COMPARISON OF SOIL TREATMENT USING NATRIUM CHLORIDE AND COPPER SULPHATE FOR ELECTRICAL EARTHING SYSTEM

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ABSTRACT

This paper describes the comparison of soil treatment using natrium chloride and copper sulphate for electrical earthing system. Achieving good resistivity from the soil – some poor soils needs improvement in which to reduces its resistivity to make sure the grounding rods can conduct in such large electrical currents because these grounding rods always depends on the surrounding of the soil. The electrolytes seems to be a good material in which giving a lower resistance for the soil. An electrolyte is the ionized compound after dissolve in the suitable solvents like water. It performs in giving the ions to make a pathway to the electron to pass through it. This mean that electrolytes not just to reduce resistivity but also reacts as the jointer to the grounding rods and makes the electrical current to flow through it and soils to the earth. To do so, there are common used electrolytes like salt or scientifically natrium chloride. However, the copper sulphate also has its own potential as it can react as electrolytes that also having less corrosion than salt. For that, this research will objectively starts in studying the previous research that uses salts as material in lowering the resistivity of the soil. Yet at the same time, the study on copper sulphate also will be done to see its potential in replacing salts. This experiment will take part to see the reaction on these two electrolytes on soil resistivity in thirty days. The copper sulphate will gives lower resistivity to the soil compared to natrium chloride for better earthing.

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CHAPTER 1

INTRODUCTION

1.1 BACKGROUND OF STUDY

1.1.1 Overview

In any structures of buildings, electric devices and lightning rods need to be connected to the earth for protection and safety from electrical fault current. Earthing reacts as the path to ensure fault current flows through it and then goes to the earth electrode. In some cases, the earthing system is too bad which when the faulty happened, the fault current cannot find the path to earth but somehow, it will make a new path towards anything which had potential difference like electric equipment, socket plug and may also human being. Then, earthing electrodes are the conducting elements used to connect electrical systems and/or equipment to the earth [16]. The earthing electrodes are placed into the earth to maintain electrical equipment at the potential of the earth and to dissipate over-voltages into the earth [16]. There are several types of the earthing electrodes like ground rods, metal plates, concrete encased conductors, ground rings, electrolytic ground rods, the metal frame of building or structure, and metal underground water pipes [16]. This is means the earthing electrode is the main thing in order to achieve measurement of the soil resistivity in which it will get the potential between two points from the soil with the earth electrode itself.