CUREC+ A Miracle Earthing Compound

Profile

The field of Electrical engineering has seen tremendous advancements over the years. Electrical Earthing remained a neglected area for long though it plays a very important part of all electrical distribution systems. The importance of efficient earthing is realized only after suffering serious damages to costly equipment and lives.

Quite often, good earthing results cannot be achieved due to high resistively of the soil at the location of electrical installations. Most of the resistance of an earth electrode is accounted by the soil very close to the earth electrode. Hence the nature of the soil immediately surrounding a ground electrode is very important. If the soil resistivity in the immediate vicinity of an earth electrode is high (as in case of rocky/sandy and dry soils) the bedding resistance will be high and therefore the overall earth resistance will be high.

It has been a general practice to artificially treat the soil with common salt, charcoal, soft-cake and other similar backfills in order to bring down the earth resistance. These conventional methods are not effective and permanent is soil of moderately high resistively and porosity. Where the soil resistively exceeds 50 ohms the low quality chemicals/conventional backfills will be inadequate to get the desired value of earth resistance permanently. Research has proved that, if a compound of high electrical conductivity fills up the space around the ground electrode, the earth resistance value would decrease appreciably.

Keeping in mind the shortcomings of the conventional earth pit backfills, we have developed CUREC+, a highly conductive earth pit which along with 25-kgs CURENITE backfill which can perform in any weather and soil condition.

3 Kgs of CUREC+ 25 kgs CURENITE reduces Soil resistivity by – 50% approx. (for normal soil)

6 Kgs of CUREC+ 50 Kgs CURENITE – for part rocky / sandy / gravel soil

20 Kgs & above of CUREC+ reduces Soil resistivity – recommended for hard rock/ granite

What is CUREC+

CUREC+ essentially consists of 7 different type of chemicals, these are:

- **Ionic compounds** NaCl (Sodium chloride) and KCl etc. (Potassium chloride) these compounds increase the conductivity of the compound.

- **Dispersion compounds**, mainly consisting on coke powder, which uniformly distribute the ions throughout the earth pit.

- **Diffusion compounds**, which remove the air pockets between the earthing rod and the earth pit thereby, increasing the conductivity. It slowly increases
the effectiveness of earth mass around the electrode. This helps in reduction of earth pit resistance with passage of time.

- **Expansion compounds** such as vermiculite and perlite, which can expand up to increasing in surface area with time & increasing the contact pressure around earth electrode, thereby reducing the contact resistance.

- **Hygroscopic compounds**, which retain and absorb the moisture from the surrounding and maintain in jelly form thereby increasing the conductive nature of the chemicals.

- It has high electrical conductivity, which should remain constant and unaffected by changes in temperature & moisture.
- It does permanently remain embedded and should nor dissolve in and swept away by water.
- It has an ability to absorb large amount of water and retain the same over a long periods of time.
- It decreases earth pit resistance with passage of time, in the critical 3 months the rate of reduction is fast, subsequently the rate is slow.
- Solubility : partly miscible; hence it does not dissolve fully like common salt. Earth Pit Life increases thereby.
- The pH value : 6.9-7.2 1000g/1 at 20 degrees C. since it is pH neutral it does not pollute soil or water and also does not corrode earth electrode.

**Advantages & Benefits**

1. **Maintenance-Free**: This is a 100% maintenance free earthing compound, no need of extra water pouring at regular interval as in conventional earthing material, because it retains the moisture.

2. **Thermally Conductive**: Continuously maintains the same (approx) earth resistance value over time regardless of soil & climate conditions. Unlike as in conventional earthing material, the stability of the CUREC will remain constant in temp range of -50 degrees to +60 degrees. The life and the resistance of the electrode are less affected by adverse climatic conditions as sandy/ dry/ and rocky areas soil.

3. **More Surface Area**: The conductive compound with diffusion property creates conductive zones, which provides the increased surface area for peak current Dissipation and also gets stable reference point.

4. High conductivity can create very low resistance even in a rocky area.

5. No corrosion, Eco friendly, Ph value between 6.9 to 7.2.

6. Low earth resistance, carries high peak current repeatedly.

7. A Long and reliable life, just use and forget.

8. Easy Installation: Can be installed indoors or outdoors and in almost all soil conditions. For existing or new facilities, requires less space & time.
## Comparison with conventional material.

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<th><strong>CUREC+</strong></th>
<th><strong>Other Chemical MATERIAL</strong></th>
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<tr>
<td>CUREC+ has a very low natural Resistivity ,manufactured in UAE as per International Standards</td>
<td>Chemicals with local technology are like other backfills which have a very high natural resistivity &amp; low quality parameters.</td>
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<td>CUREC + has the ability to absorb tremendous amount of water in jelly form. It is not perishable and is permanent.</td>
<td>Charcoal &amp; Other backfills hold less water comparatively and they are easily perishable.</td>
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<td><strong>CUREC + has a capability to hold Moisture for every long periods and is Thermally conductive over very long periods.</strong> Hence it stabilizes the earth impedance even in dry seasons/ sandy areas. Specially recommended for SOLAR sites.</td>
<td>Low quality chemicals hold moisture for shorter periods comparatively hence the pit has to be watered frequently. Therefore the earth impedance increases in dry seasons.</td>
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<td>CUREC+ is free from corrosive chemicals and does not require salt to be added in it. This increases the life of the electrode and earth pit as a whole. Tested for pH Neutral at laboratories.</td>
<td>Charcoal and other backfills require the addition of salt to perform. This salt is highly alkaline and eats up the electrode resulting in increase of earth resistance</td>
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<td>CUREC+ forms a watery -gel when water is added to it. This solution is fully in contact with electrode eliminating any kind of air gap resistance around the electrode. The solution also fills the cavities in the soil as it expands 18-20 times after water absorption.</td>
<td>Charcoal &amp; Other backfills are coarse and are not in contact of the electrode uniformly. This introduces air-gap resistance in the earthing circuit, which increases the overall resistance of the earth pit.</td>
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<td>CUREC+ prevents the corrosion of electrode hence eliminating the need of replacement. This reduces the troubles of shut-down and costly replacements later on.</td>
<td>Normal earth pit on the other hand undergoes significant corrosion on electrode as the backfill compounds are pH Acidic. This reduces the life of earthing system &amp; joints.</td>
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<td>CUREC + Is a 15 years maintenance free compound. <em>We have Seasonal-variation test report for CUREC+, tested at CPRI Bengaluru center &amp; as per IEC.</em></td>
<td>Even within these two years the resistivity of the traditional pits keep on rising hence giving very poor earthing.</td>
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<td>CUREC + brings down the resistivity of the ground to a very low value and keep on reducing till next 2 months to optimal value. CUREC+ has been tested on rocks such as basalt, sand and even granite strata and has brought earth resistance to acceptable value.</td>
<td>Not effective on sandy, part-rocks/ high resistence soils , requires expensive system and inter-connected earth pits.</td>
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The Price of a traditionally made earth pit come to around 6000 to 8000 INR where an earth pit consisting of CUREC+ cost around rupee 9,000 but the advantage of using CUREC+ exceed that of a less-standard CHEMICAL EARTHING over a long term period.

So overall even if we consider at the economics for a period of ten years, traditional earth pits would be required to be changed 5 times hence a total cost of almost between 25-30,000 rupees which is more then double, if CUREC+ is used.

Guarantees / warranties for CUREC system earthing is more than 20 years life.

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