

Experiments for electro-decontamination about Radioactive Metal

Waste

555

가

SUS Carbon Steel

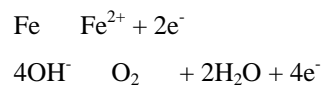
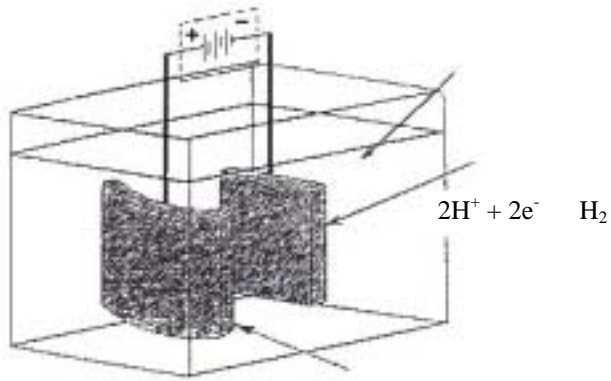
Abstract

Decontamination means every method that can drop the level of the radioactivities from the materials contaminated with them to the allowable one. In this paper, one decontamination method, the electro-decontamination was described with lots of experiments in which several kinds of test specimen with low radioactivities were made and used. Sulphuric acid, phosphoric acid, nitric acid, citric acid and oxalic acid were used as the electrolyte and SUS, carbon steel contaminated with radioactivities were used as the materials of the test specimen. Decontamination Factors(DF) depend on the each electrolyte, current intensities and time

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1.

2.2.

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1)

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2)

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3.

SUS Carbon Steel TRIGA 2 Co-60 2.5cm×3cm



(a) Carbon Steel



(b) SUS

2. Carbon Steel SUS

4.

(S5XLD) 3
1 (MDA) 1.07E+002 Bq/m²
9.15E+001 Bq/m²



3.



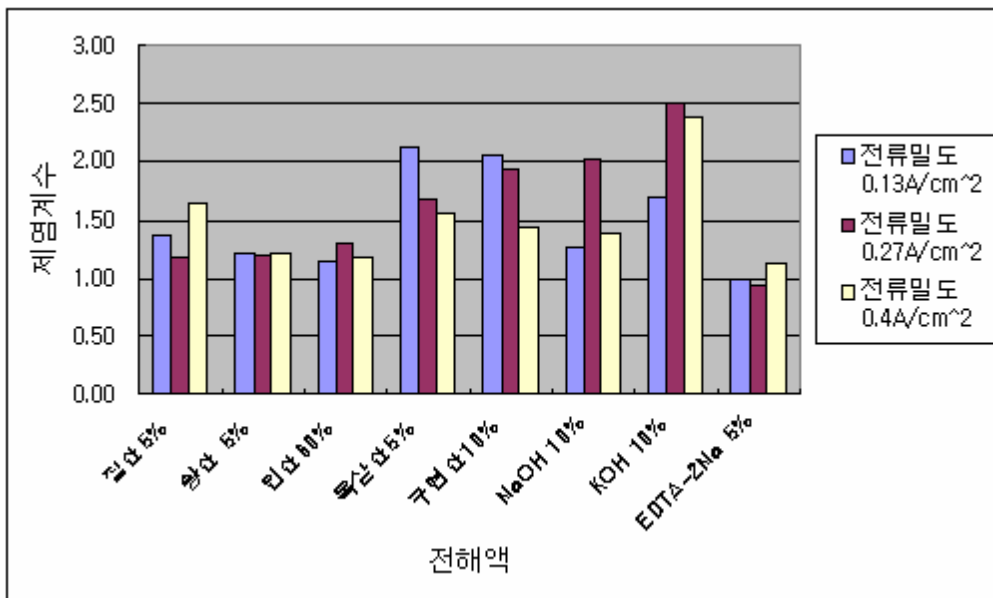
4. Smear

5. Carbon Steel

5.1

Carbon Steel

5%(HNO₃), 5%(H₂SO₄), 60% (H₃PO₄), 5% (HO₂CCO₂H-2H₂O),
 10% (HOOCCCH₂C(OH)(COOH)CH₂COOH), 10%(NaOH),
 10%(KOH), EDTA-2Na 5%(C₁₀H₁₄N₂Na₂O₈·2H₂O) 2.5cm×3.0cm
 0.13, 0.27, 0.408 A/cm² 5
 80 °C 5



5.

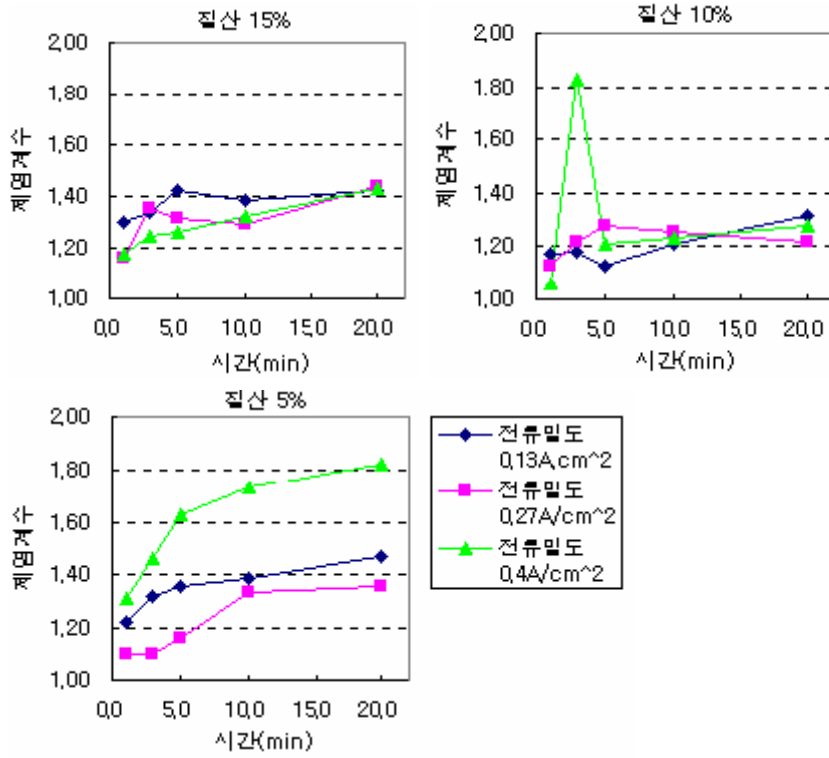
(5)

5.2

20

- : 5, 10, 15%
- : 0.13, 0.27, 0.4 A/cm²
- : 1, 3, 5, 10, 20
- : 2.5×3.0 cm
- :
- : 6 Carbon Steel

Carbon Steel



6.

5.3 KOH

가 가

KOH

7

- : 5%, KOH 10%
- : 0.13, 0.27, 0.4 A/cm²
- : 5, 10, 20, 40, 60
- : - 80 °C, KOH -
- : 2.5×3.0 cm

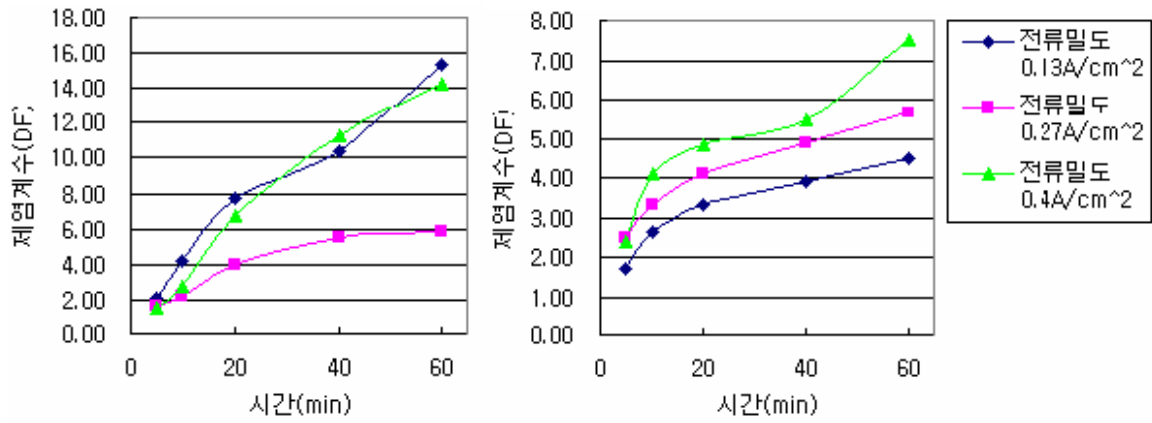
KOH

Carbon Steel

KOH

20

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7. KOH
(a) 5%

(b) KOH 10%



(a) 5%



(b) KOH 10%

8.

(0.4A/cm²)

5.4

5.4.1 KOH

5.3 KOH 5% 80 1

2

MDA

9

1. KOH

						beta	beta	
						(Bq/m ²)	(Bq/m ²)	
	(%)	(A/cm ²)	()	()				
1	KOH	10	0.13	60		1.09E+04	2.44E+03	4.47
2	KOH	10	0.27	60		1.17E+04	2.06E+03	5.68
3	KOH	10	0.40	60		1.32E+04	1.76E+03	7.50

5. NaOH

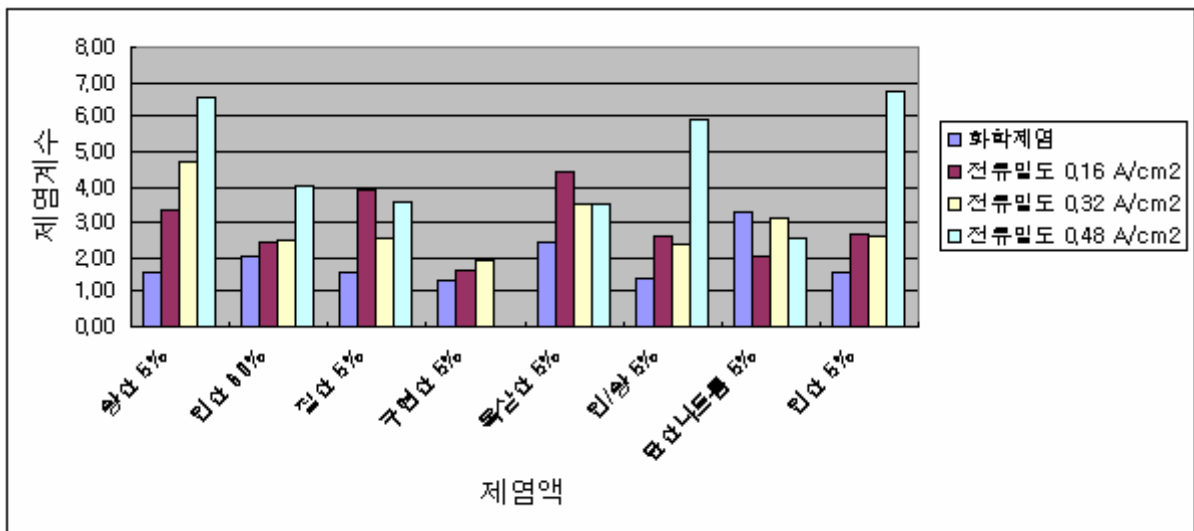
						beta		
	(%)	(A/cm ²)	()	()	(Bq/m ²)	()	()	
1	5	0.40	10		2.47E+0	2.17	71.66	
2	5	0.40	10		2.37E+0	1.54	74.26	
3	5	0.40	10		4.86E+0	1.00	33.74	

6. Stainless Steel

6.1

Stainless Steel

- : 5%(H₂SO₄), 60% (H₃PO₄), 5%(HNO₃), + (7:3), 5% (HO₂CCO₂H-2H₂O), 5% (HOOCCH₂C(OH)(COOH)CH₂COOH), 5% (Na₂CO₃)
 - : 2.5x2.5 cm
 - : 0, 0.16, 0.32, 0.48 A/cm²
 - :
- 10 (20)



6.2

5.2.1

가

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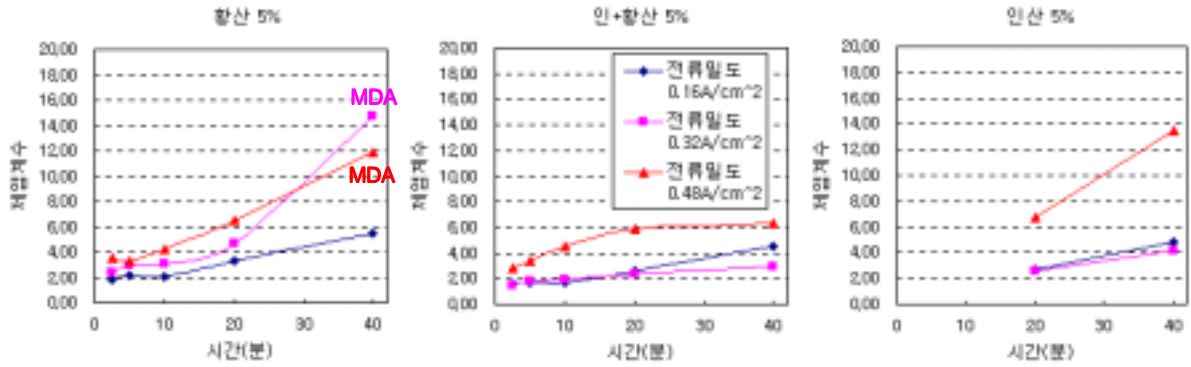
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11

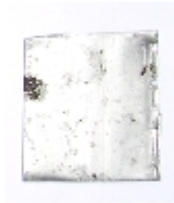
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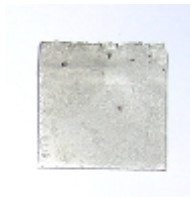
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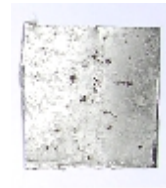
11. , + ,



(a) 5%



(b) + 5%



(c) 5%

12.

(

0.48A/cm²)

7.

Carbon Steel SUS

1) Carbon Steel

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1 KOH

20

100

2) SUS

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Reference

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