



Long-line flexible anode for impressed-current cathodic protection of buried pipelines and of on-grade and buried storage tanks.

Product description

ANODEFLEX 1500 cathodic protection.

Construction: Five basic elements:

Central Copper Conductor: #6 AWG, serving as a low resistance busbar to deliver the required current over considerable distance without incurring substantial longitudinal voltage drop.

Conductive polymer: 0.5 inch (13 mm) in diameter special extrusion, sealing the copper conductor from chemical attack, yet allowing current to flow through it, from the conductor to the environment all along its length.

Coke breeze: Pre-packaged, high performance calcined petroleum coke breeze, serving as the active matrix in which the electrochemical reactions take place. Designed for min. 20 years service life at max. current output of 16 mA/ft (52 mA/m).

Fabric jacket: Integrated woven, acid resistant and porous jacket holding the coke breeze in place around the anode.

Protective braid: Tough, porous, non-conductive protective braid enhancing the abrasion and damage resistance of the fabric jacket.

Anodeflex 1500-1 is a long-line, flexible, cable-like anode, which is placed in continuous close proximity to the target structure. Uniform distribution of cathodic protection current is therefore achieved on applications where many conventional anode ground beds do not work. Key to the product's performance is the central, conductive-polymer coated copper conductor. This unique construction allows current to flow long distances down the center conductor, while allowing sufficient cathodic protection current to continuously pass through the conductive polymer all along the length of the anode. In contrast to conventional CP systems, AnodeFlex is placed in the ground in close proximity to the steel surface to be protected and provides uniform distribution of protective current to the entire steel surface, thereby maintaining the steel-to-soil "instant-off" potential in the required window of -850mv (-950mv if SRB's present) and -1200mv. The central anode cable is surrounded by factory prepackaged, high conductivity coke breeze, held in place by a porous, woven acid-resistant jacket. This arrangement avoids handling loose coke breeze and simplifies field installation. The improved current distribution increases anode efficiency and helps prevent over-voltage problems such as hydrogen generation and associated rapid coating disbondment. In addition, interference from other structures and stray currents are virtually eliminated. On poorly coated pipelines where optimal polarization can no longer be achieved, Anodeflex 1500-1 can often be installed as an alternative to expensive recoating. Both on single and multi-parallel pipelines, safe levels of polarization will be restored at every point. The system avoids difficult and costly field recoating and greatly reduces environmental disturbance. Above ground storage tank bottoms and buried tanks can be more effectively protected from corrosion using this continuous, close proximity anode system.

AnodeFlex 1500-1 is delivered on long length spools and because no additional coke breeze is required, the installation is as simple as laying a low voltage power cable. Proven heat-shrinkable splice kits, Tee joints and end sealing caps are available to complete any installation design.

Product features/benefits

- Anode is always in close proximity to the pipeline**
 Distributes current uniformly over total length of pipeline.
 No over- or under-protected areas.
 Prevents accelerated coating disbondment.
 More effective & economical than a series of discrete anodes.
 Independent of variations in soil resistivity.
- Pipeline Rehabilitation without Excavation**
 A fraction of the cost of recoating.
 Environmentally friendly.
 No loss of revenue or supply interruptions.
 No safety problems associated with working on live lines.
 Far quicker, up to 1.25 miles (2 km) laying speed per day.
- Long continuous circuit lengths**
 90% fewer joints compared to conventional anode systems.
 Lower maintenance cost.
- Avoids interference and stray current problems**
 Enhances long-term performance.
 Focuses current on the target structure.
 Improves protection and cost efficiency.
- Pre-packaging coke breeze (Anodeflex 1500-01)**
 Ensures low resistance ground bed all the time.
 Ensures the polymer coated cable is centred.
 Simplifies field installation.
- Installation with standard cable laying equipment**
 Fast, Easy & Cost Effective.

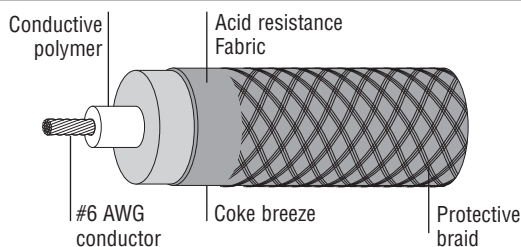
Product selection guide

	AnodeFlex 1500-01
Recommended Max Design	52 mA/m (16 mA/ft)
Current Output in Soil	
Min Installation and Storage Temperature	-18°C (0°F)
Min Bend Radius	500 mm (20 inches)

Product dimensions

	AnodeFlex 1500-01
Nominal diameter	1.5 in. (38 mm)
Weight	1.0 lbs/ft (1.49 Kg/m)
Length	1550 ±100 ft (472 ±30 m)
Coke breeze requirements	0.072 lb/ft (1.15 kg/m)

Product properties: AnodeFlex 1500-01



Property	Test method	Typical Value
Copper Conductor		
Dimensions	ASTM B-263	6 AWG
Resistance	ASTM B-193	1.5 10 ⁻³ Ohm/m
Conductive Polymer		
Dimensions	ASTM B-263	Pass
Volume resistivity	ASTM B-193	1.5 Ohm-cm
Coke Breeze		
Fixed carbon	ASTM D-172	99.7%
Resistivity	G.L.C. - C - 12A @ 23°C (73°F), 10 bar	0.4 Ohm-cm
Fabric Jacket		
Weight	Min. 200 g/m ²	229 g/m ²
Bursting strength	ISO 3303	575 N
Abrasion resistance	ASTM D-4157	219 cycles to failure
Fluid resistance	Internal immersion test 6 months	Pass
Chlorine resistance	Internal immersion test 6 months	Pass
UV resistance	ASTM G-53 @ 60°C (140°F), 8 hrs @ 50°C (122°F), 4 hrs condensation	55% tear strength loss

Ordering information

ANODEFLEX type products are available:

- as a spool

Example: AFLX-1500-01

AFLX	AnodeFlex type product
1500-01	Conductive polymer coated copper conductor surrounded by pre-packaged high conductivity coke breeze Standard cutlength = 472 +/- 30 M (1550 ft +/- 100 ft)

Accessories

AFLX-1500-01-CAP	End seal kit
AFLX-1500-01-TEE	Tee splice kit
AFLX-1500-01-SPLICE	In-line splice kit
Design software	Special computer program calculating the cathodic protection circuit lengths, anode to pipe distances, power supply voltages and current demands for each individual AnodeFlex section on pipeline and tank applications.

Important: Like any cathodic protection system, the Tyco Adhesives AnodeFlex system must be optimized for particular design conditions. Severe environments may limit the life-time. AnodeFlex is a flexible carbon cable anode system. When all the active anode material available around the polymeric cable is consumed, the anode will no longer function. Tyco Adhesives warrants that AnodeFlex meets the internal Tyco Adhesives specification, but the purchaser must rely on its own engineering experience judgement and skill to ascertain whether or not AnodeFlex is fit for the particular purpose proposed by the purchaser.

All of the above information, including illustrations, is believed to be reliable. Users, however, should independently evaluate the suitability of each product for their application. Tyco Adhesives makes no warranties as to the accuracy or completeness of the information and disclaims any liability regarding its use. Tyco Adhesives' only obligations are those in the Standard Terms and Conditions of Sales for this product and in no case will Tyco Adhesives be liable for any incidental, indirect or consequential damages arising from the sale, resale, use or misuse of the product. Tyco Adhesives' specifications are subject to change without notice. In addition, Tyco Adhesives reserves the right to make changes in materials or processing, without notification to the Buyer, which do not affect compliance with any applicable specification.

Tyco Adhesives

Corrosion Protection Group

www.tycoadhesives.com

Headquarters:

Tyco Adhesives
1400 Providence Hwy
Norwood, MA 02062 USA
Int'l Tel: +1 781 440-6161
US Toll Free: +1 800 248-0149
Fax: +1 781 440-6271
E-mail: CPG@tycoadhesives.com

In Europe, Middle East, Africa, Asia & Pacific:

Tyco Adhesives B.V.B.A.
Nieuwlandlaan B15
B-3200 Aarschot, Belgium
Tel: +32 16 55 36 00
Fax: +32 16 55 36 74
E-mail: CPGE@tycoadhesives.com

In the Americas:

Tyco Adhesives L.P.
1675 Suite C Brandywine Avenue
Chula Vista, CA 91911 USA
Tel Mexico: +52 (664) 623 30 70
Tel US: +1 (619) 4 24 42 59
Fax Mexico: +52 (664) 623 64 63
Fax US: +1 (619) 4 24 42 58
E-mail: CPGTJ@tycoadhesives.com

Local agent / Distributor: