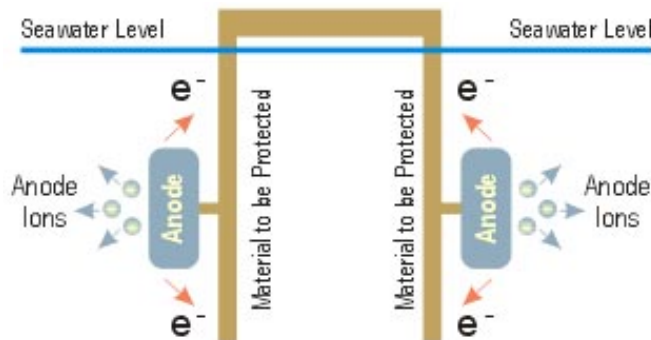
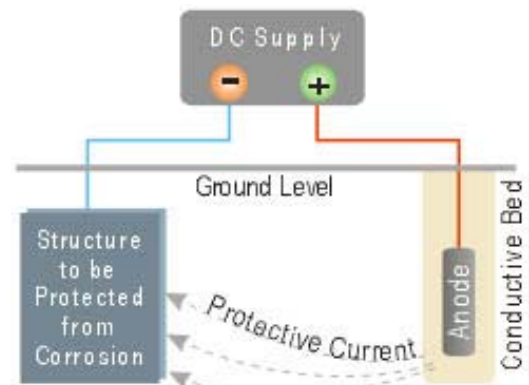


Cathodic Protection

CP & ICCP Materials



CP ระบบป้องกันสนิมโลหะ โดยให้ Anode จ่าย อิเล็กตรอนแก่สิ่งแวดล้อมแทนตัวโครงสร้างโลหะ โดยไม่ใช้กระแส ไฟฟ้าช่วย



ICCP ระบบป้องกันสนิมโลหะ โดยใช้ไฟฟ้ากระแสตรงจาก แหล่งกำเนิดภายนอก จ่ายอิเล็กตรอนแก่สิ่งแวดล้อมแทน ตัวโครงสร้างโลหะ โดยที่ขั้ว Anode จะคงรูป ไม่สลายตัว ไปเหมือนระบบ CP จึงใช้งานได้ยาวนานกว่ามาก (หลายปี)

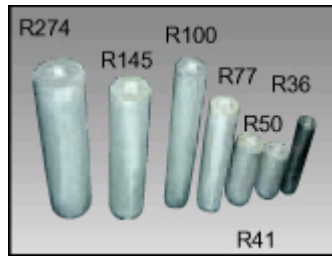
- **Anode-galvanic (CP)**
 - **Magnesium anode** **2**
 - **Mg High Potential Anode** **3**
 - **H-1 ALLOY Mg Anode** **3**
 - **Pre-packaged Mg Anode** **4**
 - **Cast Rod Anode-AZ63 Alloy** **4**
 - **Mg/AL Extruded Rod** **5**
 - **Extruded ribbon anode** **6**
 - **Aluminum anode** **7**
 - **Zinc anode** **9**
 - **Zinc Ribbon Anode** **10**
- **C.P. Wire and Cable** **16**
 - **XLPE/PVC Cable** **16**
 - **EPR/CSPE Cable** **16**
 - **HMWPE Cable** **16**
 - **HMWPE/PVDF (Kynar) Cable** **16**
- **Anode Backfill** **17**
 - **Metallurgical Coke Breeze** **17**
 - **Calcined Petroleum Coke** **17**
- **Anode Impressed Current (ICCP)**
 - **Ti-Mixed Metal Oxide Anode** **11**
 - **MMO solid rod** **12**
 - **MMO tube anode** **12**
 - **MMO tubular Anode String** **12**
 - **MMO Ribbon Anodes** **13**
 - **MMO mesh ribbon anode** **13**
 - **Graphite Anode** **14**
 - **High Silicon Cast Iron Anode** **15**
 - **Rod Anode** **15**
 - **Si-Fe Tube Anode** **15**
- **Other CP Materials** **18**
 - **Reference Electrode** **18**
 - **Test station / Junction Boxes** **18**
 - **Rectifiers** **18**
 - **CP Tool Kits** **18**
 - **Insulation Flanges** **18**
 - **Thermit Welding Power & Mould** **18**
 - **Heat shrink pipe Model & Size** **18**

Magnesium Sacrificial Anode

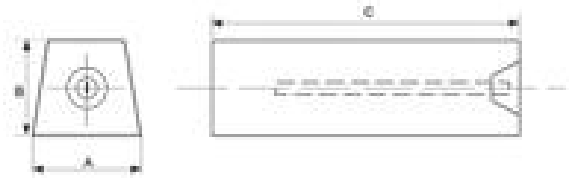
Magnesium anodes are commonly used in cathodic protection, as Mg metal have the more negative potential than other galvanic materials. We adopt super quality magnesium metal exceeding industrial standards for producing anodes.



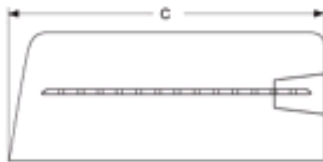
"D" Shape anodes



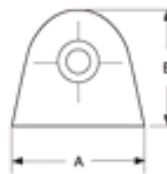
"R" shape anodes



"S" shape



"D" shape



"R" shape



"D" shape Type

TYPE	WEIGHT	A	B	C	Insert
9D2 -1	4.1	63.5	63.5	669.9	Strip
9D2 -2	4.1	69.9	76.2	560	Strip
14D2-1	6.35	63.5	63.5	1054	Strip
14D2-2	6.35	69.9	76.2	850.9	Strip
20D2-1	9.1	63.5	63.5	1505	Strip
20D2-2	9.1	69.9	76.2	1270	Strip
9D3	4.1	88.9	95.25	258.8	Strip
17D3	7.7	88.9	95.25	657.2	Strip
32D5	14.5	139.7	146.05	523.9	Strip
48D5	21.8	139.7	146.05	765.2	Strip

"R" shape Type

Type	N.W. (kg)	G.W. (kg)	DIA (mm)	Length -1.7V(mm)	Length -1.5V(mm)	Insert Dimension
YM-R36	3.6kg	3.7kg	114	202	193	25x2x190
YM-R41	4.1kg	4.2kg	114	230	220	25x2x190
YM-R50	5.0kg	5.1kg	114	280	268	25x2x195
YM-R77	7.7kg	7.8kg	114	431	412	25x2x332
YM-R100	10kg	10.2kg	114	560	536	25x2x428
YM-R145	14.5kg	14.7kg	146	494	472	25x2x428
YM-R227	22.7kg	22.9kg	178	520	497	25x2x428
YM-R274(I)	27.3kg	27.6kg	178	630	618	25x3x550
YM-R274(II)	27.3kg	27.6kg	114	1528	1462	25x3x1300

"S" shape Type

Type	N.W. (kg)	G.W. (kg)	A	B	C	Insert Dimension
YM-3S3	1.36kg	1.4kg	76	76	114	Strip
YM-5S3	2.27kg	2.3kg	76	76	191	Strip
YM-9S2	4.1kg	4.2kg	71.1	50.8	711	strip
YM-9S3	4.1kg	4.2kg	76	76	343	Strip
YM-17S3	7.7kg	7.8kg	96.5	76.2	650	Strip
YM-17S4	7.7kg	7.8kg	102	102	432	Strip
YM-32S5	14.5kg	14.7kg	127	127	533	Strip
YM-48S5	21.8kg	22.0kg	127	127	800	Strip

Besides above anodes, we are also supplying Hull Anode, Tank Anode, Rectangular Anode. Special size anodes can be manufactured upon receipt your request.

Mg High Potential Anode

Our high potential anodes are made from high purity Mg metal superior to normal industrial standard. The anode produced by special casting technology, have superior electrochemical properties tested according to ASTM97-89 standard. In the course of use, the anode is consumed uniformly. Thereof have a longer life. We suggest to use our high potential Mg anode in soils with resistance higher than 2000ohm.cm.

Chemical composition (%)

Alloy	Al (max)	Mn	Si (max)	Cu (max)	Ni (max)	Fe (max)	Other impurity(each) (max)	Total Impurities (max)
Mg-Mn	0.01	0.50-1.30	0.05	0.005	0.001	0.01	0.05	0.30

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

H-1 ALLOY Mg Anode

Chemical composition (%)

Alloy	Al	Zn	Mn	Si (max)	Cu (max)	Ni (max)	Fe (max)	Total of Impurities (max)
AZ63B	5.30-6.70	2.50-3.50	0.15-0.70	0.10	0.02	0.002	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

We suggestion to use our H-1 alloy Mg anodes in soils with resistance lower than 2,000 ohm.cm to minimize the cost, as this kind of anodes are much cheaper than high potential mg anodes.

Prepackaged Mg anode (Environment safe)

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.

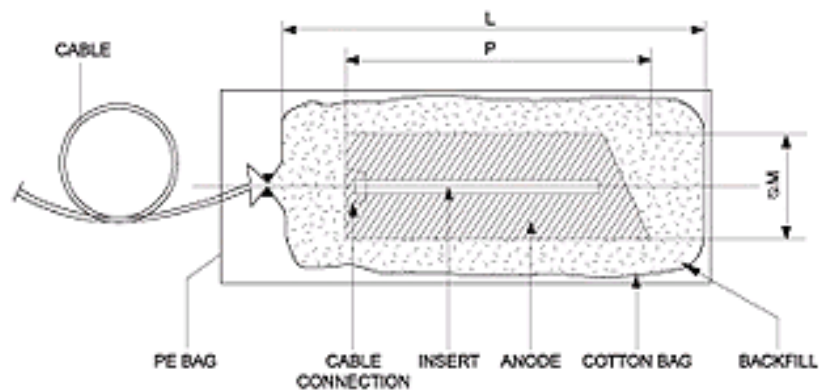
As the prepackaged anodes are buried under the ground, if there is any harmful element in the backfill of prepackaged anodes, this element will leak to the earth and groundwater when the anode is in use, which will pollute the environment.

Our 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: 6mm², 10mm², 16mm².

Composition of Backfill

Gypsum: 75% Bentonite: 20%,
Anhydrous Sodium Sulphate: 5%
Harmful elements in backfill:



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



Mg Cast Rod Anode----AZ63 alloy

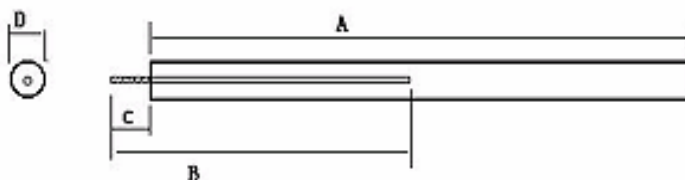
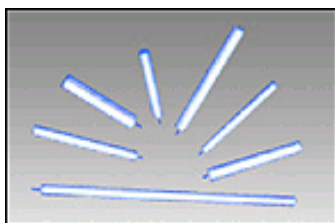
Mg cast rod anode are normally use in protecting water heater from corrosion. We adopts advanced casting technology, supply supper quality Mg cast rod anode as follows:

Chemical composition (%)

Alloy	Al	Zn	Mn	Si (max)	Cu (max)	Ni (max)	Fe (max)	Total of Impurities(max)
AZ63B	5.30-6.70	2.50-3.50	0.15-0.70	0.10	0.02	0.002	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

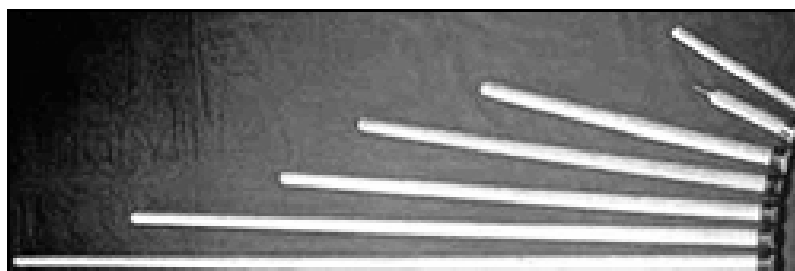


Type	Length	Dia	Insert
13-115	115	13	M4
14-150	150	14	M6
14-180	180	14	M6
14-215	215	14	M6
14-275	275	14	M6
16-90	90	16	M4
16-100	100	16	M6
16-155	155	16	M6
16-165	165	16	M6
16-210	210	16	M6
16-250	250	16	M6
16-340	340	16	M6
16-400	400	16	M6

Type	Length	Dia	Insert
18-100	100	18	M4
18-140	140	18	M6
18-200	200	18	M6
18-300	300	18	M6
18-400	400	18	M6
20-130	130	20	M6
20-200	200	20	M6
25-150	150	25	M6
25-180	180	25	M6
25-300	300	25	M8
28-110	110	28	M6
28-150	150	28	M6
28-200	200	28	M8

Mg/Al Extruded Rod

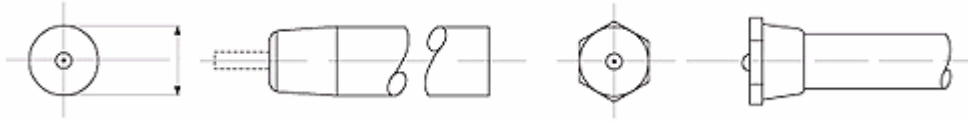
Extruded anodes have high current to weight ratio, are suitable to be used in where a small diameter anode is required to give enough cathodic current. We supply extruded anodes in both high potential (Mg-Mn alloy) and low potential (AZ31 alloy). Our extruded anodes are typically suitable for all kinds of water heaters and water storage tanks, or in prepolarization of offshore structure etc.



Chemical composition (%)

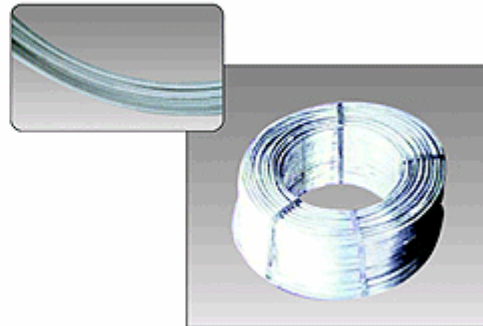
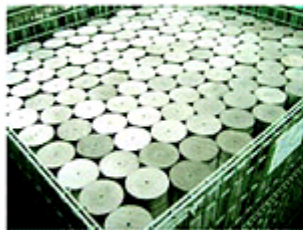
Alloy	Al	Mn	Zn (max)	Ca (max)	Si (max)	Cu (Max)	Ni (max)	Fe (max)	Other Imp.	
									each	total
AZ31B	2.5-3.5	0.2-1.0	0.6-1.4	0.04	0.10	0.03	0.005	0.005	---	0.30
Mg-Mn	0.01 max	0.5-1.3	---	---	---	0.02	0.001	0.03	0.05	0.30
Aluminum	balance	---	4.0-5.0	Sn	0.25	---	---	0.25	---	0.15
				0.05-0.25						

Extruded rod anodes size specification



Diameter(inch)	Core eccentric(inch)	Core diameter(inch)	Straightness(inch/2 ft length)	Weight(lbs/inch)
Magnesium Extruded rod				
0.675-0.020	0.050	0.135	0.060	0.025
0.750-0.020	1/16	0.135	0.040	0.031
0.800-0.020	1/16	0.135	0.040	0.035
0.840-0.020	1/16	0.135	0.040	0.038
0.900-0.020	1/16	0.135	0.040	0.043
1.050-0.020	1/16	0.135	0.040	0.057
1.315-0.020	1/16	0.135	0.040	0.089
Aluminum Extruded rod				
0.576-0.020	0.050	0.135	0.060	0.038
0.750-0.020	1/16	0.135	0.050	0.048

Extruded ribbon anode



Chemical composition (%)

Mg	Mn	Zn	Al (max)	Cu (max)	Ni (max)	Fe (max)	Si (max)	Impurities	
								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

SPECIFICATION

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)

Aluminum anode

We supply series of aluminum anode for defend the corrosion of steel structures in seawater. The Performance of the anode will be affected by the chemical composition of the alloy. We adopt high purity Aluminum ingot for the anodes. The anodes are cast automatically, thus the anode alloy is uniform, free of dust and oxides.

We have different alloy series to meet customer's request:

a).YA-I series, AL-Zn-In-Si, Al-Zn-In-Ti alloy

Suitable for seawater environment.

b).YA-II series AL-Zn-In-Mg-Ti Alloy

Suitable for seawater environment, specially suitable for where the fresh water and seawater mixed, and have a higher resistance.

Chemical composition

Type	Zn%	In %	Si %	Fe %	Mn %	Cu %	Ti	Mg	Al
Al-Zn-In-Si ALLOY	2.8-3.5	0.01-0.02	0.08-0.20	0.10 max	0.10 max	0.005max	-----	-----	Balance
DNV RP-B-401	2.0-5.0	0.015-0.05	0.01max	0.10 max	0.10 max	0.005max	0.01-0.05	-----	Balance
Al-Zn-In-Mg-Ti	4.0-7.0	0.02-0.05	0.1max	0.15 max	-----	0.01max	0.01-0.08	0.5-1.5	Balance

Electrochemical properties

Type	Open Voltage (-V)	Closed Voltage (-V)	Capacity A.h/kg	Efficiency
Al-Zn-In-Si ALLOY	1.05-1.18	1.05-1.12	2600 min	92% min
DNV RP-B-401		-1.00v(Ag/AgCl)	2500 min	90% min
Al-Zn-In-Mg-Ti	1.10-1.18	1.05-1.12	2600 min	90% min

1. For vessel

Type	YA-V01	YA-V02	YA-V03	YA-V04	YA-V05
Dim.	800x140x57	800x140x50	800x140x40	600x120x50	500x140x35
Weight	16.0kg	15.0kg	12.0kg	10.0kg	5.5kg
Type	YA-V06	YA-V07	YA-V08	YA-V09	
Dim.	400x100x35	300x100x35	250x100x35	180x70x35	
Weight	3.7kg	2.3kg	1.9kg	1.1kg	



The dimension: length x width x thickness

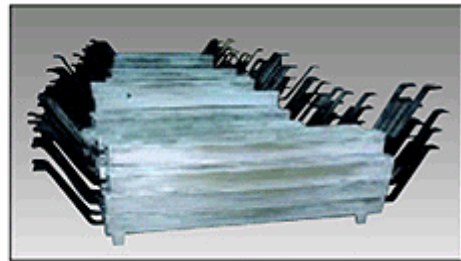
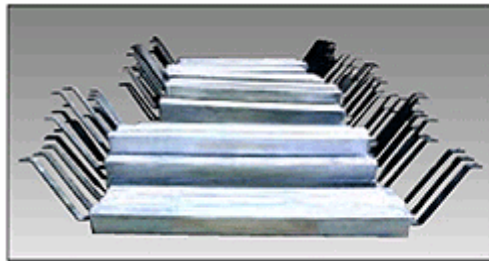
2. For ballast tank

Type	YA-B01	YA-B02	YA-B03	YA-B04	YA-B05	YA-B06
Dim.	1500x(65+75) x 70	500x(115+135) x 130	500x(110+130) x 120	1000x(58.5+78.5) x 68	800x(56+74) x 65	1143x(48+54) x 51
Weight	21.5kg	23.0kg	20.0kg	13.2kg	10.0kg	9.0kg

The dimension: length x(up width+bottom width) x thickness

3. For Sea port and offshore structure

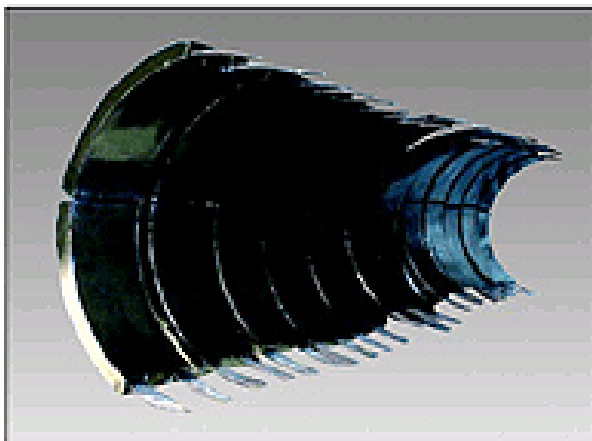
Type	YA-S01	YA-S02	YA-S03	YA-S04
Dim.	2300x(220+240)x230	1600x(220+210)x220	1500x(170+200)x180	800x(200+280)x150
Weight	275kg	165kg	144kg	80kg
Type	YA-S05	YA-S06	YA-S07	YA-S08
Dim.	1250(115+135)x130	900x(150+170)x160	1000x(115+135)x130	750x(115+135)x130
Weight	56kg	53kg	45kg	34kg



4. Pipe line in sea water

Type	YA-P01	YA-P02	YA-P03	YA-P04
Dim.	622x51x420x38	559x76x254x51	503x51x400x51	371x51x562x51
Weight	105kg	80kg	77kg	75kg
Pipe Dia.	20"	16"	14"	10"

The anodes are bracelet shape, the dimension: Out diameter x thickness x length x distance of bracelet.



ZINC ANODE

Zinc anodes are widely adopted for protecting of steel construction from corrosion in seawater and saline mud.

The alloy chemical composition of the anode are covered by US MIL-A-18001H and the ASTM-B418 type I standard.



Chemical composition (%)

Al	Cd	Fe	Pb	Cu	Zn
0.1-0.5	0.02-0.07	0.005 max	0.006 max	0.005max	Balance

Electrochemical properties

Open Voltage (-V)	Closed Voltage (-V)	Actual capacitance A.h/kg	Efficiency %	Solution Appearance
1.05-1.09	1.00-1.05	780 min	95 min	Solute uniformly

Size Specification

We supply Zn anodes in different shapes according to customer's request.

There are hull, condenser, tank anodes and bracelet shapes anodes. The anodes also can be made in strings.

Following are some of the anodes available.

Zn anodes for Vessel

Type	YZ-V01	YZ-V02	YZ-V03	YZ-V04	YZ-V05	YZ-V06	YZ-V07	YZ-V08
Size	390x120x50	500x150x40	300x150x35	400x100x35	300x150x30	320x100x40	250x100x35	200x100x35
Weight	15.6	13.6	11.0	9.0	8.6	8.0	5.6	4.0

Zn anodes for ballast tank

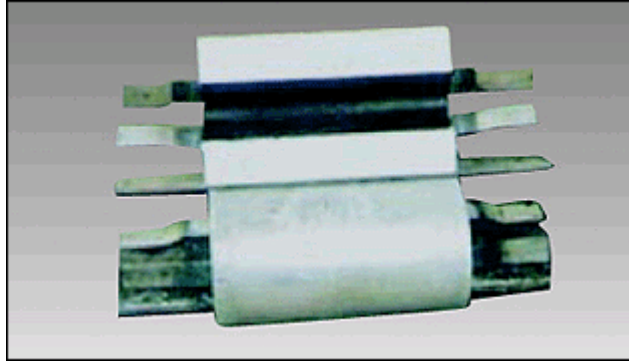
Type	YZ-B01	YZ-B02	YZ-B03	YZ-B04	YZ-B05	YZ-B06
Size	1500x (65+75)x70	100x (58.5+78.5)x68	800x (56+74)x65	1143x (48+54)x51	800x (58+64)x60	650x (58+64)x70
Weight	52.8	33.0	25.0	22.0	22.0	18.0

Zn anodes for Oil Tank

Type	YZ-T01	YZ-T02;	YZ-T03	YZ-T04	YZ-T05	YZ-T06
Size	500x(105+135)x100	Dia300 x80	390x120x65	Dia250x60	Dia200x50	350x(60+90)x75
Weight	40	40	20	20	10	14

Zn anodes for Pipeline in seawater

Type	YZ-P01	YZ-P02	YZ-P03	YZ-P04
Size	622x51x420x38	530x46x464x38	503x51x400x51	371x51x562x51
Weight	261	218	191	184



Above anodes are all in bracelet shape

The dimension is: diameter x thickness x length x distance between the bracelet.

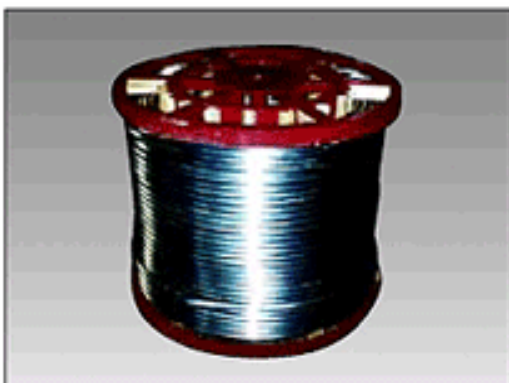
Zinc Anode String



Zinc Ribbon Anode

Zinc ribbon anodes are produced according to ASTM-B-418-95a type I and type II alloy standard in the shape of diamond.

Zinc ribbon anode can be used in fresh water, seawater environments, also can be used in underground structures.



Chemical composition

	Al %	Cd %	Fe %	Pb %	Cu %	Zn
ASTM B-418 type I	0.1-0.5	0.02-0.07	0.005 max	0.006 max	0.006 max	Balance
ASTM B-418 type II	0.005 max	0.003 max	0.0014 max	0.003 max	0.002 max	Balance

Electrochemical properties

	Open Voltage(-V)	Closed Voltage(-V)	CapacityA.h/kg	Efficiency
ASTM B-418 type I	1.05 min	1.00 min	353	95%
ASTM B-418 type II	1.10 min	1.05 min	335	90%

Size Specification

Size type	A (inch)	B(inch)	net weight (lbs/feet)
YZR-01	1	1-1/4	2.4
YZR-02	5/8	7/8	1.2
YZR-03	1/2	9/16	0.6
YZR-04	11/32	15/32	0.25

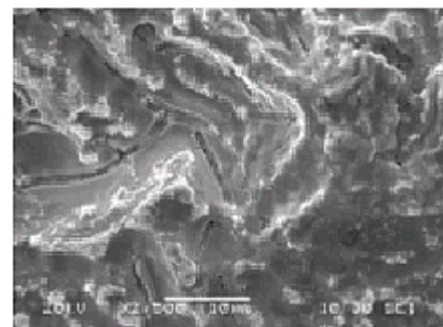
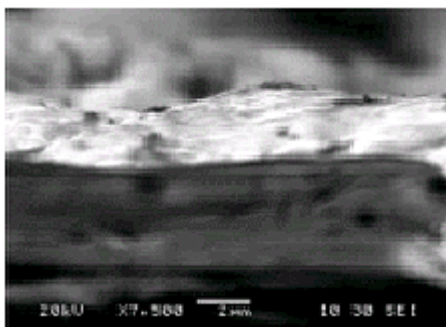
A and B are the length of the diagonal lines of the diamond section.

Anode Impressed Current (ICCP)

Ti - Mixed Metal Oxide Anode

The research of mechanism and application development for electro-active coatings on Titanium was started in early 1980's. Various kinds of multi-elements coatings have been developed. The mixed metal oxide anode has an extremely low consumption rate, measured in terms of milligrams for ampere-year. Whether operating in soil, fresh water, and/or sea water, mixed metal oxide coatings demonstrate very high chemical stability, even in environments with very low PH values.

We supply high performance MMO anodes suitable for soil, sea mud, seawater, and fresh water environments. In seawater, the suggested working current density is: 600 A/m², and in fresh water :100A/m².



Products Form of MMO Anode :

The MMO anode can be in plate/sheet, rod, tube, wire, mesh etc. The dimension can be made according to customer's request.

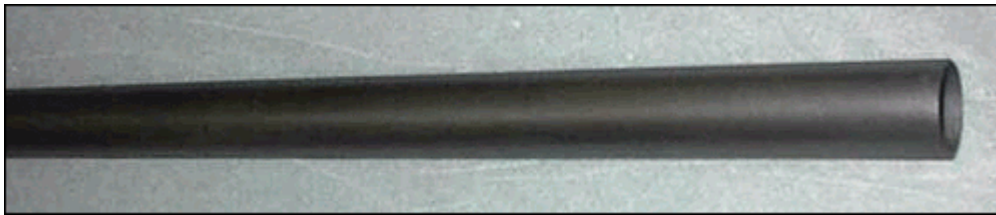
MMO solid rod



Type	MMO-R1	MMO-R2	MMO-R3	MMO-R4	MMO-R5
Diameter	Dia3.2mm	Dia6.4mm	Dia12.7mm	Dia19mm	Dia25mm

The length of above anode can be supplied in any length between 0-2000mm. And the coating type can be changed according to different environment.

MMO tube anode

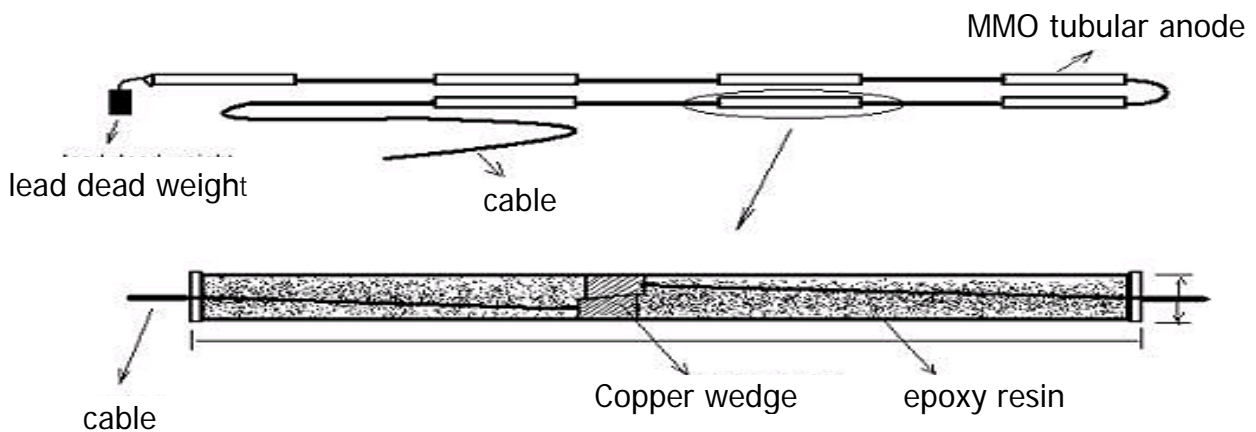


Titanium to ASTM standard B338

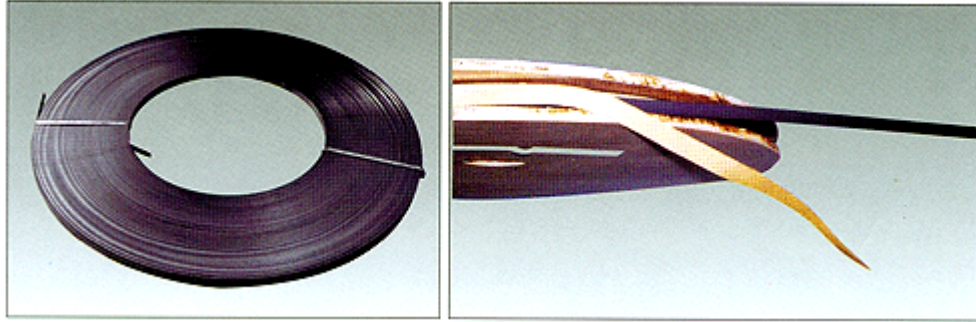
Dimension	Current output	Life time
Dia 25mm x 1000mm long	8amps (based on 100amps/m ²)	20years
Dia25mm x 500mm long	4amps (based on 100amps/m ²)	20years
Dia19mm x 1200mm long	7amps (based on 100amps/m ²)	20years
Dia32mm x 1200mm long	12amps (based on 100amps/m ²)	20years

MMO Tubular Anode string

The tubular anode can be supplied in string, to be used in deep well to protect the underground pipe or other steel structure.



MMO Ribbon Anodes



Mixed metal oxide ribbon anodes are designed for use on both newly constructed above ground storage tanks, and existing tanks utilizing double bottom construction. They can be used in sands with various levels of moisture and salt contents without carbon backfill. The anodes are composed of a titanium ribbon substrate coated with a mixed metal oxide catalyst. This two parts composition allows for a maximum current density of 17 mA/m to achieve a 50 year design life.

Chemical Composition

Substrate	Catalyst
ASTM B-265 Gr.1	Mixed Metal Oxide

Specification

Dimension	6.35mm x 0.635mm
Coil Length	152.4 meters
Coil Weight	2.8kg

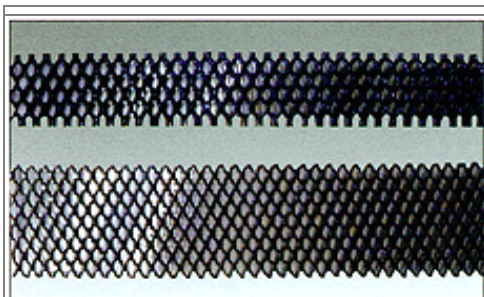
Titanium Conductor Bar

Titanium conductor bars are used along with MMO ribbon anodes and MMO mesh anodes for cathodic protection of above ground storage tank bottoms.

Ti conductors bar specifications

Material	titanium
Grade	ASTM B 265 Gr1
Width	6.35mm, 12.7mm,
Thickness	0.6mm, 0.9mm
Standard coil length	76 m., 152.4 m.
Standard coil weight	3.9 kg, 7.8 kg

MMO mesh ribbon anode



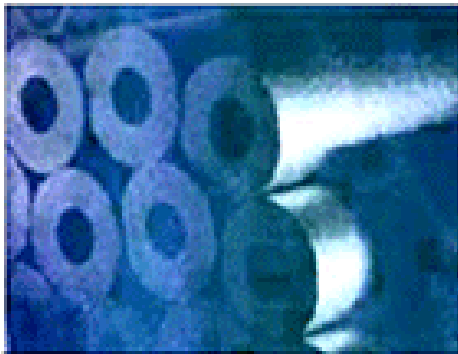
There is two kind of MMO mesh ribbon anodes. One is designed specially for Cathodic Protection systems in reinforced concrete structures. Another is designed for underground steel structures. The anodes will be packaged in canister filled with calcined petroleum coke backfill. The substrate is expanded Titanium mesh. And the catalyst is Mixed Metal Oxide.

MMO mesh ribbon anode size specification

Type	Width (mm)	Thickness (mm)	Length (m)	Current density	Life (year)
YMR-M01G	20	1.3	1	2Amp	20
YMR-M02G	32.5	1.3	1.25	5Amp	20
Dimension of canister: Dia76mm x 1500mm					
YMR-M03C	12.7	1.3	76	3.5mA/m	75
YMR-M04C	19	1.3	76	5.28mA/m	75
YMR-M05C	1200	2	1	30mA/m (25mA/m ²)	75

Graphite Anode

Our Graphite anodes are produced by high quality petroleum coke. The petroleum coke is mixed with petroleum tar and extruded into rod size. After being repeatedly sintered at very high temperature, the rod becomes high density, high carbon content, thus have a low consumption when it is being used.



According to customer's request, our graphite anodes are impregnated by linseed oil or by wax in order to protect the anode from moisture.

Our graphite anodes can be supplied in following form:

- a). Rod, without processing
- b). Rod, Hole prepared for connection
- c). End connection
- d). Center connection

Properties

Bulk Density g/cm ³	Apparent Porosity %	Grain Size mm	Ash %	Sulphur %	Specific Resistance Ohms/mm ²
1.65 min	5 max	1.5 max	0.16 max	0.01 max	8.6

Standard size specification

Type	YG-01	YG-02	YG-03	YG-04
Diameter	3 inch	4 inch	3 inch	4 inch
Length	30 inch	40inch	60 inch	80 inch
Weight	13 lbs	35 lbs	27 lbs	70lbs

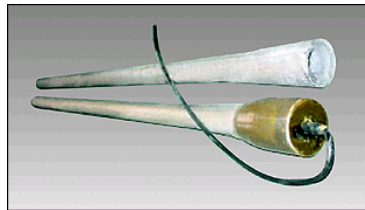
High Silicon Cast Iron Anode

Our Silicon Iron anodes are made by Chill Casting in metal mould. The anodes have more high density, more compact crystal structure and low consumption rate, thus have longer life.

Si-Fe alloy with 14.5% Silicon content is a wide used corrosion control material. Because of abundant resources and low cost, Si-Fe alloy becomes the major anode material for cathodic protection since 1950s. Si-Fe anodes have good corrosion resisting performance, as the surface of the anode can come into a stable SiO_2 film. In sea water or fresh water, we suggest to use Si-Fe alloy containing of chromium or chromium molybdenum to resist the corrosion of chlor-ions.

Si-Fe anodes are widely used in impressed current cathodic protection of offshore structures, underground pipelines, buried cable and so on. It is a kind of idea anode, as it has the character of low resistance, low consumption and low energy consumption.

Our Si-Fe anodes are made according to ASTM A518-86 (grade 3) standard, Supplying in difference shapes:



Rod Anode

Type	Dimension	Surface Area	Weight
YS-R01	25 x 300	0.023	1.5
YS-R02	38 x 900	0.12	7.5
YS- R03	38 x 1200	0.16	10
YS- R04	38 x 1500	0.20	13
YS- R05	50 x 900	0.16	13.5
YS- R06	50 x 1200	0.20	16.5
YS- R07	50x 1500	0.25	20.5
YS- R11	75 x 900	0.28	34
YS- R12	75 x 1200	0.30	40
YS- R13	75 x 1500	0.38	48

Si-Fe Tube Anode

Compare with the solid rod anode, tube anodes can:

1. Minimize the resistance of anodes to electrolytes.
2. Increase the surface to weight ratio, thus can reduce current density and distribute the produced gases over larger areas. It is very important for deep layer installations.
3. Improve current distribution, relaxes end electric discharge, while the cable joint is located in the center of the tube.



Specification

Type	Out Diameter	Wall thickness	Surface area	Length	Weight
YS-T01	75 mm	10 mm	0.35 m ²	1500mm	23kg
YS-T02	100mm	10 mm	0.47 m ²	1500mm	39kg

C.P. Wire and Cable

XLPE/PVC cable
EPR/CSPE cable
HMWPE cable



Type	Stranding	AWG	Coating
YC-1	7	#14	HMWPE
YC-2	7	#12	HMWPE
YC-3	7	#10	HMWPE
YC-4	7	#8	HMWPE
YC-5	7	#6	HMWPE
YC-6	7	#4	HMWPE
YC-7	7	#2	HMWPE
YC-8	7/19	#1/0	HMWPE
YC-9	19	#2/0	HMWPE

HMWPE/PVDF (Kynar) cable

Type	Stranding	Nominal Area (mm ²)	Nominal Wt (Kg)	O.D. (mm)	Coating
YKC-1	7 x1.04	6	89	7.44	PVDF/HMWPE
YKC-2	7x1.35	10	144	8.37	PVDF/HMWPE
YKC-3	7x1.70	16	196	9.42	PVDF/HMWPE
YKC-4	19x1.35	25	312	11.07	PVDF/HMWPE
YKC-5	19x1.53	35	409	12.30	PVDF/HMWPE

CONDUCTOR: Circular stranded conductor of copper wires.

INSULATION: irradiated PVDF with radial thickness 0.51mm.

SHEATH: HMWPE.

Anode Backfill

Metallurgical coke breeze

Specification

Fixed carbon	90%
Ash	8% max
Moisture	10% max
Volatiles	1% max
Sulphur	1.2% max
Bulk Density:	500-600 kg/m ³
Resistivity:	35-55 ohm.cm

Special backfill can be supplied upon receipt request.

Calcined Petroleum Coke Backfill



Specification

Fixed carbon	99%
Ash	0.2%
Moisture	0.5%
Volatiles	0.4%
Sulphur	0.9%
Bulk Density:	900-1000 kg/m ³
Resistivity:	0.15 ohm.cm

Other CP Materials



Reference Electrode

ใช้วัดประสิทธิภาพการทำงานของ Anode - CP, ICCP



Test station & Junction Boxes

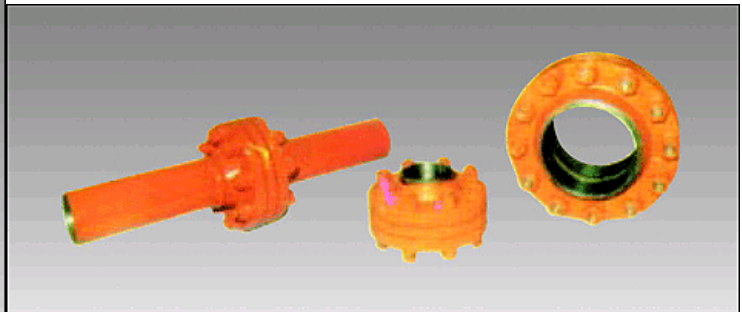


Rectifiers

ระบบจ่ายไฟกระแสตรงสำหรับ ICCP



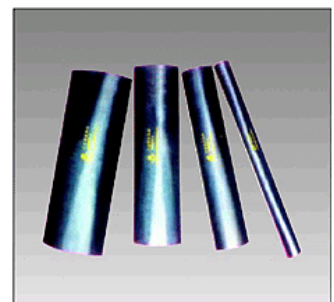
CP Tool Kits



Insulation Flanges



Thermit Welding Power & Mould



Heat shrink pipe Model & Size