

MIXED METAL OXIDE ANODE (TUBULAR)

IMPRESSED CURRENT ANODE



MMO Anode Tubular

Information

Titanium is chemically resistant & mechanically robust. Mixed Metal Oxide when coated over Titanium activates the latter. The Mixed Metal Coating has an excellent Electrochemical property. The evolution of Oxygen & Chlorine and / or mixtures of the two Gases can be established with a Low Stable Anode Potential.

Composition

Mixed Metal Oxide Coating is a combination of precious groups of Metal Oxides. The Oxide composition has been extensively developed for optimized Electrochemical & Long lifetime in the various Cathodic Protection Environments.

Lifetime

BSS Tech recognizes the simultaneous generation of Chlorine & Oxygen on the stringent environment the Anode inhabit. And so we provide Mixed Metal Oxide to withstand these harsh conditions. Concurrent Anodic generation of Chlorine & Oxygen occurs in Low Salinity / Brackish / Fresh Water. Hydrogen ions co-generated with Oxygen have a particular stagnant Electrolyte flow, which results in very acidic conditions at the Coated Electrolyte Interface. Mixed Metal Oxide Anodes are designed to resist acidic conditions & the coating to the Titanium Interface is protected from Anodic and Chemical attack. It has a very low wear rate in the range of 0.5 to 4 mg. / A-year; depending on the specified Cathodic Protection Application & Conditions. The long lifetime behaviour is only because of the Low Electrochemical wear of the Coating provided for a stable low Anodic Operating Potential. We design our Mixed Metal Oxide Tubular Anodes for a lifetime of 10 to 30 years, even longer depending upon the Application & Customer requirement.

Current Outputs

Mixed Metal Oxide Anodes have High Current Outputs. The recommended maximum Current Density depends upon the Resistivity & Composition of the Electrolyte. As with all Anode Systems, the lifetime is a function of the Current Density.

The recommended maximum current outputs are:

Sea water	750 A / m ²	Brackish/ Fresh water	150 A/m ²
Soil (Carbonaceous Backfill)	100 A / m ²	Mud	50 A/m ²

Dimension & Size

BSS Tech Mixed Metal Oxide Tubular Anodes are available in all Lengths & Diameters. We also provide other types of Mixed Metal Oxide Anodes which includes: Rods, Wires, Discs, Sheet, Expanded Mesh, Strip and can be tailor made to suit our Customer's Specification & Requirements. Canistered MMO Anodes also available with different sizes.

Applications

Major applications for Mixed Metal Oxide Anodes include:

- Internal Cathodic Protection for Tanks, Condensers & Heat Exchangers, etc.
- External Cathodic Protection on Pipeline, Ships, Platforms, Jetty Structures, Offshore Structures, Seawater intake structures.
- Buried Structures (used with Carbonaceous Backfill)
- Tank Bottom Protection

MIXED METAL OXIDE RIBBON ANODE

Information

Titanium is chemically resistant & mechanically robust. Mixture of Metal Oxide when coated over Titanium, activates the latter. The Mixed Metal Coating has an excellent Electrocatalytic property. The evolution of Oxygen & Chlorine and / or mixtures of the two Gases can be established with a Low Stable Anode Potential.

Composition

Mixed Metal Oxide Cathodic Protection Coating is a combination of precious groups of Metal Oxides. The Oxide composition has been extensively developed for optimized Electro Chemical & long lifetime in the various Cathodic Protection Environments.

Lifetime

BSS Tech recognizes the simultaneous generation of Chlorine & Oxygen on the stringent environment the Anodes inhabit. And so we manufacture Mixed Metal Oxide to withstand these harsh conditions. Concurrent Anodic generation of Chlorine & Oxygen occurs in Low Salinity / Brackish / Fresh water . Hydrogen ions co-generated with Oxygen have a particular stagnant Electrolytic flow, which results in very acidic conditions at the Coated Electrolyte Interface. Mixed Metal Oxide Anodes are designed to resist acidic conditions & the coating to Titanium interface is protected from Anodic & Chemical attack . It has a very low wear rate in the range of 0.5 to 4mg./A-year; depending on the specified Cathodic Protection Application & Conditions . The long lifetime behaviour is only because of the Low Electrochemical wear of the Coating provided for a stable low Anodic operation potential. We design our Mixed Metal Oxide Ribbon Anodes for a lifetime of 10 to 40 years, or even longer depending upon the Application & Customer requirement.

Current Outputs

Mixed Metal Oxide Anodes can have different output ratings based on the life & current requirements . The recommended maximum Current Density depends upon the Resistivity & Composition of the Electrolyte as with all Anode systems, the lifetime is a function of the Current Density.

The recommended current outputs are:

Size (Width x Thickness)	Current Output				
0.25" x 0.025" (6.35mm x 0.635mm)	17 mA/M	33 mA/M	42 mA/M	70 mA/M	105 mA/M

Applications

Mixed Metal Oxide Ribbon Anode is primarily used for Tank Bottom Cathodic Protection System.

Packing

Mixed Metal Oxide Ribbon Anodes are available in rolls of 250 feet or 500 feet.

IMPRESSED CURRENT ANODE



Mixed Metal Oxide Ribbon Anode