

Magnesium Anode

Standard Potential Magnesium Anodes

In average soil conditions, H-1 alloy, commonly known as standard potential magnesium, is an excellent choice for use in cathodic protection systems. Typically, CORRTECH H-1 anodes produce a minimum open circuit potential of 1.52 volts with respect to Cu-CuSO₄.



Therefore, the driving potential of the H-1 cathodic protection anodes

exceed that of aluminum or zinc, but is still lower than a high potential magnesium anode. We suggest using CORRTECH Standard Potential Magnesium Anodes in soils with resistivity lower than 2000 Ω/cm to minimize the cost, as this kind of anodes are much cheaper than high potential magnesium anodes.

Chemical composition (%)

Alloy	Al	Zn	Mn	Si (max)	Cu (max)	Ni (max)	Fe (max)	Total of impurities (max)
AZ63 B	5.30-6.70	2.50-3.50	0.15-0.60	0.08	0.01	0.001	0.003	0.30
AZ31 D	2.5-3.5	0.6-1.4	0.2-1.0	0.08	0.01	0.001	0.002	0.30
AZ63 C	5.30-6.70	2.50-3.50	0.15-0.70	0.30	0.05	0.003	0.003	0.30

Electrochemical properties

Open voltage(-V)	Closed voltage(-V)	Actual capacity(A.h/kg)	Efficiency (%)
1.50-1.55	1.45-1.50	1,230 min	55 min

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Mg High Potential Anode

CORRTECH Magnesium High Potential Anode is manufactured from high quality, primary magnesium under strict, state of the art production techniques, anode chemistry, testing and certification according to ASTM97-89 standard. For these reasons, CORRTECH Magnesium High Potential Anode meets or exceeds industry standards for high potential Mg anodes and has a longer life.



As normally required, the anode is packaged in a cloth bag with a prepared backfill mixture that works to maintain moisture around the anode and lowers the anode to earth resistance.



For farther information of packaged Mg anodes, please call CORRTECH.

Chemical composition (%)

Alloy	Al	Mn	Cu	Si	Fe	Ni	Other metal impurity (max)	Total of impurities (max)
	(max)		(max)	(max)	(max)	(max)		
Mg-Mn	0.01	0.50-1.30	0.02	0.05	0.03	0.001	0.05	0.3

As per ASTM B843 Industry Standard for M1C high potential magnesium anodes.

Electrochemical properties

Open voltage(-V)	Closed voltage(-V)	Actual capacity (A.h/kg)	Efficiency (%)
1.70-1.75	1.58-1.62	1,100 min	50 min

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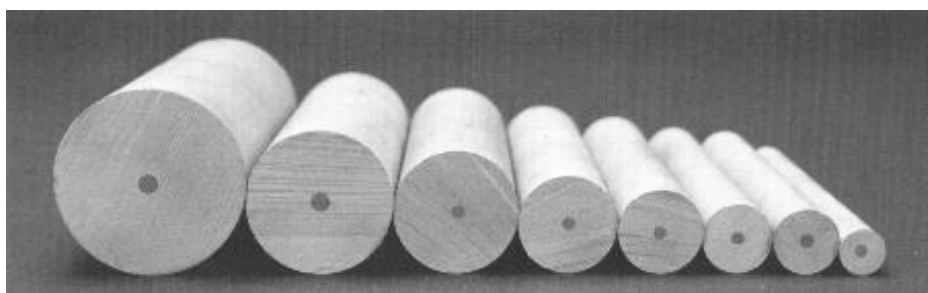
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Mg Extruded Rod Anodes

Extruded anodes have high current to weight ratio, are suitable to be used in where a small diameter anode is required to give enough cathodic current.

CORRTECH supplies extruded anodes in both high potential (Mg-Mn alloy) and low potential (AZ31 alloy). CORRTECH's extruded anodes are typically suitable for all kinds of water heaters and water storage tanks, or in prepolarization of offshore structure etc.



Chemical composition (%)

Alloy	Al	Mn	Zn (max)	Ca (max)	Si (max)	Cu (max)	Ni (max)	Fe (max)	Other Imp.	
									each	total
AZ31B	2.5-3.5	0.2-1.0	0.6-1.4	0.04	0.1	0.03	0.005	0.005	---	0.3
AZ31D	2.5-3.5	0.2-1.0	0.6-1.4	0.04	0.05	0.01	0.001	0.002	0.01	0.3
Mg-Mn	0.01 max	0.5-1.3	---	---	---	0.02	0.001	0.03	0.05	0.3

Specification

Diameter (inch)	Core eccentric (inch)	Core diameter (inch)	Straightness (inch/ 2 ft length)	Weight (lbs/inch)
0.500-0.020	0.040	0.135	0.06	0.015
0.675-0.020	0.050	0.135	0.06	0.025
0.700-0.020	1/16	0.135	0.06	0.027
0.750-0.020	1/16	0.135	0.04	0.031
0.800-0.020	1/16	0.135	0.04	0.035
0.840-0.020	1/16	0.135	0.04	0.038
0.900-0.020	1/16	0.135	0.04	0.043
1.050-0.020	1/16	0.135	0.04	0.057
1.315-0.020	1/16	0.135	0.04	0.089
1.561-0.016	1/16	0.188	0.05	0.125
2.024-0.024	1/8	0.188	0.05	0.208
2.562-0.024	1/8	0.188	0.05	1/3

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Mg Extruded Ribbon Anode

Mg Extruded ribbon anodes have much more surface to weight ratios, thus it will create greater current than normal cast anode.

Mg extruded anodes are normally used for protecting oil tanks or other steel structure in high resistivity electrolytes.



Chemical composition (%)

Mg	Mn	Zn	Al	Cu	Ni	Fe	Si	Impurities	
			(max)	(max)	(max)	(max)	(max)	Each	Total
Balance	0.50-1.3	----	0.01	0.02	0.001	0.03	---	0.05	0.30
Balance	0.20 min	0.7-1.3	2.5-3.5	0.01	0.001	0.002	0.05	0.05	0.30

General Specifications

Section (inch)	3/8x3/4 +- 0.015(1/8"corner)
Diameter of core (inch)	0.135
Core eccentric (inch)	<1/16
Weight (lbs/feet)	0.243
Standard coil length (feet)	1000
Coil weight (lbs)	243 (110kg)

Application

- ◆ Oil tanks
- ◆ Pipeline and other kinds of steel structure



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Mg Cast Rod Anode AZ63 alloy

Mg cast rod anodes are normally use in protecting water heater from corrosion.

CORRTECH adopts advanced casting technology, supplies quality Mg cast rod anode as follows:

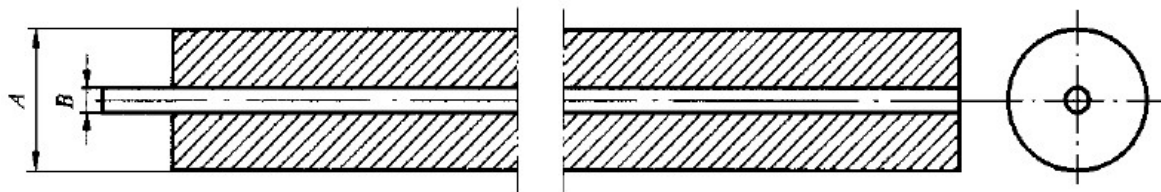
Chemical composition (%)

Alloy	Mg	Al	Zn	Mn	Si	Cu	Ni	Fe	Total of Impurities (max)
					(max)	(max)	(max)	(max)	
AZ63 B	Balance	5.30-6.70	2.50-3.50	0.15-0.70	0.1	0.02	0.002	0.003	0.3

Electrochemical properties

Open voltage (-V)	Closed voltage (-V)	Actual capacity (A.h/kg)	Efficiency (%)
1.50-1.55	1.45-1.50	1,230 min	55 min

General Specifications



A/mm	B/mm	kg/m	Dia. of the steel core (mm)
14.0	2.0	0.28	
16.0	2.0	0.37	
19.1	3.4	0.55	3.2
21.3	3.4	0.68	
26.7	3.4	1.00	
33.4	3.4	1.60	
39.6	4.8	2.23	
51.4	4.8	3.72	

The diameter of steel core could be available according to customers' request. And we also could supply special product in accordance with the drawing from customers.

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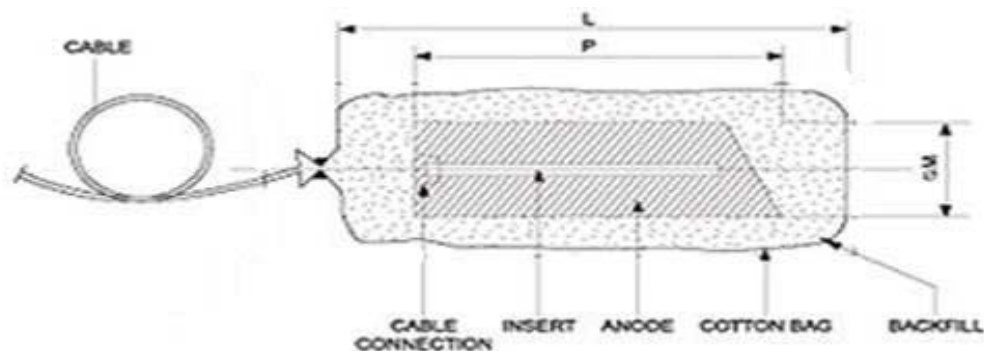
Prepackaged Mg Anodes

Above bare Mg anodes could be supplied after being prepackaged. The bare Mg anodes will be assembled with cable and sealed with epoxy resin, and packaged in cotton bag.

As the prepackaged anodes are buried under the ground, if there is any harmful element in the backfill of prepackaged anodes, this element will leak to the earth and groundwater when the anode is used, which will pollute the environment.

CORRTECH prepackaged anodes are made of recyclable materials or easily decomposable materials and the content of harmful elements in the backfill is lower than safety standards, which will not bring any pollution to the surrounding.

The available cables type (insulation / sheath) are: PVC/PVC, XLPE/PVC, HMWPE with cable size: 6mmsq, 10mmsq, 16mmsq.



Composition of Backfill

- Ø Gypsum: 75%
- Ø Bentonite: 20%,
- Ø Anhydrous Sodium Sulphate: 5%

Harmful elements in backfill:

Cd (max)	As (max)	Hg (max)	Pb (max)
1ppm	1ppm	1ppm	10ppm

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