

## MMO Flexible Anode (Linear Anode) for Pipelines and Tanks

MMO/Ti flexible linear anodes for cathodic protection of buried pipelines, tanks and vessels: MMO wire in carbon backfill, connected to the cable every 3 m, 500 m or 1,000 m reels.

### Key Specifications

|                                   |                                                     |
|-----------------------------------|-----------------------------------------------------|
| Anode wire                        | MMO-coated titanium, $\Phi 1.0$ mm or $\Phi 1.5$ mm |
| Outer diameter                    | $40 \pm 2$ mm                                       |
| Maximum current output            | 52 mA/m (standard design)                           |
| Design life                       | $\geq 25$ years                                     |
| Wire-to-cable connection          | Every 3 m $\pm 5$ %                                 |
| Contact resistance per connection | $\leq 0.01 \Omega$                                  |
| Length per reel                   | 500 m or 1,000 m                                    |

### Construction

- **Anode core:** titanium wire with a mixed metal oxide (MMO) coating,  $\Phi 1.0$  mm or  $\Phi 1.5$  mm as standard.
- **Feeder cable:** an insulated feeder cable runs inside the anode. The MMO wire is connected to it every 3 m  $\pm 5$  %, using high-conductivity copper connectors sealed by automatic mechanical encapsulation.
- **Backfill:** the wire and cable are surrounded by carbon (coke) backfill with a carbon content of at least 98 %.
- **Outer braid:** a braided sleeve holds the backfill in place and gives the anode its round, flexible form.

The anode is built on a fully automated production line of about 35 m.

### Specifications

| Parameter                         | Value                                                                                        |
|-----------------------------------|----------------------------------------------------------------------------------------------|
| Anode wire                        | MMO-coated titanium, $\Phi 1.0$ mm or $\Phi 1.5$ mm ( $\Phi 2.0$ / $\Phi 3.0$ mm on request) |
| Outer diameter                    | $40 \pm 2$ mm                                                                                |
| Maximum current output            | 52 mA/m (standard design; higher-output designs on request)                                  |
| Design life                       | $\geq 25$ years (other lives designed to order)                                              |
| Feeder cable                      | $1 \times 10$ mm <sup>2</sup> (16 mm <sup>2</sup> or 25 mm <sup>2</sup> on request)          |
| Wire-to-cable connection          | Every 3 m $\pm 5$ %                                                                          |
| Contact resistance per connection | $\leq 0.01 \Omega$                                                                           |
| Carbon content of backfill        | $\geq 98$ %                                                                                  |
| Weight                            | 1.1 – 1.3 kg/m                                                                               |
| Length per reel                   | 500 m or 1,000 m; other lengths cut to order                                                 |
| Reel size                         | 1,600 mm high $\times$ 1,000 mm wide                                                         |
| Weight of a 500 m reel            | $600 \pm 50$ kg                                                                              |

Ratings are typical design values and are confirmed per project.

### Lengths, Connectors and End Caps

Besides full reels, anodes are made to the lengths a layout needs, with the ends finished at the factory.

Straight and T-shaped copper connectors and end caps are made for the flexible anode assemblies.

## Inspection and Packing

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Each batch ships with an inspection report that records measured values. The checks cover the anode wire specification, outer diameter ( $40 \pm 2$  mm), coating system and thickness ( $\geq 4$   $\mu\text{m}$ ), coating adhesion by a 180° bend around a  $\Phi 12$  mm mandrel, and a visual check that the coating is intact, the backfill is full and even, and the braid is sound. The cable specification is recorded on the report.

Reels are wrapped in film and fixed to a timber base for shipment.

## Samples, Shipping and Response

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- **Samples:** 1–2 sample anodes can be supplied for evaluation before you order.
- **Shipping:** anodes have been shipped to Malaysia and Dubai (UAE). We quote FOB, CIF or DDP; for DDP we handle import customs clearance.
- **Response:** every enquiry receives a reply within 24 hours.

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**Current version online:** <https://titaniumseller.com/products/titanium-anodes-and-electrodes/mmo-flexible-anode/>