

Supplementary Materials

Performance Evaluation of an Anti Gas-Channelling System (Asphalt-Rigid Particle-Xanthan Gum) Applied in High-Temperature and High-Salinity Fractured Reservoir

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1. The relationship between friction coefficient λ and Reynolds number (Moody's chart) is shown as follows.

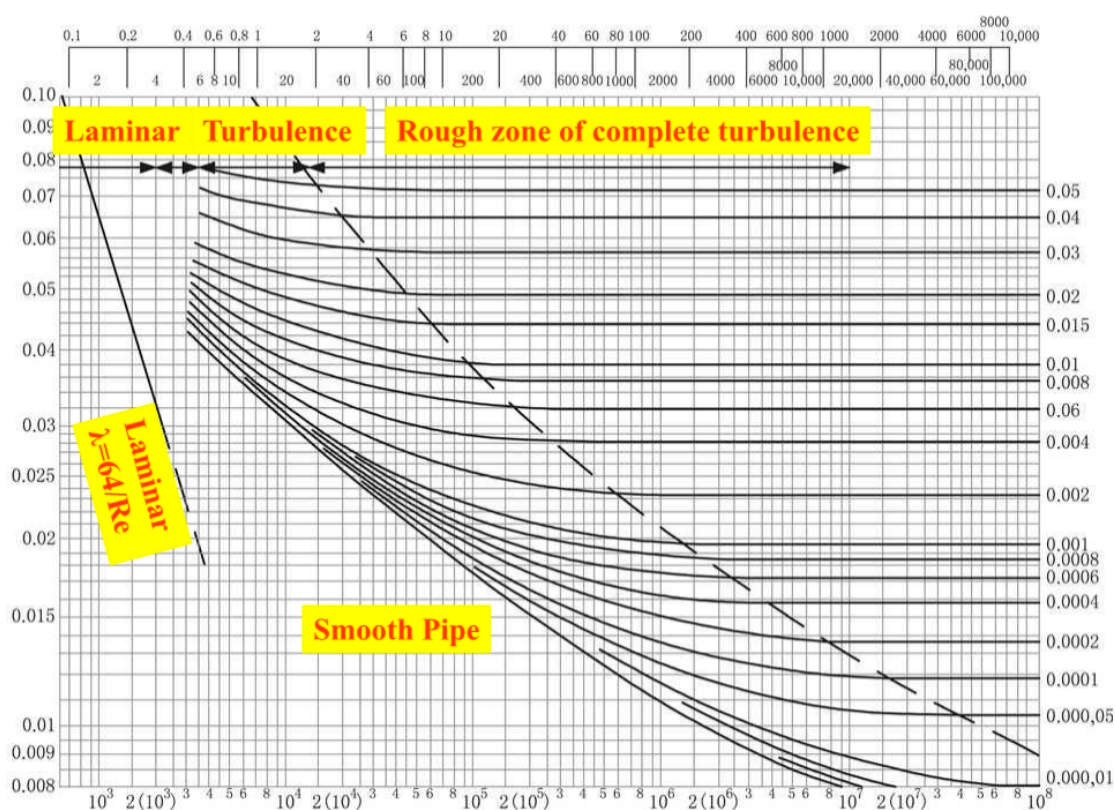


Figure S1. Moody's chart.

2. Measurement data of N₂ flow rate under different conditions in orthogonal experiment.

Table S1. Measurement data of N₂ flow rate (Orthogonal experiment, N₂ pressure 0.25 MPa).

No.	N ₂ Flow Rate									
	Blocking/Before			Blocking/After			Mean Value/Before	Mean Value/After	Standard Error/Before	Standard Error/After
1	26.01	25.71	25.83	20.37	20.19	20.46	25.85	20.34	0.0643	0.1375
2	25.12	25.45	25.08	18.67	18.80	18.81	25.15	18.76	0.0889	0.0781
3	24.43	24.31	24.22	17.66	17.89	17.70	24.32	17.75	0.0105	0.1229
4	24.57	24.80	24.61	17.52	17.65	17.51	24.66	17.56	0.1229	0.0781
5	25.09	25.22	25.17	11.86	11.80	11.77	25.16	11.81	0.0656	0.0458
6	25.41	25.19	25.39	5.75	5.91	5.92	25.33	5.86	0.1217	0.0954
7	26.30	26.39	26.48	8.94	8.81	8.89	26.39	8.88	0.0900	0.0656
8	26.76	26.98	26.84	8.58	8.77	8.69	26.86	8.68	0.1114	0.0954
9	26.49	26.67	26.55	10.30	10.30	10.15	26.57	10.25	0.0917	0.0866
10	25.73	25.63	25.83	7.41	7.26	7.23	25.73	7.30	0.1000	0.0964
11	26.17	25.98	25.97	13.43	13.29	13.27	26.04	13.33	0.1127	0.0872
12	24.60	24.81	24.78	5.90	6.02	5.99	24.73	5.97	0.1136	0.0625
13	25.81	25.45	25.57	11.65	11.80	11.71	25.61	11.72	0.1054	0.0755
14	25.11	25.30	25.25	8.11	8.26	8.26	25.22	8.21	0.0985	0.0866
15	25.11	24.88	25.04	3.20	3.23	3.41	25.01	3.28	0.1179	0.1136
16	25.69	25.82	25.80	4.01	4.11	4.09	25.77	4.07	0.0700	0.0529

Table S2. Measurement data of N₂ flow rate (Orthogonal experiment, N₂ pressure 1 MPa).

No.	N ₂ Flow Rate									
	Blocking/Before			Blocking/After			Mean Value/Before	Mean Value/After	Standard Error/Before	Standard Error/After
1	76.63	76.80	76.76	61.68	61.78	61.58	76.73	61.68	0.0889	0.1000
2	74.97	74.85	74.91	57.48	57.60	57.48	74.91	57.52	0.0600	0.0693
3	75.71	75.49	75.66	57.02	56.88	56.98	75.62	56.96	0.1153	0.0721
4	75.09	75.23	75.25	55.39	55.50	55.52	75.19	55.47	0.0872	0.0700
5	75.96	76.11	76.02	39.34	39.21	39.35	76.03	39.30	0.0755	0.0781
6	75.67	75.80	75.84	23.19	23.40	23.40	75.77	23.33	0.0889	0.1212
7	76.43	76.49	76.64	30.47	30.61	30.57	76.52	30.55	0.1082	0.0721
8	75.10	75.23	75.24	29.06	29.23	29.04	75.19	29.11	0.0781	0.1044
9	76.23	76.41	76.20	34.00	34.12	34.15	76.28	34.09	0.1114	0.0794
10	75.35	75.11	75.23	25.98	26.15	26.11	75.23	26.08	0.1200	0.0889
11	76.32	76.51	76.37	42.33	42.41	42.34	76.40	42.36	0.0985	0.0436
12	75.49	75.71	76.37	23.32	23.55	23.39	75.61	23.42	0.1114	0.1179
13	76.19	76.31	76.13	37.78	37.86	37.94	76.21	37.86	0.0916	0.0800
14	75.19	75.45	75.29	28.71	28.80	28.83	75.31	28.78	0.1311	0.0625
15	75.32	75.50	75.50	15.19	15.31	15.25	75.44	15.25	0.1039	0.0600
16	75.98	76.21	76.08	17.39	17.51	17.57	76.09	17.49	0.1153	0.0917

3. Blocking performance of anti-gas channeling system in long-term.

Table S3. Measurement data of N₂ flow rate (Long-term performance, N₂ pressure 0.25 MPa).

No.	N ₂ Flow Rate									
	Blocking/Before			Blocking/After			Mean Value/Before	Mean Value/After	Standard Error/Before	Standard Error/After
1	26.68	26.70	26.81	2.57	2.43	2.35	26.73	2.45	0.0569	0.0529
2				2.78	2.80	2.73		2.77		0.0351
3				2.61	2.70	2.58		2.63		0.0603
4				2.25	2.34	2.28		2.29		0.0321
5				2.75	2.88	2.71		2.78		0.0854
6				2.65	2.57	2.58		2.60		0.0153
7				2.54	2.62	2.55		2.57		0.0361

Table S4. Measurement data of N₂ flow rate (Long-term performance, N₂ pressure 1 MPa).

No.	N ₂ Flow Rate									
	Blocking/Before			Blocking/After			Mean Value/Before	Mean Value/After	Standard Error/Before	Standard Error/After
1	77.16	77.48	77.41	10.57	10.82	10.71	77.35	10.70	0.0651	0.0666
2				10.02	10.41	10.23		10.22		0.1069
3				10.89	11.10	11.04		11.01		0.0458
4				10.17	10.34	10.36		10.29		0.0361
5				10.57	10.77	10.64		10.66		0.0700
6				10.23	10.09	10.25		10.19		0.0808
7				10.47	10.81	10.70		10.66		0.0777



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