

FLEX ANODES DATA SHEET



Titanium Electrode Products Companies, “**TELPRO**,” are manufacturers of mixed metal oxide anodes for Cathodic protection.

TELPRO MMO Flex-Anodes can be assembled using **TELPRO** Wire Anodes (ASTM B348), or **TELPRO** Ribbon Anodes (ASTM B265) which have been coated with **TELPRO** Mixed Metal Oxide Coating.

TELPRO MMO coating consists of IrO₂/Ta₂O₅ and is suitable for use in all cathodic protection applications. Because mixed metal oxide anodes have an extremely low consumption rate, the titanium substrate remains constant throughout the design life of the anode.

Based upon accelerated life testing, conducted by an independent laboratory, **TELPRO MMO** coating has been proven to be equivalent or superior to other mixed metal oxide coatings which are currently being used; a copy of this test report is available upon request.

APPLICATIONS
BURIED PIPING
INPLANT PIPEWORK
VESSELS AND TANKS

Strict quality control procedures are followed throughout the entire coating process, to guarantee proper coating adhesion and loading. Also, **TELPRO** products are tested using an X-Ray Fluorescence Spectrometer, to ensure production of the highest quality product, which is fundamental in every step of the manufacturing process.

TELPRO MMO Flex-Anodes are a flexible, packaged linear anode assembly. The linear anode is packaged in a highly absorbent fabric sleeve. This sleeve is sewn using a poly four-thread double interlocking stitch, which prevents the seam from separating during installation, or when stored in high temperature conditions. The sleeve is filled using a high quality, calcined petroleum coke.

- ANODE TO CABLE CONNECTION IS RESIN FILLED AND HELIUM TESTED FOR AN EFFECTIVE SEAL OF CONNECTION
- AVAILABLE WITH OUTPUTS RANGING FROM 16mA/LIN. FT. TO 400mA/ LIN. FT.
- PACKAGED USING HIGH QUALITY CALCINED PETROLEUM COKE IN A HIGHLY ABSORBENT FABRIC SLEEVE.
- FABRIC SLEEVE IS AVAILABLE IN 1.5” to 3” DIAMETERS WITH A VARIETY OF LENGTHS AVAILABLE
- FLEXIBLE AND LIGHTWEIGHT MAKES FOR EFFICIENT INSTALLATIONS
- REDUCES REQUIREMENT FOR IN PLANT ISOLATION

USA OFFICE : PHONE 281 498 4727 FAX 281 498 4728 TOLL FREE 877 483 5776

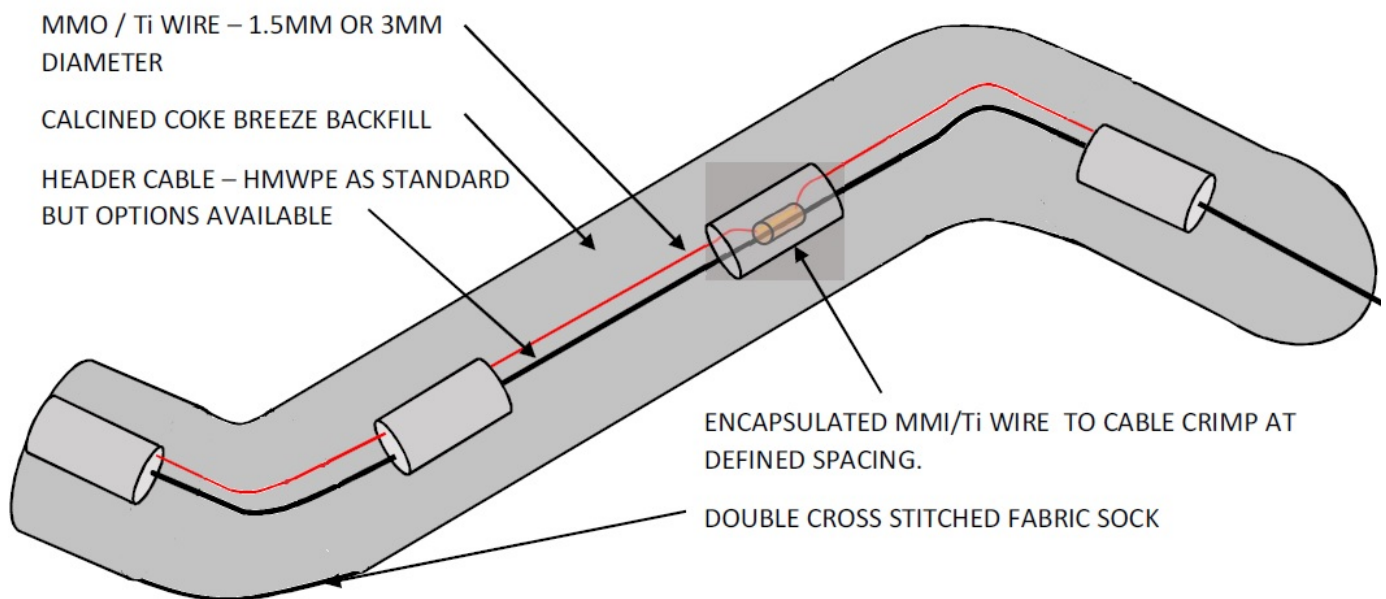
UK OFFICE : PHONE 44 1453 845 718 FAX 44 1453 845 719

WEB : WWW.TELPROCOMPANIES.COM

EMAIL : MASH@TELPROCOMPANIES.COM / CATHY@TELPROCOMPANIES.COM

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LAYOUT OF FLEX ANODE PRODUCT



Standard Current Ratings Available (output per linear meter / linear feet)

FLEX-ANODE 52 – 52mA/m (~16mA/ft)
 FLEX-ANODE 100 – 100mA/m (~30.5mA/ft)
 FLEX-ANODE 250 – 250mA/m (~76mA/ft)
 FLEX-ANODE 400 – 400mA/m (~122mA/ft)
 FLEX-ANODE 650 – 650mA/m (~200mA/ft)

Lifetime (at full rated output) Lifetimes stated are nominal.

To be specified by client at enquiry stage or to be provided with 25 years life as standard.

Please note that FLEX-ANODES Anodes can be made according to client's custom specification. Please contact us for details stating current output required and design lifetime.

Length (per sock):

Maximum 150m c/w 1m Of Cable either end.

Backfill :

Carbonaceous Backfill

- Type: Calcined petroleum coke
- Fixed Carbon: 99.8%
- Moisture: 0.07%
- Volatile: 0.02%
- Ash: 0.1%
- Particle Size: 1.0 mm (max.)

Anode materials :

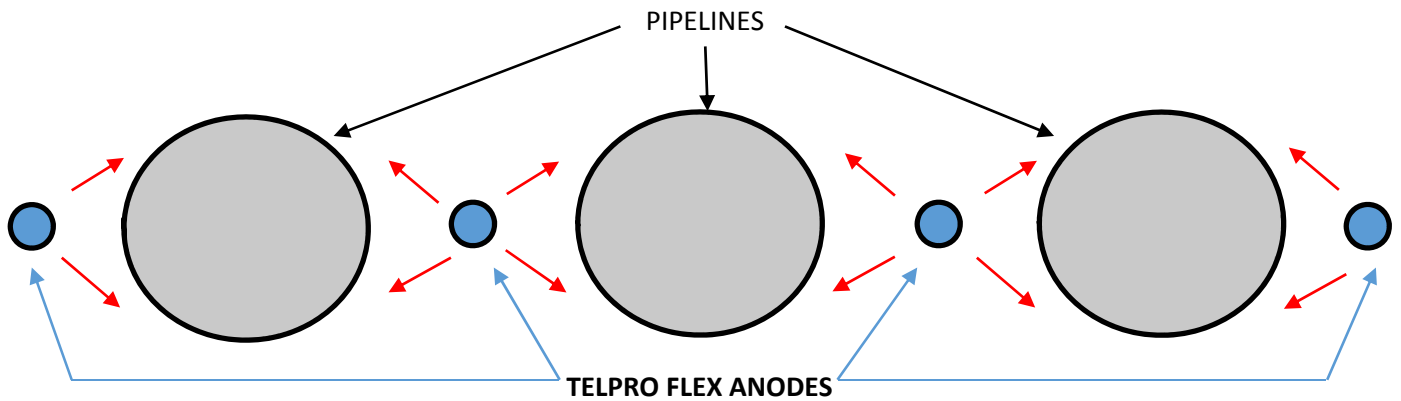
Titanium Wire MMO/Ti Wire 1.5mm or 3mm
 ASTM B863 Grade 1 Or Titanium MMO/Ti Ribbon
 nominal dimensions: 6.35mm x 0.6mm ASTM
 B265 Grade 1



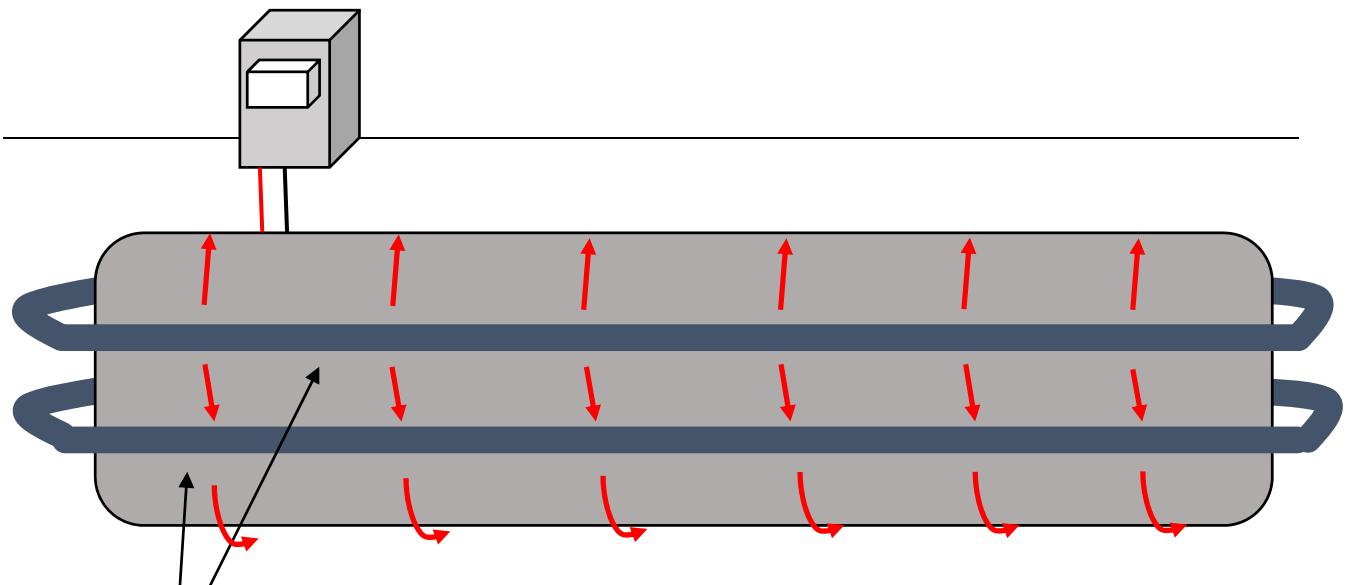
MANUFACTURERS OF MMO AND PLATINIZED TITANIUM ELECTRODES

Sleeve Diameter :	38mm
Anode Cable :	To client specification but as standard #8 AWG(10mm ²) HMWPE with 1m free cable tail at either end for splicing/termination.
Custom Cable	Available as per client request in HALAR/HMWPE or PVDF/HMWPE
Cable To Wire / Ribbon Connection :	Every 10m as a minimum. Note that spacing will vary dependent upon several factors such as <ul style="list-style-type: none"> • Anode used. • Cable size • Environment the Flex-Anode is placed in. Telpro can assist with design optimisation of your product.
Cable Wire / Ribbon Splice :	Proprietary technique using <ul style="list-style-type: none"> • Copper Compression Connector • Two Part Epoxy Resin • Heat – Shrink Sleeve.
Product Weight	Approx 1.5Kgs per linear m
Backfill Weight	Approx 1.15Kgs per linear m
Jacket Material & Construction	The linear anode and cable is assembled in a highly absorbent fabric sleeve. The fabric sleeve is sewn using a poly four thread double interlocking stitch, which prevents the seam from separating during installation or when stored in high temperature conditions.
Testing	<ul style="list-style-type: none"> • Anode to cable seal is resin filled and helium tested for an effective seal of the connection. • Anode to cable connection is checked for resistance. • Cable and anode are checked for electrical continuity and resistance. • MMO Coating is tested using an X-Ray Fluorescence Spectrometer to verify coating loading and adhesion.
Packing	In plywood packing cases or wooden reels ready for export/domestic shipment as required.
Marking	Each length of anode is labelled to show : <ul style="list-style-type: none"> • Section Lengths (if varying from standard) • Current output • Cable type • Diameter.

APPLICATIONS FOR TELPRO FLEX-ANODE



- PROTECT MULTIPLE PIPELINES IN A CORRIDOR
- EASY TO INSTALL ALONG WITH PIPE IN THE SAME TRENCH
- MULTIPLE LINEAR ANODES CAN BE DEPLOYED TO ENSURE EVEN CURRENT DISTRIBUTION
- POWER FEED CONNECTION ADVISED EVERY 100-150m MAXIMUM



- TELPRO "FLEX ANODE" INSTALLED IN RINGS AROUND THE VESSEL / BULLET TANK
- BURIED VESSELS / BULLET TANKS CAN BE PROTECTED WITH DISTRIBUTED TUBULAR / CANISTER ANODES
- TELPRO FLEX ANODE CAN ALSO BE USED FOR EASE OF INSTALLATION AND EVEN CURRENT DISTRIBUTION
- "CLOSE ANODE" SYSTEMS ENSURE PROTECTION AND REMOVE ISOLATION COSTS.