

CENTERTEC Tubular Anodes

High Silicon Chromium Cast Iron for Impressed Current Cathodic Protection

Product Description

Composition (Weight%) ASTM A518 Grade 3

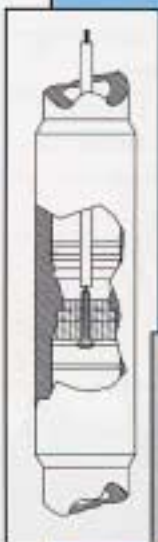
Silicon	14.20 - 14.75%	Manganese	1.50% max
Chromium	3.25 - 5.00%	Copper	0.50% max
Carbon	0.70 - 1.10%	Molybdenum	0.20% max

"Chill Cast" in Metal Molds

- Assures consistent weight, greater density, less flake graphite grain boundary, and lower chemical segregation than Sand Cast Anodes.
- The ANOTEC Chill Cast structure is similar to "Spin Cast" Tubular Anodes.

Special Features

- "Long Life Chill Cast" proven technology.
- **Center Connection** invulnerable to "necking end-effect".
- **Cable Connects Exactly at Center** using one piece anchor swaged into matching cast seat with anchor groove.
- **Low, Low Connection Resistance** is less than .0015 ohms.
- **Retention Grooves** for Epoxy/Sealants.
- **Connection Strength** exceeds strength of copper cable.
- **Expanded Head** extra thickness protects connection.
- **Consistent Weights and Dimensions** assured by precision shell cored inside diameter and chill cast exterior surfaces.
- **Quality Control** in accordance with formal quality program ISO 9002.
- **Manufactured in North America**
- **Performance Proven Technically Advanced Design**

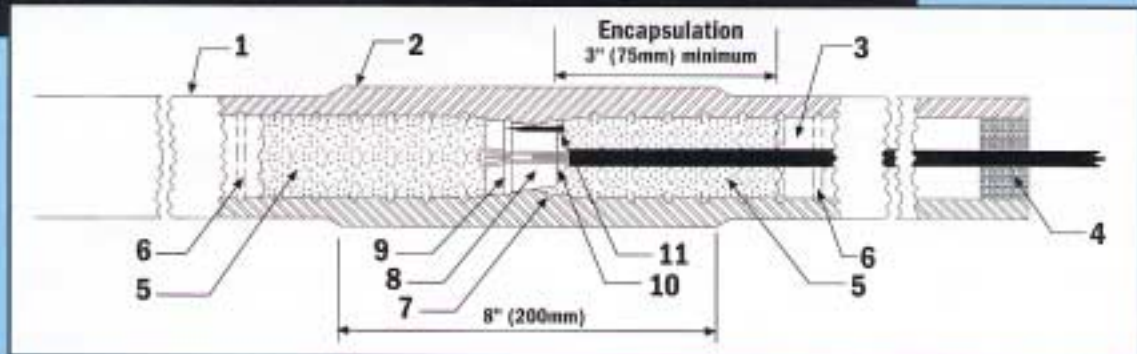


**Standard
Cable
Connection:**
Solder to
compression
wedge,
expanded into
retention grooves
(style 2)

Positive Advantages of Anotec CENTERTEC Tubular Anodes

- All Anotec anodes are produced in accordance with Anotec's Product Specifications and Quality Control Program ISO 9002.
- Records are systematically retained, covering production, testing and quality. Anodes are traceable by crate production lot code, to production, testing and quality records.
- Anotec's state-of-the art spectrometer, calibrated for Silicon Iron, assures compliance to either ASTM A518 or BS 1519 chemistry.
- Anotec makes all its products in its North American Plant dedicated exclusively to "Chill Cast" Silicon Iron Anodes, unlike other tubular anode suppliers who obtain their product from general mixed metal foundries.
- Anotec Centertec Tubulars, like centrifugal pipe anodes, are cast into metal molds, to solidify very rapidly in a "chill cast" microstructure. The result: absence of chemical segregation, and optimal grain orientation. It is rapid chill, rather than spinning, that promotes optimum structure and longer life.
- The anode interior, and the cable connection seat, are precision cast by the shell process, assuring accurate fit to the die cast anchor. Centrifugal pipe anodes do not control dimensions by a precisely defined mold cavity, but rather attempt to pour the same amount of molten iron into an "open" space. Consequently, centrifugal cast anodes tend to vary more widely in wall thickness and inner diameter and weight. In a typical test of randomly selected Chill Cast Anodes, the weight deviation was approximately one half of one percent.
- Cable to anchor solder connections have a factor of safety of more than 1.5 times the cable strength.
- Centertec's one piece die cast anchor in its matching anode seat, withstands a force of more than three times the breaking strength of typical cathodic protection cable, when a steel rod is substituted for copper conductor.
- Every Anotec Centertec anode is inspected carefully before packaging. Breakage in distribution and installation is rare, even though silicon iron is brittle by nature. Anecdotal evidence from field survival incidents validate Anotec's impact test results.
- Expanded wall thickness either side of the connection reinforces the critical zone for corrosion resistance and strength. Claims that "pipe" anodes are stronger because they avoid "shape changes" are not substantiated by tests or field reports.
- To protect the connection, Centertec's interior retention ribs positively lock epoxy sealant. Centrifugal pipes from other manufacturers are cast with a uniform parallel walled interior, dependent solely upon adhesion for sealant security.
- Centertec's integral, cast-in-place conical anchor seat located at the exact center of the anode assures centering without misplacement or creep. Centertec capture grooves lock the cable connection anchor into the Centertec anode by extrusion. Centrifugal spin-cast pipe anodes do not provide a specific seat, nor retention features; relying instead upon friction against the uniform parallel walls to hold the anchor wherever it is expanded.
- Experience has established that connections of resistance less than 0.0015 ohms are reliable. Standard Centertec connections test at less than 0.001 ohms. Optional contact screws in the anchor seat interface reduce the resistance to less than 0.0002 ohms.

Features & Attributes of CENTERTEC

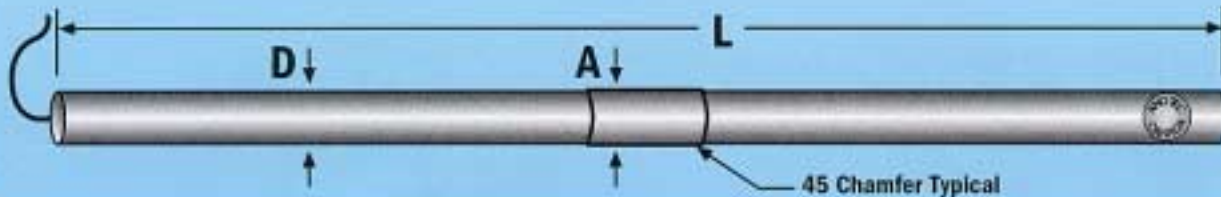


Item	Name	"Centertec" Standard Features	Special Attributes of "Centertec" Feature
1	Tubular Anode	ASTM A 518 grade 3 and BS 1591 SiCr 14 4	Chill cast in metal mold with precision shell cored interior for consistent weight & dimensions
2	Expanded Head	Extra wall	Extra strength & protection for cable connection
3	Cathodic Protection Cable		
4	Cable Guide	Polyethylene, closed cell foam	Centralizes & protects cable. Firm, forgiving, no sharp edges
5	Epoxy	100% solid, no shrink, compounded for cathodic protection	
6	Retention Ribs		Positively lock epoxy & enhance seal
7	Anchor Seat	Conical, at exact center of anode	Lower Resistance Higher Strength
8	Anchor	Lead die casting matches seat	Standard connection less than 0.001 OHMS More than 2500lb/1100kg using steel rod as cable
9	Retention Groove	Anchor is expanded into groove	
10	Solder Joint	Tinned conductor soldered to anchor	With 2 optional contact screws less than 0.0002 OHMS
11	Contact Screws	Optional assurance	

Actual test results on connections
— made in accordance with
Anotec's Formal Quality Control Procedures
EXCEED INDUSTRY CRITERIA

Typical Cathodic Protection Industry Cable Connection
Test Criteria:
Resistance: 0.002 - 0.004 OHMS
Pull Strength: 1.5 x Cable Strength

Anotec CENTERTEC Tubular Anodes



Anotec Type	Nominal Dimensions			Nominal Weight Lb (Kg) c/w Anchor	Nominal Area Sq. Ft. (M ²)	Shipping Information		
	D	Inches (mm) L	A			Anodes per crate	Gross Weight Lbs	Kgs
2260	2.2 (56)	60 (1520)	2.4 (61)	36 (16 kg)	3 (.28)	45	1750	794
2284	2.2 (56)	84 (2130)	2.4 (61)	48 (22 kg)	4.2 (.39)	45	2310	1048
2660	2.6 (66)	60 (1520)	2.8 (71)	50 (23 kg)	3.5 (.33)	40	2130	966
2684	2.6 (66)	84 (2130)	2.8 (71)	69 (31 kg)	4.9 (.46)	40	2910	1320
3860	3.8 (97)	60 (1520)	4.0 (102)	75 (34 kg)	5 (.46)	21	1705	774
3884	3.8 (97)	84 (2130)	4.0 (102)	94 (43 kg)	7.0 (.65)	21	2125	964
4860L	4.8 (122)	60 (1520)	5.0 (127)	93 (42 kg)	6.29 (.58)	15	1525	692
4884L	4.8 (122)	84 (2130)	5.0 (127)	128 (58 kg)	8.8 (.82)	15	2070	939
4860H	4.8 (122)	60 (1520)	5.0 (127)	126 (57 kg)	6.29 (.58)	15	2020	917
4884H	4.8 (122)	84 (2130)	5.0 (127)	177 (80 kg)	8.8 (.82)	15	2805	1273
4860X	4.8 (122)	60 (1520)	5.0 (127)	164 (75 kg)	6.29 (.58)	10	1790	812
4884X	4.8 (122)	84 (2130)	5.0 (127)	230 (104 kg)	8.8 (.82)	10	2450	1111
6784	6.7 (170)	84 (2130)	6.7 (170)	270 (122 kg)	12.3 (1.14)	8	2310	1048

A. Large 84" crate dimensions, nominal:
31.5W x 87L x 25H inches • 39.7 Ft³
(800W x 2210L x 635H mm • 1.13 M³)

B. Small 60" crate dimensions, nominal:
31.5W x 62.5L x 25H inches • 29 Ft³
(800W x 1590L x 635H mm • 0.81 M³)