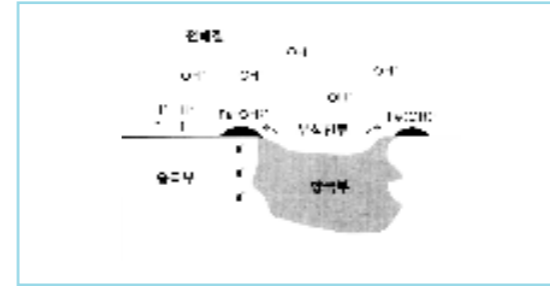


Tel : 02) 3433-7821
E-mail : harmonic@mail.ssyenc.co.kr



[1]

가
(-0.45 ~ -0.65)
(, Mg : -1.55V)

()
(Cathodic Protection)

(Cathodic)

< 1 >	
Metal	Volts)
Magnesium	-2.37
Aluminum	-1.66
Zinc	-0.76
Iron	-0.44
Tin	-0.14
Lead	-0.13
Hydrogen	0.00
Copper	+0.34 ~ +0.52
Silver	+0.80
Platinum	+1.20
Gold	+1.50 ~ 1.68

) Half-cell potential in solution of own salts, measured with respect to hydrogen reference electrode.
) Handbook of Chemistry and Physics. 41st Edition 1959-1960, Chemical Rubber Publishing Co., p.1733.

< 2 >	
Metal	Volts)
Commercially pure magnesium	-1.75
Magnesium alloy (6% Al, 3% Zn, 0.15% Mn)	-1.6
Zinc	-1.1
Aluminum alloy (5% Zn)	-1.05
Commercially pure aluminum	-0.8
Mild steel (clean and shiny)	-0.5 ~ -0.8
Mild steel (rusty)	-0.2 ~ -0.5
Cast Iron (not graphitized)	-0.5
Lead	-0.5
Mild steel in concrete	-0.2
Copper, brass, bronze	-0.2
High silicon cast iron	-0.2
Mill scale on steel	-0.2
Carbon, graphite, coke	-0.3

) Typical potential normally observed in neutral soil and, water, measured with respect to copper sulfate reference electrode
) Handbook of Chemistry and Physics. 41st Edition 1959-1960, Chemical Rubber Publishing Co., Page 1733

2. _____

(Mechanism)

()

(Cathodic Protection)

(Anodic Protection)

(Cathodic Protection)

가

()

()

가

가

가 (1. _____ ?)

가
. KAIST

가 GNP 3~5 %
가 200 ~ 250 US \$

(가 , ,) 가

()가

가 30 ~ 40

가

(Protection)

가

가

- 1) ():
BED
DISTRIBUTION
- 2) ():
SHALLOW BED
DEEPWELL
DISTRIBUTION
- 3) LINE ANODE

2.1 (Sacrificial Anode Method)

가

- 가
- 가
- 가
- 가

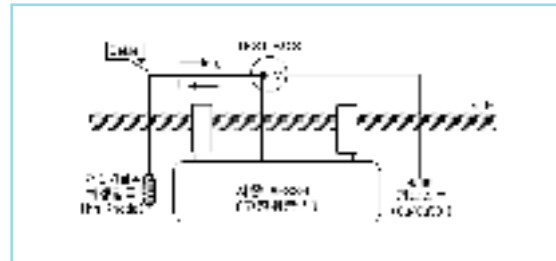
< 3>			
	M g	A l	Z n
(V)	1.55 - 1.75	1.10	1.1
(V)	0.8	0.25	0.25
(AH/g)	2.2	2.88	0.82
(%)	50	90	95
(AH/g)	1.1	2.59	0.78
(Kg/A·Yr)	7.96	3.38	11.23

2.2 (Cathodic Protection)

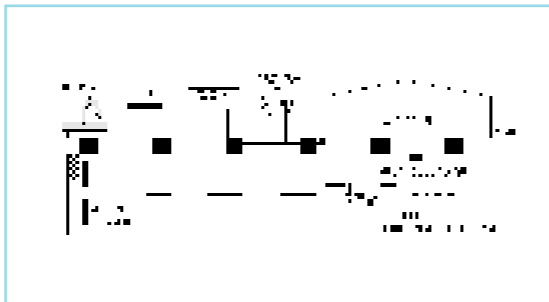
가 (Anode)

(Negative Current)

(Cathodic Protection)



[2]



[3]

- < >
- 1)

- 가
- 2) 가
- 가

3.

3.1

3.2

1)

< 4> (Bare steel structures)	
Environment	mA Per sq. ft.
- Neutral soil or water (pH 7)	0.4 ~ 1.5
- Well-aerated, neutral soil or water (pH 7)	2.0 ~ 3.0
- Sea water	3.0 ~ 10.0
- Moving fresh water (Velocity above 5ft. per sec.)	9.0 ~ 25.0
- Wet soils	1.0 ~ 6.0
- Heated, in soil or moist concrete	3.0 ~ 25.0
- Highly acid soil	3.0 ~ 15.0
- Anaerobic soil with active sulfate-reducing bacteria, initial requirement	6.0 ~ 42.0
- Fresh water that is relatively still	1.0 ~ 6.0
- Fresh water that is highly turbulent and contains much dissolved oxygen	5.0 ~ 15.0
- Hot water	5.0 ~ 15.0
- Mildly acid or alkaline solution in process tanks, depending on turbulence and temperature	1.0 ~ 25.0
- Brine tanks	8.0 ~ 10.0

) US Army - COE Manual EM 1110-1-184

DC

2)

PH

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3)

log

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3) ,

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4) .

4. _____

4.1

1)

5. _____

, 2

, Coating ,

2)

Boring,

() Block out

Coordination

3) Line Anode

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4.2

가 21 가

1)

90%

2)

가 .

3)

4.3

1) ()

1. Handbook of chemistry and physics. 41st Edition,

1959 ~ 1960, Chemical rubber publishing Co., p.1933

2. ()

3. US Army-COE Manual EM 1110-1-184