IMPRESSED CURRENT SYSTEMS

# Vector®

# Vectrode® Ti Tape Anode

**Surface mounted titanium tape anode for cathodic protection of reinforced concrete**

## Description

The Vectrode Ti Tape Anode system is a distributed impressed current cathodic protection system. The innovative Vectrode Ti Tape Anode was developed with the highest metal processing technology and extensive experience and knowledge of concrete cathodic protection. Utilizing a specially engineered adhesive, the inert mixed metal oxide coated titanium tape anodes are simply applied onto concrete surfaces. The electro-conductive adhesive allows current to flow from the anode to protect the reinforcing steel from corrosion.

Easy anode installation using the Vectrode Ti Tape Anode system significantly reduces the installed cost of your impressed current cathodic protection system. The Ti Tape Anode is a cost-effective solution for concrete structures to control the corrosion of reinforcing steel.

## Applications

- Bridge substructures
- Parking decks
- Balconies
- Columns and beams
- Structures with low concrete cover

## Features and Benefits

- **Surface mounted** - provides even current distribution, reduced potential for shorts to rebar.
- **Easy installation** - eliminates the need for expensive and time consuming saw cuts and grouting.
- **Economical** - efficient installation reduces total installed cost.
- **Durable** - mixed metal oxide coated titanium anodes have extremely long (75 yr) expected service life.

## How It Works

ICCP mitigates corrosion activity by supplying sufficient electrical current from an external source to overcome on-going corrosion within the structure. Vectrode Ti Tape Anodes are permanently installed and attached to a DC power source that provides electrical current to overpower corrosion activity. According to industry standards, an ICCP system is considered to be effective when the system polarizes the reinforcing steel sufficiently to result in a 100mV depolarization after the system is turned off.

## Installation Instructions

Sandblast or grind surfaces smooth to receive Vectrode Ti Tape Anode. Blow clean with oil-free compressed air. Peel off paper backing and adhere tape anodes directly to the concrete surface at the specified spacing. Use Vectrode Ti Distribution Tape to connect Vectrode Ti Tape Anodes together. Connections may be made by welding or using conductive epoxy. Generally, FRP Tape is applied to secure and protect the impressed current cathodic protection anodes. Alternately, the Vectrode Ti Tape Anode System can be covered by tiles, decorative coatings, etc.

*Mixed Metal Oxide Titanium Tape Anodes*

| Level of Protection | Description | Vectrode® Ti Tape Anode |
|---|---|---|
| Corrosion Prevention | Mitigates initiation of new corrosion activity | • |
| Corrosion Control | Reduces on-going corrosion activity | • |
| Cathodic Protection | Reduce or eliminate on-going corrosion activity | • |

*Ti Tape Anode Secured and Protected with FRP Tape*

## Design Criteria

Vectrode Ti Tape Anodes can be designed to provide long term durability to both new and existing structures under highly aggressive conditions. In line with other cathodic protection systems, Vectrode Ti Tape anode systems should be designed by corrosion specialists and installed by knowledgeable and experienced contractors.

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## Specification

**Nominal Dimensions:**

Width.....standard size 20 mm
available from 10 - 50 mm
Thickness ..... 0.05 mm or 0.07 mm

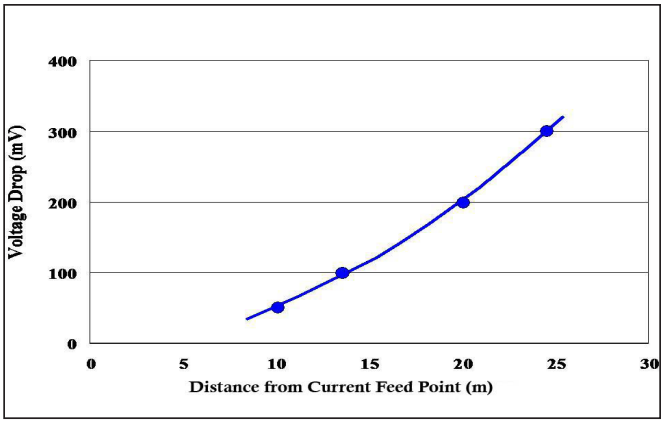
**Anode Performance:**

| Tape Width (mm) | Anode Current Rating (mA/m) | Anode Linear Resistance (ohm/m) | |
|---|---|---|---|
| | | 0.05 mm Thick Anode | 0.07 mm Thick Anode |
| 10 | 1.5 | 1.12 | 0.70 |
| 20 | 3.0 | 0.56 | 0.35 |
| 30 | 4.5 | 0.37 | 0.23 |
| 40 | 6.0 | 0.28 | 0.18 |
| 50 | 7.5 | 0.22 | 0.14 |

* Maximum design anode current density.....150 mA/m$^2$

**Substrate:**

Composition.....Titanium, Grade 1 per ASTM B265
Thermal expansion ..... 8.7 x $10^{-5}$/°K
Electrical resistivity..... 0.000056 ohm-cm
Tensile Strength ..... 245 MPa minimum
Yield Strength ..... 175 MPa minimum

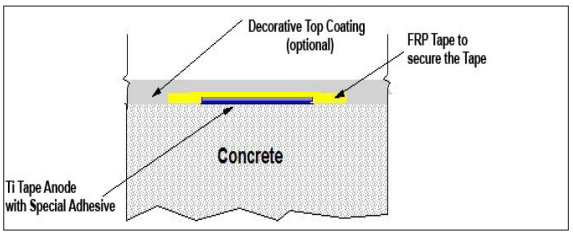


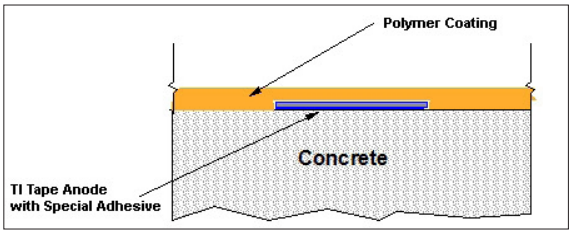

*Voltage Drop along Anode (for All Sizes Operated at 150 mA/m²)*

## Health and Safety

There are no known health hazards associated with Vectrode Ti Tape anodes.

*Vectrode Ti Tape Anode Packaging*




*Cross-Section of Ti Tape Installation on Concrete*

## Storage

Store in dry conditions.

## About Vector

Vector Corrosion Technologies is a member of the Vector Construction Group, a privately owned corporation with 11 offices throughout Canada and the United States. Vector takes pride in offering technically advanced yet cost effective solutions for concrete structures subject to corrosion damage and has earned numerous awards and patents for product innovation. As evidenced by our Corporate Safety and Environmental Policies, Vector is committed to a safe, healthy and sustainable environment.



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