

# ACE

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## Zinc Ribbon Anodes

### For Cathodic Protection and mitigation of induced AC Voltages

Extruded Zinc Ribbon is used extensively in the Cathodic Protection of buried steel structures and as an earth electrode for the mitigation of dangerous levels of induced alternating electrical current (AC).

### Cathodic Protection

Where indicated, extruded Zinc Anodes provide relatively inexpensive, low maintenance Cathodic Protection to pipelines, tank bottoms and other buried or submerged steel structures. Zinc anodes are suitable for use in low resistivity electrolytes such as sea- and

brackish water and soils and other waters with resistivities lower than  $1000\Omega\text{cm}$ . In these applications ACE™ Zinc Ribbon Anodes offer the following:

Size	DIM.	CORE	Mass
Medium	12mm X 15mm	Dia. 3.5mm	0.90kg/m (Nom.)
Large	15mm X 25mm	Dia. 3.5mm	1.90kg/m (Nom.)
Extra	30mm X 25mm	Dia. 5mm	3.50kg/m (Nom.)

- > **Ease of Installation** - ACE™ Zinc Ribbon Anodes require no special tools or skills to install. The steel core is exposed and conventionally welded, brazed or thermit welded to the structure.
  
- > **Slow consumption rate** – Anode material is high purity zinc (ASTM B418-95 Type I or II, as specified) with a low self-corrosion rate and low driving potential of 1.1V.
  
- > **Even current distribution** – linear installation in pipe trenches and along submerged structures ensures even spread of protective current.
  
- > **Economy** – in low resistivity electrolytes ACE™ Zinc Ribbon Anodes are an economical alternative to magnesium or other anode materials.

ACE™ Zinc Ribbon Anodes are available in various sizes and chemical compositions to allow accurate specification for optimum performance.

*Note:*

- Medium size available on wooden drums. Large and Extra available in loose coils.
  
- Ribbon extruded onto a galvanized steel wire to ensure permanent, low resistance electrical connection.
  
- Ribbon available in two alloys viz. Type I and Type II as per ASTM B418-95 (see chart for chemical composition).

## AC Mitigation

Where pipelines share right of way with high voltage AC transmission lines, as is commonly the case, it is possible for dangerous levels of AC voltage to be induced onto the pipeline with a consequent safety risk to personnel and the public.

In such cases it is necessary to earth the pipe at regular intervals and at points of contact such as valve stations in order to provide a safe path to earth for the fault current. This is usually accomplished by means of earth-mats or conductors placed in the pipe trench. Connecting to the pipe through a suitable electronic device (MOV) allows fault currents to be passed to earth without draining impressed current CP systems or causing sacrificial corrosion of the zinc ribbon.

ACE™ Zinc Earth Ribbon offers the following advantages over conventional earthing materials:

- > **High Purity Zinc** – as per ASTM B418 Type I, does not readily passivate or self-corrode.
  
- > **Larger Surface Area** – specially designed for earthing applications, the earth contact area is relatively high for the mass of material, offering a low resistance to earth.
  
- > **Safety** – unlike Magnesium which is pyrophoric there is no danger of ignition at high temperatures generated when discharging current under extreme conditions.
  
- > **Low resistance** – the larger diameter core creates less resistance to ensure efficient discharge of fault currents.
  
- > **Economy** – Zinc is relatively inexpensive when compared to conventional copper earthing electrodes.

## Pre-Packed Backfill

For use in both Cathodic Protection and earthing applications ACE™ Low Resistivity Backfill ensures optimum performance of extruded zinc products.

The backfill comprises a 75% calcium sulphate, 20% bentonite clay, 5% sodium sulphate mixture in dry powder form. This mixture has an extremely low resistivity and is hygroscopic ensuring a continuous low earth-resistance under most soil and climate conditions.

Element	Type I	Type II
Aluminium -%	0.1 – 0.5	0.005 max
Cadmium - %	0.025 – 0.07	0.003 max
Iron – max. %	0.005	0.0014
Lead – max. %	0.005	0.003
Copper – max. %	0.005	0.002
Others – total %	0.1	
Zinc - %	Remainder	Remainder