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(30) 9500853 1995 10 13 (BE)

(73) -6411 1

(72) (.) (6191) 15

(6049) 1

(6051) . 22

(74)

:

(54)

10 %

, , 1 24

-

가
0.1 - 1000 ppm
pm
가
가
가
가
15 120 5 300
가
가
0.02 , 0.05 0.25
가
60 180 , 60 100
(flashing))
0.1 - 0.6 MPa,
I
70 kg 190 mmol NaOH(1500 mmol NaOH/kg) (15 %) 107 ml
(OL) 250 ml (CHHP), 40 mmol (ON) 90 mmol
11 * 10⁻³ min⁻¹ 가 CHHP 가
A
CHHP NaOH(1500 mmol NaOH/kg) 107 ml 가 가 I
가 1 8 * 10⁻³ min⁻¹
II
70) 107 ml NaOH(1500 mmol NaOH/kg), (15 %) Cr(NO₃)₃ (10 ppm Cr
(ON) 90 mmol (OL) 250 ml (CHHP), 40 mmol
가 CHHP
13 * 10⁻³ min⁻¹
B
NaOH(1500 mmol NaOH/kg) Cr(NO₃)₃ (10 ppm Cr) 107 ml 가 가
II CHHP 가 1 8 * 10⁻³ min⁻¹
가 500 ml
(overflow)가
1
III
kg 153 mmol (CHHP), 53 mmol (ON) 105 mmol
(OL) 17.0 ml/min 1 가 , NaOH(750
mmol NaOH/kg), Na₂CO₃ (354 mmol/kg), CoSO₄ (4.3 ppm Co) (C₁
C₆)(20 %) 1.95 ml/min 가 CHHP 1
69 2 66 CHHP 가
1 140 * 10⁻³ min⁻¹ CHHP 95 %

IV
kg 182 mmol (CHHP), 42 mmol (ON) 86 mmol
(OL) 16.7 ml/min 1 , III
가 , NaOH(750 mmol NaOH/kg), Na₂CO₃ (365 mmol/kg Na₂CO₃), CoSO₄ (4.3 ppm Co)
(C₁ C₆)(20 %)
1.93 ml/min 가 . CHHP 1 67 , 2 66
가 . CHHP 가 1 131 * 1
0 -3 min⁻¹ . CHHP 95 %

V
kg 182 mmol (CHHP), 42 mmol (ON) 86 mmol
(OL) 16.9 ml/min 1 , III
가 , NaOH(750 mmol NaOH/kg), Na₂CO₃ (375 mmol/kg), CoSO₄ (4.3 ppm Co)
(C₁ C₆)(15 %)
가 . CHHP 1 67 , 2 66
CHHP 가 1 110 * 10⁻³ min⁻¹
. CHHP 93 %

C
kg 153 mmol (CHHP), 53 mmol (ON) 105 mmol
(OL) 16.6 ml/min 1 , III
가 , NaOH(750 mmol NaOH/kg), Na₂CO₃ (365 mmol/kg) CoSO₄ (4.3 ppm Co)가
1.94 ml/min 가 . CHHP 1 69 , 2
66 . CHHP 가 1
60 * 10⁻³ min⁻¹ . CHHP 87 %

1000 ml Cr/Ni
가

VI
kg 153 mmol (CHHP), 53 mmol (ON) 105 mmol
(OL) 75.3 ml/min 가 , NaOH(625 mmol
NaOH/kg), Na₂CO₃ (445 mmol/kg), CoSO₄ (10 ppm Co)
(C₁ C₆)(
15 %)
15.6 ml/min 가 . CHHP 85
) . CHHP 가 1.97 min⁻¹ (90 2.63 min⁻¹
) . CHHP 95 %

VII
kg 153 mmol (CHHP), 53 mmol (ON) 105 mmol
(OL) 75.3 ml/min 가 , NaOH(935 mmol
NaOH/kg), CoSO₄ (10 ppm Co) (12 %)
15.6 ml/min 가 .
CHHP 105 . CHHP 가 1 5.6
5 min⁻¹ (90 2.49 min⁻¹) . CHHP 98 %

VIII
kg 153 mmol (CHHP), 53 mmol (ON) 105 mmol
(OL) 76.5 ml/min 가 , NaOH(750 mmol
NaOH/kg), Na₂CO₃ (315 mmol/kg), CoSO₄ (10 ppm Co)
(C₁ C₆)(
25 %)
15.3 ml/min 가 . CHHP 85
) . CHHP 가 1.78 min⁻¹ (90 2.37 min⁻¹
) . CHHP 95 %

D
kg 153 mmol (CHHP), 53 mmol (ON) 105 mmol
(OL) 74.5 ml/min 가 , NaOH(660 mmol
NaOH/kg), Na₂CO₃ (420 mmol/kg) CoSO₄ (10 ppm Co)
15.0 ml/min 가 . CHHP
P 96 . CHHP 가 1 0.45 min⁻¹
-1 (90 0.32 min⁻¹) . CHHP 85 %

E
kg 153 mmol (CHHP), 53 mmol (ON) 105 mmol
(OL) 74.5 ml/min 가 , NaOH(1600 mmol
NaOH/kg), Na₂CO₃ (630 mmol/kg) CoSO₄ (10 ppm Co)가
15.0 ml/min 가 . CH

HP
n⁻¹ (90
95
0.73 min⁻¹)
. CHHP
가
92 %
. 1
0.97 mi

(57)

1.
,
,
10 % 1
.

2.
1 ,
1 24
.

3.
1 2 ,
.

4.
1 2 ,
가 45 %
.

5.
1 2 ,
가 20 % 35 %
.

6.
1 2 ,
OH⁻ 가 0.1 2 N ,
.

7.
1 2 ,
0.1 1000 ppm
.

8.
1 2 ,
, 가 0.3 MPa 5 MPa , 120 2
00