

بررسی آزمایشگاهی مکانیسم انحلال سنگ ضمن تزریق آب رقیق‌شده دریا در سنگ‌های کربناته

2 1 *1 1
-1
-2

1399/03/31:

1399/02/17:

چکیده

(rock dissolution)

20) (

) (pH

pH

کلمات کلیدی:

.]8-1[

مقدمه

.]9 4[

.]10[

]20-17 10[
]27-21 18 13-10[
 1000
 000ppm 3000ppm
]12 11 7 6 1[
]8 1[
]28 18[
 pH
 pH
) (
]16 11[
 90°C
 pH
]2 [

		1
]13[]10[) (
]1 []14[
]1 []14[
]1 []14[
]11[]13[1
]13[
]13[

.]30 29[

pH

2
¹XRD 1

.]24[

$$FZI^* = 0.0314 \sqrt{\frac{K}{j}} \quad)1($$

K 1

mD

نفت خام

pH

A

2h

مواد و روش کار

مواد

محیط متخلخل

3

نمونه‌های شورآب

%

FZI*

.)A (

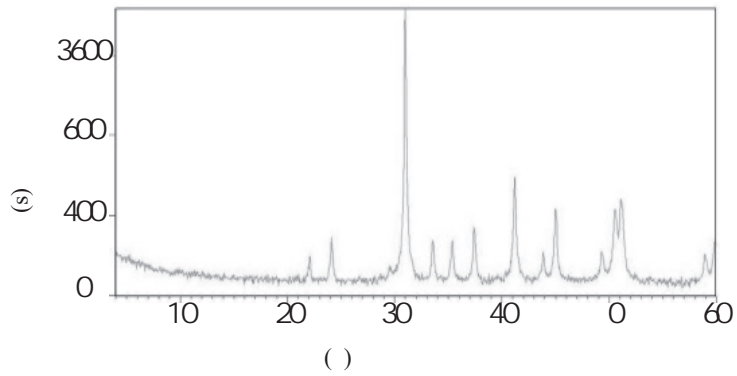
2

1

FZI*

2

FZI*	(cm)	(cm)	(cm ³)	(mD)	(g)	%(
0/17	8/087	3/81	1/4	3/94	188/7	1/73	1#
0/169	8/120	3/80	16/9	4/91	191/	17/01	2#
0/10	8/207	3/80	17/33	4/03	190/4	17/8	3#



Major Phase (s)	Minor Phase (s)	Trace Phase (s)
Calcite	Quartz	--
CaCO ₃	SiO ₂	

XRD 1

3

cp	2	
g/cm ³	0.8	
mg KOH/g Oil	0.6	
% (g asphaltene/g oil)	1	

NaCl

تمیزسازی پلاگها

(SW)

2

(d5SW)

(d20SW)

20

4

روشها

آزمایش سازگاری شورآبها

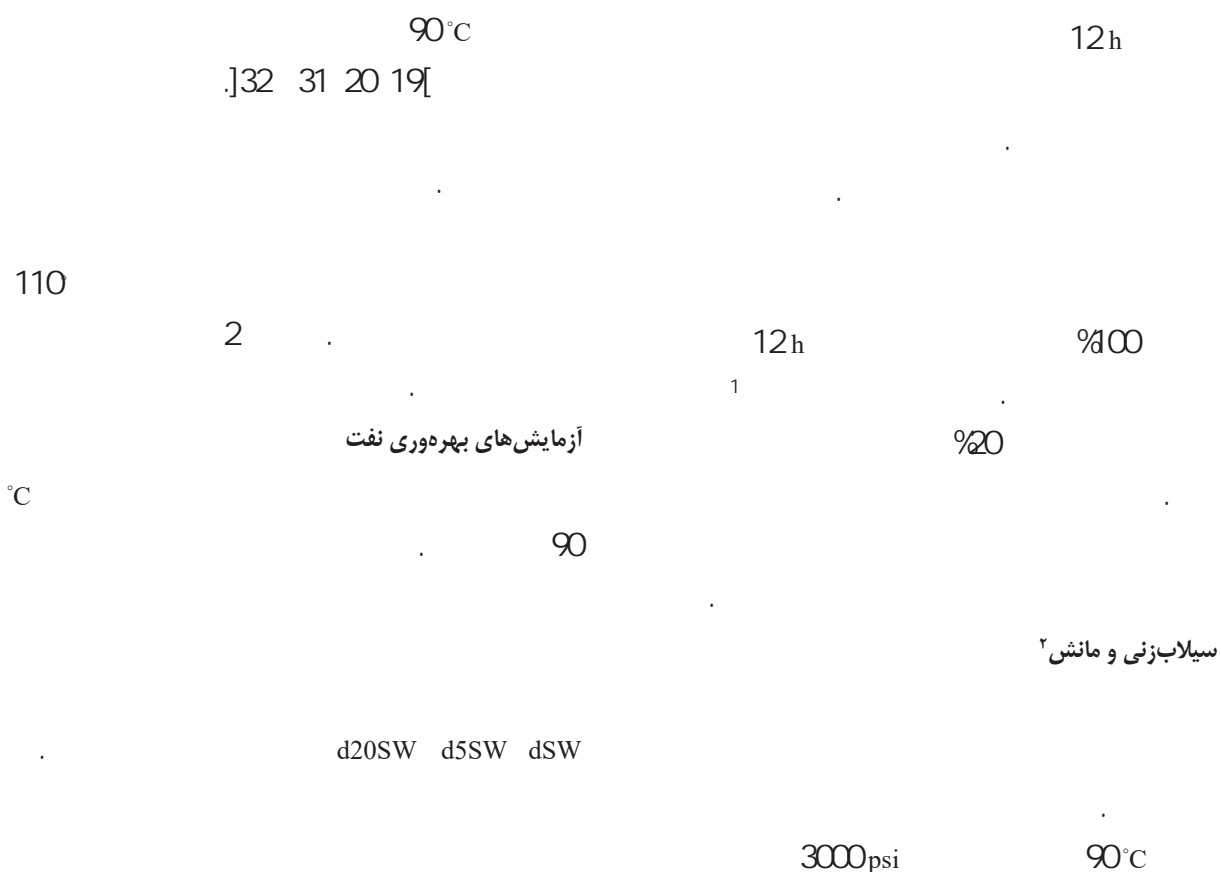
90°C

¹ Bottle tes

4

d20SW	d5SW	SW	FW	
0/	2/2	11	2697	(mmol/L)
3/1	12/6	63	110	(mmol/L)
26/7	106/8	34	264	(mmol/L)
31/9	127/8	639	3471	(mmol/L)
1/67	6/68	33/4	0	(mmol/L)
0/12	0/48	2/4	2	(mmol/L)
0/36	1/44	7/2	0	(mmol/L)
64/	2 8	1290	6 44	(mmol/L)
2023	8/114	40/ 7	240	(g/L)

رساندن بلاگ‌ها به اشباع آب کاهش نیافتی



1. Desiccator
2. Aging Time



2

24h 70

pH

Kenl 7045/46c pH meter

FTIR

3

FTIR

10

4000 cm⁻¹ 400

4

FTIR

1140 cm⁻¹

602 cm⁻¹ 660 cm⁻¹

27 21[

.]33[

FW SW

نتایج و بحث

سازگاری و آنالیز FTIR

d20SW d5SW

.]34[

(FW)

4 mL

20 mL

%2

)

(

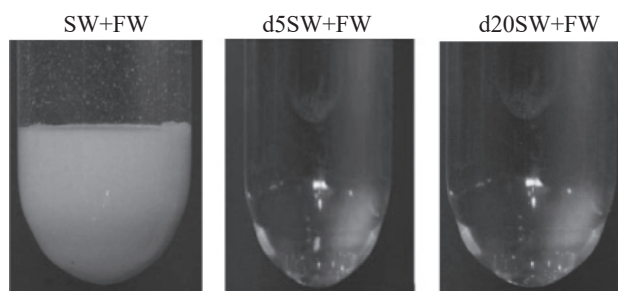
عملکرد تولید در قالب تست‌های سیلاب‌زنی

(1

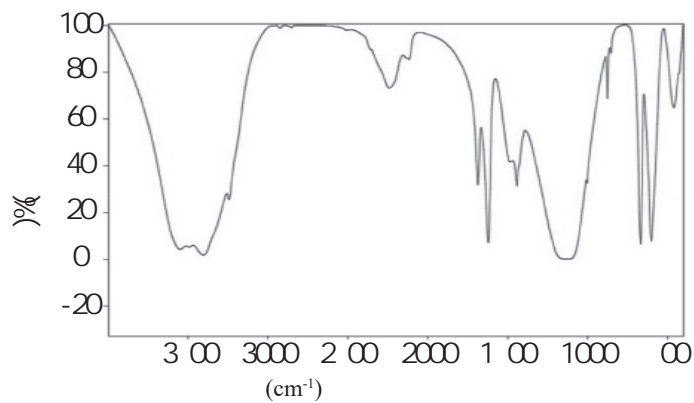
)11 mm

7

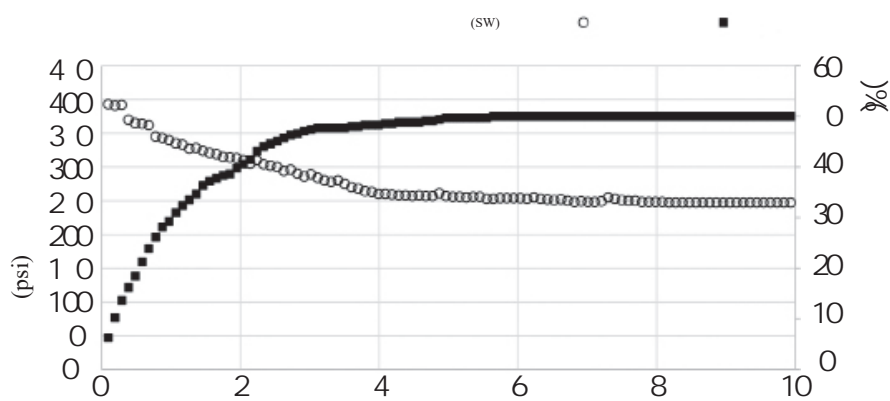
°C



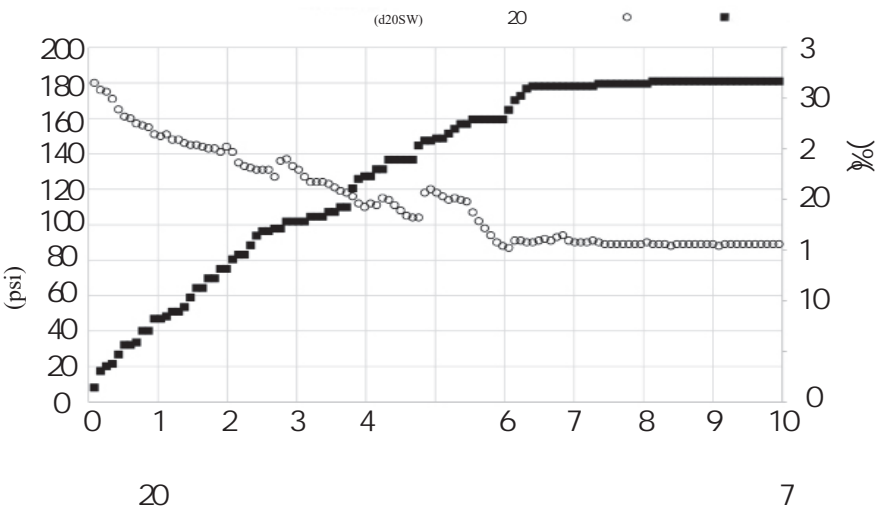
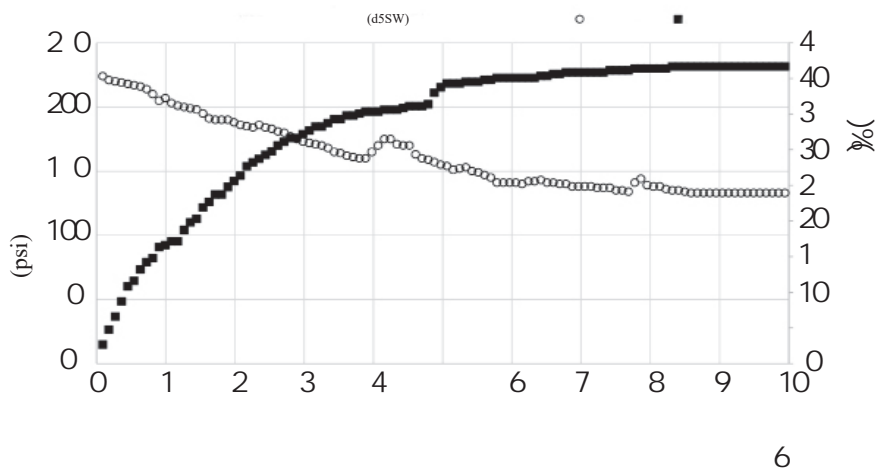
3



FTIR 4



5



SW
 d5SW
 SW
 6
 4 (43 2 d20SW d5SW SW
)
 7
 d20SW SW
 d5SW
 %
 SW

pH

pH

pH

8

SW

SW

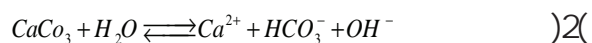
pH

pH

d20SW d5SW

%20 1

pH



5	-	-
0	393	1-SW
42	224	2-d5SW
32	180	3-d20SW

1/7

20

pH

2/18

pH

pH

]3 [

OH⁻

2

اندازه‌گیری تراوایی مطلق نمونه سنگ‌ها پیش و پس از سیلاب‌زنی

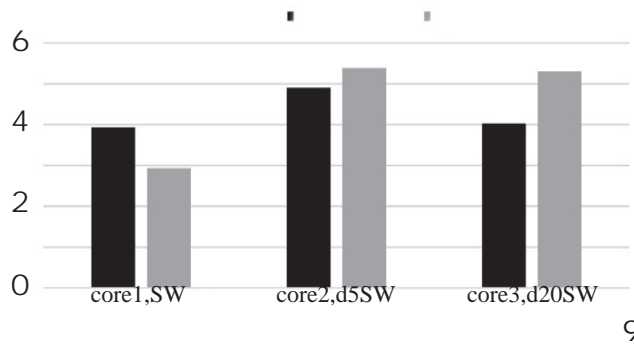
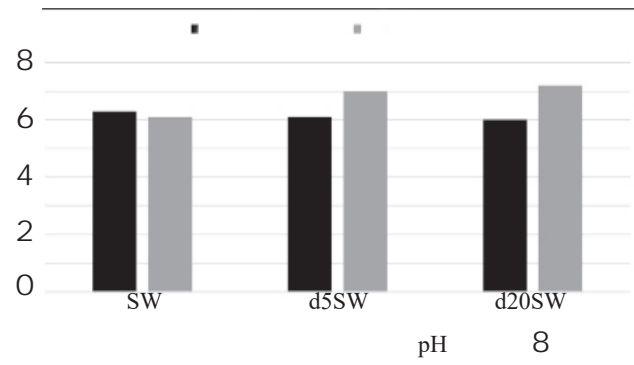
2

اندازه‌گیری pH شورآب‌ها و فاز آبی خروجی از تست‌های سیلاب‌زنی

pH

9

SW



SW

×2

نتیجه گیری

pH

FTIR

SW

2

d20SW d5SW

3

×32 10

تشکر و قدردانی

pH

مراجع

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measurements (Figure 5).

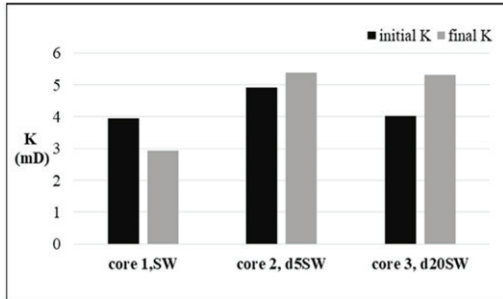


Fig. 5 permeability measurements after the injection.

Conclusions

Nomenclatures

References

1. [Reference 1]
2. [Reference 2]

3. [Reference 3]
4. [Reference 4]
5. [Reference 5]