



BARE / PREPACKAGED MAGNESIUM ANODES



CELEBRATED ENTERPRISE IN CATHODIC PROTECTION



JENNINGS ANODES

BARE / PREPACKAGED MAGNESIUM ANODES

DATA SHEET

Magnesium anodes are a widely used solution for corrosion control when impressed current cathodic protection is not an appropriate or feasible option for the intended facilities.

They are the most commonly used anode for applications in soil. The greater negative potential of the magnesium anode results in a high driving voltage which allows the anode to supply sufficient protection to underground steel structure in soil with medium to high resistivity (1,000 – 10,000 $\Omega\cdot\text{cm}$).

Our bare magnesium anodes are cast from high-purity magnesium and has three configurations, including round type, D-shape type and square type.

And the efficiency of anode can be further enhanced when pre-packaged in a permeable cotton bag with a naturally degradable backfill. This specialized backfill mixture lowers the anode-to-soil resistance, and allows electrical current to flow more easily to the targeted structure.



APPLICATIONS

Designed to meet the fast-paced requirements of engineering construction, our prepackaged magnesium anodes are often used for the cathodic protection of buried metallic structures in a range of soil resistivities.

- External surface of buried transmission pipelines
- External surface of underground storage tanks
- External bottom of aboveground tanks
- Foundations of tower structures



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Our magnesium anode is usually made into two types with differing electrode potential (relative to Cu/CuSO₄ reference electrode). They can be used to protect most buried metallic structures found in a range of soil resistivities.

High potential magnesium anode are often utilized in dry or resistant earth, or where increased current is needed due to a poorly coated tank. Standard potential magnesium anodes perform well in corrosive soil, if the tank is well coated, and in this case will last longer than the high potential alloy.

■ Environment-friendly Backfill

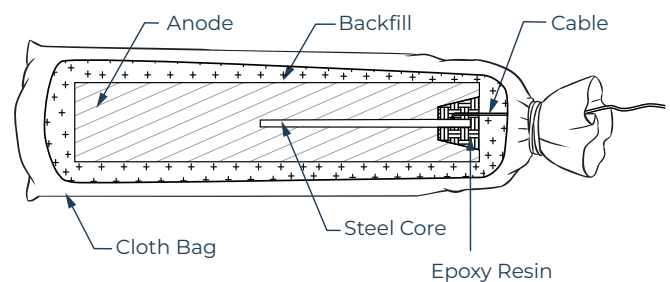
Our highly hygroscopic backfill is made of recyclable materials, containing a 75% gypsum, 20% bentonite and 5% sodium sulfate mix. The content of harmful elements in the backfill is below the industrial safety standards, meaning it will not introduce any pollution to the surrounding environment.

- Cadmium ≤ 1 ppm
- Arsenicum ≤ 1 ppm
- Mercury ≤ 1 ppm
- Phosphorus ≤ 10 ppm

* Other specialized mixture compositions are available upon request.

■ Various Lead Cable Options

Our standard lead cable is 10ft. AWG #12 Solid THHN/THWN. Other options include PVC/PVC, XLPE/PVC, HMWPE or TW, which can be supplied in custom sizes, lengths and colors upon request. The cable can be connected by direct brazing, mechanical fastening or welding to ensure high pull strength and low connection resistance.



CHEMICAL COMPOSITION

Element	Standard	High Potential (ASTM B843-M1C)	Standard Potential (ASTM B843-AZ63B)
Aluminum (Al)		0.01% max.	5.30% ~ 6.70%
Manganese (Mn)		0.50% ~ 1.30%	0.15% ~ 0.70%
Zinc (Zn)		—	2.5% ~ 3.5%
Silicon (Si)		0.05% max.	0.1% max.
Copper (Cu)		0.02% max.	0.02% max.
Iron (Fe)		0.03% max.	0.03% max.
Nickel (Ni)		0.001% max.	0.02% max.
Other Impurity(each)		0.05% max.	0.05% max.
Total Impurities		0.30% max.	0.30% max.
Magnesium (Mg)		Remainder	Remainder

ELECTROCHEMICAL PROPERTIES

Technical Measurement	High Potential (ASTM B843-M1C)	Standard Potential (ASTM B843-AZ63B)
Open Circuit Voltage (-V)	1.70 ~ 1.75	1.50 ~ 1.55
Closed Circuit Voltage (-V)	1.58 ~ 1.62	1.45 ~ 1.50
Current Capacity	500 A.h/lbs (1100 A.h/kg)	550 A.h/lbs (1230 A.h/kg)
Current Efficiency	50% min.	55% min.

* The open/closed circuit voltage is with respect to a copper sulfate electrode.

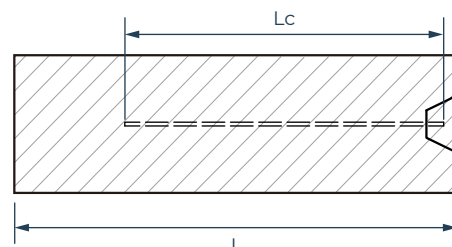
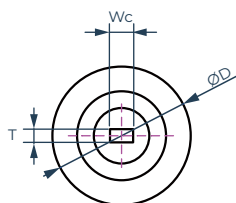


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DATA SHEET

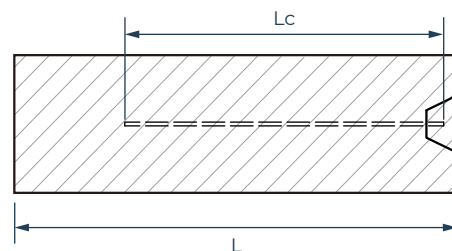
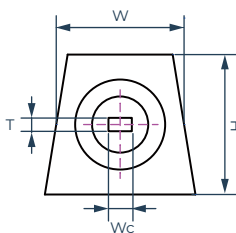
SPECIFICATIONS

R Type Anode



Item No.	Anode Dimensions (ØD x L)		Insert Dimensions		Prepackaged Size		Weight	
	High Potential	Standard Potential	Wc	T	Diameter	Length	Bare	Prepackaged
JA-MG-R50	4.5" x 11.3" (114 x 288 mm)	4.5" x 10.8" (114 x 275 mm)	1.0" (25 mm)	0.08" (2 mm)	6.3" (160 mm)	18.9" (480 mm)	11 lbs (5 kg)	29.8 lbs (13.5 kg)
JA-MG-R77	4.5" x 17.3" (114 x 440 mm)	4.5" x 16.1" (114 x 410 mm)	1.0" (25 mm)	0.08" (2 mm)	6.9" (175 mm)	25.2" (640 mm)	17 lbs (7.7 kg)	48.5 lbs (22 kg)
JA-MG-R100	4.5" x 22.2" (114 x 565 mm)	4.5" x 21.5" (114 x 545 mm)	1.0" (25 mm)	0.08" (2 mm)	6.9" (175 mm)	28.0" (710 mm)	22 lbs (10 kg)	55.1 lbs (25 kg)
JA-MG-R145	5.75" x 19.9" (146 x 505 mm)	5.75" x 18.7" (146 x 475 mm)	1.0" (25 mm)	0.08" (2 mm)	7.9" (200 mm)	25.6" (650 mm)	32 lbs (14.5 kg)	66.1 lbs (30 kg)
JA-MG-R273	4.5" x 60" (114 x 1524 mm)	4.5" x 57.1" (114 x 1450 mm)	1.0" (25 mm)	0.08" (2 mm)	6.9" (175 mm)	65.0" (1650 mm)	60 lbs (27.3 kg)	127.9 lbs (58 kg)

S Type Anode

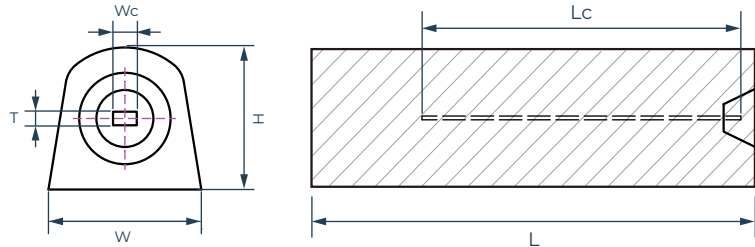


Item No.	Anode Dimensions (W x H x L)		Insert Dimensions		Prepackaged Size		Weight	
	High Potential	Standard Potential	Wc	T	Diameter	Length	Bare	Prepackaged
JA-MG-3S3	3.4" x 3.0" x 4.7" (86.3 x 76 x 120 mm)	3.4" x 3.0" x 4.5" (86.3 x 76 x 115 mm)	0.6" (14 mm)	0.06" (1.5 mm)	6.3" (160 mm)	11.8" (300 mm)	3.1 lbs (1.4 kg)	18.7 lbs (8.5 kg)
JA-MG-5S3	3.4" x 3.0" x 8.0" (86.3 x 76 x 204 mm)	3.4" x 3.0" x 7.8" (86.3 x 76 x 198 mm)	0.6" (14 mm)	0.06" (1.5 mm)	6.3" (160 mm)	13.8" (350 mm)	5 lbs (2.3 kg)	22.0 lbs (10 kg)
JA-MG-9S3	3.4" x 3.0" x 14.4" (86.3 x 76 x 365 mm)	3.4" x 3.0" x 13.6" (86.3 x 76 x 345 mm)	0.6" (14 mm)	0.06" (1.5 mm)	6.3" (160 mm)	21.7" (550 mm)	9 lbs (4.1 kg)	35.3 lbs (16 kg)
JA-MG-17S3	3.4" x 3.0" x 26.8" (86.3 x 76 x 680 mm)	3.4" x 3.0" x 25.6" (86.3 x 76 x 650 mm)	0.6" (14 mm)	0.06" (1.5 mm)	6.3" (160 mm)	31.5" (800 mm)	17.0 lbs (7.7 kg)	50.7 lbs (23 kg)
JA-MG-32S5	4.6" x 5.0" x 22.2" (117 x 127 x 563 mm)	4.6" x 5.0" x 21.0" (117 x 127 x 535 mm)	0.8" (20 mm)	0.08" (2 mm)	7.7" (195 mm)	27.6" (700 mm)	32 lbs (14.5 kg)	66.1 lbs (30 kg)
JA-MG-48S5	4.6" x 5.0" x 33.3" (117 x 127 x 845 mm)	4.6" x 5.0" x 32.3" (117 x 127 x 820 mm)	0.8" (20 mm)	0.08" (2 mm)	7.9" (200 mm)	39.4" (1000 mm)	48.1 lbs (21.8 kg)	99.2 lbs (45 kg)
JA-MG-60S4	4.0" x 4.0" x 58.5" (102 x 102 x 1485 mm)	4.0" x 4.0" x 59.6" (102 x 102 x 1515 mm)	0.8" (20 mm)	0.12" (3 mm)	—	—	60.2 lbs (27.3 kg)	—

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DATA SHEET

■ D Type Anode



Item No.	Anode Dimensions (W x H x L)		Insert Dimensions		Prepackaged Size		Weight	
	High Potential	Standard Potential	Wc	T	Diameter	Length	Bare	Prepackaged
JA-MG-5D2	2.8" x 3.0" x 12.2" (70 x 76 x 310 mm)	2.8" x 3.0" x 12.0" (70 x 76 x 305 mm)	0.6" (14 mm)	0.06" (1.5 mm)	5" (127 mm)	17.7" (450 mm)	5 lbs (2.3 kg)	18.1 lbs (8.2 kg)
JA-MG-5D3	3.5" x 3.7" x 7.5" (89 x 95 x 190 mm)	3.5" x 3.7" x 7.1" (89 x 95 x 180 mm)	0.6" (14 mm)	0.06" (1.5 mm)	6.3" (160 mm)	11.8" (300 mm)	5 lbs (2.3 kg)	19.8 lbs (9 kg)
JA-MG-9D2	2.8" x 3.0" x 21.5" (70 x 76 x 545 mm)	2.8" x 3.0" x 21.3" (70 x 76 x 540 mm)	0.6" (14 mm)	0.06" (1.5 mm)	5.5" (140 mm)	27.2" (690 mm)	9 lbs (4.1 kg)	35.3 lbs (16 kg)
JA-MG-9D2-1	2.5" x 2.6" x 25.6" (63.5 x 67 x 650 mm)	2.5" x 2.6" x 25.2" (63.5 x 67 x 640 mm)	0.6" (14 mm)	0.06" (1.5 mm)	5.1" (130 mm)	31.9" (810 mm)	9 lbs (4.1 kg)	55.1 lbs (25 kg)
JA-MG-9D3	3.5" x 3.7" x 13.6" (89 x 95 x 345 mm)	3.5" x 3.7" x 12.8" (89 x 95 x 325 mm)	0.6" (14 mm)	0.06" (1.5 mm)	6.3" (160 mm)	21.7" (550 mm)	9 lbs (4.1 kg)	35.3 lbs (16 kg)
JA-MG-14D2	2.8" x 3.0" x 33.5" (70 x 76 x 850 mm)	2.8" x 3.0" x 32.1" (70 x 76 x 815 mm)	0.6" (14 mm)	0.06" (1.5 mm)	5.5" (140 mm)	37.4" (950 mm)	14.0 lbs (6.36 kg)	48.5 lbs (22 kg)
JA-MG-17D2	2.5" x 2.6" x 47.6" (63.5 x 67 x 1210 mm)	2.5" x 2.6" x 46.8" (63.5 x 67 x 1188 mm)	0.6" (14 mm)	0.06" (1.5 mm)	5.5" (140 mm)	53.1" (1350 mm)	17.0 lbs (7.7 kg)	68.3 lbs (31 kg)
JA-MG-17D3	3.5" x 3.7" x 25.4" (89 x 95 x 645 mm)	3.5" x 3.7" x 24.0" (89 x 95 x 610 mm)	0.6" (14 mm)	0.06" (1.5 mm)	6.3" (160 mm)	30.7" (780 mm)	17.0 lbs (7.7 kg)	48.5 lbs (22 kg)
JA-MG-17D4	4.0" x 4.3" x 20.7" (102 x 108 x 525 mm)	—	0.6" (14 mm)	0.06" (1.5 mm)	7.5" (190 mm)	26.8" (680 mm)	17.0 lbs (7.7 kg)	61.7 lbs (28 kg)
JA-MG-20D2	2.8" x 3.0" x 60.0" (70 x 76 x 1524 mm)	2.8" x 3.0" x 58.9" (70 x 76 x 1495 mm)	0.6" (14 mm)	0.06" (1.5 mm)	5.5" (140 mm)	65.0" (1650 mm)	20 lbs (9.1 kg)	83.8 lbs (38 kg)
JA-MG-32D5	5.5" x 5.7" x 19.6" (140 x 146 x 498 mm)	5.5" x 5.7" x 18.6" (140 x 146 x 472 mm)	0.8" (20 mm)	0.08" (2 mm)	7.9" (200 mm)	26.8" (680 mm)	32 lbs (14.5 kg)	66.1 lbs (30 kg)
JA-MG-48D5	5.5" x 5.7" x 29.5" (140 x 146 x 750 mm)	5.5" x 5.7" x 28.0" (140 x 146 x 710 mm)	0.8" (20 mm)	0.08" (2 mm)	8.1" (205 mm)	37.8" (960 mm)	48.1 lbs (21.8 kg)	99.2 lbs (45 kg)
JA-MG-60D4	4.4" x 4.4" x 60.0" (112 x 112 x 1524 mm)	4.5" x 4.5" x 58.5" (114 x 114 x 1485 mm)	0.8" (20 mm)	0.12" (3 mm)	7.5" (190 mm)	65.0" (1650 mm)	60 lbs (27.3 kg)	149.9 lbs (68 kg)

Notes: All dimensions and weights are nominal. The parameter provided is subject to variation in material compositions and Jennings Anodes foundry tolerance.

TESTING DETAILS

We employ ISO 9001:2015 quality management system and rigorous internal testing standards to ensure the optimum lifespan and performance of our Anodes. Each anode is labelled with a unique serial number for quality tracking.

Technical Measurement	Chemical Composition	Electrochemical Performance	Physical Properties
Testing Standard	ATSM A518 (Gr1)	ATSM A518 (Gr3)	Foundry ITP
Testing Content	Chemical Analysis	Circuit Potential Current Efficiency	Surface Finish Dimension & Weight Steel Core Anode Resistance Cable Connection Sealing Backfill Packaging
Equipment	Optical Emission Spectrometer OBLF QSN 750	Electrochemical Analyzer EPI 200	Calibrated Digital Measuring Devices

* Third party testing is conducted by customer's special request at extra charge.

PACKAGING INFORMATION

We have strict packing protocols to guarantee safe delivery of our products. Clear shipping marks and documentation make delivery acceptance straightforward and simple.

■ Bare Magnesium Anode

Item No.	Anode Qty (per pallet)	Pallet Dimensions (L x W x H)	Weight		Pallet Qty (per 20ft. container)
			N.W.	G.W.	
JA-MG-R50	50	43" x 35" x 42.5" (1100 x 900 x 1080 mm)	2500 lbs (1135 kg)	2545 lbs (1155 kg)	18
JA-MG-60S4	40	61.5" x 40" x 25.5" (1560 x 1020 x 650 mm)	2405 lbs (1092 kg)	2460 lbs (1116 kg)	19
JA-MG-5D3	270	40" x 40" x 27" (1020 x 1020 x 690 mm)	1370 lbs (622 kg)	1410 lbs (635 kg)	33
JA-MG-9D3	270	41.5" x 41.5" x 32" (1050 x 1050 x 810 mm)	2440 lbs (1108 kg)	2478 lbs (1125 kg)	19
JA-MG-17D3	144	41.5" x 41.5" x 32" (1050 x 1050 x 810 mm)	2478 lbs (1124 kg)	2522 lbs (1144 kg)	18
JA-MG-20D2	120	57" x 32.5" x 32" (1450 x 810 x 800mm)	2406 lbs (1092 kg)	2456 lbs (1110 kg)	19
JA-MG-32D5	80	41.5" x 41.5" x 33.5" (1050 x 1050 x 860mm)	2560 lbs (1160 kg)	2600 lbs (1180 kg)	18
JA-MG-40D3	60	58" x 35.5" x 26.5" (1470 x 910 x 680mm)	2406 lbs (1092 kg)	2456 lbs (1115 kg)	19
JA-MG-48D5	50	41.5" x 41.5" x 34" (1050 x 1050 x 870mm)	2405 lbs (1090 kg)	2450 lbs (1112 kg)	19
JA-MG-60D4	40	60.5" x 32.5" x 28.5" (1540 x 810 x 710mm)	2405 lbs (1090 kg)	2460 lbs (1116 kg)	19

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■ Prepackaged Magnesium Anode

Item No.	Anode Qty (per pallet)	Pallet Dimensions (L x W x H)	Weight		Pallet Qty (per 20ft. container)
			N.W.	G.W.	
JA-MG-R50	12	33.5" x 47.5" x 36.5" (850 x 1210 x 930 mm)	1542 lbs (700 kg)	1663 lbs (755 kg)	20
JA-MG-60S4	20	72" x 38.5" x 31" (1830 x 980 x 790 mm)	2577 lbs (1170 kg)	2698 lbs (1225 kg)	12
JA-MG-17D3	50	46.5" x 42.5" x 40.5" (1180 x 1080 x 1030 mm)	2478 lbs (1125 kg)	2600 lbs (1180 kg)	18
JA-MG-20D2	20	72" x 32" x 25" (1830 x 810 x 630 mm)	1695 lbs (770 kg)	1805 lbs (820 kg)	21
JA-MG-32D5	40	43.5" x 45" x 42.5" (1110 x 1140 x 1080 mm)	2687 lbs (1220 kg)	2780 lbs (1270 kg)	17
JA-MG-40D3	20	68" x 35.5" x 28.5" (1730 x 910 x 720mm)	1785 lbs (810 kg)	1895 lbs (860 kg)	18
JA-MG-48D5	24	2.5" x 51.5" x 35" (1080 x 1310 x 890mm)	2400 lbs (1090 kg)	2522 lbs (1145 kg)	16

Remarks: Custom packing is available upon request.





Worldwide Service Network

Our worldwide network of sales and service centers can provide immediate advice and assistance on the complete range of products.

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