

PRODUCT DESCRIPTION

MMO anodes have the advantage of having a low consumption rate with a high current capacity, the consumption rate of the MMO anodes is only milligrams per Ampere/year, and because of this low wear rate, the metal dimensions remain constant throughout all of the anode life, thus providing a constant performance with a low resistivity.

This type of anodes is widely used for impressed current cathodic protection of deep and shallow anode beds, and in offshore applications as well.

MMO tubular anodes used in cathodic protection are hollow titanium tubes with a mixed metal oxide (MMO) coating, that increase the titanium surface conductivity, these conform to the ASTM B338 grade I standard, and because of its light weight, the transportation fare is very low.

TECNOLOGIA TOTAL manufactures MMO anodes using titanium as a substratum, applying an MMO layer using a thermal catalysis process that forms a high resistance union. This MMO coating improves the conductive properties of the anode, while titanium is inherently stable and gives the alloy durability and high performance.



CONSTRUCTION

They are manufactured in dimensions of 1x45 and 1x60" with a 3 m HMWPE #8 cable, these being the standard dimensions, however other dimensions and cable length are available upon special request.

The chemical composition of the MMO used in manufacturing is as follows:

ASTM B338 GRADE I							
C%	Fe%	N%	O%	H%	Others (Individual)	Others (Total)	Ti%
0.08 max	0.20 max	0.03 max	0.18 max	0.015 max	0.10 max	0.40 max	Balance

MAIN FEATURES

- Easy transportation.
- Easy installation.
- They are light.
- Long durability.
- Suitable for working in water with high content of chlorides.

20 YEAR LIFE DESIGN

Dimensions	Current density (A/m ²)	Current output (A/anode)	Medium
Ø 1 x 45"	88	8.10 A	Coke
	100	9.00 A	Soil
	300	25.00 A	Brine
	600	50.00 A	Sea water
Ø 1 x 60"	88	11.70 A	Coke
	100	13.00 A	Soil
	300	35.00 A	Brine
	600	70.00 A	Sea water

INSTALLATION

Tubular MMO anodes are easy to install, but require qualified personnel, so, the installation instructions specified by the designer must be followed.

When using calcined petroleum coke, it is recommended to be of high carbon purity (>98.0%) and low resistivity (< 1.0 Ohm-cm) with high density (> 1000 kg/m³) and small particles.

TECHNICAL SERVICE

For any technical questions regarding the use of our products, let us support you by contacting our commercial technical department. Contact us, we have NACE certified cathodic protection professionals ready to support you in product selection.

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.

