experimental data of methane adsorption-desorption in dry shale at 60 °C.

Adsorption		Desorption	
Pressure (MPa)	Absolute adsorption amount (cm ³ /g, STP)	Pressure (MPa)	Absolute adsorption amount (cm ³ /g, STP)
0	0	23.872	3.346
0.960	0.739	22.629	3.315
1.928	1.146	20.351	3.258
3.897	1.665	17.856	3.181
6.038	2.022	15.934	3.111
8.285	2.352	13.809	3.017
10.135	2.617	12.082	2.923
12.090	2.815	10.190	2.797
14.325	2.946	8.166	2.620
16.026	3.063	6.043	2.371
18.376	3.152	3.967	2.014
20.073	3.266	1.880	1.450
22.012	3.302	0.876	1.042
23.872	3.346		

Table A5. Experimental data of methane adsorption-desorption in shale with the water content of 2.05% at 60 °C.

Adsorption		Desorption	
Pressure (MPa)	Absolute adsorption amount (cm ³ /g, STP)	Pressure (MPa)	Absolute adsorption amount (cm ³ /g, STP)
0	0	24.494	3.024
0.994	0.475	22.457	2.914
1.929	0.858	20.141	2.926
3.740	1.303	18.304	2.812
5.908	1.740	16.205	2.778
7.978	2.026	13.849	2.718
9.929	2.233	12.161	2.641
12.251	2.454	10.074	2.527
13.902	2.539	8.088	2.392
16.183	2.639	6.108	2.194
17.991	2.756	4.086	1.935
20.032	2.873	1.827	1.553
22.006	2.946	0.819	1.317
24.494	3.024		

Table A6. Experimental data of methane adsorption-desorption in shale with the water content of 4.20% at 60 °C.

Adsorption		Desorption	
Pressure (MPa)	Absolute adsorption amount (cm ³ /g, STP)	Pressure (MPa)	Absolute adsorption amount (cm ³ /g, STP)
0	0	21.924	2.544
1.192	0.424	19.626	2.456
2.255	0.758	17.790	2.405
4.115	1.150	16.283	2.358
6.226	1.456	14.055	2.307
8.271	1.699	11.987	2.217
9.996	1.838	10.133	2.121
12.020	1.996	8.062	1.990
14.165	2.192	6.034	1.780
16.012	2.294	4.005	1.595
17.977	2.389	1.760	1.252
20.108	2.445	0.769	1.088
21.924	2.544		

Table A7. Experimental data of methane adsorption-desorption in dry shale at 80 °C.

Adsorption		Desorption	
Pressure (MPa)	Absolute adsorption amount (cm ³ /g, STP)	Pressure (MPa)	Absolute adsorption amount (cm ³ /g, STP)
0	0	23.896	3.252
1.057	0.660	22.529	3.038
2.036	1.007	20.272	2.975
3.964	1.426	17.725	2.891
6.273	1.844	16.395	2.84
8.041	2.025	14.039	2.733
10.063	2.246	12.125	2.627
12.002	2.42	10.098	2.487
14.125	2.547	8.079	2.312
16.029	2.633	6.100	2.089
18.013	2.790	4.005	1.762
21.539	2.916	2.734	1.497
22.053	2.955	1.244	1.079
23.896	3.252	0.580	0.838

Table A8. Experimental data of methane adsorption-desorption in shale with the water content of 2.02% at 80 °C.

Adsorption		Desorption	
Pressure (MPa)	Absolute adsorption amount (cm ³ /g, STP)	Pressure (MPa)	Absolute adsorption amount (cm ³ /g, STP)
0	0	23.818	2.668
0.979	0.410	22.409	2.709
1.958	0.709	20.152	2.648
3.886	1.137	17.605	2.539
6.195	1.523	16.275	2.492
7.963	1.797	13.919	2.396
9.985	2.002	12.005	2.304
11.924	2.108	9.978	2.186
14.047	2.306	7.959	2.042
15.951	2.386	5.980	1.865
17.935	2.483	3.885	1.597
20.61	2.624	2.614	1.407
21.975	2.651	1.124	1.126
23.818	2.668	0.460	1.019

Table A9. Experimental data of methane adsorption-desorption in shale with the water content of 4.25% at 80 °C.

Adsorption		Desorption	
Pressure (MPa)	Absolute adsorption amount (cm ³ /g, STP)	Pressure (MPa)	Absolute adsorption amount (cm ³ /g, STP)
0	0	22.240	2.274
1.018	0.285	19.955	2.193
2.062	0.530	18.081	2.177
3.951	0.889	15.924	2.085
6.177	1.213	13.897	2.019
8.270	1.450	11.985	1.973
10.066	1.617	9.537	1.859
11.994	1.766	8.284	1.791
14.095	1.903	6.035	1.621
16.140	2.017	4.254	1.479
17.967	2.106	1.891	1.257
20.012	2.192	1.121	1.158
22.240	2.274	0.458	1.041