

# CERANODE PIGGYBACK™ MMO LINEAR ANODE TECHNOLOGY



CerAnode developed MMO linear anode technology and assigned the trademark PiggyBack™ in 1992. The first PiggyBack™ installation was in 1993. Since that time, continuous close-proximity anode-to-cathode applications have become a common design approach.

#### Features:

- Continuous anode technology
- Follows structure symmetry
- Optimized current distribution
- Optimized power efficiency
- Easy to install and cost-effective
- Customized anode rating-design life
- Arrives onsite ready to lay in place

#### Benefits:

- Optimized groundbed resistance.
- Optimized interference mitigation.
- Superior power efficiencies.
- Environmentally safe materials that are inert, benign and biodegradable.



#### Applications:

Tank bottoms, underground vessels, bullet tanks, and pipelines.



# PIGGYBACK™ LINEAR PBL-CS™ ANODE PRODUCT CHARACTERISTICS

The Standard PiggyBack™ Linear provides flexibility to the design engineer. Standard product specification is listed below, but since CerAnode manufactures the key components of the PiggyBack, the product specification can easily be customized. Parameters such as design life, current rating, wire diameter, cable size and insulation type can be specified and manufactured quickly.

Product Information	
Coke Sock Anode Diameter	1.5" (38mm)
MMO (mixed metal oxide) Anode Wire Coating Type	Ir-Ta
MMO Anode Substrate Material is Titanium CP G1	ASTM B348
Anode-to-Coke and Coke-to-Earth Current Density Interface	Excellent
MMO Anode Test Method for Anode Life	XRF & AEC
MMO Anode-to-Header Cable Connection Resistance	≤ 0.0009 Ω
MMO Anode-to-Header Cable Connection Environmental Seal	MultiSeal™
Coke Sock Environmental Rating – Green	Biodegradable
Coke Specification	Loresco® SC-3
Product Weight	1.13 lb/ft (1.68 kg/m)
Anode Length per Spool	1640 ft (500 m)
Gross Weight per Spool	2200 lbs (1,000 kg)

MMO Wire Anode is packaged with Loresco® SC-3 carbon backfill in a porous sock. Functions efficiently in arid soils or immersed in water. In many applications this technology has significant advantages compared to traditional discrete anode arrangements.

The technology provides optimized current distribution, optimized polarization characteristics, optimized grounded resistance, optimized interference mitigation, and better than ever power efficiencies.

Depending on the application, the linear anode can be ordered with or without the Coke Sock. The sock material employed is green, in that it is environmentally safe. The anode's sock decomposes leaving a conductive horizontal column at the position where it was buried allowing protection currents to pass freely to the structure. The MMO anode core is firmly positioned to protect the structure for many decades. Anodes are designed explicitly for Deep Anode Beds and meet the rigorous demands of Open Hole applications.

Ordering Information	
Linear Anode Products	Output
PBL-CS-16/30	16.7 mA/Ft (55mA/m) for 30yrs
PBL-CS-133/30	133.3 mA/Ft (437mA/m) for 30yrs
PBL-CS-25/20	25 mA/Ft (82mA/m) for 20yrs
PBL-CS-50/20	50 mA/Ft (164mA/m) for 20yrs
PBL-CS-100/20	100 mA/Ft (328mA/m) for 20yrs
PBL-CS-200/20	200 mA/Ft (656mA/m) for 20yrs
PBL-CS-400/20	400 mA/Ft (1,312mA/m) for 20yrs

#### Ordering Code: PBL-A/B-C-D-E-F-G-H

- A: Anode rating (mA/Ft or mA/M)
- B: Years
- C: Anode length (in Ft/M)
- D: Lead length (in Ft/M)
- E: Tail length (in Ft/M)
- F: Cable Size (8AWG, 6AWG, 4AWG)
- G: Insulation type (HMWPE, Kynar or Halar)
- H: Others (Specify)
  - Pulling eyelet
  - Fold in half

**Example: PBL-CS-16/30-750FT-100FT-850FT-6AWG-HMWPE**