

INTRODUCTION

Magnesium anodes are the basic material for corrosion engineering when it is intended to protect facilities that are not adequate for impressed current cathodic protection.

TECNOLOGIA TOTAL supplies magnesium anodes that can be in bars or prepackaged, high potential, and are ready to use with depolarizing filler or bentonite, plaster and copper-sulphate backfill.

TECNOLOGÍA TOTAL offers its clients an adequate alloy with a low impurity level, specially of copper, iron and nickel, which are the elements that determine the lifespan and effectiveness of the anode.

Our anodes are manufactured under the ASTM B843 standard alloy M1C of high potential or AZ63B for standard potential, according to the following composition:

PRE-PACKAGED ANODES

CHEMICAL COMPOSITION

HIGH POTENTIAL ALLOY	
<i>Al</i>	0.010% max
<i>Mn</i>	0.5 - 1.30%
<i>Cu</i>	0.020% max
<i>Si</i>	0.05%
<i>Fe</i>	0.030% max
<i>Ni</i>	0.001% max
<i>Others</i>	0.05% max
<i>Magnesium</i>	Balance

<i>TecnoMag® HP</i>	
<i>Efficiency</i>	50% Minimum
<i>Capacity</i>	1,120 A-h / kg at 50% efficiency.
<i>Closed circuit potential</i>	-1.52 to -1.70 V CSE.
<i>Open circuit potential</i>	-1.72 to -1.79 V CSE.

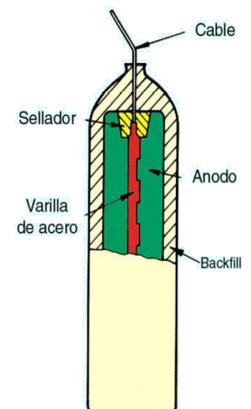
CHARACTERISTICS

The standard range of the anodes' models cover all of the general needs, although other types of low demand anodes can be made.

TecnoMag® HP magnesium anodes are supplied with depolarizing backfill or highly hygroscopic backfill, in a cotton bag and 3 m of cable of 4.0 mm² with HMWPE black sheath, which is appropriate for direct burial. This cable is connected and isolated thru a bituminous compound to the soul of the anode.

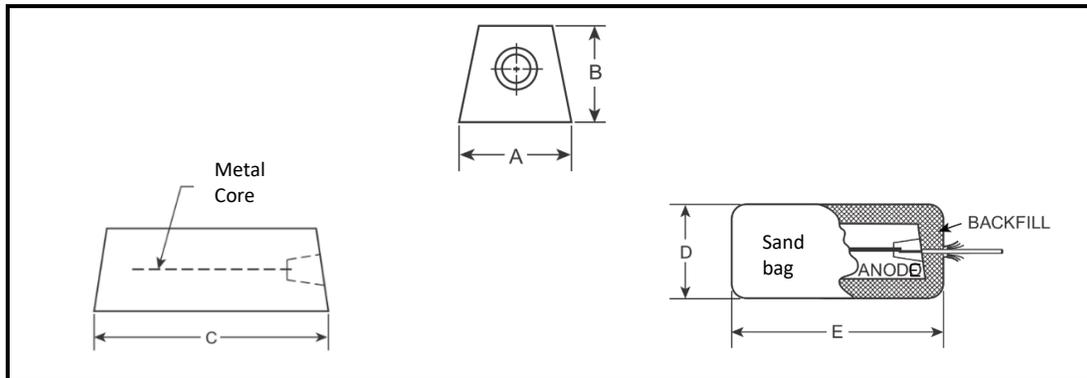
The added backfill helps to decrease the resistance of the anode to the ground, retains moisture and allows for a better efficiency and homogeneous consumption of the anode, thus creating an efficient anode bed.

The backfill composition is 75%, 20% and 5% of gypsum, bentonite and sodium, respectively.



DIMENSIONS

TECNOLOGÍA TOTAL distributes magnesium anodes of any size, according to the final specifications of the client. Do not hesitate to contact us for any special size anode that fits your needs.



REFERENCE	BARE WEIGHT (lb)	PACKED WEIGHT (lb)	BARE			PACKED	
			A (mm)	B (mm)	C (mm)	D (mm)	E (mm)
TecnoMag® HP 3	3	8	76	76	127	133	203
TecnoMag® HP 5	5	13	76	76	203	133	286
TecnoMag® HP 09	09	27	76	76	356	133	508
TecnoMag® HP 17	17	45	102	102	432	191	610
TecnoMag® HP 32	32	68	127	127	521	216	711
TecnoMag® HP 50	50	100	178	178	406	254	610

BAR ANODES

CHEMICAL COMPOSITION

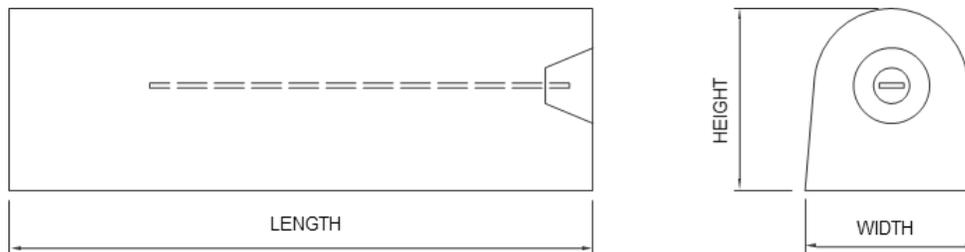
Component	High potential alloy ASTM B843 - M1C	Standard potential alloy ASTM B843 - AZ63B
Aluminum	0.01 % Max	5.3 – 6.7 %
Manganese	0.50 – 1.30 % Max	0.15 – 0.7 %
Copper	0.005 % Max	0.02 % Max
Silicon	0.05 % Max	0.10 % Max
Nickel	0.001 % Max	0.002 % Max
Zinc	-	2.5 – 3.5 % Max
Iron	0.01 % Max	0.003 % Max
Single Impurity	0.05 % Max	0.05 % Max
Total impurity	0.30 % Max	0.30 % Max
Remaining	Magnesium	Magnesium

ELECTROCHEMICAL PROPERTIES

Component	High potential alloy ASTM B843 - M1C	Standard potential alloy ASTM B843 – AZ63B
Open voltaje (-V)	1.70 – 1.75 (-V) SCE	1.50 – 1.55 (-V) SCE
Closed voltaje (-V)	1.58 – 1.62 (-V) SCE	1.45 – 1.50 (-V) SCE
Actual capacity (A.h/kg)	1,100	1,230
Efficiency (%)	50	55

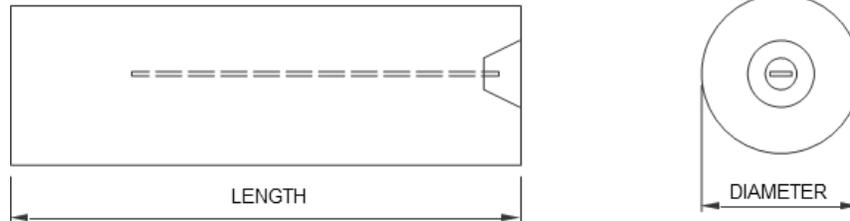
DIMENSIONS AND WEIGHT

- “D” shape anode



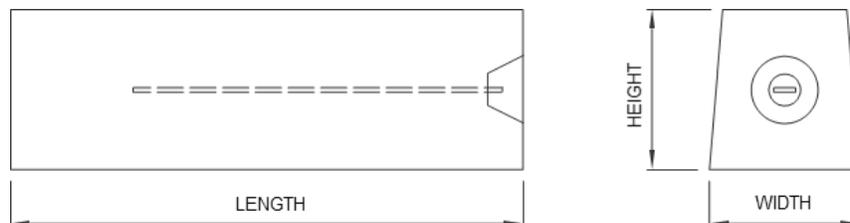
Type	High potential (-1.7 V)				Standard potential (-1.5 V)			
	Width (mm)	Length (mm)	Height (mm)	Weight (kg)	Width (mm)	Length (mm)	Height (mm)	Weight (kg)
MagnoTec-D01	70.0	310.0	76.0	2.30	70.0	305.0	76.0	2.30
MagnoTec-D02	70.0	560.0	76.0	4.10	70.0	550.0	76.0	4.10
MagnoTec-D03	63.5	650.0	67.0	4.10	63.5	640.0	67.0	4.10
MagnoTec-D04	70.0	1524.0	76.0	9.10	70.0	1495.0	76.0	9.10
MagnoTec-D05	63.5	1450.0	67.0	9.10	63.5	1420.0	67.0	9.10
MagnoTec-D06	70.0	850.0	76.0	6.36	70.0	830.0	76.0	6.36
MagnoTec-D07	63.5	1210.0	67.0	7.70	63.5	1188.0	67.0	7.70
MagnoTec-D08	89.0	190.0	95.0	2.30	89.0	180.0	95.0	2.30
MagnoTec-D09	89.0	345.0	95.0	4.10	89.0	325.0	95.0	4.10
MagnoTec-D10	89.0	645.0	95.0	7.70	89.0	610.0	95.0	7.70
MagnoTec-D11	140.0	498.0	146.0	14.50	140.0	472.0	146.0	14.50
MagnoTec-D12	140.0	750.0	146.0	21.80	140.0	710.0	146.0	21.80
MagnoTec-D13	102.0	525.0	108.0	7.70	--	--	--	--
MagnoTec-D14	112.0	1524.0	112.0	27.30	114.0	1485.0	114.0	27.30

- “R” shape anode



Type	High potential (-1.7 V)			Standard potential (-1.5 V)		
	Diameter (mm)	Length (mm)	Weight (kg)	Diameter (mm)	Length (mm)	Weight (kg)
MagnoTec-R1	114.0	288.0	5.0	114.0	275.0	5.0
MagnoTec-R2	114.0	440.0	7.7	114.0	410.0	7.7
MagnoTec-R3	114.0	565.0	10.0	114.0	545.0	10.0
MagnoTec-R4	146.0	505.0	14.5	146.0	475.0	14.5
MagnoTec-R5	114.0	1524.0	27.3	114.0	1450.0	27.3

- “S” shape anode



Type	High potential (-1.7 V)				Standard potential (-1.5 V)			
	Width (mm)	Length (mm)	Height (mm)	Weight (kg)	Width (mm)	Length (mm)	Height (mm)	Weight (kg)
MagnoTec-S1	86.25	120.0	76.0	1.40	86.25	115.0	76.0	1.40
MagnoTec-S2	86.25	204.0	76.0	2.30	86.25	198.0	76.0	2.30
MagnoTec-S3	86.25	365.0	76.0	4.10	86.25	345.0	76.0	4.10
MagnoTec-S4	86.25	680.0	76.2	7.70	86.25	650.0	76.0	7.70
MagnoTec-S5	117.00	563.0	127.0	14.50	117.0	535.0	127.0	14.50
MagnoTec-S6	117.00	845.0	127.0	21.80	117.0	820.0	127.0	21.80

If you have any technical inquiry regarding to which anode you should use in your application, let us support you by communicating with our commercial technical department. Contact us, we have got NACE certified professionals in cathodic protection ready to help you.

NOTES

- Weight and dimensions may vary slightly by $\pm 5\%$.
- We have different anode configurations depending on the client's need.
- We manufacture anodes in any weight and configuration needed.
- The most commercial prepackaged anodes are 9 and 17 lb anodes, which we always keep in stock.

WARRANTY AND LIMITATION OF LIABILITY

TECNOLOGIA TOTAL will not be in any case responsible for damages of any nature that could be derived from an inadequate use of the product. Before using the product, the user must determine if the product is suitable for its intended use, taking all risks and liability that could be derived from its use.

If it's proved that a product is faulty due to manufacturing or its material at the time of sale, or that it does not fulfill during its warranty period the indicated properties in this technical sheet, the only responsibility of TECNOLOGIA TOTAL will consist of replacing the buyer with the quantity of product that is found to be defective. TECNOLOGIA TOTAL does not take any responsibility for any additional cost such as manufacturing cost, withdrawal or re-application of the products. If TECNOLOGIA TOTAL offers a warranty to their clients, express or implicit, or a compensation that differs from the established in this section, this stipulation can not be altered unless a signed agreement by the parties.

