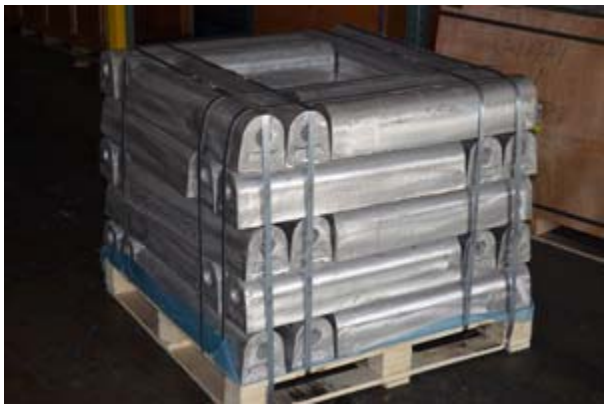
# HP High Potential Mag Anode



The sacrificial anode of choice is the high potential magnesium anode case of 'primary magnesium'. State of the art production techniques yield a higher open circuit voltage (driving) potential than conventional H-1 alloy anodes. These anodes produce potentials of 1.75 Volts with a "certified" minimum current efficiency of 50%, allowing protection levels to be achieved using fewer anodes. As a result you have a higher current output anode making it ideal for use in higher resistivity soils, while also performing very well in lower resistance environments. High Potential Anodes are cast to meet ASTM B843, Alloy M1C.

**Product Chemistry and Testing**

The anodes meet or exceed the chemistry industry standard for high potential anodes. The chemistry is per ASTM B843 Industry Standard for high potential anodes-Alloy M1C.

Casting parameters are continuously checked to control production variables. Anodes are individually weighed to ensure they meet weight requirements. They are physically inspected for excessive shrink cavities, core security, and general physical appearance to ensure highest quality.

Each production run is tested as per ASTM specification G97 Standard Test Method for Laboratory Evaluation of Magnesium Sacrificial Anode Test Specimens for Underground Applications. This tests the anodes for voltage potential and current efficiency performance. Often times the importance of current efficiency is overlooked when evaluating magnesium anodes. Current efficiency is the percent of metal consumed in producing useful cathodic protection to the total metal consumed. Because anodes must be installed in a corrosive environment to produce useful amount of current, the environment also promotes self-corrosion of the anode material. Electrical currents produced by self-corrosion cannot be used to advantage; the higher the percent of current efficiency, the better the anode, which also translates into longer life. A quality high potential magnesium anode should have a minimum current efficiency of 50%.

**MESA Manufacturing Process**

Each bare cast anode is closely examined for shrinkage voids, core centering and length, and weight conformity. Any inconsistency results in rejection. A coiled lead wire of #12 TW insulated solid copper is silver soldered (45% silver) to the galvanized steel core. Standard wire length is 10 feet long. The 45% silver in the solder is critical to ensuring a 'stronger than the wire itself' connection. The core cavity is filled with electrical sealing compound to assure a fully insulated and protected connection. Bare anodes are centered in cotton bags, then surrounded with a backfill mixture consisting of 75% hydrated gypsum, 20% bentonite, and 5% sodium sulfate. This backfill lowers the anode to earth resistance, draws moisture to the anode for best performance, and creates a uniform environment for the anode to

consume itself evenly. The packaged anodes are then inserted into multi wall paper sacks, palletized, and film wrapped for shipping.

**Chemical Composition**

| Element | Content % |
|---|---|
| Aluminum | 0.01% Max |
| Manganese | 0.50 - 1.3% |
| Silicon | 0.05% Max |
| Copper | 0.02% Max |
| Nickel | 0.001% Max |
| Iron | 0.03% Max |
| Others Each | 0.05% Max |
| Magnesium | Remainder |

**Sizes Available**

| Anode Type | Bare Weight | Packaged Weight | Shipping Package | Bare | | | Packaged | |
|---|---|---|---|---|---|---|---|---|
| | | | | W | H | L | D | OL |
| 1R8 | 1 | 5 | 6 per box | 1-3/4" | 1-3/4" | 8" | 3-1/4" | 9” |
| 3D3 | 3 | 8 | 5 per box | 3-1/2" | 3-3/4" | 5" | 6" | 10" |
| 5D3 | 5 | 17 | 5 per box | 3-1/2" | 3-3/4" | 8-1/2" | 6” | 12" |
| 9D2 | 9 | 35 | 2 per box | 2-3/4" | 3" | 27" | 5-1/2" | 32" |
| 9D3 | 9 | 27 | 2 per bag | 3-1/2" | 3-3/4" | 14" | 6" | 17" |
| 17D2 | 17 | 60 | 1 per bag | 2-3/4” | 2-3/4” | 50-1/4” | 6 | 55” |
| 17D3 | 17 | 45 | 1 per bag | 3-1/2” | 4” | 25-3/4” | 6-1/2” | 29” |
| 20D2 | 20 | 70 | 1 per bag | 2-3/4” | 3-3/4” | 59-3/4” | 5" | 66" |
| 32D3 | 32 | 91 | 1 per bag | 3-1/2” | 3-3/4” | 45-1/4” | 6-1/2” | 53" |
| 32D5 | 32 | 70 | 1 per bag | 5-1/2” | 5” | 20-1/2” | 8” | 28" |
| 40D3 | 40 | 96 | 1 per bag | 3-1/2" | 3-3/4” | 59-3/4” | 6-1/2” | 66" |
| 48D5 | 48 | 100 | 1 per bag | 5-1/2” | 5-3/4” | 31” | 8” | 38" |
| 60S4 | 60 | 125 | 1 per bag | 4” | 4” | 60” | 7” | 64" |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