

## **ЕФЕКТ НА ПЛАСТМАСОВИТЕ МАТЕРИАЛИ ВЪРХУ ГЕОТЕХНИЧЕСКИТЕ СВОЙСТВА НА ПОЧВА ЗА ИНЖЕНЕРНИ СЪОРЪЖЕНИЯ**

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## **EFFECT OF PLASTIC MATERIALS ON GEO-TECHNICAL PROPERTIES OF SOIL FOR ENGINEERING CONSTRUCTION**

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### **Abstract:**

*Disposal of plastic waste is a challenge in developing countries, hence the need to re-use. Soil samples were collected from a borrow pit at Oworonshoki in Kosofe LGA, Lagos, Nigeria. Plastics materials were sourced for, grinded into 5mm sieve size. Grinded plastic strips were mixed with soil samples at 0%, 10%, 15% and 20%, ratio by weight. Compaction and California Bearing Ratio (CBR) tests were carried out to determine the Maximum Dry Densities (MDD) with the corresponding Optimum Moisture Contents (OMC) and the California Bearing Ratio (CBR) values.*

*At 0% inclusion, OMC was 20% and MDD was 1.62 kNm<sup>3</sup> while the average value for 2.5 mm and 5mm penetration on soil were 38.75% and 45.80% respectively. At 10% inclusion, OMC was 22.2% and MDD was 1.61 kNm<sup>3</sup> while the CBR value at 2.5 mm and 5 mm penetration on soil were 50.16% and 38.18% respectively. At 15% inclusion, OMC was 21%, MDD was 1.61 kNm<sup>3</sup> while the CBR value at 2.5 mm and 5 mm penetration on soil were 30.97% and 32.59% respectively. At 20% inclusion, OMC was 22%, MDD was 1.62 kNm<sup>3</sup> while the CBR value at 2.5mm and 5 mm penetration on soil were 33.40% and 38% respectively. The results indicated that MDD decreases with increasing plastic content above 15%, and CBR value decreased when 20% plastic material was included. Thus, inclusion of plastics up to 15% soil improves the compaction properties of the soil.*

### **Keywords:**

*Borrow Pit, Plastic Materials, Compaction Test, Optimum Moisture Content, Maximum Dry Densities, Penetration Test, California Bearing Ratio.*

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