MAGNETITE ANODE

Magnetite (Fe₃O₄) is a natural mineral with good conductivity and a high degree of oxidation that makes it resistant to corrosion even at high temperatures. The magnetite anode performance has been proven by many projects.

The magnetite anode is casted in hollow cylindrical forms to minimize weight and to facilitate cable to anode connections at the centre of the anode. This centre cable to anode connection allows for a uniform current dissipation at the anode surface.

**Characteristic**

- Can be operated at high current
- Extremely low consumption rate (0.02 kg per ampere-year)
- No maximum D.C. operating voltage
- Centre cable to anode connection for uniform current distribution and the protection of the cable connection.
- Light weight and easy to install, removable for inspection and reinstallation.
- Not susceptible to ripple in D.C. supply
- Inside anode is filled with soft plastic core to absorb different rates of the expansion of the magnetite and the resin.

**Material Specification**

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Specific Gravity</td>
<td>4.7 - 4.8 kg/dm³</td>
</tr>
<tr>
<td>Brinell Hardness</td>
<td>344 HB</td>
</tr>
<tr>
<td>Bending Strength</td>
<td>5 KN/cm²</td>
</tr>
<tr>
<td>Density</td>
<td>4.71 g/cm³</td>
</tr>
<tr>
<td>Melting Point</td>
<td>1,540°C</td>
</tr>
<tr>
<td>Tensile strength</td>
<td>245 MPa minimum</td>
</tr>
<tr>
<td>Yield strength</td>
<td>175 MPa minimum</td>
</tr>
<tr>
<td>Elongation</td>
<td>24% minimum</td>
</tr>
</tbody>
</table>

**Type:** MA-U

- Environment: Neutral Soil and Water without Chlorine and Sulphate Content
- Applications: Shallow Groundbeds, Deep Groundbeds

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diameter</td>
<td>60 mm</td>
</tr>
<tr>
<td>Total length</td>
<td>720 mm</td>
</tr>
<tr>
<td>Effective length</td>
<td>670 mm</td>
</tr>
<tr>
<td>Total weight</td>
<td>6.0 kg</td>
</tr>
<tr>
<td>Min. effective mass</td>
<td>4.7 kg</td>
</tr>
<tr>
<td>Surface area</td>
<td>13.4 dm²</td>
</tr>
<tr>
<td>Max. current load</td>
<td>3.0 A</td>
</tr>
</tbody>
</table>
**MAGNETITE ANODE**

**Type: MA-CS**

- Diameter: 60 mm.
- Total length: 760 mm.
- Effective length: 710 mm.
- Total weight: 6.0 kg.
- Min. effective mass: 4.7 kg.
- Surface area: 13.4 dm².
- Max. current load: 6.0 A

**Environment:** Chlorine and/or Sulphate Containing Soil or Stagnant water

**Applications:** Shallow Groundbeds, Deep Groundbeds

---

**Type: MA-SEA**

- Diameter: 60 mm.
- Total length: 760 mm.
- Effective length: 670 mm.
- Total weight: 6.0 kg.
- Min. effective mass: 4.7 kg.
- Surface area: 13.4 dm².
- Max. current load: 16.0 A

**Environment:** Flowing Seawater or Brackish Water

**Applications:** Platforms, Jetties, Harbours

---

**Type: MA-CHAIN-1**

- Diameter: 60 mm.
- Total length: 740 mm.
- Effective length: 600 mm.
- Total weight: 6.2 kg.
- Min. effective mass: 4.7 kg.
- Surface area: 11.3 dm².
- Max. current load (groundbeds): 6.0 A
- Max. current load (tanks): 16.0 A

**Environment:** Chlorine Containing Soil or Stagnant Water

**Applications:** Deep Groundbeds Open Hole, Deep Groundbeds Closed Hole, Water Tanks

---

**Type: MA-CHAIN-2**

- Diameter: 60 mm.
- Total length: 740 mm.
- Effective length: 600 mm.
- Total weight: 6.2 kg.
- Min. effective mass: 4.7 kg.
- Surface area: 11.3 dm².
- Max. current load (groundbeds): 6.0 A
- Max. current load (tanks): 16.0 A

**Environment:** Chlorine Containing Soil or Stagnant Water

**Applications:** Deep Groundbeds Open Hole, Deep Groundbeds Closed hole, Water Tanks

---

**Canister for Type: MA-U + MA-CS**

**COKE BACKFILL**

- Max. carbon content: 90%
- Max. moisture content: 5%
- Max. resistivity: 1&m
- Density: 700-950 kg/m³
- Maximum particle size: 20 mm.
- Surface area: 13.4 dm²
- Max. current load: 16.0 A

<table>
<thead>
<tr>
<th>Standard Canister</th>
<th>Diameter</th>
<th>Length</th>
<th>Total weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAN 10</td>
<td>160 mm.</td>
<td>1,000 mm.</td>
<td>22 kg.</td>
</tr>
<tr>
<td>CAN 15</td>
<td>300 mm.</td>
<td>1,500 mm.</td>
<td>85 kg.</td>
</tr>
<tr>
<td>CAN 20</td>
<td>300 mm.</td>
<td>2,000 mm.</td>
<td>110 kg.</td>
</tr>
</tbody>
</table>