XGEL, High Conductivy Earth Gel, reduces drastically the soil resistivity and protects any copper electrode from corrosion. Z-EARTH, Ground Enhancing Compound, retains moisture (hygroscopic properties) and is non corrosive.
Both compounds will therefore provide the best environment for your eathing system. Associated with High Quality Copper bonded Steel Electrodes or Copper Plates, these solutions ensure low earth resistance value without maintenance for 10 to 15 years.

XGEL: High Conductivity Earth Gel

Caracteristics

- Enhances ionic properties of the soil: drastically reduces soil resistivity
- Remains around the earth electrodes; does not get washed (Gel substance)
- Increases life span of earthing systems: protects from corrosion
- Maintenance Free

Description

INDELEC XGEL is a chemical compound made of 2 parts: part A and part B. Mixed together in water (10 litters water for 5kg part A+5kg partB), these 2 parts react and form a thick but fluid substance that releases ions. These ions considerably improve the conductivity of the soil. Any Surge, Fault or lightning current can therefore be dissipated in the shortest time.

Associated with Z-EARTH, **INDELEC XGEL** enables to obtain low resistance value even in very difficult soil conditions like in rock or sandy areas.

XGEL is supplied in 10 Kg buckets (5 Kg part A + 5 Kg part B)

Z-EARTH: Ground Enchancing Compound

Caracteristics

- High Hygroscopic properties: retains moisture
- Ensures thermal and humidity stability
- Good diffusion/dissipation properties
- Non corrosive

Description

INDELEC Z-EARTH is a natural backfilling compound.
It is made of natural components (graphite, minerals, etc...) and is totally ECO-Friendly. Its ability to absorb moisture from the surrounding soil and its non corrosive property makes it an ideal environment around any earthing electrode.

Z-EARTH is supplied in 20 Kg bags

ADVANCED EARTHING Solutions

Tested at CPRI

INDELEC Adavanced Earthing Solutions have been tested at **CPRI Laboratory** in Bangalore and compared with conventional earthing made as per IS3043/1987. Measurements were taken 41 days after installations. It clearly proved that the results obtained with INDELEC Earthing Solutions were much better! Resistance values were up to 3-4 times lower than the ones of the conventional system!

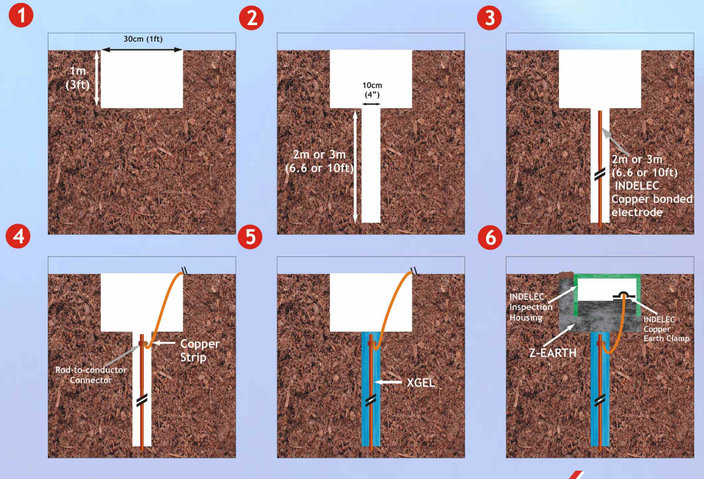
As written in CPRI Test report: ***"The presence of INDELEC compound surrounding the electrode has effectively reduced the earth pit resistance compared to the conventional one"***

These tests have fully confirmed the efficiency and reliability of INDELEC Advanced Earthing Solutions. Finally an Earthing Solution you can trust and count on!

Installation Method

1. Auger a 4" (for single electrode & tripod) or 6" (for tripolar) diameter hole to a depth of 7 feet (for 2m length electrodes) or 10 feet (for 3m length electrodes).
2. Place the electrode or tripolar system into the augered hole and drive 6" into the bottom
3. Make the connection between the earthing system and the horizontal conductor (copper tape or cable) using the rod-to-conductor connector.
4. Mixed **XGEL** part A & part B together and add water (10 Litres for 10Kg **XGEL**). Wait for ½ hour.
5. Pour XGEL directly onto the earthing system using a PVC pipe of 4" (single electrode & tripod) or 6" diameter (tripolar)
6. Fill remainder of augered hole with **Z-EARTH** mixed with good local soil/agricultural soil (black cotton type) removing any existing rock.

Note: For Tripod Earthing System, the 3 electrodes must be interconnected together with a 25x3mm copper strip using rod-to-conductor connectors. **XGEL** and **Z-EARTH** must also be poured on the horizontal conductor.



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Advanced Earthing Solutions

Maintenance free
Ultra low Resistance
High Conductivity

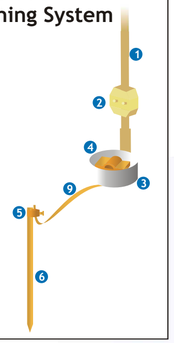
Tested at CPRI, Bangalore

Indelec
lightning protection

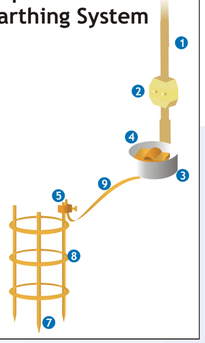
INDELEC, French company with over 50 years experience in Lightning protection & Earthing equipments, has recently developed elaborated solutions to provide Ultra Low Resistance & Maintenance Free Earthing Systems specially designed for your projects.

INDELEC Adanced Earthing Solutions are made of High Quality Copper bonded Electrodes, XGEL High Conductivity Earth Gel and Z-EARTH Ground Enhancing Compound.
Arranged in different designs and quantities depending on soil conditions at your site, INDELEC's engineered solutions offer the earth resistance you require and ensure safety to your personal and equipments for a minimum and calculated investment.

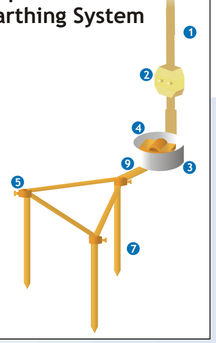
Electrode Earthing System



Tripolar Earthing System



Tripod Earthing System



1. Conductor from Equipments
2. INDELEC Test Clamp
3. INDELEC High-Grade PVC Inspection Housing
4. INDELEC Copper Earth Calmp
5. INDELEC Rod-to-Conductor Clamp
6. INDELEC Copper Bonded Steel Electrode 3m - 15mm, 20mm or 25mm dia
7. INDELEC Copper Bonded Steel Electrode 2m or 3m - 15mm dia
8. INDELEC Copper Bonded Steel Flanges 5,5" dia
9. Copper Conductor (25x3mm Strip or 50sqmm copper cable not insulated)
10. INDELEC XGEL: High Conductivity Earth Gel
11. INDELEC Z-EARTH: Ground Enhancing Compound

ADVANCED EARTHING Solutions

Why do you need good Earthing Systems?

The purpose of an Earthing System is to ensure the safety of your personal, provide protection to your site, guarantee the performance and reliability of your equipments, and ensure a safe path for the dissipation of any fault or lightning current. It is therefore ESSENTIAL for any electrical installation.

INDELEC range of Advanced Earthing Solutions

Thanks to **INDELEC's** engineers expertise and **INDELEC's** wide range of solutions, you can now choose the most appropriated Earthing Solution for your site and equipments:

Maintenance Free Earthing Electrode - 3m- 15mm, 20mm or 25mm dia

This solution is suitable for soil resistivity value between 1 to 50 Ωm and for earthing resistance value requirement around 5 Ω.

40 kg. Z-EARTH

Advanced Maintenance Free Electrode -3m 15mm, 20mm or 25mm dia

This solution is suitable for soil resistivity value between 1 to 50 Ωm and for earthing resistance value requirement around 1 Ω.

10 kg. XGEL & 20 kg. Z-EARTH

Maintenance Free Tripolar Earthing System- 2m or 3m length

This solution is suitable for soil resistivity value between 50 to 200 Ωm and for earthing resistance value requirement around 5 Ω.

60 kg. Z-EARTH

Advanced Maintenance Free Tripolar Earthing System- 2m or 3m length

This solution is suitable for soil resistivity value between 50 to 200 Ωm and for earthing resistance value requirement around 1 Ω.

10 kg. XGEL & 40 kg. Z-EARTH

Maintenance Free Tripod Earthing System- 2m or 3m length

This solution is suitable for soil resistivity value between 200 to 500 Ωm and for earthing resistance value requirement around 5 Ω.

80 kg. Z-EARTH

Advanced Maintenance Free Tripod Earthing System 2m or 3m length

This solution is suitable for soil resistivity value between 200 to 500 Ωm and for earthing resistance value requirement around 1 Ω.

20 kg. XGEL & 40 kg. Z-EARTH

Note 1: All **INDELEC** Earthing Electrodes are extendable so the length can be adapted according to the site conditions and the soil resistivity at different depth.

Note 2: When required resistance value cannot be obtained with one system (e.g. granite soil), 2 or more systems should be interconnected together using copper strip.

ADVANCED EARTHING Solutions

What is a good Earthing System?

A good Earthing should :

- have a low resistance value,
- be resistant to corrosion,
- be independent on season/weather change

The resistance value and the corrosion factor directly depends on the nature of the soil, more exactly on its electrical resistivity. The "season change " factor depends on the moisture contents.

Besides, it's important to note that:
The lower the soil resistivity, the lower the resistance value and the more the corrosion
The higher the soil resistivity, the higher the resistance value and the lesser the corrosion

Therefore, a good Earthing should ensure a balance between low resistance value and low corrosion, and maintain a constant moisture level during all seasons.

Table of Soils Resistivity

This table hereunder will help you to choose a suitable Earthing Solution at your site depending on the observed type of soil. However, a soil resistivity test is more reliable and recommende.

Type of soil	Common Resistivity in Ω.m	Usual limits in Ω.m
Sea Water	2	0.1 to 10
Swampy Terrain	20	3 to 30
Jurassic marl	35	40 to 30
Silt	40	20 to 100
Soft Clay	40	30 to 40
Black Humus	50	10 to 150
Humid Peat, Loam & Mud	100	5 to 150
Clay & sand mixture/Red sand	120	50 to 500
Marl and compact clay	150	100 to 200
Soft limestone	150	100 to 300
Schist	150	50 to 300
Sandstone altered	300	100 to 600
Grass covered stony soil	350	300 to 500
Silceous sand	400	200 to 3000
Cracked limestone	600	500 to 1000
Mica schist	800	800
Bare stony soil	2000	1500 to 3000
Compact limestone	2000	1000 to 5000
Granite	3000	1500 to 20000
Ice	50000	10000 to 100000