

## > EARTH ELECTRODES, GROUND ENHANCING PRODUCTS AND EARTH PITS

### 146 > APLICEM

In high resistivity soils it is necessary to use a specific material to obtain a suitable grounding resistance.

APLICEM ground enhancing cement improves grounding effectiveness around any type of earthing rod.

This product is very useful in industries that require a low grounding resistance such as computer installations, radio frequency facilities and substations etc.

**APLICEM** increases the conductive surface of the earth electrode, reducing the earthing resistance of the loose electrode.

Additionally, resistance remains stable regardless of soil moisture

Therefore, costs are reduced as it requires fewer boreholes for appropriate resistance.

Moreover, as it is an inert material, it prevents any corrosion forming on the electrode.



AT-034L

### INSTALLATION

**APLICEM** ground enhancing cement is supplied in 11.5 kg bags, and is to be mixed with 5 litres of water. The bag contains two parts: the conductive mixture and the cement.

It is installed as filling or resistance improver with two applications:

**1. Vertical boreholes:** for filling the ground around the electrode, increasing its size and thus reducing the earthing resistance.

- > Make the borehole with the required dimensions.
- > Mix the cement included in the **APLICEM** conductive mixture bag with water.
- > Pour water into the ground to moisten the soil and insert the electrode.
- > Fill the rest of the hole with **APLICEM**, stirring the electrode to ensure even coverage.

**2. Trenches:** for filling the ground around the conductor in order to prevent the corrosion of the conductor and preserve the obtained resistance.

- > Dig the trench with the dimensions that are required
- > Mix the cement included in the **APLICEM** conductive mixture bag with water.
- > Cover the bottom of the trench with **APLICEM** until achieving a thickness of at least 5 cm.
- > Place the conductor on the **APLICEM** layer.
- > Cover the conductor with **APLICEM** until achieving a thickness of at least 5 cm.
- > Let the mixture harden before filling the rest of the trench.

Number of APLICEM bags for backfilling around earth rods

| Øhole   | Depth |     |       |     |     |     |     |
|---------|-------|-----|-------|-----|-----|-----|-----|
|         | 1.5 m | 2 m | 2.5 m | 3 m | 4 m | 5 m | 6 m |
| 7.5 cm  | 2     | 2   | 2     | 2   | 4   | 4   | 4   |
| 10.0 cm | 2     | 3   | 3     | 3   | 6   | 7   | 7   |
| 12.5 cm | 3     | 4   | 4     | 5   | 9   | 10  | 10  |
| 15.0 cm | 5     | 5   | 6     | 7   | 13  | 14  | 15  |
| 17.5 cm | 6     | 7   | 8     | 9   | 17  | 19  | 20  |
| 20.0 cm | 8     | 9   | 11    | 12  | 22  | 25  | 26  |
| 22.5 cm | 10    | 12  | 13    | 15  | 28  | 31  | 32  |
| 25.0 cm | 12    | 14  | 16    | 18  | 34  | 38  | 40  |

Meters of trench for each APLICEM bag:

| Trench Width | APLICEM total thickness (cm) |        |        |        |
|--------------|------------------------------|--------|--------|--------|
|              | 2.5                          | 5      | 7.5    | 10     |
| 10 cm        | 4.30 m                       | 2.10 m | 1.40 m | 1.00 m |
| 15 cm        | 2.80 m                       | 1.40 m | 0.90 m | 0.70 m |
| 20 cm        | 2.10 m                       | 1.00 m | 0.70 m | 0.60 m |
| 25 cm        | 1.70 m                       | 0.80 m | 0.60 m | 0.40 m |
| 30 cm        | 1.40 m                       | 0.70 m | 0.50 m | 0.35 m |

**APLICEM** allows rapid and versatile installation, maintains a constant volume. It does not filter through the ground, therefore its resistivity values remain constant. It is not corrosive for the conductor, reduces installation and maintenance costs and is easily stored for long periods.

| Reference | Denomination | Description   | Weight (kg) |
|-----------|--------------|---|-------------|
| AT-034L   | APLICEM      | Ground enhancing cement for improving grounding effectiveness | 11.5        |

Complies with IEC 62305, IEC 62561, UNE 21186, NF C 17-102